# BARRIERS TO FAMILY PLANNING ACCESS AND UTILIZATION DURING THE COVID-19 PANDEMIC ERA AMONGST MARRIED COUPLES IN ANAMBRA STATE, NIGERIA

Chinedu Ugochukwu and Prof. Peter Chukwuma Ezeah
Department of Sociology/Anthropology
Nnamdi Azikiwe University, Awka, Anambra State, Nigeria
Chineduuqochukwu5@gmail.com, pc.ezeah@unizik.edu.ng or pitezeah@gmail.com

#### **Abstract**

This study investigated barriers to family planning access and utilization during the COVID-19 pandemic era amongst married couples in Anambra State, Nigeria. The study objective was to investigate factors affecting family planning access and utilization during the COVID-19 pandemic era amongst married couples in Anambra State. Three theories were reviewed namely Malthusian Theory of Population, Health Belief Model (HBM) and Social Ecological Theory. Thereafter, HBM was adopted as the theoretical framework. The study adopted the mixed methods research design and sampled 623 respondents generated using Taro Yamane (1967) statistical formula. Quantitative data were analyzed using descriptive statistics such as frequency counts, simple percentages and charts while the qualitative data were analyzed using thematic method of data analysis. Findings revealed that majority of the respondents were willing to make use of family planning services during COVID-19 pandemic era but were constrained by restriction of movements. Hence, the study recommended amongst others that health workers should make use of mobile health clinics during future disease outbreaks in Anambra State, Nigeria.

Keywords: Barriers, Family Planning, Access, Utilization, and COVID-19 Pandemic.

#### Introduction

The term pandemic is derived from Greek word 'pan' which means all and 'demos' which means the crowd (Boakye-Agyemang, 2021). Therefore, a pandemic refers to the outbreak of an infectious disease that has spread across large regions, continents or worldwide, affecting a substantial number of people (Boakye-Agyemang, 2021). Throughout human history, a number of pandemics have occurred such as the Black Death, the great plague of London, Russian flu, Spanish flu, Asian flu, Severe Acute Respiratory Syndrome (SARS) and more recently COVID-19 pandemic also known as coronavirus (Boakye-Agyemang, 2021).

In the year 2020, the World Health Organization (WHO) announced that COVID-19 virus was officially a pandemic after penetrating about 114 countries in few months and infecting thousands of people (WHO, 2020). COVID-19 is caused by a novel corona virus. Symptoms include respiratory problems, fever and cough, and can lead to pneumonia and death. Like some other infectious diseases, it is spread through droplets from sneezes. The first reported case in China appeared in the Hubei Province, but went unrecognized. Many people learned about COVID-19 when a doctor in China (Li Wenliang) defied government orders and released safety information to other doctors. Subsequently,

China informed WHO and charged Li with a crime. Li died from Covid-19 just after a month later (WHO, 2020).

In Africa, all facets of the society- health, security, political, economic and social institutions were negatively impacted by the pandemic (WHO, 2020). In the health sector, the pre-existing fragile health systems were overwhelmed with the surge in cases at the peak of the outbreak. The continuity of family planning services and utilizations were disrupted in many African countries (WHO, 2020). According to Kantorova, Wheldon and Dasgupta (2020), common types of family planning services available to Nigerians during the COVID-19 pandemic era include oral contraceptive pills, implants, intra-uterine devices, barrier methods (condoms), sterilization and withdrawal method. These methods and practices have different mechanisms of action and effectiveness in preventing unintended pregnancies.

In Nigeria, at the start of the pandemic measures such as social distancing, lockdown strategies, mobility restrictions as well as fear of travelling to health facilities raised concerns about the effects of COVID-19 on the utilization of family planning services. Disrupted manufacturing and supply chains, and overwhelmed health facilities also threatened to reduce the availability of family planning access and utilization in Nigeria (Mbachu, 2019). For the record, a coordinated COVID-19 response in Nigeria included redistribution of medical supplies, procurement of emergency reproductive health kits, personal protective equipment for health providers and intensified quarterly monitoring. Nonetheless, the country continued to face serious obstacles in accessing and providing family planning services. The pandemic forced non-essential workers to stay at home, with no access to family planning services thereby giving rise to many consequences such as unintended pregnancies (Mbachu, 2019).

Barriers to family planning access and utilization during the COVID-19 pandemic era amongst married couples in Nigeria include limited access to services, perceived fear or experience of side-effects, religion, interference from family members, poor quality of available services, users' and providers' bias against some methods, and gender-based barriers to accessing services (Taiwo, 2021). Today, the COVID-19 pandemic era in Nigeria is gone. However, the challenges in access to family planning services still persist. This means that although the spread of COVID-19 pandemic has been curtailed, there is still a need to examine barriers to family planning access and utilization during the peak of COVID-19 pandemic era amongst married couples in Anambra State, Nigeria as well as the way forward to mitigate the problem.

# Specific Objectives

- 1. What were the factors affecting family planning access and utilization during the COVID-19 pandemic era amongst married couples in Anambra State, Nigeria?
- 2. How can family planning access and utilization be enhanced amongst married couples in Anambra State, Nigeria?

## Literature Review

Family planning simply means birth by choice and not by chance (Dumindin, 2018). It is a voluntary and responsible decision made by individuals and couples as to the desired family size and timing of births. It means that children are born because they are wanted and can be cared for (Ghule, 2021). It also involves consideration of the number of children a woman wishes to have, including the choice to have no child, as well as the age which she wishes to have them (Taiwo, 2021). Raising a child requires significant amount of resources, time, socio-cultural and economic considerations. Thus, family planning can help assure that resources are available for the upkeep of children (Taiwo, 2021). For this reason, Amongin (2021) posits that the purpose of family planning is to make sure that any couple who has the desire to have children, has the needed resources to complete this goal.

There are two broad categories of family planning namely; traditional methods (calendar or rhythm method, withdrawal, use of charms and native concoctions), and modern methods which can further be grouped into medical and non-medical contraceptives (examples include condom use, oral tablets, implants, injections, IUD, vasectomy and tubal ligation) (Amongin, 2021). According to Khanna and Ahmad (2021), modern methods of family planning refers to contemporary and current methods that couples adopt in limiting or spacing the number of children and for the prevention of unwanted pregnancies. Khanna and Ahmad (2021) added that for a method to be called modern family planning method, it must have the following qualities: must be based on sound understanding of reproductive biology, follows a precise protocol for correct use and has been tested in an appropriately designed study to assess its efficacy under various conditions.

Furthermore, it is important to examine the reasons for low level of family planning access and utilization during COVID-19 pandemic around the globe. Among the 1.9 billion women of reproductive age group (15-49 years) worldwide in 2019, 1.1 billion have a need for family planning; of these, 842 million have access to the use of family planning, and 270 million have an unmet need for family planning (Wold Health Organization, 2020). According to Egede, Onoh, Umeora, Iyoke, Dimejesi and Lawani (2015), one method of family planning such as condom use, can prevent pregnancy and the transmission of sexually transmitted infections. Easy access and use of family planning services can advance the right of people to determine the number and spacing of their children. According to Obubu, Nkata, Ananaba, Diallo, Sambo, Kolade, Oyekanmi and Olaosebikan (2023), providing access to family planning services has been the goal of most nations and cultures. This is because family planning aims to keep the population under control while also improving living conditions. Many developing countries, including Nigeria face the challenge of dealing with overpopulation due to high fertility rates, and as result, family planning is considered a veritable way of dealing with high fertility problems. According to Ekong, Chukwu and Chukwu (2020), at the peak of COVID-19 pandemic, there was low uptake of family planning services in Nigeria and other parts of the globe. This was because family planning services were considered by some policy makers and directors of medical institutions to be nonessential activity, as such, many clinics were ordered to halt operations. In few clinics that have remained open, appointments for family planning services were de-prioritized and re-scheduled. In addition to physical clinic closures, studies by Oliver, Lepri, Sterly, Lambiotte, Deletaille and De-Nadai (2020) have shown that attendance was further affected by patients` fears of contracting COVID-19, and lockdowns in certain countries. Reports from reproductive health stakeholders in a number of countries confirmed large decrease in the number of women attending reproductive health clinics.

#### Theoretical Framework

This study adopted the Health Belief Model (HBM) as the theoretical framework. HBM was adopted because it is the most suitable health related theory that explains disease and health behaviours concisely. This is obvious because the variables of HBM namely perceived susceptibility, perceived seriousness, perceived benefits and cues to action are vital enablers that influence the use and non-use of family planning services during disease outbreaks.

HBM is relevant to this study because it maintains that belief systems of married couples about health emergency can predict a follow-up behaviour. So far the model has been used to explain why married couples may or may not be willing to access and make use of family planning services during COVID-19 pandemic. It is instructive to note that HBM is also used to measure health seeking behaviour of married couples. For context, studies by Ekong et al. (2020) revealed that perceived benefits cost of services and belief systems were the most significant predictors of access and utilization of family planning services amongst married couples in Nigeria. In other words, HBM helps married couples to understand appropriate contraceptive behaviour, facilitate strategies to prevent unintended pregnancy and promote positive family planning outcomes during disease outbreaks. This chain of thought makes HBM apt and most appropriate to guide this study.

# Methodology

This study was carried out in Anambra State, Nigeria. The study adopted the multistage sampling procedure which involves the breakdown of sampling process into different stages and the application of different sampling techniques in selecting the respondents. Multistage sampling procedure was suitable because of the size of the study population. Using 2.8% annual population growth rate, the projected population of married couples aged 18 years and above living in Awka South and Idemili North LGAs was 246,300. Thus, a sample size of 623 was determined using Taro Yamane (1967) statistical formula. The target population for the study were married couples aged 18 years and above. The study also adopted the mixed methods research design, which involves the combination of quantitative and qualitative technique in data collection and presentation. Questionnaires were used to collect the quantitative data while the In-Depth Interview (IDI) guide was used to collect the qualitative data. A uniform set of questionnaires were administered to all the respondents. The researcher got approval from the respondents before administering the questionnaires. Purposive sampling technique was adopted to select 6 knowledgeable participants (comprising 3 men and 3 women) aged 18 years and above for

the qualitative aspect of the study based on their knowledge of the theme of the study. The Statistical Package for Social Sciences (SPSS) software version 24 was used to process the quantitative data collected from the field. The quantitative data were presented and analyzed using descriptive statistics such as simple percentages, frequency counts and graphic illustrations like charts. The qualitative data gathered from the interview sessions were recorded, carefully transcribed and analysed thematically using narrative method of qualitative data analysis. These qualitative data were compared with the quantitative data to establish a synergy between the two findings. Thematic method of data analysis was used to analyze the qualitative data.

# Results/Findings

The study administered 623 copies of questionnaires and recovered 609 (98%). The remaining 14 copies were wrongly filled and were discarded. The socio-demographic data of the respondents were analyzed and presented in table 1.

Table 1: Socio-demographic characteristics of respondents

Socio-demographic variables	Frequency	Percentage (100.0%)	
Sex			
Male	303	49.8	
Female	306	50.2	
Total	609	100.0	
Age			
18 - 27 years	200	32.8	
28 - 37 years	244	40.1	
38 years and above	165	27.1	
Total	609	100.0	
Marital Status			
Married	532	87.4	
Divorced	21	3.4	
Separated	39	6.4	
Widowed	17	2.8	
Total	609	100.0	
Religious Affiliation			
Christianity	528	86.7	
Islam	7	1.1	
African Traditional Religion	41	6.7	
(ATR)			
Atheist	33	5.4	
Total	609	100.0	
Place of Residence			
Rural area	301	49.4	
Urban area	308	50.6	
Total	609	100.0	
Occupation			
Civil servant	199	32.7	

Business	163	26.8
Farming	87	14.3
Artisan	105	17.2
Unemployed	55	9.0
Total	609	100.0
Educational Qualification		
No formal education	51	8.4
FSLC	98	16.1
SSCE	143	23.5
OND/NCE	109	17.9
HND/B.Sc.	168	27.6
Higher degree	40	6.6
Total	609	100.0
Annual Income		
Less than №360,000	233	38.3
N361,000 - N720,000	305	50.1
N721,000 - N1,080,000	30	4.9
N1,081,000 - N1,440,000	12	2.0
N1,441,000 - N1,800,000	12	2.0
N1,801,000 - N2,160,000	3	0.5
№2,161,000 and above	14	2.3
Total	609	100.0

# Field Survey, 2024

The socio-demographic data of respondents in table 1 show that 306 (50.2%) respondents are females while 303 (49.8%) are males. The table also indicates that 244 (40.1%) of the respondents are between the ages of 28-37 while 165 (27.1%) of the respondents are 38 years and above. This implies that many respondents are in their late 20s and 30s. Furthermore, the respondents have a mean age of 36 years, a median age of 35 years and a modal age of 33 years, with a standard deviation of 8.58200. The table shows that the respondents have a minimum age of 19 and a maximum age of 60. This implies that most respondents that took part in this study are young adults. With regards to marital status, it can be seen that 532 (87.4%) of the respondents are married whereas 17 (2.8%) are widowed. This implies that majority of the respondents are married couples. This is not surprising because the target population for this study are married couples living in selected LGAs in Anambra State.

This study also examined the religious affiliation of the respondents and result indicates that 528 (86.7%) of the respondents are Christians whereas 7 (1.1%) of the respondents are Moslems. This implies that Christianity is the most dominant religion in Anambra State. In terms of place of residence, 308 (50.6%) of the respondents live in urban areas while 301 (49.4%) live in rural areas. The implication is that a higher number of the respondents studied reside in the urban areas. Equal number of questionnaires were distributed to the respondents in rural and urban areas. However, during data cleaning, it was discovered that more respondents from the urban areas filled the questionnaires correctly. The educational status of the respondents was assessed and data revealed

that 168 (27.6%) of the respondents are HND/B.Sc. holders while only 40 (6.6%) have higher degrees. This implies that a majority of the respondents have access to higher levels of education. This result affirms the recent national perception which indicates that many Anambrarians appreciate western education. Thus, Anambra State is no more among the states in the Southeast classified in Nigeria as educationally disadvantaged states. Furthermore, income status of the respondents reveals that 305 (50.1%) of the respondents earn between N361,000-N720,000 every year while only 3 (0.5%) of the respondents earn as high as N1,801,000-N2,160,000 annually. From the result, it can be rightly inferred that most respondents are low income earners. This implies that although high literacy rate was observed among the respondents, it has not translated into higher income status for most residents of Anambra State, Nigeria.

# Analysis of Objectives

This section analyzed the specific objectives formulated to guide this study.

Table 2: Respondents' views on factors affecting family planning access and utilization during the COVID-19 era amongst married couples in Anambra State

Responses	Frequency	Percentage
Cost of family planning services	70	11.5
Distance to family planning clinics	32	5.3
Disruption of family planning services during Covid-19	48	7.9
era		
Easy access to traditional methods of family planning	29	4.8
Restriction of movements/lockdowns	260	42.7
Unavailability of family planning services	69	11.3
Religious beliefs	35	5.7
Perceive fear of side effects	30	4.9
Poverty	21	3.4
All of the above	15	2.5
Total	609	100.0

Field Survey, 2024

Table 2 shows that in terms of factors that affected family planning access and utilization during the COVID-19 era amongst married couples in Anambra State, 260 (42.7%) of the respondents identified restriction of movements/lockdowns while 15 (2.5%) indicated all of the above. This implies that restriction of movement was a major barrier to the use of family planning services during COVID-19 pandemic among married couples in Anambra State. This means that family planning services, access and utilization were adversely affected by COVID-19 restrictions and safety guidelines during the pandemic era in Anambra State. This agreed with the qualitative data. One of the interviewees had this to say:

Oh yes, lockdown stopped many couples from making use of family planning during COVID-19. Income is another serious factor when it comes to access and utilization of family planning services. That is why low income earners or poor people tend to have large family size; have you wondered why? The answer is simple; they are always with the wife in the morning, afternoon, evening and night,

performing their conjugal rights, hahahahahaha no leave, no transfer. Another important factor is level of education. My experience as a medical practitioner indicates that educated people are more likely to embrace the use of family planning services unlike their uneducated counterparts (Married Man, 59 years, Medical Doctor, Meshack Memorial Hospital and Maternity, Okpuno, Awka South LGA of Anambra State, Nigeria).

## Another participant had this to say:

Money influences everything in this country including access and utilization of family planning services. That is why poor Nigerians tend to have large families. Again, level of education can influence the use of family planning. I have observed over time here in Ideani that educated people are more likely to embrace the use of family planning services unlike their uneducated counterparts (Married Man, 48 years, Bus Driver, Ideani, Idemili North LGA of Anambra State, Nigeria).

## Furthermore, another participant stated:

Money they say is the root of all evil, but when it comes to access to FP services, my brother you need money. This explains why the poor masses or many poor people tend to give birth to plenty children, with the hope that they will make money giving out their daughters hand in marriage. This is not always the case (Married Woman, 30 years, Trader, Ideani, Idemili North LGA of Anambra State, Nigeria).

Table 3: Respondents' views on ways that family planning access and utilization can be enhanced amongst married couples in Anambra State

Responses	Frequency	Percentage
Use of mobile health clinics during disease outbreaks	65	10.7
Awareness creation on the benefits of family planning services	164	26.9
Adhering to non-medical protocols during hospital visit to FP clinics	64	10.5
Designate FP services as essential services during future pandemics	106	17.4
Ensure availability of family planning services to married couples	95	15.6
Government should subsidize the cost of FP for married couples	60	9.9

Total	609	100.0	
Active involvement of men in family planning	26	4.3	
Religious and opinion leaders should assist in promoting positive uptake of family planning services	29	4.8	

# Field Survey, 2024

Table 3 shows that in terms of measures to enhance voluntary uptake of family planning access and utilization among married couples in Anambra State, 164 (26.9%) of the respondents recommended awareness creation on the benefits of family planning services while 26 (4.3%) suggested active involvement of men in family planning campaigns. This implies that one of the most sustainable ways to enhance the use of family planning services has to include awareness creation on the benefits of family planning services among married couples in Anambra State. This finding was corroborated by the qualitative data. One of the interviewees stated:

First of all, it is important that policy makers in Anambra State understand that public education is key to positive uptake of family planning services in Anambra State. What that means is that there is need to provide free and steady access to quality education among the citizens, so that by the time they are adults and maybe married, they will appreciate the benefits of family planning services (Married Woman, 28 years, Food Seller, Okpuno, Awka South LGA of Anambra State, Nigeria).

## In the same way, another participant stated:

In order to increase family planning access and utilization amongst married couples, there is need for adequate sensitization campaign to make married couples appreciate the need to adopt the use of available family planning services within their localities (Married Man, 59 years, Medical Doctor, Meshack Memorial Hospital and Maternity, Okpuno, Awka South LGA of Anambra State, Nigeria).

# Similarly, another participant stated:

Honestly, things are hard and everything seems to be getting worse in this country day by day. I think in order to enhance access and utilization of family planning amongst married couples; government should subsidize the cost of family planning services for married couples living in Ideani and other communities in Anambra State. In fact, some methods of family planning like condom use should be given to married couples free of charge (Married Man, 48 years, Bus Driver, Ideani, Idemili North LGA of Anambra State, Nigeria).

## Another participant suggested:

In my opinion, the best measure that should be put in place to improve the use of family planning methods in Anambra State should include the following: creation of adequate community awareness on the need to embrace the use of family planning methods, government may also come in here, and either subsidize or make

family planning services free for married couples (Married Man, 40 years, Civil Servant, Okpuno, Awka South LGA of Anambra State, Nigeria).

# More so, another participant stated thus:

For better utilization of family planning services in Anambra State, there is need to promote couples interaction about the benefits of making use of family planning; the government, non-governmental organizations, religious bodies, traditional rulers, and family planning service providers should encourage new couples to sit down and plan for their unborn children before they start making babies (Married Woman, 30 years, Trader, Ideani, Idemili North LGA of Anambra State, Nigeria).

# Probing further, another participant observed that:

There is no problem that has no solution. In order to increase access and utilization of family planning services, the government and health workers cannot do it alone. It is therefore important to spread the message and benefits of family planning services across all the spectrum of the society; by this I mean that doctors, nurses, churches, mosques, religious leaders, marriage counsellors, civil society organizations, the academics etc should be involved in promoting and encouraging married couples not to slowdown or become hesitant in the use of family planning services. It should be seen as a basic right for mothers (Married Woman, 35 years, Nurse, Ideani Primary Healthcare Centre, Idemili North LGA of Anambra State, Nigeria).

## Discussion of Findings

This work looked at barriers to family planning access and utilization during the COVID-19 pandemic era amongst married couples in Anambra State, Nigeria. One specific objective was formulated to identify factors affecting family planning access and utilization during COVID-19 pandemic era amongst married couples. Findings showed that restriction of movement was one of the major factors that affected family planning access and utilization during COVID-19 pandemic era amongst married couples in Anambra State. Other factors that affected family planning access and utilization during the period include cost of family planning services, distance to family planning clinics, disruption of family planning services during COVID-19 pandemic and easy access to traditional methods of family planning. This agrees with a similar study by the United Nations Fund for Population Activities (UNFPA, 2021) which found that during COVID-19 pandemic era major factors that affected access and utilization of family planning services in developing countries include lockdown, easy access to traditional methods of family planning services, distance and poverty.

The second objective was conceived to identify measures to improve access to family planning services amongst married couples in Anambra State. Thus, awareness creation on the benefits of family planning services was found to be the best method to enhance uptake of family planning services among married couples in Anambra State. Other viable measures identified in this study include use of mobile health clinics during disease

outbreaks, adhering to non-medical protocols during hospital visit to family planning clinics, designate family planning services as essential services during future pandemics, ensure availability of family planning services to married couples, government should subsidize the cost of family planning for married couples, religious and opinion leaders should assist in promoting positive uptake of family planning services and lastly, there is need for more active involvement of men in family planning campaigns and practices.

Finally, this study has further strengthened the postulations of Health Belief Model (HBM) which was adopted as the theoretical framework. HBM indicates that belief systems of married couples can predict a follow-up behaviour. So far the model has been used to explain why married couples may or may not be willing to access or make use of family planning services during disease outbreaks. This is because perceived benefits and steady access were the most important predictors of positive uptake of family planning services amongst married couples. In other words, steady access to family planning services can encourage high level of utilization, facilitate better ways to prevent unwanted pregnancies and promote positive family planning outcomes during disease emergencies in the society.

## Conclusion

Nigeria still grapples with low access and utilization of family planning services. The campaign to reduce high fertility rate in the country has met little success. For example, many married couples who desired to limit/stop childbearing during COVID-19 pandemic could neither access nor utilize such important health services during the pandemic era because of major disruptions in supply chains across the world. Hence, many married couples especially women who were familiar with methods of family planning but could not make use of it produced unintended children. Today even after COVID-19 has come and gone, access and utilization of family planning services is still low in Nigeria. This paper examined barriers to family planning access and utilization during COVID-19 pandemic era and after in Anambra State and found that these barriers include lockdown, financial poverty, cost, distance to family planning clinics, easy access to traditional methods, perceived fear of side effects, religious beliefs and shortage of family planning methods. To this end, the challenge now is upon stakeholders in the health sector to proffer solutions that can help to address factors affecting the use of family planning services by married couples during disease outbreaks. Some of the solutions were outlined in the next subsection.

#### Recommendations

Based on the findings of this study, the following recommendations were made:

- 1. Health workers should make use of mobile health clinics during future disease outbreaks in Anambra State, Nigeria. This will help address the issue of low access and utilization of family planning services in Nigeria.
- Government should designate family planning services as essential services during future pandemics. This will help to take care of factors preventing or affecting family planning access and utilization during and after disease outbreaks in Nigeria.

3. Government should subsidize the cost of family planning for married couples. Furthermore, there is need for active involvement of men as stakeholders in family planning campaigns and practices in Anambra State, Nigeria.

# References

- Amongin, D. (2021). Rapid assessment of COVID-19 impact on family planning access and use. Journal of Family Planning Research, 2 (1), 4-10.
- Boakye-Agyemang, C. (2021). COVID-19 deaths in Africa. WHO Africa Health Emergencies.
- Dumindin, I. (2018). Poor health, poor women: how reproductive health affects poverty. environmental change and security program. Washington, DC: Woodrow Wilson Center for Scholars.
- Ekong, I., Chukwu, E., & Chukwu, M. (2020). Mobile positioning data contact tracing and patient privacy regulations: Exploratory search of global response strategies and the use of digital tools in Nigeria. *Journal of Medical Health*, 3 (2), 23–25.
- Egede, I., Onoh, E., Umeora, P., Iyoke, C., Dimejesi, O. & Lawani, I. (2015). Benefits of family planning. *Journal of Family Planning*, 3 (1), 1-5.
- Ghule, M. (2021). Understanding family planning under the COVID-19 pandemic: Findings from a study with young married couples in rural Maharashtra, India. Rupa Publications.
- Kantorova, U., Wheldon, K. & Dasgupta, C. I. (2020). How family planning supply and the service environment affect contraceptive use: Findings from four east African countries. Maryland, USA. ICF Calverton Incorporated
- Khanna, A., & Ahmad, D. (2021). Large scale community-based data collection on family planning during the pandemic: Reflections from PMA Rajesthan. India: Roli Books Inc.
- Mbachu, C. (2019). Role of community resource persons in improving use of modern family planning methods among women of reproductive age in a rural area in Ebonyi State Nigeria. International Journal of Health Plan management, 2 (1), 1-10.
- Obubu, M., Nkata, C., Ananaba, A., Diallo, R., Sambo, E., Kolade, O., Oyekanmi, T., & Olaosebikan, S. (2023). Choices and availability of family planning services: Evidence from census-based health facility assessment data in Bauchi State, Nigeria. Journal of Public Health, 12 (1), 1-10.
- Oliver, N., Lepri, B., Sterly, H. Lambiotte, R, Deletaille, S., De-Nadai, M. (2020). Mobile phone data for informing public health actions across the COVID-19 pandemic life cycle. *Journal of Public Medicine*, 6 (23), 4-10.
- Taiwo, M. (2021). Assessment of impact of COVID-19 pandemic on adolescent sexual and reproductive health services in Northern Nigeria. Abuja: JODEZ Press Ltd.
- United Nations Fund for Population Activities (UNFPA, 2021). Impact of COVID 19 on family planning: What we know one into the pandemic. UNFPA Technical Note.
- World Health Organization (2020). Pandemics that changed history. Factual Entertainment Brand.
- Yamane, T. (1967). Elementary sampling theory. New York, NY: Practice-Hall Inco.