Title

Use of Modern Contraceptives in Lagos Nigeria during the COVID-19 Pandemic

Abstract

With only modelled estimates of potential impact of COVID-19 pandemic on family planning utilisation available, this community-based cross-sectional survey sought to estimate the modern contraceptive prevalence rate (mCPR) and examine predictors of modern contraceptives utilisation amongst women of reproductive age (WRA) in Lagos – the epicentre of Nigeria – during the COVID-19 pandemic. The study was conducted between the months of July and September 2020. Following descriptive and bivariate analyses, logistic regression was used to examine predictors of modern contraceptives use during the pandemic. Of all 1,445 WRA recruited, most (88.2%) had at least secondary education, were aged 20-39 years (79.7%) and earned <₦30,000 (US$80) monthly (57.2%). The estimated mCPR for the period was 30.8%. Women aged 20-29 years were 50% (AOR: 0.51, 95%CI:0.37-0.71) less likely to use modern contraceptives during the pandemic than the 30-39-year age-group. Married and divorced women were about three (AOR: 2.68, 95%CI:1.37-5.25) and more than three (AOR: 3.21; 95%CI:1.32-7.79) times more likely to use modern contraceptives during the pandemic compared to single women. Though mCPR has not reduced during the pandemic as predicted, continuous assessment of family planning needs of sometimes obscure sub-populations is required, especially if outbreaks like COVID-19, which mandated lockdowns, become our 'new normal'.

Keywords: Family planning, modern contraceptives, COVID 19, pandemic, predictors

Introduction

The Coronavirus Disease 2019 (COVID-19) has led to a complex worldwide outbreak with an enormous impact on health, economic and social fabrics (WHO, 2020c, 2020b). As the disease, which was declared a pandemic on 11 March 2020 (WHO, 2020c), continued to accelerate, fears increased about its potential effect on women's and girls' sexual and reproductive health and rights (SRHR). These anxieties were further heightened by the restrictions to movement implemented in many countries as part of efforts to slow down its spread and the effect this has had on access to care (Cousins, 2020). Many of the concerns, particularly for low- and middle-income countries (LMICs), stemmed from an expected disruptive effect of the COVID-19 pandemic on manufacture and supply chains of some modern contraception commodities, closure of services as a result of the lockdown and fear of women's access to health services (Purdy, 2020; Riley et al., 2020; Sharma et al., 2020). At the beginning of the pandemic, Riley et al. estimated a 10% decline in the use of short- and long-acting reversible contraceptives resulting in 48.5 million additional women with an unmet need for modern contraceptives and 15.4 million additional unintended pregnancies in 132 LMICs (Riley et al., 2020). Concerned about the potential consequences of the pandemic, the World Health Organization (WHO) declared that sexual and reproductive health (SRH) services, including the provision of family planning, were deemed as vital and essential services to be maintained during the COVID-19 pandemic (WHO, 2020a). The concerns and the immediate response may not have been unwarranted. In the recent past, the West African Ebola Virus Disease outbreak of 2016 greatly affected family planning services in Liberia and Sierra Leone (Bietsch et al., 2020).

With family planning, modern contraceptive methods, particularly, which typically have a robust basis in reproductive biology, an explicit protocol for its use and evidence of efficacy under diverse conditions have been promoted for use (Festin et al., 2016). Its potential to reduce poverty and hunger and avert 32% of all maternal deaths and almost 10% of childhood deaths has long been recognised (Cleland et al.,

2006). Besides, family planning services provide other potential non-health benefits, which include wider education opportunities, empowerment for women, poverty reduction and economic development (World Health Organization et al., 2018). Despite these recognised effects, uptake of modern contraceptives has not been optimal for many LMICs, even before the COVID-19 pandemic. Indeed, uptake of modern contraceptives in sub-Saharan Africa had always been low, with the sub-region reporting the lowest rate globally at 28·5% (95% CI 26·8–30·2) (Cahill et al., 2018). Nigeria has one of the lowest rates in sub-Saharan Africa [13·1% (95% CI 9·8–17·3)] (Cahill et al., 2018). Although the Federal Ministry of Health adopted a free commodity policy in April 2011, making all family planning commodities at public facilities available free of charge, the use of contraceptives remains low in Nigeria (FMOH, 2014). Reasons that have been advanced for non-use of contraception before the advent of COVID-19 range from fear of side effects, limited contraceptive options, inadequate counselling and lack of knowledge about contraception (Sedgh & Hussain, 2014).

Although models have been used to estimate the potential impact of COVID-19 in LMICs, including Nigeria (Riley et al., 2020), the actual effect of the pandemic on modern contraceptives uptake remains unknown. The reasons for use or non-use in the middle of the pandemic have also not been established. This is particularly critical for hard-hit areas by COVID 19, such as Lagos, which is the economic hub and the epicentre of the COVID-19 pandemic in Nigeria (NCDC, 2020). It is essential to identify factors that predict the use of family planning services and uptake of modern contraception during health emergencies in such settings. Hence, this study's objective was to estimate the modern contraceptive prevalence rate (mCPR) and examine the predictors of modern contraception usage by women of reproductive age (15-49 years) in Lagos, Nigeria, during the COVID-19 pandemic.

Methods

Setting

This community-based cross-sectional survey was conducted in Lagos State, Nigeria. The state located in the south-west region is the smallest in terms of the country's landmass, yet it is the most densely populated. It is also the economic nerve centre of the country with several ports of entry. As a result of this status, it was not particularly surprising that the first case of COVID-19 in Nigeria was confirmed on the 27 February 2020. Following global practice, a nationwide lockdown which took immediate effect was announced in Nigeria on 30 March 2020 in three states of the country, including Lagos. However, while this helped keep the spread of the disease at bay, the untold hardship experienced by people prompted the government to announce a phased and gradual easing of the lockdown from 5 May 2020. A mix of partial lockdowns and curfews continued till 31 July 2020 (Ibrahim et al., 2020). By this day, there had been 43,151 confirmed cases and 879 deaths nationally, with three quarters of the burden in Lagos (NCDC, 2020).

Sampling

A multi-stage sampling technique was used to select women meeting the inclusion criteria from communities in six of the 20 local government areas (LGAs) of Lagos State, including two rural and four urban LGAs. Communities within the LGAs were selected by a simple random sampling process from the list of communities per LGA and divided into clusters. Subsequently, households were randomly selected within each of the selected clusters.

Data collection

Data collection was conducted between July and September 2020 with a pre-tested interviewer-administered questionnaire designed by the research team on the mobile application, Kobotoolbox –

Enketo version 2.5 (KoBoToolbox at the Harvard Humanitarian Initiative, MA, USA). Research assistants conducted data entry in real-time on tablets. The instrument collected socio-demographic data including age, marital status (single, married, separated/divorced, and widowed), family type (single parent, monogamous, and polygamous), location of the respondent (urban or rural), educational level attained (No formal education, primary, secondary and post-secondary), occupation (Housewife, student, unskilled worker, skilled worker, professional, unemployed), monthly income (none, less than ₦30,000 - minimum wage in Nigeria, ₦30,000- ₦60,000 and above ₦60,000), religion (Christian, Muslim, others), as well as data on awareness of family planning, ever used modern contraceptives, use of modern contraceptives during the COVID-19 pandemic, a perception that the COVID-19 pandemic had affected availability and utilisation of family planning services.

Data was collected by field assistants who received three days of virtual and one physical in-person training on the survey objectives, survey instrument and infection prevention and control (IPC) to prevent the risk of COVID-19 infection before proceeding to the field. The team was provided with face masks, shields, and sanitisers for the fieldwork. They were enjoined to maintain a social distance from the participants and observe all safety protocols as per COVID-19 guidelines.

Data analysis

Following data cleaning to assure quality, an initial descriptive analysis was conducted to determine those who had heard or not heard about family planning previously. Subsequently, respondents who had not heard of family planning were excluded from further analysis on the use of modern contraceptives and factors affecting usage. Descriptive statistics, including frequencies and proportions, were used to summarise socio-demographic data. Age being a continuous variable was summarised as mean and

categorised into less than 20 years, 20-29, 30-39 (middle adulthood) and 40-49 in the perimenopausal years (older adulthood). The analysis also involved estimating the mCPR for the period.

Bivariate analysis was performed to test the association between the dependent variable (use of modern contraceptives during the early phase of the COVID-19 pandemic) and selected independent variables. These independent variables included age, marital status, educational level, religion, occupation and perception that COVID-19 had affected family planning services. The *p*-value allowed us to verify any significant associations between the dependent variables and the independent variables, based on a *p*≤0.05 statistical significance level. Subsequently, a multivariate analysis was conducted to demonstrate the strength of association between the dependent and independent variables for which the bivariate analysis showed to be significant. Results were presented with odds ratio, 95% confidence intervals (CI) and *p*-values. All statistical analyses were conducted with STATA SE 13.0 (StataCorp, College Station, Texas, USA).

Ethical considerations

Ethical approval was obtained from the Lagos State University Teaching Hospital's health research and ethics committee (LREC/06/10/1326). Social approval was also obtained from the Lagos State Ministry of Health (LSMoH) and the Lagos State Primary Health Care Board (LS/PHC/MS/1128/Vol. V1/022). Participation was voluntary, and verbal informed consent was obtained from respondents.

Results

In all, 1,445 respondents were recruited into this study. Of all, 1,159 (80.2%) had heard of FP. Amongst this sub-group of the sample who had heard of FP, 541 (46.75%) were within the 30-39 years age group (mean age of 31.7 years±7.8), 953 (82.2%) were married, 886 (76.4%) respondents were in monogamous

6

relationships, 616 (53.1%) had attained secondary level of education, 471 (40.6%) were skilled workers, 581 (57.2%) earned less than ₦30,000 (US$73), 753 (65.0%) resided in urban settlements, and 613 (52.9%) were Christians (Table 1).

Insert Table 1

Of the respondents who were aware of family planning, 357 (30.8%) used modern contraceptives during the early phase of the pandemic, while the remaining 802 (69.2%) did not. In all, 338 (29.0%) perceived that COVID 19 had affected access to family planning services. Within this sub-group of respondents who felt that COVID-19 had affected family planning service, they were asked specific questions related to family planning service utilisation and availability. For utilisation, 254 of the respondents (75.2%) reported that they did not want to visit health facilities because they feared contracting COVID-19, and 105 (31.1%) respondents were not confident about Infection Prevention and Control (IPC) measures available in health facilities. For availability, 151 (44.7%) believed that family planning services were unavailable during the early stages of the pandemic, and 143 (42.3%) believed that commodities were not available.

There were statistically significant associations between age group, marital status, educational level attained, occupation, religion and perception that COVID-19 has affected family planning utilisation and use of modern contraceptives during the early phase of the pandemic (Table 2).

Insert Table 2

Women between the ages of 20 and 29 years were 50% (AOR: 0.511, 95%CI: 0.37-0.71) less likely to use a modern contraceptive during the pandemic compared to those in the 30-39 years age bracket. Women

who were married were about three (AOR: 2.68, 95%CI: 1.37-5.25) times more likely to use family planning during the pandemic compared to single women. Similarly, those who were separated or divorced were more than three (AOR: 3.21; 95%CI: 1.32-7.79) times more to use a modern contraceptive during the pandemic than single women. There was also a significantly higher likelihood of modern contraceptive use by those with secondary education (AOR: 1.73; 95%CI: 1.06-2.82) compared to respondents with only primary education. Christians in other denominations had more than twice (AOR: 2.51; 95%CI: 1.22-5.18) the odds of using modern contraceptives compared to their Roman catholic Christian. Compared to those who had the perception that COVID-19 had affected the availability of family planning services, there was a significantly higher likelihood of using modern contraceptives for women who were indifferent or neutral about the effect that COVID-19 had on family planning service availability (AOR: 1.59; 95%CI: 1.16-2.20) and an even higher odds of usage for those who perceived that COVID-19 had not affected the availability of family planning services (AOR: 2.09; 95%CI: 1.51-2.89) (Table 3).

Insert Table 3

Discussion

Earlier predictions made when the COVID-19 pandemic was still only beginning to creep on humanity suggested a very gloomy picture regarding the potential effect on family planning utilisation. One estimate for LMICs included a 10% decline in contraceptive use due to health system challenges on account of the COVID-19 pandemic (Riley et al., 2020). In our survey, mCPR during the early phase of the pandemic was 30.8%. This estimate is higher than those of model estimates for Lagos, which combined multiple secondary data sources, to calculate an mCPR of 20.6% as of 2017 (Mercer et al., 2019). With a continuous year-on increase of mCPR since the year 2000, it is not unlikely that our sample estimate is

very much within the margin of error of other estimates that took place pre-COVID-19 pandemic (Mercer et al., 2019). Our estimate is also not too far from the 25.6% estimate of the Performance Monitoring and Accountability Survey (PMAS) conducted in Lagos between December 2019 and January 2020 (PMA Nigeria et al., 2020). This suggests that, as a whole, utilisation rates have not particularly been affected by the prevailing COVID-19 pandemic.

Bivariate analysis conducted in this study, however, provide some unique insights. Usage increased with the advancement in age but declined in the older adulthood period approaching perimenopausal years (early forties upwards). It is likely that family size would have been completed during this phase of the reproductive years. Critically, young women aged 20-29 years were 50% less likely to use modern contraception during the pandemic than those 30-39 years old. Pre-pandemic, despite adjusting for confounders, there was no statistically significant difference in utilisation of modern contraceptives between age groups (Alo et al., 2020). Indeed, the period of 20-29 years is characterised by pre-marital sexual relationships, with many needing family planning in some form to prevent unwanted pregnancies (Ajaegbu, 2015). Furthermore, a significant proportion of those within this 20—29 years age group in Nigeria are typically undergoing post-secondary education. However, in the early part of the pandemic, educational institutions were closed, and so many would have had to return to their family homes to stay with their parents or guardians (Haider et al., 2020). Under the supervision of their parents, the need for modern contraceptives and family planning, in general, would have been limited with minimised opportunities for engaging with any sexual partners. Additionally, the prevailing lockdown and curfews as a result of the pandemic also minimised the number of social events where they could meet up potential sexual contacts.

The use of modern contraceptives during the pandemic was also significantly higher amongst married as well as divorced or separated women differing from the PMA2020 survey conducted in 2018. Analysis based on the PMAS database from a sample of seven states of Nigeria, including Lagos, showed that women who were are currently married [AOR: 0.3, 95% CI: 0.22–0.45] and those who are divorced or widowed [AOR: 0.2, 95% CI: 0.08–0.48] were less likely to use modern contraceptives compared to sexually single women (Alo et al., 2020). Our analysis suggests that there has been a trend reversal, with single women using fewer modern contraceptives and married and divorced women using more. In the context of the lockdown, work from home, job losses and all the attendant consequences of the COVID-19 pandemic, it makes sense that married couples spent more together, and there was an increased need for protection during conjugal relationships. Historically, research has shown that during lockdowns that completely restrict human movement, and when people have to spend more time at home, there is a likelihood of increased unprotected sex or increased sexual activity because couples are less occupied by other recreational activities outside of the home and maybe under stress. Indeed, sexual gratification is a relatively common way for some adults to relieve such stress (PAHO, 2019; Sharma et al., 2020). However, it is interesting that in our study, divorced or separated women had even higher odds of using modern contraceptives during the early phase of the COVID-19 pandemic. With the lockdown and isolation that it brought, divorced or separated women might have had a higher need for conjugation with partners necessitating their higher use during this period.

In addition, those that had attained secondary education had higher odds of using modern contraceptives compared to those who only had primary education. This has similarly been reported in the literature, with many authors making a case for increasing education and contraceptive utilisation (Alo et al., 2020). Similarly, for religion, Christians in other denominations were twice as likely to use modern contraceptives compared to those in the Roman Catholic denomination. The opposition of the Roman Catholic church to

artificial methods of family planning, including modern contraceptives and the general preference for natural methods, has long been known (Lemaire, 2016). Clearly, this long-held position did not change within the context of COVID-19.

Perception also appeared to play a significant role in the utilisation of modern contraceptives. As our findings show, those, who were indifferent or neutral about the perception that COVID-19 influenced service availability had higher odds of utilisation than those who did not believe it did at all. A significantly higher odds were reported amongst those who did not believe that COVID-19 had affected family planning service availability had higher odds of using modern contraceptives. Clearly, such perception influences service utilisation. A key driving factor for this perception is fear, with three in four in our survey stating that they were afraid to engage with health facilities, so they do not get infected with COVID-19. This fear was as ubiquitous as the virus itself in the early days of the pandemic, and it affected service utilisation all-around (Semaan et al., 2020). About a third also stated that they were concerned about the status of IPC in health facilities. Such lack of trust in the system to protect service users will ultimately affect service utilisation.

Findings from this study point to some key policy implications. During the early phase of the pandemic, reproductive health services were indeed shut down or minimised in Lagos and in many other LMIC settings (Marie Stopes International, 2021). However, this was only for a short while before multilevel and variable health systems responses kicked in (Ameh et al., 2021). Even in the middle of lockdown, pharmacy stores that were deemed essential were allowed to stay open. In addition, the health systems response in the delivery of essential services leveraged telemedicine and set up remote appointments, including platforms like WhatsApp to provide contraception services (Salau, 2020), while for the most part ensuring that healthcare providers had sufficient personal protective equipment either through

government funds, agency or philanthropic donations (Banke-Thomas et al., 2021). Additional supportive reproductive health care provision by non-governmental organisations appear to have covered any gaps that might have occurred (Marie Stopes International, 2021). Like the West African Ebola crisis before, it appears that though there have been disruptions in service delivery, "to a large extent, it was not health service provision that failed" (Brolin Ribacke et al., 2016). However, unlike that outbreak, where uptake of health services by the population decreased (Brolin Ribacke et al., 2016), with the early phase of the COVID-19, it appears that it was uptake of certain sub-populations which was affected due to additional restrictions. Certainly, in planning for future epidemics that have not fully affected the supply chain but have led to a barrier to access available commodities, there is a need to plan tailored service for individuals who can be 'locked out' or isolated from the system and need private and safe spaces to be able to access modern contraceptives if they need—for example, young university students who are now with their parents.

The other group are those who need more modern contraceptive utilisation. For this group, the supply chain needs to be maintained to ensure that their needs continue to be met even in the middle of the crisis. To guarantee that there is no reversal in the stability that has been achieved thus far, efforts need to continue to ensure that family planning commodities and, in particular, modern contraceptives remain in supply. Safety measures must be continuously enforced during provider-patient engagements and re-assurance of communities and recipients of non-disruption of services and supplies. This is particularly important in the context of our finding that a third of women did not want to visit a health facility because of concerns for the robustness of IPC measures. Health facilities need to contribute to building public trust by propagating efforts that they are making to keep patients safe.

To the best of our knowledge, this study is the first that reports actual impact of COVID-19 of modern contraceptive utilisation in a LMIC setting. In the study, we focused on women who were already sensitised and aware of family planning, ensuring that we were able to isolate effects of COVID-19 and exclude other pre-conceptions that could affect utilisation which pre-date the COVID-19 pandemic. We found that four in five women in our sample had heard of family planning previously. A similar study conducted pre-pandemic in an urban community of Lagos showed a slightly lower level of awareness (64.0%) services (Kanma-Okafor et al., 2019). This suggests that our sample was not significantly different from others that have been reported in studies conducted pre-COVID-19 pandemic. However, there were some limitations that need to be considered in interpreting the findings of this study. First, in questioning the respondents, we did not distinguish between lockdown and non-lockdown periods. While this would have provided an additional layer of disaggregated evidence that would have allowed us to separate the effect of the pandemic from those of measures imposed to deal with it, it was difficult to separate both in a fine manner. In any case, it would have been subject to significant recall bias, with respondents needing to remember specific dates. Second, we did not ask about the specific type of modern contraceptive being used or if its use pre-dates the COVID-19 pandemic or not. Again, though this would have provided more information, it would have been difficult to interpret and link it with discontinuation or otherwise and COVID-19. Third, being a cross-sectional study, issues of temporality should be of concern.

Conclusion

The COVID-19 pandemic has altered life and health service delivery and many ways. In many LMIC settings like Lagos, its reality is not in line with the predictions, at least as it relates to family planning. Going forward, especially if COVID-19 and any future outbreaks become our 'new normal', continuous assessment to identify needs of sometimes obscure or unusual sub-groups and ensure such needs are met will be critical. This is in addition to the need for addressing the diverse pre-pandemic reasons for

non-utilisation of family planning, as this remain and continue to be perpetuated (Sedgh & Hussain, 2014). If there is any silver lining for family planning during the pandemic, it is that the increased need for modern contraceptives amongst certain groups during the COVID-19 pandemic might mean an opportunity to convert some non-users.

References

Ajaegbu, O. (2015). Premarital Sex, HIV and Use of Condom among Youths in Nigeria. *Arts and Social Sciences Journal*, *6*(5), 1000146. https://doi.org/10.4172/2151-6200.1000146

Alo, O. D., Daini, B. O., Omisile, O. K., Ubah, E. J., Adelusi, O. E., & Idoko-Asuelimhen, O. (2020). Factors influencing the use of modern contraceptive in Nigeria: A multilevel logistic analysis using linked data from performance monitoring and accountability 2020. *BMC Women's Health*, *20*(1), 191. https://doi.org/10.1186/s12905-020-01059-6

Ameh, C., Banke-Thomas, A., Balogun, M., Makwe, C. C., & Afolabi, B. B. (2021). Reproductive Maternal and Newborn Health Providers' Assessment of Facility Preparedness and Its Determinants during the COVID-19 Pandemic in Lagos, Nigeria. *The American Journal of Tropical Medicine and Hygiene*, *1*(0), 1–12. https://doi.org/10.4269/ajtmh.20-1324

Banke-Thomas, A., Makwe, C. C., Balogun, M., Afolabi, B. B., Alex-Nwangwu, T. A., & Ameh, C. A. (2021). Utilization cost of maternity services for childbirth among pregnant women with coronavirus disease 2019 in Nigeria's epicenter. *International Journal of Gynecology & Obstetrics*, *152*(2), 242–248. https://doi.org/10.1002/ijgo.13436

Bietsch, K., Williamson, J., & Reeves, M. (2020). Family Planning During and After the West African Ebola Crisis. *Studies in Family Planning*, *51*(1), 71–86. https://doi.org/10.1111/sifp.12110

Brolin Ribacke, K. J., Saulnier, D. D., Eriksson, A., & von Schreeb, J. (2016). Effects of the West Africa Ebola Virus Disease on Health-Care Utilization – A Systematic Review. *Frontiers in Public Health*, *4*(OCT), 222. https://doi.org/10.3389/fpubh.2016.00222

Cahill, N., Sonneveldt, E., Stover, J., Weinberger, M., Williamson, J., Wei, C., Brown, W., & Alkema, L. (2018). Modern contraceptive use, unmet need, and demand satisfied among women of reproductive age who are married or in a union in the focus countries of the Family Planning 2020 initiative: a systematic analysis using the Family Planning Estimation Tool. *The Lancet*, *391*(10123), 870–882. https://doi.org/10.1016/S0140-6736(17)33104-5

Cleland, J., Bernstein, S., Ezeh, A., Faundes, A., Glasier, A., & Innis, J. (2006). Family planning: the unfinished agenda. *Lancet*, *368*(9549), 1810–1827. https://doi.org/10.1016/S0140-6736(06)69480-4

Cousins, S. (2020). COVID-19 has "devastating" effect on women and girls. *Lancet*, *396*(10247), 301–302. https://doi.org/10.1016/S0140-6736(20)31679-2

Festin, M. P. R., Kiarie, J., Solo, J., Spieler, J., Malarcher, S., Van Look, P. F. A., & Temmerman, M. (2016).

Moving towards the goals of FP2020 — classifying contraceptives. *Contraception*, *94*(4), 289–294. https://doi.org/10.1016/j.contraception.2016.05.015

FMOH. (2014). *Nigeria Family Planning Blueprint (Scale-Up Plan)*. https://www.healthpolicyproject.com/ns/docs/CIP_Nigeria.pdf

Haider, N., Osman, A. Y., Gadzekpo, A., Akipede, G. O., Asogun, D., Ansumana, R., Lessells, R. J., Khan, P., Hamid, M. M. A., Yeboah-Manu, D., Mboera, L., Shayo, E. H., Mmbaga, B. T., Urassa, M., Musoke, D., Kapata, N., Ferrand, R. A., Kapata, P. C., Stigler, F., … McCoy, D. (2020). Lockdown measures in response to COVID-19 in nine sub-Saharan African countries. In *BMJ Global Health* (Vol. 5, Issue 10, p. 21). BMJ Publishing Group. https://doi.org/10.1136/bmjgh-2020-003319

Ibrahim, R. L., Ajide, K. B., & Olatunde Julius, O. (2020). Easing of lockdown measures in Nigeria: Implications for the healthcare system. *Health Policy and Technology*, *9*(4), 399–404. https://doi.org/10.1016/j.hlpt.2020.09.004

Kanma-Okafor, O., Asuquo, E., Izuka, M., Balogun, M., & Ayankogbe, O. (2019). Utilisation and preferences of family planning services among women in Ikosi-Isheri, Kosofe Local Government area, Lagos, Nigeria. *Nigerian Postgraduate Medical Journal*, *26*(3), 182. https://doi.org/10.4103/npmj.npmj_52_19

Lemaire, W. J. (2016). The roman catholic church and contraception. *Int J Reprod Contracept Obstet Gynecol*, *5*(6), 2065–2068. https://doi.org/10.18203/2320-1770.ijrcog20161723

Marie Stopes International. (2021). *Stories from the frontline: In the shadow of the COVID-19 pandemic*. COVID-19. https://www.msichoices.org/covid-19/stories-from-the-frontline/

Mercer, L. D., Lu, F., & Proctor, J. L. (2019). Sub-national levels and trends in contraceptive prevalence, unmet need, and demand for family planning in Nigeria with survey uncertainty. *BMC Public Health*, *19*(1), 1752. https://doi.org/10.1186/s12889-019-8043-z

NCDC. (2020). *Confirmed Cases by State*. https://covid19.ncdc.gov.ng/

PAHO. (2019). *Prevention and Control of Sexually Transmitted Diseases in Emergencies*. Health Emergencies. https://www.paho.org/disasters/index.php?option=com_content&view=category&view=article&id=740&Itemid=659&lang=en

PMA Nigeria, CRERD, Johns Hopkins Bloomberg School of Public Health, & jhpiego. (2020). *PMA Nigeria (Lagos): Results from Phase 1 baseline survey*. https://www.pmadata.org/sites/default/files/data_product_results/Nigeria Lagos Phase 1 Results Brief_Final_revised.pdf

Purdy, C. (2020). Opinion: how will COVID?19 affect global access to contraceptives—and what can we do about it? In *Global views: COVID-19*. https://www.devex.com/news/opinion-how-will-covid-19-affect-global-access-to-contraceptives-and-what-can-we-do-about-it-96745

Riley, T., Sully, E., Ahmed, Z., & Biddlecom, A. (2020). Estimates of the potential impact of the covid-19 pandemic on sexual and reproductive health in low-and middle-income countries. *International Perspectives on Sexual and Reproductive Health*, *46*, 73–76. https://doi.org/10.1363/46e9020

Salau, T. (2020). *Amidst coronavirus fears, Nigeria's pregnant women turn to remote consultation and online groups*. Minority Africa. https://minorityafrica.org/coronavirus-fears-nigerias-pregnant-women-remote-consultation/

Sedgh, G., & Hussain, R. (2014). Reasons for Contraceptive Nonuse among Women Having Unmet Need for Contraception in Developing Countries. *Studies in Family Planning*, *45*(2), 151–169. https://doi.org/10.1111/j.1728-4465.2014.00382.x

Semaan, A., Audet, C., Huysmans, E., Afolabi, B., Assarag, B., Banke-Thomas, A., Blencowe, H., Caluwaerts, S., Campbell, O. M. R., Cavallaro, F. L., Chavane, L., Day, L. T., Delamou, A., Delvaux, T., Graham, W. J., Gon, G., Kascak, P., Matsui, M., Moxon, S., … Benova, L. (2020). Voices from the frontline: findings from a thematic analysis of a rapid online global survey of maternal and newborn health professionals facing the COVID-19 pandemic. *BMJ Global Health*, *5*(6), e002967. https://doi.org/10.1136/bmjgh-2020-002967

Sharma, V., De Beni, D., Sachs Robertson, A., & Maurizio, F. (2020). Why the Promotion of Family Planning Makes More Sense Now Than Ever Before? *Journal of Health Management*, *22*(2), 206–214. https://doi.org/10.1177/0972063420935545

WHO. (2020a). *Maintaining essential health services: operational guidance for the COVID-19 context*. https://www.who.int/publications/i/item/10665-332240

WHO. (2020b). *WHO Coronavirus Disease (COVID-19) Dashboard*. https://covid19.who.int/

WHO. (2020c). *WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020*. Speeches. https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020

World Health Organization, Johns Hopkins Bloomberg School of Public Health, & United States Agency for International Development. (2018). *Family Planning - A global handbook for providers* (Third). World Health Organization and Johns Hopkins Bloomberg School of Public Health. https://apps.who.int/iris/bitstream/handle/10665/260156/9780999203705-eng.pdf?sequence=1

Tables

Table 1: Socio-demographic characteristics of respondents (N=1,159).

Background characteristics	No.	%
Woman's age group		
<20 years	14	1·2
20-29 years	383	33·0
30-39 years	541	46.7
40-49 years	221	19.1
Marital status		
Single	135	11.6
Married	953	82.2
Divorced/Separated	51	4.4
Widowed	20	1.7
Family setting		
Single parent	168	14.5
Monogamous	886	76.4
Polygamous	93	8.0
No response	12	1.0
Educational level attained		
None	17	1.5
Primary	119	10.3
Secondary	616	53.1
Post-secondary	407	35.1
Employment status		
Housewife	68	5.9
Student	60	5.2
Unskilled worker	378	32.6
Skilled worker	471	40.6
Professional	157	13.5
Others	25	2.2
Income (Naira (₦))		
<30,000	581	57.2
30,000-60,000	314	30.9
>60,000	120	11.8
Settlement type		
Rural	406	35.0
Urban	753	65.0
Religion		
Christian	613	52.9
Roman Catholic	58	5.0
Muslim	484	41.8
Traditional	4	0.4

Table 2: Bivariate analysis of factors associated with modern contraceptive use during the COVID-19 outbreak in Lagos, Nigeria.

Background characteristics	Total	Utilisation of modern contraceptives		P-value
		Use (n=357) No. (%)	**Non-use (n=802) No. (%)**	
Woman's age group				
<20	14	1 (7.1)	13 (92.9)	<0.001
20-29	383	81 (21.1)	302 (78.9)	
30-39	541	204 (37.7)	337 (62.3)	
40-49	221	71 (32.1)	150 (67.9)	
Marital status				
Single	135	17 (12.6)	118 (87.4)	<0.001
Married	953	318 (33.4)	635 (66.6)	
Divorced/Separated	51	19 (37.3)	32 (62.7)	
Widowed	20	3 (15.0)	17 (85.0)	
Family setting				
Single parent	168	52 (31.0)	116 (69.0)	0.332
Monogamous	886	272 (30.7)	614 (69.3)	
Polygamous	93	32 (34.4)	61 (65.6)	
No response	12	1 (8.3)	11 (91.7)	
Educational level attained				
None	17	3 (17.6)	14 (82.4)	0.05
Primary	119	25 (21.0)	94 (79.0)	
Secondary	616	194 (31.5)	422 (68.5)	
Post-secondary	407	135 (33.2)	272 (66.8)	
Occupation				
Housewife	68	17 (25.0)	51 (75.0)	0.04
Student	60	10 (16.7)	50 (83.3)	
Unskilled worker	378	115 (30.4)	263 (69.6)	
Skilled worker	471	147 (31.2)	324 (68.8)	
Professional	157	61 (38.9)	96 (61.1)	
Others	25	7 (28.0)	18 (72.0)	
Income (Naira (₦))				
<30,000	581	179 (30.8)	402 (69.2)	0.727
30,000-60,000	314	102 (32.5)	212 (67.5)	
>60,000	120	41 (34.2)	79 (65.8)	
Settlement type				
Rural	406	117 (28.8)	289 (71.2)	0.28
Urban	753	240 (31.9)	513 (68.1)	
Religion				
Christianity	613	212 (34.6)	401 (65.4)	0.012
Roman Catholic	58	10 (17.2)	48 (82.8)	
Islam	484	135 (27.9)	349 (72.1)	
Traditional	4	0 (0.0)	4 (100.0)	
Perception that COVID-19 has affected family planning services				
Indifferent/Neutral	440	98 (22.3)	342 (77.7)	<0.001
Yes	338	135 (39.9)	203 (60.1)	
No	381	124 (32.5)	257 (67.5)	

Table 3: Multivariate analysis of factors associated with modern contraceptive use during the COVID-19 outbreak in Lagos, Nigeria.

Background characteristics	Odds ratio	95% Confidence Interval		*P*-value
		Lower	Higher	
Woman's age group				
<20	0.19	0.02	1.63	0.130
20-29	0.51	0.37	0.71	<0.001
30-39	1.00			
40-49	0.77	0.54	1.09	0.136
Marital status				
Single	1.00			
Married	2.68	1.37	5.25	0.004
Divorced/Separated	3.21	1.32	7.79	0.010
Widowed	1.08	0.26	4.48	0.920
Family setting				
Single parent	-	-	-	-
Monogamous	-	-	-	-
Polygamous	-	-	-	-
No response	-	-	-	-
Educational level attained				
None	0.93	0.24	3.61	0.914
Primary	1.000			
Secondary	1.73	1.06	2.82	0.027
Post-secondary	1.63	0.95	2.77	
Occupation				
Housewife	-	-	-	-
Student	-	-	-	-
Unskilled worker	-	-	-	-
Skilled worker	-	-	-	-
Professional	-	-	-	-
Others	-	-	-	-
Income (Naira (₦))				
<30,000	-	-	-	-
30,000-60,000	-	-	-	-
>60,000	-			-
Settlement type				
Rural	-	-	-	-
Urban	-	-	-	-
Religion				
Christianity	2.512	1.218	5.182	0.013
Roman Catholic	1.000			
Islam	1.711	0.819	3.575	0.153
Traditional	0.545	0.011	5.587	0.58
Perception that COVID-19 has affected family planning services				
Indifferent/Neutral	1.593	1.155	2.198	0.005
Yes	1.000			
No	2.087	1.507	2.891	<0.001