Awareness and use of emergency contraception among women attending antenatal clinic in a tertiary hospital in Nigeria

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Abstract

Objective: To evaluate the knowledge and use of emergency contraception (EC) amongst antenatal care attendees at the Federal Medical Center, Bida (FMCB), Nigeria.

Material and Methods: This was a cross-sectional, hospital-based, descriptive study involving women attending routine check-up at antenatal clinic of FMCB. Self-administered questionnaires were completed by the women after having obtained written informed consents. Data was analyzed using the Statistical Package for the Social Sciences (SPSS), version 23.0 (IBM Inc., Armonk, New York, USA). Descriptive statistical analysis was employed. Statistical significance was set at a p value of <0.05.

Results: This research involved 129 women and demonstrated that only 43 (33.3%) had any knowledge of EC. Eighteen of these (41.9%) had their source of information from health workers followed by friends and peers (n=12, 27.9%) and one (2.3%) from public health campaign. Only 17.5% had used EC, with the majority (65.2%) using levonorgestrel pills, 13.1% used an intrauterine contraceptive device and 3.3% used the combined oral contraceptive pills. About two-thirds (67.4%) had no idea when EC would be effective. Age, tertiary level of education, religion, ethnicity, and upper socioeconomic status were all significantly associated with awareness of EC.

Conclusion: The majority of the women in our cohort were not aware of EC and the proportion who had used EC was even lower. Therefore, there is a need to increase the awareness and effective use of EC through health education and advocacy. [J Turk Ger Gynecol Assoc. 2025; 26(4): 246-55]

Keywords: Emergency contraception, awareness, utilization, Nigeria

Introduction

Emergency contraception (EC) refers to techniques that women are able to employ to avoid pregnancy following casual sexual interaction. It is also known as "back-up" or "post-coital" birth control. Circumstances of unguarded sexual interaction where EC can be employed as contraception include sexual violence, rape, failed withdrawal method, misuse of the condom or failure of barrier techniques, for example, slippage, breakage, ≥ two successive skipped oral contraceptive pills (OCP), or just because sexual interaction

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was unanticipated and so a regular contraceptive method was not used (1,2). No contraception method is 100% effective and not many people use their method flawlessly whenever they have intercourse, hence the necessity of an emergency backup method. EC gives these women practical choice and a vital last opportunity to prevent unwanted pregnancy and, for couples, unintended or unplanned hardship. EC when used within five days after unprotected intercourse may prevent up to over 95% of pregnancies (1,2).

It is estimated that 40% of the 210 million annual pregnancies worldwide are unintentional, and about 56 million of these pregnancies result in induced abortion (IA), of which 20 million are unsafe abortions (3,4). The problem is more worrisome in developing countries because of the very low level of modern contraceptive uptake. The most recent National Demographic and Household review in Nigeria, reported only a 17% contraceptive prevalence rate amongst married women of reproductive age, with only 12% using modern contraception (5). In Nigeria, out of the approximate 6.8 million pregnancies annually, it is estimated that one in five pregnancies is unplanned (6).

There are two types of EC in use, which are the intrauterine device (IUD) and hormonal EC (7,8). Hormonal EC include progesterone receptor modulator (ulipristal acetate), progesterone only pills, such as levonorgesterel (LNG) and combined OCP. The effectiveness of hormonal EC is optimal when initiated within 72 hours following a one-off mid-cycle act of unprotected sexual intercourse. They are less effective, if greater than one incident of sexual interaction has taken place or if treatment is commenced more than 72 hours after sexual intercourse. Nonetheless, they can still be offered and effective within 120 hours of casual sexual interaction (1,8-10). Research has shown that EC is largely underutilized globally (1,10).

The IUD used for EC is the copper-bearing IUD. It can be inserted up to a week following ovulation for EC purposes and is the most effective method of EC (about 99% effective) (1,7-10). While these IUDs have the advantage of being continued as ongoing long-term contraception after insertion, EC pills are not suitable for repeated use and a main method of contraception should be adopted if a woman does not intend to get pregnant soon.

The awareness of and use of EC as a means of preventing unintended pregnancy in our region is low (1,11). In a scoping review amongst women aged 15-49 years in sub-Saharan Africa (SSA), knowledge of EC ranged from 10.1% to 93.5%; while actual use of EC ranged from as low as 0% in DR Congo and Ethiopia to as high as 54.1% in Nigeria (10). In a study conducted with female college students in Ethiopia, the knowledge of EC was 93.5% while the percentage use was 38.8% (12). The corresponding proportions in a study among future healthcare providers in Ghana was 86.9% and 25.7%, respectively (13). In

a study conducted amongst antenatal women in Addis Ababa, Ethiopia, of the 636 women included in the study, only 65 (10.2%) were aware of EC, while only 12 (1.9%) women had practiced EC (14). Local studies among undergraduates in Nigeria tertiary institutions have reported the level of awareness of EC ranged from 52.1-89.3.8% while that of utilization ranged from 19.3-68.7% (7,8).

Justification for the study

Nearly half of all pregnancies globally are unplanned, and more than half of unplanned pregnancies result in IA. Approximately 56 million IA occurred yearly in 2010-2014, which is equivalent to a yearly abortion rate of 35 for every 1,000 women aged 15-44 years (15). SSA accounts for nearly two thirds of global maternal mortality (16). Some of these deaths may have been prevented by adequate knowledge, accessibility and suitable use of EC while simultaneously preventing unnecessary straining of already fragile health facilities. In addition, no study on this topic has been previously carried out in this specific setting. It will therefore be helpful to evaluate awareness and practical use of EC in preventing unwanted pregnancy in SSA.

Aims and objectives

The general aim of this study was to determine the level of awareness of EC and to also investigate actual usage of EC among women attending antenatal clinic (ANC) at the Federal Medical Center, Bida (FMCB), Nigeria.

Specific objectives

1. To estimate the level of awareness of EC among clientele accessing healthcare at the ANC of FMCB.
2. To determine the prevalence of use of EC among the study group.
3. To evaluate the predictors of awareness of EC.
4. To evaluate the predictors of utilization of EC.

Material and Methods

Study design

The study was a cross-sectional, hospital-based, descriptive study.

Setting

The study was carried out at the ANC of FMCB. FMCB is a federal tertiary institution located in Bida town, a semi-urban settlement in Niger state, north central Nigeria. Beside Minna the state capital, Bida is the second largest city in the state (17), with a projected population of 266,008 for 2020 in the 2006 National Census. It is located in the southern Guinea Savannah Zone of Nigeria. The majority of the population are Muslims and farmers. FMCB receives referrals from primary and secondary

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health facilities in the state, as well as the neighboring states. It has a capacity for 350 inpatients care and the obstetrics and gynecology department provides emergency obstetrics care, postnatal care and general gynecological services.

Study population

The study population consisted of clientele of reproductive age (15-49 years) who visited the ANC of FMCB for routine antenatal check-ups during the data collection period.

Sampling technique

A structured questionnaire was administered to consenting clientele attending ANC at FMCB over a period of three months, starting on March 4th 2024. A systematic sampling method was used to obtain information from the respondents.

Sample size

A standard statistical formula ($N=Z^2pq/d^2$) by Pourhoseingholi et al. (18) was employed to calculate the sample size where:

N is the sample size;

Z is the level of confidence (95%) which is =1.96;

p is the percentage of ANC clients who were aware of EC from a previous study (14) which was 10.2% or 0.102;

(q=1)-(p=1)-(0.0=0.9);

and d is the expected degree of correctness; taken to be 0.05.

Thus the sample size used in the present study was (n) = $(1.96)^2$x0.102 $(1-0.102)/0.05^2$

Which gave a value of n=140.76 $\approx$ 141

Given that N (the entire population of ANC attendees) is less than 10,000, the requisite sample size will be less. Therefore final sample calculation (nf)=n/(1+(n/N)), where:

n is the expected sample size when population is
>10,000=141.

N is the estimate of the total population, that is the population frame=660.

Thus the adjusted sample size calculation was n_{f} = 141/1+(141/660)=116.18

and n_f=116.18=116

Adjusting for an estimated non-response rate (NR) of 10%, therefore the minimum sample size: (N)= n_f/1-NR

n_f=116

Non-response rate =0.10

N=116/1-0.10=128.889

The final sample size figure after all adjustments was N=129.

Selection of participants

Approximately 200 patients book for ANC at FMCB every month, based on data from the preceding year. The study was

designed to be carried out over a period of three months, giving a total of 600 clients expected to book for antenatal care. A systematic sampling method was employed. With a populace frame of 600, the sampling gap (K) used was 600/129=4.651 $\approx$ 5, to arrive at the requisite 10 women weekly.

The first client was selected by simple random sampling by ballot amongst the initial five clientele. The client who selected the number one and was eligible for inclusion was chosen as the first study participant. Subsequently, the other clientele were chosen via systematic sampling, at predetermined intervals of every fifth client. The participants were enlisted for our research following endorsement or thumb printing a written consent.

Exclusion criterion

Any patient that was too ill to respond to the questionnaire.

Clientele and data collection

The study questionnaire was adapted from the questionnaire used in a similar study in northern Nigeria (19) and it was pretested for comprehensibility, reduction of measurement error, and internal validity at FMCB, using a pilot of 30 questionnaires. The information obtained from the pre-test was incorporated into the main study. Four research assistants were recruited and trained by the researcher for a period of two weeks before commencement of the study. These research assistants were medical registrars in the department of obstetrics and gynecology. They were trained to assist in the selection of patients for the study and appropriate filling of information data sheets.

The questionnaire contained questions aimed at obtaining basic socio-demographic information and reproductive history of the women. Questions related to desirability of their current pregnancy, their awareness of EC and appropriate use were asked. The socio-economic classes of the pregnant women were determined using the educational and occupational hierarchy developed by Oyedeji (20). Socio-economic index score was adopted as a combination of the occupations and the educational attainment of the husband and the pregnant woman. The mean of four scores (two each for the husband and the pregnant woman) to the nearest whole number was the social class assigned to the woman.

The United States (US) model of social classification categorized into five main groups was adopted: I) upper class, II) upper-middle class, III) middle class, IV) working class, and V) lower class (21). This 5-class model was used to allow for a more granular breakdown and objectivity in assigning social classes for the study participants. The 3-class model is sometimes used. This is a simplification of the 5-class model, with the upper and upper-middle classes often grouped together as upper class,

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and the lower and working classes sometimes merged as well into lower class while the middle class remains. The 5-class model was therefore collapsed into the 3-class model of: I) upper, II) middle and III) lower socioeconomic classes for ease of comparison with extant literature.

Statistical analysis

Data obtained through interviewer-administered questionnaires was analyzed using the Statistical Package for the Social Sciences, version 23.0 (IBM Inc., Armonk, NY, USA). Descriptive statistical analysis was employed. Statistical significance was set at a p value of <0.05.

Ethical issues

The research protocol was submitted for consideration and subsequent approval by the Health Research and Ethics Committee of FMCB before administering questionnaires (approval number: FMCB/HCS/HREC/APPR/VOL2/10/22, date: 23.11.2022). Questionnaires were administered after educating the clientele about the purpose of the research and after having obtained written informed consent.

Results

The study recruited 129 women and full response was obtained making a 100% response rate.

Table 1 shows the demographics characteristics of the sample. One hundred and twenty-four (96.1%) of the respondents had formal education, while 5 (3.9%) had Quranic (informal) education. Among the study subjects 99 (76.7%) were Muslims, while 30 (23.3%) were Christians. Seventy-six (58.9%) were gainfully employed and 38 (29.4%) were housewives.

In the 5-class system, no subject was categorized as social class I. Equal proportions of 41.1% (n=53) each were seen in classes II and III, with 14.7% (n=19) and 3.1% (n=4) in classes IV and V, respectively (Figure 1).

Awareness of EC is summarized in Table 2. Of note, two-thirds of the participants (66.7%) had not heard of EC. Eighteen (41.9%) had their source of information from health workers followed by friends and peers-12 (27.9%) and 1 (2.3%) from outreaches. Of the women who were aware of EC, the type of EC included LNG pills (n=21, 48.8%), combined OCP (n=5, 11.6%), and IUD (n=4, 9.3%), while 8 (18.6%) had no knowledge of the types of EC available.

Only 23 (17.8%) of the participants had ever used EC. More than half (n=87, 67.4%) did not know the timescale in which EC is effective. Eighteen (14.0%) felt that EC was effective within 24 hrs after sex, 12 (9.3%) that EC should be taken before sex, 7 (5.4%) believed that EC was effective within 72 hrs after sex, while 3 (2.3%) thought that EC would be effective up to five days after sex.
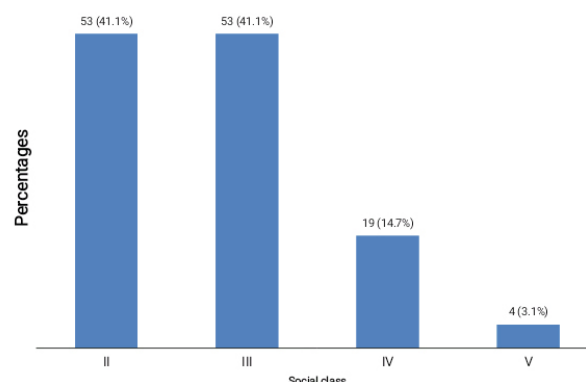
Figure 1. Graphical representation of the social class of study participants

Table 1. Socio-demographic characteristics of patients

Variable	Category	Frequency (%)
Age (years)	<25	48 (37.2)
	26-30	41 (31.8)
	>31	40 (31.0)
Mean ± SD (years)		28.47±5.14
Mode (years)		30.00
Parity	Nulliparous	44 (34.1)
	Para 1-2	36 (27.9)
	Para 3-4	35 (27.1)
	Para >5	14 (10.9)
Level of education (subjects)	Quranic	5 (3.9)
	Primary	13 (10.1)
	Secondary	30 (23.3)
	Tertiary	81 (62.8)
Level of education (partners)	Quranic	6 (4.7)
	Primary	5 (3.9)
	Secondary	17 (13.1)
	Tertiary	101 (78.3)
Ethnicity	Nupe	90 (69.8)
	Hausa	7 (5.4)
	Yoruba	13 (10.1)
	Igbo	11 (8.5)
	Others	8 (6.2)
Occupation	Civil servant	29 (22.5)
	Self-employed	47 (36.4)
	Housewife	38 (29.4)
	Teaching	10 (7.8)
	Farming	2 (1.6)
	Others	3 (2.3)
Husband's occupation	Civil servant	60 (46.5)
	Self-employed	47 (36.4)
	Teaching	8 (6.2)
	Farming	6 (4.7)
	Others	8 (6.2)
SD: Standard deviation		

The most common form of EC used among the women who had used it was the LNG pills (n=15, 65.2%). Of those that had ever used EC, about a third of (n=7, 30.4%) took EC to prevent unwanted pregnancy, and equal numbers (n=5, 21.8%) took

Table 2. Awareness of emergency contraception (n=43)

Variable	Category	Frequency (%)
Have you heard of EC?	Yes	43 (33.3)
	No	86 (66.7)
Sources of information	Media	5 (11.6)
	Friends/peers	12 (27.9)
	Health worker	18 (41.9)
	Family/relatives	4 (9.3)
	Books/magazines	3 (7.0)
	Campaign outreach	1 (2.3)
Types of EC aware of	Levonorgestrel pills	21 (48.8)
	Combined OCP	5 (11.6)
	IUD	4 (9.3)
	Others	5 (11.6)
	I don't know	8 (18.6)
EC: Emergency contraception, OCP: Oral contraceptives pills, IUD: Intrauterine device		

EC because of miscalculated sex timing or failed withdrawal method (Table 3).

Determinants of awareness about EC

In Table 4, age, level of education, religion, ethnicity and social class have significant association with awareness of EC.

The logistic regression analysis of awareness of EC showed a significant higher odds of 3 times level of awareness among those aged 26-30 years compared to other age groups [confidence interval (CI): 1.228-8.351]. There were significantly higher odds of awareness of EC amongst participants with tertiary education and those whose husbands had attained tertiary level of education, respectively, in contrast to other levels of educations [(2.020-25.658), (1.023-21. 762)]. The odds of awareness of EC among Muslims was 2.3 times higher compared to the Christians (1.069-5.095). The odds of awareness of EC were twelve and seven times higher among the Igbo ethnicity compared to Nupe and Hausa ethnic groups respectively (1.019-141.336). Also, there were significantly higher odds of 2.2 and 5.3 times the chance of being aware of EC among women whose families were in upper and middle social classes, respectively, when compared to the lower class [(CI: 1.249-3.822) and (CI: 1.554-18.304)].

Table 3. Utilization of emergency contraception (n=129)

Variable	Category	Frequency (%)
Ever used EC	Yes	23 (17.8)
	No	106 (82.2)
When is EC effective?	Before sex	12 (9.3)
	Within 24 hrs after sex	18 (14.0)
	Within 72 hrs after sex	7 (5.4)
	Up to 5 days after sex	3 (2.3)
	Others	2 (1.6)
	I don't know	87 (67.4)
Where is EC obtained from?	Public hospital	30 (23.3)
	Private hospital	12 (9.3)
	Pharmacy/patent medicine store	22 (17.0)
	I don't know	65 (50.4)
Method of EC used (n=23)	Levonorgestrel pills	15 (65.2)
	Combined OCPs	1 (4.3)
	IUCD	3 (13.1)
	Others	4 (17.4)
Reasons for use (n=23)	Prevent unwanted pregnancy	7 (30.4)
	Miscalculated sex timing	5 (21.8)
	Failed withdrawal method	5 (21.8)
	Others	6 (26.0)
EC: Emergency contraception, OCP: Oral contraceptives pills, IUCD: Intrauterine contraceptive device		

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Table 4. Logistic regression of awareness of emergency contraception

Variable	Awareness of EC	OR (95% CI)	p-value
	Yes (n=33)	No (n=86)	
Age (years)			
≤25	9 (20.9)	39 (45.4)	1
26-30	17 (39.5)	24 (27.9)	3.20 (1.228-8.351)
≥31	17 (39.5)	23 (26.7)	1.04 (0.432-2.522)
Parity			
Nulliparous	12 (27.9)	32 (37.2)	1
Para 1-4	28 (65.1)	43 (50.0)	1.38 (0.326-5.796)
Para ≥5	3 (7.0)	11 (12.8)	2.388 (0.611-9.325)
Level of education (wife)			
Quranic	2 (4.7)	3 (3.5)	1
Primary	2 (4.7)	11 (12.8)	1.200 (0.190-7.572)
Secondary	3 (7.0)	27 (31.4)	4.400 (0.916-21.130)
Tertiary	36 (83.7)	45 (52.3)	7.200 (2.020-25.658)
Level of education (husband)			
Quranic	0 (0.0)	6 (7.0)	1
Primary	2 (4.7)	3 (3.5)	1.25 (0.201-7.796)
Secondary	2 (4.7)	15 (17.4)	0.944 (0.151-5.903)
Tertiary	39 (90.7)	62 (72.1)	4.718 (1.023-21.762)
Religion			
Islam	34 (79.1)	65 (75.6)	2.333 (1.069-5.095)
Christianity	9 (20.9)	21 (24.4)	1
Ethnicity			
Nupe	33 (76.7)	57 (66.3)	1
Hausa	1 (2.3)	6 (7.0)	1.727 (0.405-7.369)
Yoruba	1 (2.3)	12 (14.0)	0.000 (0.478-75.344)
Igbo	4 (9.3)	7 (8.1)	12.000 (1.019-141.336)
Others	4 (9.3)	4 (4.6)	1.750 (0.275-11.152)
Occupation (wife)			
Civil servant	12 (27.9)	17 (19.8)	1
Self-employed	13 (30.2)	34 (39.5)	0.708 (0.057-8.730)
Housewife	14 (32.6)	24 (27.9)	1.308 (0.109-15.679)
Schooling	2 (4.7)	8 (9.3)	0.857 (0.071-10.331)
Farming	1 (2.3)	1 (1.2)	2.000 (0.115-34.822)
Others	1 (2.3)	2 (2.3)	0.500 (0.013-19.562)
Occupation (husband)			
Civil servant	27 (62.8)	33 (38.4)	1
Self-employed	10 (23.3)	37 (43.0)	1.222 (0.279-5.349)
Schooling	0 (0.0)	8 (9.3)	3.700 (0.784-17.467)
Farming	3 (4.6)	4 (4.6)	1.615 (1.000-21.207)
Others	4 (9.3)	4 (6.5)	2.000 (0.224-17.894)
Social class			
Upper	24 (55.8)	29 (33.7)	2.185 (1.249-3.822)
Middle	16 (37.2)	37 (43.0)	5.333 (1.554-18.304)
Lower	3 (7.0)	20 (23.2)	1
EC: Emergency contraception, OR: Odds ratio, CI: Confidence interval			

Determinants of using EC

As shown in Table 5, age, parity, level of education of the couples, religion, and social class of the respondents had significant associations with experience of personal use of EC. The bivariate analysis on use of EC showed that the odds of this were two and three times higher among those aged 26-30 years compared to those of ≤25 and ≥31 years respectively (1.550-2.429). Equally, there were significantly higher odds, of 3.5 and 2.3 times, the level of EC use among para 1-4 and para ≥5, respectively, when compared to nulliparous women [(CI: 1.298-9.234) and (CI: 1.251-9.251)]. There were significant higher odds of EC use amongst participants with primary education and those whose husbands attained primary level of education respectively in comparison to women with only basic (quranic) levels of education; [(CI: 1.78-8.569), (CI: 1.871-5.387)]. The odds of EC use among Muslims was four times higher compared to Christians (1.635-9.785). Finally, the odds of personal use of EC were 3.8 times higher for both women in the upper and middle social classes compared to the lower class (CI: 1.966-7.416).

Discussion

In the present study, only one third of women knew of EC and only 17.8% had ever personally used EC. Two thirds of participants had no idea when EC was effective. The prevalence of unintended pregnancy in our cohort was 29.5%. The results of the current study revealed that age, ethnicity, religion, level of education and socioeconomic status had significant effects on level of awareness of EC. Equally, personal experience of using EC was significantly influenced by age and parity, as well as level of education, religion and socioeconomic status.

The finding that only one third of women knew of EC was similar to previous reports from Nepal (22), India (23) and northwest Nigeria (24). However, this proportion was higher than reported figures in similar cross-sectional, hospital-based studies from Ethiopia (14), India (25,26) and Ankara, Türkiye (27). Interestingly, one other hospital-based study from Ethiopia reported a higher rate of knowledge of EC (28). This rate of one-in-three women having awareness of EC is lower than reported figures from a study across 14 countries in Western, Central and Eastern Europe and Central Asia (29), among female high school students in Ethiopia (30,31), nursing students in Spain (32), first year medical students of an International University in Nicosia, Cyprus (33), undergraduates students in Northern Uganda (34), and local studies among undergraduates in Nigeria tertiary institutions (7,8). The differences may not be unconnected to the fact that our research was conducted in a semi-urban settlement. Also, a higher literacy level coupled with socio-cultural differences may account for greater level of awareness among Europeans. It is notable that many of the studies reporting higher levels of awareness of EC were conducted among college and undergraduate students or nursing and medical students, who were likely to be more enlightened on reproductive health issues.

In our cohort, most of the participants who knew about EC learnt about it through health workers, and the next most common source of information was friends and peers. This is in agreement with the report by Acen et al from Northern Uganda (33), but in contrast with report by Adavuruku et al. (8) from northwest Nigeria and Chaudhary (22) from Nepal, South Asia, where most of the respondents learnt about it through friends, then social media, followed by health workers.

The proportion of women in our cohort who had personal experience of using EC was very low (17.8%) with most having used LNG pills followed by much smaller numbers using IUDs or OCP. This finding is in consonance with Putchakayala et al. (25) from India and Adavuruku et al. (8) from northwest Nigeria. As only one third of our sample had actually heard of EC, it is unsurprising that only a few had personal experience of using it. However, the level of utilization from this study is similar to previous report from southwest Nigeria (7), Europe and Central Asia (29) as well as a report from the US (35). The level of EC usage in our cohort was still higher than some reports from India (25) and Ethiopia (30), but lower than other reports from other developing nations, including Brazil (36), Ethiopia (31), Ghana (13) and Nigeria (8). These observed differences in level of use may be due to the differences in level of awareness of the women towards EC among the various study populations, or cultural or demographic differences. Generally, the higher the awareness of EC, the higher the utilization rate. Furthermore, high rates of modern contraception use among women of reproductive age in developed countries, in contrast to what is obtainable in developing countries, may account for the lower levels of utilization of EC in developed countries, reported by some studies.

Determinants of awareness of EC

Age, ethnicity, religion, tertiary level of education and higher socioeconomic status of the respondents had significant association with awareness of EC.

In our study, the younger age group was associated with higher odds of awareness of EC. This is consistent with previous reports showing strong association between awareness of EC and younger age group (8,14,22,28,29,37). Also, the higher odds of awareness of EC among clientele with tertiary level of education and high socioeconomic status in this study, is also in agreement with previous reports from Nigeria (7,8), Nepal (22), Türkiye (27), and Ethiopia (14,38). However, our finding is in contrast to a report from India where low socioeconomic status was significantly associated with knowledge of EC (37). This may not be unconnected to the fact that higher educational status as well as good income widens the social interaction which in turn help them to obtain additional information regarding family planning services including emergency contraceptive methods.

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Table 5. Logistic regression of experience of using emergency contraception

Variable	Use of EC	OR (95% CI)	p-value
	Yes (n=23)	No (n=106)	
Age (years)			
≤25	5 (21.7)	43 (40.6)	1
26–30	11 (47.8)	30 (28.3)	1.940 (1.550-2.429)
≥31	7 (30.4)	33 (31.1)	0.58 (0.199-1.685)
Parity			
Nulliparous	7 (30.4)	37 (34.9)	1
Para 1-4	16 (69.6)	55 (51.9)	3.46 (1.298-9.234)
Para ≥5	0 (0.0)	14 (13.2)	2.25 (1.251-9.251)
Level of education (wife)			
Quranic	0 (0.0)	5 (4.7)	1
Primary	1 (4.3)	12 (11.3)	2.78 (1.78-8.569)
Secondary	2 (8.7)	28 (26.4)	3.934 (0.481-32.180)
Tertiary	20 (87.0)	61 (57.6)	4.590 (1.003-21.005)
Level of education (husband)			
Quranic	0 (0.0)	6 (5.6)	1
Primary	1 (4.3)	4 (3.8)	2.58 (1.871-5.387)
Secondary	1 (4.3)	16 (15.1)	1.050 (0.111-9.896)
Tertiary	21 (91.3)	80 (75.5)	4.200 (0.526-33.506)
Religion			
Islam	34 (79.1)	65 (75.6)	4.000 (1.635-9.785)
Christianity	9 (20.9)	21 (24.4)	1
Ethnicity			
Nupe	13 (56.5)	77 (72.6)	1
Hausa	2 (8.7)	5 (4.7)	0.846 (0.096-7.457)
Yoruba	2 (8.7)	11 (10.4)	0.357 (0.025-5.109)
Igbo	5 (21.7)	6 (5.7)	0.786 (0.059-10.377)
Others	1 (4.4)	7 (6.6)	0.171 (0.015-1.905)
Occupation (subjects)			
Civil servant	4 (17.4)	25 (23.6)	1
Self-employed	9 (39.1)	38 (35.8)	3.125 (0.227-43.021)
Housewife	8 (34.8)	30 (28.3)	2.111 (0.172-25.925)
Schooling	1 (4.3)	9 (8.5)	1.875 (0.150-23.396)
Farming	0 (0.0)	2 (1.9)	4.500 (0.190-106.823)
Others	1 (4.3)	2 (1.9)	1.47 (0.297-7.253)
Occupation (partners)			
Civil servant	10 (43.5)	50 (47.2)	1
Self-employed	8 (34.8)	39 (36.8)	3.000 (0.615-14.626)
Schooling	1 (4.3)	7 (6.6)	2.925 (0.578-14.794)
Farming	1 (4.3)	5 (4.7)	4.200 (0.332-53.123)
Others	3 (13.0)	5 (4.7)	3.000 (0.227-39.608)
Social class			
Upper	11 (47.8)	42 (39.6)	3.818 (1.966-7.416)
Middle	11 (47.8)	42 (39.6)	3.818 (1.966-7.416)
Lower	1 (4.3)	22 (20.8)	1
EC: Emergency contraception, OR: Odds ratio, CI: Confidence interval			

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In this study, being a Muslim was associated with higher odds of awareness, as has previously been reported from northwest Nigeria (24,39) and India (37).

In our study Igbo ethnicity was associated with higher odds of awareness of EC, which again, is in agreement with other studies of this topic where ethnicity has been investigated as a determinant of EC awareness (38).

Determinants of use of EC

Once again, younger age, and high socioeconomic status, together with religion all had significant associations with personal experience of using EC. This finding is in agreement with previous reports where younger age, religion and high socioeconomic status were found to be associated with use of EC (24,34,35-37,39).

We also found a significant association between higher order parity and use of EC. This finding is not unusual as the nulliparous may be more eager to get pregnant as a way of securing and/or cementing her marriage, rather than preventing pregnancy. Especially in this cultural context where much premium is placed on child bearing!

Interestingly, a primary level of education was associated with personal use of EC. The reason for this finding may be because being a Muslim dominated community where young girls are married as teenagers, the majority had completed their family size at the age when their counterparts who went on to continue their education to tertiary level were just settling down for marital life. Consequently, the overriding consideration for the women with only primary level of education would be to limit and/or prevent further increase in their family size.

Study Limitations

The strength of this study is that no previous study has examined EC in Niger State, Nigeria. The majority of the studies about EC in northern Nigeria have focused on secondary and undergraduate students (8,24,39). This study was hospital-based. A further limitation, which may explain the increased variability observed within the data, was the small sample size. These may limit the generalizability of our findings to the general populace. Self-reporting was used as the only means of measuring awareness and personal history of using EC. This method has the drawback of recall bias and eliciting only socially acceptable responses and hence, may lead to inaccurate results. Finally, this study was carried out amongst women who were accessing care in a public health facility, and who were therefore disposed to having greater health-related awareness than women from a general populace.

Conclusion

EC has the benefit of stopping accidental pregnancy and potential resultant IA after unprotected sexual intercourse. However, most of the participants in the present study had no knowledge of EC. The level of actual use of EC was even lower at not quite 20%. Women who are not well-informed about EC are unlikely to use it. We believe, therefore, that there is a need to increase public health knowledge and practice of EC through health education and advocacy in our population. Furthermore, motivating and training health workers to enlighten and educate clientele at the family planning service point about EC methods, their uses and where they are available will be important to achieve this aim. A multicenter, population-based study to bridge the limitations identified by the present study is recommended.

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