Determinants of Modern Contraceptive Uptake among Women in Peri-Urban Communities of Port Harcourt City, Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. All authors designed the study, authors OM and CITW performed the statistical analysis. Authors CITW, AOUO, ENUE and BIO wrote the protocol. Author CITW managed the literature searches, and in conjunction with author OM wrote the first draft of the manuscript. All authors read and approved the final manuscript.

Article Information

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ABSTRACT

Aim: The aim of the study was to investigate the determinants of contraceptive uptake among women of reproductive age in semi-urban communities of Rivers State, Nigeria. The information will be useful in reordering priorities and strategies for family planning interventions in the state.
Study Design: The study was a cross sectional, household-based study, employing a cluster sampling technique proportionate to size, to recruit eligible participants.
Study Location: The study was carried out in September 2013 in five contiguous communities located at the fringes of the Port Harcourt city.
Methodology: Anonymous questionnaires were administered to 772 women of reproductive age normally resident in these five communities. Visitors were excluded. The data was analysed using

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SPSS version 20 software package. The Chi-square test was performed to determine the association between contraceptive use and demographic and socioeconomic variables, while Logistic regression was used to identify determinants of contraceptive uptake. The level of statistical significance was set at $p = .05$.

Results: A total of 772 women aged (15-49) years participated in the study and 731 (94.7%) knew about modern contraceptives and their benefits. Young age (15-34 years old), $(\chi^2 = 12.7, df = 3, p = .01)$ and being single, $(\chi^2 = 16.270, df = 3, p < .01)$ were significantly associated with contraceptive usage. Younger women had six times higher odds of contraceptive usage than older women; [O.R (95% C. I) = 5.97 (1.56-22.90) and 5.96 (1.63 -21.71)], and women with contraceptive knowledge had 19% higher odds of usage than contraceptive naïve women [O.R (95% C. I) = 0.19 (0.09-0.40)].

Conclusion: This study underscores the importance of young age and knowledge about contraceptives in promoting its acceptance among women. We therefore advocate for an early introduction of curriculum-based family planning education in schools, local media campaigns and peer education to create more awareness about contraceptives.

1. INTRODUCTION

Pregnancy and childbirth are major health risks for women in developing countries. About 56% of maternal deaths from pregnancy and childbirth occur in the African sub-region, with a woman having a 1 in 16 risk of dying in pregnancy or childbirth, compared to a 1 in 4,000 risk in developed countries [1]. Although a number of countries in sub-Saharan Africa have made tremendous progress by halving their levels of maternal mortality since 1990, with maternal mortality declining approximately at a rate of 2.6% per year, the decline is far from the projected annual rate of 5.5% required to achieve the fifth millennium development goal (MDG 5) by 2015 [2]. It is estimated that 560 maternal deaths per 100,000 live births occurred in Nigeria in 2013, representing a 53.3% decline from 1200 deaths per 100,000 live births in 1990 [1]. Most of the maternal deaths are said to have resulted from unplanned pregnancies, unsafe abortions and low use of contraception [3,4]. Furthermore, unsafe abortions account for up to 40% of these deaths in Nigeria, as a result of the abysmal use of modern contraceptives (the pills, injectables, implants, sterilization, the IUDs, the diaphragms, male or female condoms) [3,4]. According to the Nigerian National Demographic and Health Survey (NDHS) reports, the contraceptive prevalence rate (CPR) among sexually active women aged 15-49 years stood at 16% for all contraceptives, but 11% for modern contraceptives. The rates are considerably lower in rural areas compared to urban areas: 6% against 17% [5]. Contraceptives protect women from unwanted or mistimed pregnancies, thereby preventing high-risk pregnancies or unsafe abortions by unskilled providers or under unhygienic conditions. It is estimated that if all susceptible women could avoid high-risk pregnancies by using appropriate contraceptives, a quarter of maternal deaths could be averted, aside from other benefits such as prevention of cervical cancers and sexually transmitted infections, including HIV/AIDS [6,7].

In Nigeria, like in many other developing countries, the majority of the population (about 70%) lives in the rural communities [8]. These rural communities have higher fertility rates than the urban communities (6.2 versus 4.7 births per woman), while the national average is 5.5 births per woman [5]. The Total Fertility rate (TFR) refers to the average number of live births a woman would have if she were subjected to the current age-specific fertility rates throughout her reproductive years (15-49 years). [5] The goal of the National Policy on Population for Sustainable Development of Nigeria is to achieve a reduction in the total fertility rate of at least 0.6 children every five years [5]. Ironically, it has been reported that many women in the rural and peri-urban areas seem reluctant to accept any artificial method of contraception. Rather, they appear to show more interest in the survival of their existing children because of the widely held view in Nigeria that children are as a source of economic support for their parents at old age [9,10].

Some studies, however, have suggested that ignorance and inadequate information about contraceptives were some of the likely significant factors militating against acceptance of contraceptives in Nigeria [11,12]. These findings

underscore the key strategic thrust of the National Reproductive Health Policy of Nigeria, which focuses on the provision of appropriate family planning knowledge to women in order to significantly reduce maternal morbidity and mortality due to pregnancy and childbirth [13].

Unlimited access to contraception and family planning has a beneficial impact on sustainable livelihoods and job growth in resource-limited settings. It gives women greater liberty for employment and increased productivity, which ultimately result in increased earnings for the family [14]. Furthermore, with women's participation in wealth creation significant contributions are being made to household incomes, with several positive multiplier effects on the health and education of their children [15]. Unfortunately, despite the momentous benefits of modern contraceptives and several efforts of the health care system to promote its acceptability and sustainable usage among women of childbearing age in Nigeria, their usage has remained disappointingly low [16-18]. In order to provide better support for programme policies, it will be necessary to understand the determinants of acceptability of modern contraceptive among women of childbearing age in Rivers State, Nigeria, especially among those in rural and semi-urban communities. The information will be useful in reordering priorities and strategies for programme direction in family planning interventions in the state.

2. METHODS

2.1 Study Area and Population

The study was carried out in Obio/Akpor Local government Area (LGA) of Rivers State. The LGA is one of the two that make up Port Harcourt city, the capital city of Rivers state, Nigeria. The LGA is made up of 46 communities and has a total population of 462,350 people made of 238,951 males and 223,399 females. The sampled communities were Rumuekini, Rumuosi, Rumuokparali, Rumualogu and Ozuoba all of which are contiguous and are peri-urban; located at the fringes of Port Harcourt city. The communities were initially traditional and homogeneous communities with their unique cultures and traditions, but over the last three decades, they have become rapidly urbanized with the influx of people from other parts of Nigeria seeking job opportunities in the inner city. They have, however, maintained their traditional ways of life to a very large extent. The people are of the Ikwerre ethnic nationality of the Niger Delta region and are essentially subsistence farmers and petty traders. There are a number of poorly maintained physical infrastructures like roads, electricity and water supply in the area. There are also a number of educational and health care institutions like primary and secondary schools, primary health care centres, pharmacy and patent medicine shops. The University of Port Harcourt Teaching Hospital, a tertiary care hospital is located a few kilometres away from these communities. Overall, the literacy level in Rivers State and the LGA are among the highest in Nigeria, with at least 77.5% of the women 15-49 years having completed secondary school or higher [5]. Nevertheless, the contraceptive prevalence rate in the LGA is only 6.1% among all women aged 15-49 years, married or not [19].

2.2 Conceptual Framework

A number of demographic and socio-cultural variables may influence the respondent's decision to use or not to use contraceptives. Age, marital status, education, parity and others, all play a role in contraceptive acceptance and use [20]. Younger women are likely to be better educated about the benefits of contraceptives, unmarried and thus could be more disposed to the use of contraceptives Similarly, with increasing economic hardships, many more families now see the need to embrace birth control. Nevertheless, strong cultural factors such as the desire for large family size and several myths about side effects of contraceptives and male dominance have continued to limit contraceptive uptake. In all these, mediating factors such as availability and cost of health services, media and peer influences contribute to the uptake of contraceptives [20].

2.3 Study Design and Sampling

The study was a descriptive, cross-sectional household survey carried out among women of reproductive age (15-49 years) resident in the study communities. The study included normally resident individuals (residents for at least one year) who were sexually exposed, but excluded visitors and sexually unexposed. A minimum sample size of 687 participants was determined to be adequate for the study, by applying the formula for descriptive studies [21]; $n=Z^2pq/d^2$, n=minimum sample size, Z= normal standard deviate 1.96 at 95% confidence level, p= contraceptive prevalence in

Nigeria (15.4%) [22], q=1-p, d=error margin of 5%, with adjustments made for a Design Effect (DEFT) =2 and non-response rate of 10%. Participants were selected by a cluster sampling method proportionate to the size of the communities.

The estimated populations of the communities were: Rumuekini, 3,506; Rumuosi, 3,405; Rumuokparali, 2,746; Rumualogu, 2,689 and Ozuoba, 3,367. The populations of women aged 15–49 years (22%) [15] in the respective communities were estimated to be: 771, 749, 604, 591 and 740 respectively. A cluster sampling technique proportionate to size was used to recruit the women from each of the communities as follows: Rumuekini 771/3,455 x772 = 172; Rumuosi, 749/3,455 x 772 = 167;

Rumuokparali, 604/3,455 x 772 = 134; Rumualogu 591/3455 x 772 = 132 and Ozuoba, 740/3455 x 772 = 165.

The first participant in each community was determined with the interviewers assuming a central location in the community and spinning a pen to decide the direction from which the first house and household were chosen. Thereafter, the subsequent household was the consecutive household. Where two households were equidistant from one another, the one on the right was chosen. This procedure was continued until the required sample size for that community was realized. In each of the household selected for the study, the survey target, all consenting women of reproductive age (15-49) years were interviewed.
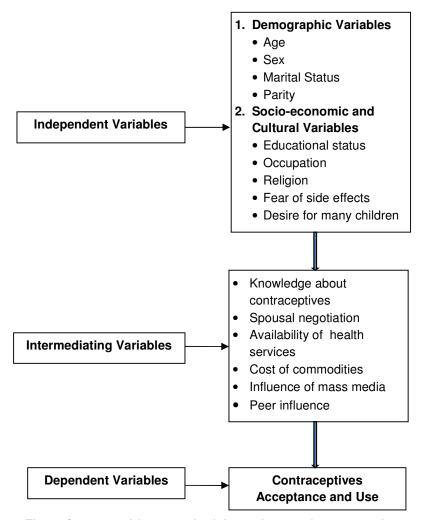

Fig. 1. Conceptual framework of determinants of contraceptive use
Source: Adapted from Gizaw & Regassa (2011)

2.4 Data Collection and Data Analysis

Data was collected in September 2012, using a pre-tested and standardized interviewer-administered questionnaire developed by the Centre for Infectious and Zoonotic Diseases of the University of Calabar and University of Port Harcourt. The questionnaire was uploaded unto mobile data capture devices (smartphones) and fed into a central server. It was pre-tested on 38 volunteers in another community (Nkpolu community), that was not earmarked for the study, and which was at least about 15 kilometres away from any of the participating communities. This was done to ensure face validity of the data. The questionnaire was then administered by 8 Resident doctors who were earlier trained in its usage. It was administered in English, but where necessary, the popular *pidgin* English widely spoken in the State was used to elicit information from the participants. All data entries were cross checked for consistency and analysed using the SPSS version 20 statistical software package. The chi - square test was performed to determine the association between contraceptive use and demographic other variables. Statistical significance was determined by a *p-value* less than *.05.* Logistic regression was used to identify determinants of contraceptive use. Outputs for logistic regression were presented as Odds Ratio (OR) and confidence intervals (CI). CI not crossing one was assumed to be significant.

3. RESULTS

A total of 772 women of reproductive age participated in the study. Their ages were as follows: 15-24 years old (n=355, 46.0%), 25-34 years old (n=311, 40.3%), 35-44 years old (n=86, 11.1%) and 45 years old and above (n=20, 2.6%). (Table 1) Most of them, (n=482, 62.4%) reportedly had senior secondary as their highest educational attainment. More than half, (n=399, 51.7%) were single and (n=419, 54.3%) were without children. Although (n=139, 18%) were unemployed and (n=204, 26.4%) were students, those in employment, (n=293, 38%) worked largely as unskilled labour (Table 1). Other details on the socio-demographic characteristics of the respondents are also found in Table 1.

3.1 Awareness and use of Modern Contraceptives among Women

Overall, (n=731, 94.7%) of the women had an awareness about modern contraceptives and their benefits. Of these, (n=692, 89.6%) knew

about condoms, (n=538, 69.7%) of pills, (n=373, 48.3%) injectables, (n=421, 54.5%) etc. (Table 2) The most common sources of information about contraception were from friends/colleagues or significant others, (n=239, 31.0%), schools, (n=189, 24.5%), health care workers (n=167, 21.6). (Table 2) With regard to contraceptive usage, 454 women (58.8%) said they currently used at least one method of modern contraceptives. The most commonly used was the male condom; (n=271, 35.1%). Other details concerning contraceptive use among the women are also presented in Table 2.

Table 1. Socio-demographic characteristics of women

Variable	Frequency (n=772)	(%)
Age group		
15 – 24	355	46.0
25 – 34	311	40.3
35 – 44	86	11.1
45 and Above	20	2.6
Education		
Diploma	33	4.3
Elementary/Primary School	58	7.5
Graduate Degree	117	15.2
Junior Secondary	52	6.7
No formal Education	24	3.1
Postgraduate	6	0.8
Senior Secondary	482	62.4
Marital status		
Divorced/Separated	7	0.9
Married	350	45.3
Single	399	51.7
Widow	16	2.1
Parity		
0	419	54.3
1-4	298	38.6
5 and above	55	7.1
Occupation		
Skilled Worker	136	17.6
Student	204	26.4
Unemployed	139	18.0
Unskilled labour	293	38.0
Religion		
Christian	760	98.4
Islam	12	1.6

3.2 Association between Socio-demographic Characteristics of Women, Awareness and Contraceptive Usage

Socio-demographic variables found to be significantly associated with contraceptive use were age, $(x^2= 12.7,\ df = 3,\ p < .01)$, being single, $(x^2=16.270,\ df=3,\ p < .01))$. (Table 3) Awareness about contraceptives was also

significantly associated with its usage (χ^2=21.17, df=1, p < .01). The awareness of natural/calendar and withdrawal methods were most significantly associated with usage (χ^2=11.83, df=1, p < .01) and (χ^2=25.77, df=1, p < .01) compared to condoms, (χ^2=4.71, df=1, p= .03) and contraceptive pills (χ^2=4.69, df=1, p= .03). (Table 4).

Table 2. Awareness and use of modern contraceptives among women

Variable	Frequency	Percentage (%)
Awareness about contraception (multiple options)		
Generally Aware	731	94.7
Natural/Calendar	421	54.5
Withdrawal	378	49.0
Condom	692	89.6
Contraceptive Pills	538	69.7
Injectable	373	48.3
Diaphragm	82	10.6
Tubal Ligation	108	14.0
Abstinence	262	33.9
Source of information (n=772)		
Books/Pamphlet	7	0.9
Church/Mosque	2	0.3
Family Member	65	8.4
Friends/Colleagues	239	31.0
Hospital/Clinic/Health Centre	167	21.6
School	189	24.5
Television/Radio	79	10.2
Not Applicable	24	3.1
Contraceptive use (multiple options)		
Use of any modern contraceptive method	454	58.8
Natural/Calendar Method	107	13.9
Withdrawal Method	110	14.2
Condom	271	35.1
Contraceptive Pills	109	14.1
Injectable/Norplant	28	3.6
Diaphragm/Cervical cap ± spermicidal	0	0.0
Tubal Ligation	2	0.3
Abstinence	18	2.3

3.3 Determinants of Contraceptive Use among Women

A multivariate analysis using multiple logistic regression identified age and awareness about contraception as the most significant determinants of contraceptive usage among the women. Women aged 15-24 and 25-34 years, respectively, were six times more likely to use contraceptives than those aged 45 years and above; O.R (95% C.I) = 5.97 (1.56-22.90) and 5.96 (1.63 -21.71). (Table 5) In addition, women

who knew about contraception had a 19% higher likelihood of using contraceptive than those who did not O.R (95% C.I) = 0.19 (0.09-0.40) (Table 5).

Finally, the only significant deterrent to contraceptive use reported was the desire for more children (χ^2=6.83, df=1, p= .01). Religious persuasions, spousal objections, fear of complications and ignorance about contraception were all not found to be deterrents to contraceptive usage (Table 4).

4. DISCUSSION

The study showed a high level of awareness about modern contraceptives among women living in semi-urban communities. The result conformed to the findings of a study on the acceptability of modern contraceptives across Nigeria, where Rivers state ranked among those with highest acceptability rates [23]. It was also similar to studies in other parts of Nigeria [5,24] and Africa [25,26]. The awareness might be credited to the modest contributions of the State health care system towards family planning and maternal mortality reduction, as well as the intervention of international health care organizations and civil society groups in response to the high prevalence of HIV/AIDS in the State [27]. However, some studies in Nigeria have consistently reported disparity between contraceptive awareness and contraceptive usage [18,28]. The point prevalence of contraceptive use rate in our study was considerably higher than the national average, [5] but was less than the value among rural women in Osun State, in western Nigeria [29] and in rural Ethiopia [30]. When further compared to what obtained in developed countries like the United States of America, a huge difference was noticed, with nearly all of the women in the USA using at least one method of contraception [31].

Results from logistic regression models showed first, that young age and awareness about contraceptives were significant determinants of contraceptive usage among the women. Women aged 15-34 years were six times more likely to use contraceptives than those aged 45 years and above. This relationship might be linked with the fact that most of the young women in the study were single, of school age and probably more concerned about preventing unintended pregnancies. However, some have argued that younger women were less enthusiastic about contraception for obvious reasons that they were

likely to be newly married and thus desire to have children [28]. That position is more likely to represent the experience in most of the northern parts of Nigeria, where early marriage is an entrenched cultural practice, with younger women in early marriage being less enthusiastic about contraception [17].

Table 3. Association between socio-demographic characteristics of women and contraceptive usage

Variable	Contraceptive use		χ^2, df, (p-value)
	Yes (%)	No (%)	
Age			
15 – 24	138(38.9)	217 (61.1)	12.7, df = 3, (< .01)
25 – 34	123(39.5)	188 (60.5)	
35 – 44	42 (48.8)	44 (51.2)	
45 and Above	15 (75.0)	5 (25.0)	
Highest education			
Diploma	11 (33.3)	22 (66.7)	
Primary School	29 (50.0)	29 (50.0)	13.3, df= 6, (.04)
Graduate Degree	41 (35.0)	76 (65.0)	
Junior Secondary	26 (50.0)	26 (50.0)	
No formal Education	14 (58.3)	10 (41.7)	
Postgraduate	0 (0.0)	6 (100.0)	
Senior Secondary	197 (40.9)	285 (59.1)	
Marital status			
Divorced/Separated	6 (85.7)	1 (14.3)	16.270, df=3, (< .01)
Married	156 (44.6)	194 (55.4)	
Single	145 (36.3)	254 (63.7)	
Widow	11 (68.8)	5 (31.3)	
Parity			
0	168 (40.1)	251 (59.9)	1.625, df= 2, (.44)
1-4	123 (41.3)	175 (58.7)	
5 and above	27 (49.1%)	28 (50.9)	
Occupation			
Skilled Worker	49 (36.0)	87 (64.0)	7.825, df=3, (.05)
Student	82 (40.2)	122 (59.8)	
Unemployed	49 (35.3)	90 (64.7)	
Unskilled labour	138 (47.1)	155 (52.9)	
Religion			
Christian	311 (40.9)	449 (59.1)	1.479, df=1, (.22)
Islam	7 (58.3)	5 (41.7)	

Table 4. Association of contraceptive awareness and use among women

Variable	Contraceptive use		χ^2, df, p-value
	Yes (%)	No (%)	
Awareness about contraceptives			
Yes	444 (60.7)	287 (39.3)	21.17, df=1, (< .01)
No	10 (24.4)	31 (75.6)	
Knowledge of types of contraceptive (Multiple responses)			
Natural/Calendar Method	271 (64.4)	150 (35.6)	11.83, df=1, (< .01)
Withdrawal Method	257 (68.0)	121 (32.0)	25.77, df=1, (< .01)
Condom	416 (60.1)	276 (39.9)	4.71, df=1, (.03)
Contraceptive Pills	330 (61.3)	208 (38.7)	4.69, df=1, (.03)
Injectables/Norplant	229 (61.4)	144 (38.6)	1.99, df=1, (.16)
Diaphragm/Cervical cap ± Spermicidal	53 (64.6)	29 (35.4)	1.29, df=1, (.26)
Tubal Ligation	80 (74.1)	28 (25.9)	12.08, df=1, (< .01)
Deterrents of contraceptive use			
Married and need a child	41 (55.4)	33 (44.6)	6.83, df=1, (< .01)
Ignorance of family planning	15 (55.6)	12 (44.4)	2.38, df=1, (.12)
Religious injunction	18 (37.5)	30 (62.5)	0.29, df=1, (.59)
Spouse/partner`s objection	18 (37.5)	30 (62.5)	0.29, df=1, (.59)
Fear of complications	61 (36.7)	105 (63.3)	1.73, df=1, (.19)

Table 5. Determinants of contraceptive use among women

Determinants	Use of contraceptives	
	Crude OR (CI)	Adjusted OR (CI)
Age		
45 and above (reference)	-	-
15-24	4.72(1.68 -13.27)	5.97(1.56-22.90)
25-34	4.59(1.63- 12.94)	5.96(1.63-21.71)
35-44	3.14(1.05-9.41)	3.12(0.89-10.97)
Parity	0.95(0.88-1.03)	1.26(1.09-1.45)
Marital status		
Widow (reference)	-	-
Single	1.43(1.17-1.75)	0.80(0.57 - 1.14)
Married	1.43(1.16 -1.77)	1.67(0.28 - 9.94)
Divorced/Separated	2.5(0.49 -12.89)	0.52(0.18 - 1.52)
Highest level of education		
No formal education (reference)	-	-
Primary Education	2.35 (1.33 - 4.15)	1.25(0.55-2.85)
Junior Secondary	2.12 (1.19 - 3.77)	1.14 (0.50-2.59)
Senior Secondary	1.42 (1.19 - 1.70)	0.80 (0.44-1.48)
Diploma	1.29 (0.64 - 2.59)	0.81 (0.32-2.07)
Graduate	1.09 (0.75- 1.59)	0.67 (0.34-1.32)
Postgraduate	1 (0.20 - 4.96)	0.46 (0.08 - 2.51)
Occupation		
Unemployed (reference)	-	-
Unskilled	1.53 (1.21- 1.93)	0.85 (0.56 - 1.29)
Student	1.29 (0.98 - 1.70)	0.62 (0.39 - 0.99)
Skilled	1.19 (0.85 - 1.67)	0.62 (0.38 - 0.99)
Total monthly income	1.00 (1.00 -1.00)	1.00 (1.00 - 1.00)
Knowledge of contraception		
Yes	0.21 (0.10 - 0.43)	0.19 (0.09 - 0.40)
No (reference)	-	-

Second, women who knew about contraception had much higher odds of using contraceptives than those unaware. This result corroborates those from other studies that have demonstrated that women who were more knowledgeable about the benefits of contraceptives and knew how best to acquire and use them than the less knowledgeable women [32,33]. It thus emphasizes the significance of women's education as an inspiring factor for acceptability of contraceptives. The finding, however, differed from a study that was conducted among rural women in western Nigeria, which showed no significant association between educational status of women and the use of contraceptives, [29] probably as a result of other socio-cultural reasons, like a partner`s objection, phobia of the side effects of contraceptives or hostile religious beliefs [34,35].

The desire to have many children acknowledged in the African culture was the only significant deterrent to contraceptive usage among the women. This might lend credence to reports that women in rural and semi-urban communities were sometimes reluctant to accept modern contraceptives. This might be linked to the widely held view in most African cultures that children were a source of economic support for their parents during old age [9,10]. Other less common reasons for rejecting contraceptives such as ignorance, fear of complications, spousal objection and religious beliefs were all not significant in our study [11,12].

5. STUDY LIMITATIONS

The scope of the study was limited to the determinants of acceptability of contraceptives and not sustenance of its usage, which we recommend for future investigation among this population. Response bias might have limited the validity of the study, since the information was obtained through self-reports. However, we applied measures that improve the quality of information in such circumstances, such as establishing good rapport with respondents, simplifying the questions and allowing respondents to answer at their own pace [36].

6. CONCLUSION

This study underscores the importance of young age and knowledge about contraceptives in

promoting its acceptance among women. We therefore advocate for an early introduction of curriculum-based family planning education in schools and the promotion of community-based family planning initiatives through local media, community dialogues and peer education to create awareness of the benefits of contraceptives among women.

ETHICAL APPROVAL

Ethical clearance for the study was obtained from the Research Ethics Board of the University of Calabar and the Federal Ministry of Health, Abuja. Given that sexual and reproductive health practices of individuals are quite sensitive in nature and often kept away from public view, efforts were made to establish good rapport with the participants, reassuring them of the confidentiality of their responses and that they were at liberty to decline participation at any stage of the study without any reprimands. Thereafter, written informed consent was also obtained from all consenting participants.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. WHO/UNICEF/UNFPA/World Bank. Trends in maternal mortality: 1990-2013. Geneva; 2014. Available:http://www.apps.who.int/iris/bitstream/10665/112697/1/WHO_rhr_14.13_eng.pdf (Accessed 22 March 2016)
2. World Health Organization (WHO). Maternal mortality. Fact sheet N°348; 2015. Available:http://www.who.int/mediacentre/factsheets/fs348/en/ (Accessed 22 March 2016)
3. World Health Organization WHO). Unsafe abortions: Global and regional estimates of the incidence of unsafe abortions and associated mortality in 2000. Geneva; 2004.
4. World Health Organization (WHO). Maternal mortality in 2005. Estimate developed by WHO, UNICEF, UNFPA and the World Bank. Geneva; 2005. Available:http://www.who.int/whosis/mme_200.pdf (Accessed 22 March 2016)
5. National Population Commission (NPC) [Nigeria] and ICF International. Nigeria demographic and health survey 2013. Abuja, Nigeria, and Rockville, Maryland, USA; 2014.
6. Hatcher RA, Rinehart W, Blackburn R, Geller JS. The essential of contraceptive technology Baltimore: Population Information Programme. 1997;1-2.
7. Ahmed S, Li Q, Liu L, Tsui AO. Maternal deaths averted by contraceptive use: An analysis of 172 countries. Lancet. 2012;380:111–25.
8. Ekong EE. An introduction to rural sociology. Uyo, Niger Publ. 2003;143–51.
9. Gaur DR, Goel MK, Goel M. Contraceptive practices and related factors among females in predominantly rural Muslim area of North India. Int J World Health Soc Polit. 2008;5:1-5.
10. Kartikeyan S, Chaturvedi RM. Family planning: Views of female non-acceptors in rural India. J Postgrad Med. 1995;41:37–9.
11. Adinma JI, Nwosu BO. Family planning knowledge and practice among Nigerian women attending an antenatal clinic. Adv Contracept Off J Soc Adv Contracept. 1995;11:335–44.
12. Moronkola OA, Ojediran MM, Amosu A. Reproductive health knowledge, beliefs and determinants of contraceptives use among women attending family planning clinics in Ibadan, Nigeria. Afr Health Sci. 2006;6:155–9.
13. Federal Ministry of Health [Nigeria]. Revised National Health Policy. Abuja, Nigeria; 2004.
14. Osotimehin B. Family planning saves lives, yet investments falter. Lancet [Internet]. 2012;380(9837):82–3. Available:http://dx.doi.org/10.1016/S0140-6736(12)60906-4 (Accessed 30 March 2016)
15. Food and Agriculture Organization (FAO). The state of food and agriculture. Rome, United Nations; 2011.

16. Oye-Adeniran BA, Adewole IF, Umoh AV, Oladokun A, Ghadegsin A, Ekanem EE, et al. Community-based study of contraceptive behaviour in Nigeria. African J Reprod Heal. 2006;10:90–104.

17. Oye-Adeniran BA, Adewole IF, Odeyemi KA, Ekanem EE, Umoh AV. Contraceptive prevalence among young women in Nigeria. J Obstet Gynaecol. 2005;25:182–5.

18. United Nations. Millennium Development Goals Report. New York; 2014.

19. Unpublished: Rivers State Ministry of Health. State health report. Port Harcourt; 2016.

20. Gizaw A, Regassa N. Family planning utilization in Mojo town, Ethiopia: A population based study. Journal of Geography and Regional Planning. 2011;4(6):355-63.

21. Campbell MJ, Machin D. Medical statistics. A common sense approach. (2nd Ed). MED Stat A common sense approach (2nd Ed). London; 1996.

22. National Population Commission (NPC) [Nigeria] and ICF Macro. Nigeria Demographic Health Survey 2008. Abuja, Nigeria; 2009.

23. Onwujekwe OE, Enemuoh JC, Ogbonna C, Mbachu C, Uzochukwu BS, Lawson A, et al. Are modern contraceptives acceptable to people and where do they source them from across Nigeria? BMC Int Health Hum Rights. 2013;13:7.
Available:http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3564795&tool=pmcentrez&rendertype=abstract
(Accessed 3 May 2016)

24. Umoh AV, Abah MG. Contraception awareness and practice among antenatal attendees in Uyo, Nigeria. Pan Afr Med J. 2011;10:53.

25. Anguzu R, Tweheyo R, Secandi JN, Zalwango V, Muhumuza C, Tusiime S, et al. Knowledge and attitudes towards use of long acting reversible contraceptives among women of reproductive age in Lubaga division, Kampala district, Uganda. BMC Res Notes. 2014;4:153.

26. Hoque ME, Ntsipe T, Mokgatle-Nthabu M. Awareness and practices of contraceptive use among university students in Botswana. J Soc Asp HIV/AIDS Res Alliance. 2013;10:83–8.

27. National Agency for the control of HIV/AIDS (NACA). Global AIDS Response: Nigeria. Ctry Rep. 2012;1–41.

28. Oyedokun AO. Determinants of contraceptive usage: Lessons from women in Osun state. Niger Niger J Humanit Soc Sci. 2007;1:1–14.

29. Olugbenga-Bello AI, Abodunrin OL, Adeomi AA. Contaceptive practices among rural women in Western Nigeria. Glob J Med Res.
Available:https://globaljournals.org/GJMR_Volume11/1-Contraceptive-Practices-Among-Women-in-Rural.pdf
(Accessed 14 April 2016)

30. Bogale B, Wondafrash M, Tilahun T, Girma E. Married women's decision making power on modern contraceptive use in urban and rural southern Ethiopia. BMC Public Health. 2011;11:342.

31. Miklavcic AY. Over-the-counter contraceptives. Postgrad Obstet Gynaecol. 2011;31:1–7.

32. Alade FA, Osakinle EO, Babatunde JO. Youths and their choices of contraceptives towards effective reproductive health: The case of Ekiti State, Nigeria. Eur Sci J. 2013;9:193–202.

33. Adebimpe WO, Asekun-Olarinmoye EO. A comparative study of contraceptive use among rural and urban women in Osun State, Nigeria. Int J Trop Dis Heal. 2012;2:214–24.

34. Carr D, Khan M. The unfinished agenda: Meeting the needs of family planning in less developed countries. Washington, DC Popul Ref Bur; 2004.

35. Adejoh O, Uchenna OM. Condom use in Nigeria: An evaluation. Econ Theory. 2011;3:10–3.

36. Gelberg L, Siecke N. Accuracy of homeless adults' self-reports. Med Care. 1997;35:287–90.

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