Ann Ibd. Pg. Med 2022. Vol.20, No.2 143-150

KNOWLEDGE OF EMERGENCY CONTRACEPTION AND PREDICTORS OF ITS USE AMONG FEMALE UNDERGRADUATES IN TWO NIGERIAN UNIVERSITIES

O.O. Ogunbode[1], R. Takpe[2], A. Adeniyi[2], A.M. Ogunbode[3], A. Agboola[2]

1. Department of Obstetrics and Gynaecology, College of Medicine, University of Ibadan, Ibadan.
2. Department of Obstetrics and Gynaecology, University College Hospital, Ibadan, Ibadan.
3. Department of Family Medicine, University College Hospital, Ibadan, Ibadan.

Correspondence:
Dr. A. Agboola
Dept. of Obstetrics and Gynaecology, University College Hospital, Ibadan
E-mail: agboolamd123@gmail.com

ABSTRACT

Background: **Unintended pregnancies contribute to the high burden of unsafe abortion, maternal deaths and morbidities among undergraduates.**

Objective: **To assess the determinants of good knowledge and evaluate the trends in the practice of Emergency Contraception (EC) among female undergraduates.**

Method: **This was a cross sectional study involving four hundred and twenty female undergraduates from two universities in Ibadan, Nigeria. Participants were recruited from their hostels and classrooms. Data collection was done using self-administered questionnaires and good knowledge was defined as three correct answers to five questions testing knowledge. The questionnaires also addressed their practices of EC. The data was stored on the computer, cleaned and analyzed using the Statistical Package for the Social Sciences (SPSS) version 22. Statistical significance was set at $p < 0.05$.**

Results: **Two hundred and fourteen (51.0%) participants were aware of EC and the common sources were friends (43.4%), media (42.9%) and pharmacies (42.0%). One hundred and sixty-four participants (39.1%) had good knowledge of EC. Participants in the age group 20-24 years, second year of study, those who were aware of EC and had ever used EC were associated with good knowledge. Less than half (48%) of the sexually active participants used EC in the past six months and Levonogestrel (51%) was the commonest EC used. Menstrual irregularity and abdominal pain were the major side effects of EC.**

Conclusion: **The practice of EC is poor and with poor knowledge demonstrated among female undergraduates. There is therefore the need to improve information and access to EC in the university community.**

Keywords: Emergency contraception, Determinants, Knowledge, Practice, Female undergraduates

INTRODUCTION

Unintended pregnancies account for approximately forty percent of all pregnancies worldwide.[1] With this growing scourge, it is no surprise that over 44 million pregnancies end in abortion annually. In Africa, many of these abortions being unsafe, are major contributors to maternal and infant mortality.[2] It is common knowledge that youths have risky sexual behaviours and constitute a high-risk group for these unwanted pregnancies.[3-5] Despite the social and cultural importance of childbearing in African societies, unwanted pregnancies are a source of concern in most families. This problem is magnified in unmarried youths and those who follow through with the pregnancies have higher unmet social needs and obstetric risks.[5-7]

Contraceptive use is an important strategy for the prevention of unwanted pregnancy and consequently reduces the incidence of induced abortion. In developing countries where the fertility rates are high, contraceptive use will guarantee human and socio-economic development.[2] Furthermore, the rate of induced abortion is an appropriate indicator of the current state of medical care and family planning in any country.[8]

Studies have shown varying levels of knowledge, attitude and practice of contraception among adolescents in Nigeria.[9,10] The Nigeria Demographic and Health Survey in 2018 revealed that contraception prevalence rates in the country were low while modern contraceptive use was higher among sexually active unmarried women (28%) than among currently married women (12%).[11] The promotion of emergency contraception (EC) may be a 'second chance method' or an 'option B' in preventing pregnancy in adolescents with an unmet need,

improper and/or inconsistent use of contraception and those who have experienced coerced unprotected sex or in cases of sexual assault.[12]

EC is defined as any drug or device which when used after intercourse will prevent pregnancy. Since the first description of EC in 1960, its popularity has increased but knowledge is still limited globally[13]. Generally, a lack of awareness restricts access to the use of EC and increased access is generally associated with increased use. It has also been shown that good knowledge of EC does not translate to adequate uptake.[14]

Currently, there are several options for EC, including progestin only pills (ECPs) which contain Levonorgestrel, progesterone modulators (Ulipristal acetate), anti-progesterone synthetic steroids (Mifepristone), and the copper intrauterine device (IUD).[15] In many countries, Levonorgestrel is the most available, accessible and acceptable of the lot.[1]

Youths in Nigeria have poor awareness, knowledge and practice of EC[12,16]. Ajayi *et al.* revealed that some female undergraduates erroneously use non-emergency contraceptive pills and concoctions as EC in Nigeria[14]. It is important to study the awareness, practice and knowledge of females to EC as these should be the major drivers of its uptake since the available options are tailored to their use and females bear the brunt of the consequences of unwanted pregnancies.

This study aimed to assess the awareness and knowledge of emergency contraception among young females with undergraduates as a case study. The results from this study will help develop strategies necessary in reducing morbidities and mortalities from unwanted pregnancies and achieving universal access to sexual and reproductive health.

MATERIALS AND METHODS

This was a cross sectional study involving four hundred and twenty female undergraduates from two Nigerian Universities in Ibadan, namely University of Ibadan (UI) and Lead City University (LCU), Ibadan. The UI, Ibadan, Oyo State, Nigeria is a public university and the oldest degree-awarding institution in Nigeria which is made up of ninety-two academic departments organised into 17 faculties. LCU, Ibadan, on the other hand, is a private university founded in 2005 and is made up of seven faculties.

Ethical approval was obtained from the UI/University College Hospital (UCH), Ibadan, Institution Research Board. The sample size was calculated using the Kish and Leslie formula for cross-sectional studies, assuming 95% level of confidence and 5% margin of error. The proportion of sexually exposed undergraduates of 48.2% from a previous similar study was used in the sample size calculation.

The five institutions in Ibadan namely Ajayi Crowther University, LCU, Kola Daisi University, Dominion University and UI were allocated numbers from 1-5, folded and put in an opaque envelope and two sample institutions were selected by simple random sampling techniques, while participants were recruited from their halls of residence and classrooms. Four research personnel were trained to collect the data using self-administered, pre-tested questionnaires. Good knowledge of EC was defined as three correct options in a five-item questions testing knowledge. The confidentiality of participants was ensured throughout the study.

The data was stored on the computer, cleaned and analyzed using Statistical Package for the Social Sciences (SPSS) version 22. Data analysis was summarized using descriptive statistics and charts. Test of associations was done using Chi square and Yates correction, while statistical significance was set at $p < 0.05$.

RESULTS

The mean age of the respondents was 20.4 ± 3.3 years. More than half (228;54.0%) of the respondents were

Table 1: Socio-demographic data of the study participants

	Frequency (N)	Percentage (%)
Age group (in years)		
<20	161	38.4
20-24	228	54.0
25-29	27	6.6
30-34	2	0.5
≥35	2	0.5
Year of Study		
1st	120	28.6
2nd	111	26.4
3rd	72	17.1
4th	83	19.8
5th	34	8.1
Religion		
Islam	93	22.1
Christianity	324	77.2
Traditional	3	0.7
Tribe		
Yoruba	359	85.5
Hausa	3	0.7
Igbo	26	6.2
Others	32	7.6
Marital Status		
Single	412	98.1
Married	8	1.9
Total	**420**	**100.0**

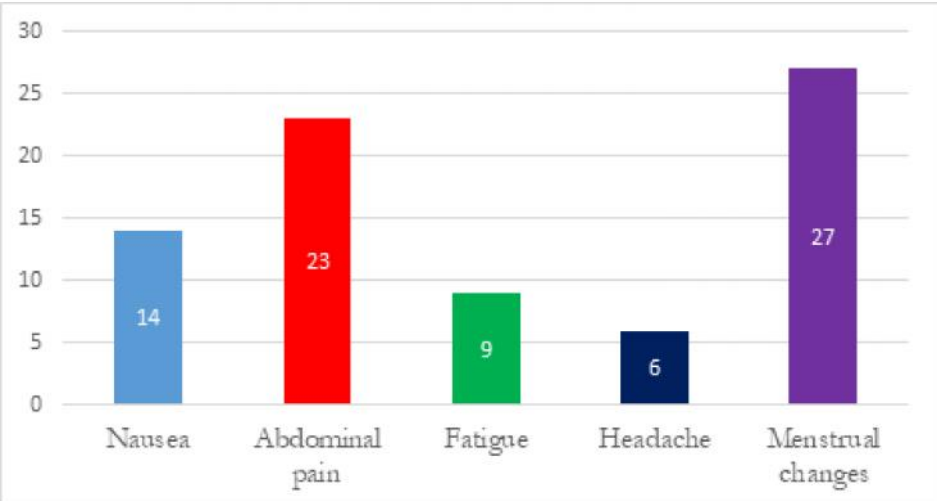
Table 2: Awareness and practice of EC among the study participants

	Frequency (N)	Percentage (%)
Awareness of EC		
Yes	219	52.1
No	201	47.9
Source of Awareness of EC		
Pharmacy	92	42.0
Health Worker	47	21.5
Family Planning Unit	22	10.5
Parents	36	16.4
Friends	95	43.4
Books	66	30.1
Media	94	42.9
Sexual Activity		
Ever had sex	156	37.1
Sex in the past 6 months	102	24.3
Practice of EC		
Recommend EC to others	124	29.5
Ever used EC	81	19.3
Ever used EC in the past 6 months	49	11.6
Approve use of EC* (n=102)	60	58.8
Type of EC used in the last use (n==49)**		
Intrauterine Device	7	14.3
Levonorgestrel (Postinor)	25	51.0
Contraceptive Pills	17	34.7

**Among currently sexually active participants*
***Among participants who are sexually active and used emergency contraception within the last 6 months of the study*

between 20 and 24 years old. Most were of the Yoruba tribe (359;85.5%), Christian (324;77.2%) and in their first year of study (120;28.6%). A vast majority were single (412;98.1%) as expected in many undergraduate programs and a little over half (216;51.4%) of the respondents were aware of EC. This is shown in table 1.

Table 2 showed the awareness and practice of EC. Of those who were aware of EC, friends were the largest contributors with 43.4% closely followed by media and pharmacies with 42.9% and 42%, respectively. Health workers, parents and family planning clinics had the least impact on awareness of



**multiple responses*

Figure 1: Problems with use of emergency contraception among the study participants

Table 3: Associations with knowledge of emergency contraception among female undergraduates

Variable	Good Knowledge (n=164)	Poor Knowledge (n=256)	Chi square	p value
Age group (in years)				
<20	56	105	10.1	*0.038
20-24	88	140		
25-29	18	9		
30-34	1	1		
≥ 35	1	1		
Level of Education (year)				
1st	25	95	29.8	<0.001
2nd	47	64		
3rd	30	42		
4th	40	43		
5th	22	12		
Religion				
Islam	30	63	5.04	*0.28
Christianity	132	192		
Traditional	1	1		
Others	1	0		
Marital Status				
Single	158	254	3.023	*0.082
Married	6	2		
Awareness of EC				
Yes	144	75	138.8	<0.001
No	20	181		
Ever used EC				
Yes	57	24	41.4	<0.001
No	107	232		
Sex in the past 6 months				
Yes	58	44	18.0	<0.001
No	106	212		
Recommend to others				
Yes	77	47	39.3	<0.001
No	87	209		

**Yates correction*

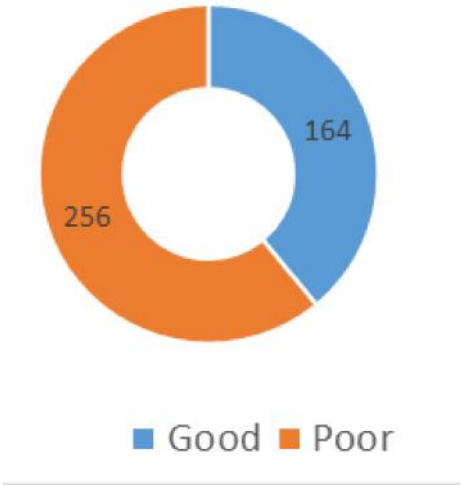


Figure 2: Knowledge scores of emergency contraception among the study participants

EC. One hundred and fifty-six participants (37.1%) had ever had sex in the past and 81 participants (19.3%) had ever used EC. Table 2 showed that 102 (65.4% of those who had ever had sex) had been sexually active in the last 6 months, most of them in the preceding month of the study. About 3 out of 10 female undergraduates were willing to recommend EC while two-thirds of those who had 'ever had sex' approved of EC. Forty eight percent of the sexually active group used EC in the last 6 months mostly (55.2%) because of a condom break. Levonogestrel (51%) was the most used EC and majority (57.1%) used EC within 24 hours of sex.

The common problems associated with the use of EC among the participants who had used EC in the past six months of the research were menstrual irregularity (27;55.1%) and abdominal pains (23;46.9%).

Table 4: Associations with the use of EC among sexually active participants

Variable	Use of EC n (%)	Non-use of EC n (%)	Chi square	p value
Age group (Years)				
<20	23(22.6)	138((40.7)	41.8	*<0.001
20-24	59(57.8)	179(56.2)		
25-29	19(18.6)	8(2.5)		
30-34	1(1.0)	1(0.3)		
≥ 35	1(1.0)	1(0.3)		
Level of Education (Year)				
1st	15(14.7)	105(33.1)	17.32	0.002
2nd	26((25.5)	85(26.7)		
3rd	27(26.5)	46(14.5)		
4th	25(24.5)	57(17.9)		
5th	9(8.8)	25(7.8)		
Religion				
Islam	16(15.6)	77(24.2)	4.49	*0.212
Christianity	84(82,4)	240(75.5)		
Traditional	1(1.0)	1(0.3)		
Others	1(1.0)	0(0.0)		
Marital Status				
Single	98(96.1)	314(98.7)	1.68	*0.195
Married	4(3.9)	4(1.3)		
Knowledge of EC				
Good	83(81.4)	173(54.4)	23.80	<0.001
Poor	19(18.6)	145(45.6)		
Recommend EC to others				
Yes	76(77.0)	64(20.1)	111.55	<0.001
No	26(23.0)	264(79.9)		
Partner's approval of EC				
Approves	21(20.6)	117(36.8)	9.19	0.002
Disapproves	81(79.4)	201(63.2)		
Total	**102(100.0)**	**308(100.0)**		

**Yates correction*

This is shown in figure 1. Only about two fifth (164;40%) of the female undergraduates had good knowledge of EC as shown in figure 2.

Table 3 shows good knowledge score of EC was associated with increasing age and higher levels of education. The female undergraduates who were aware of EC, used EC in the last 6 months or ever used EC had good knowledge scores. Those who were willing to recommend EC to others or had a partner who used EC had good knowledge scores too, however the partner's approval did not influence knowledge of EC.

The associations with the use of EC among the sexually active participants is depicted in Table IV. The age group($p<0.001$), level of education($p=0.002$), knowledge of EC($p<0.001$), willingness to recommend EC to others($p<0.001$) and partner's approval ($p=0.002$) were statistically significant.

DISCUSSION

Most of the students were single and aged between 20 and 24 years which was comparable with similar studies among undergraduates in Nigeria, Ghana, Ethiopia and Cameroon.[15-19] In a study in the South-West of Nigeria, the awareness levels of EC was just average and although higher than the studies from Ile-Ife (South-West) and Anambra (South-East), studies in Nigeria still fell short of surveys from Cameroon and Ethiopia.[10,16,20,21] Friends, media and pharmacies were the major influencers of awareness in this population of female undergraduates and unfortunately each of these was independently greater than the combination of healthcare workers and the family planning unit together. It is rather unfortunate that awareness of EC is skewed towards these unvetted sources. The quality of information from these sources needs to be investigated because this may influence knowledge of EC and consequently improve uptake of EC.[19]

Good knowledge scores of EC was only demonstrated in two-fifth of this young females and this was significantly associated with awareness. It is very probable that higher scores will have been attained with quality sources of information like health workers and the family planning service providers. A qualitative study among female undergraduates in Ekiti, South-West, Nigeria revealed many unconventional and unproven methods adopted for EC like Ampiclox, "Alabukun (a local brand of analgesic), saltwater solution, and lime and potash which many of the young females perceived to be effective in preventing unplanned pregnancies. There was a strong recommendation by friends for this unproven methods[14]. Kongnyuy et al. in Cameroon, revealed that less than a tenth of a mixed undergraduate population had adequate knowledge of EC, an outcome which was associated with identified medical sources, female sex and previous use of ECPs[20]. In another female dominated undergraduate population with low knowledge levels, younger age was associated with good knowledge[12]. It is imperative that many other studies on this subject matter use an objective scoring system to assess knowledge of EC.

Studies in Ethiopia revealed that the uptake of EC increased with age. These authors also noted increased knowledge with higher levels of education, a finding which is in keeping with this study[19,21]. We also noted associations between good knowledge scores and having 'ever had sex', previous use of EC (also use in the previous 6 months) or having a partner who had used EC in the past. Likewise, other studies in Nigeria acknowledge that good knowledge of EC was a significant predictor of its use[12,17]. About a third of our respondents were sexually active like many other surveys among females of tertiary institutions in Africa[12,17,19,21]. However, in a study in Ile-ife, Nigeria, 86.6% of the population were sexually active, out of which 89% were using a form of contraception. This level of sexual activity would have birthed a high unwanted pregnancy rate but for the commensurate consistent use of diverse forms of modern contraception.[10] About 1 in 5 females in this study had used EC in the past with ECP containing Levonogestrel, being the most common of the options available. These pills are highly effective in preventing pregnancies and one tablet of 0.75 mg Levonogestrel should be taken as soon as possible, but not later than 72 hours after unprotected intercourse, followed by another pill 12 hours later[8]. It is encouraging to know that an overwhelming majority of those who had used EC used it appropriately within the stipulated time contrary to studies that have shown that many did not know the correct timing for taking ECPs[16,20]. EC should not be subjected to frequent use as these methods are not without side effects which may be cumulative. With a little under half of the respondents attesting to rare use, there is still room for improvement in this regard.

Male partners have a prominent role with regards adopting contraceptive methods (EC inclusive). In San Francisco, United States of America, surveys among women, most of whom were aware of EC, identified some factors like male dominance, male pressure for sex and male partner unhappy with a pregnancy as factors associated with the use of EC[22,23]. Among the female undergraduates who were sexually active in this study, 58.8% of their partners approved of EC. Interestingly, this was not associated with the respondent's knowledge of EC a finding which was incongruent with another study in South-west Nigeria[12]. It may mean that this approval may have just empowered the females to adopt one form of EC without creating a forum for discussing the mechanism(s) of action, correct use and side effects that may be expected. The most common reason for using EC was condom break with most reporting menstrual changes and abdominal pain as common side effects. It is refreshing to know that there was a significant association between good knowledge of EC and recommending it to others. It may therefore mean that these females with good knowledge may propagate good practice while recommending EC.

Our study on knowledge of EC among this young female undergraduate population is necessary to improve uptake of EC but it has its limitations. This survey was conducted among an educated cohort and as such may not be representative of the general population. Due to the sensitive nature of questions, the responses may have been subjected to bias. It is very likely, a mixed methods approach incorporating in-depth interviews may highlight more factors (like previous or current pregnancies, financial status, and regular use of other forms of modern contraception), that may be associated with knowledge of EC and some misconceptions regarding EC.

CONCLUSION

This conclusion of this study is that the awareness and knowledge levels of EC among female undergraduates is low. There is a need to improve the quality of the source of awareness. We strongly recommend that accurate information be disseminated through education and communication by healthcare workers. Universities should have vibrant reproductive health clinics with a family planning unit. Also, in line with technological advancement, quality information about EC could be promulgated through audio-visual media, which have been found to be reliable and associated

with good knowledge on EC. When good knowledge ultimately increases the uptake of EC, a reduction in unsafe abortion and its attendant morbidities and mortalities is inevitable.

ACKNOWLEDGEMENT

This study was self-sponsored, and we did not receive any funds from any organization. We thank the research assistants, including Mrs Bidemi Oladapo, who assisted in data collection and entry respectively. We are grateful to the female undergraduates who participated in this study.

CONFLICT OF INTEREST

We declare that we have no conflict of interest.

AUTHORS' CONTRIBUTIONS

The study was conceived by OO, RT and AA and they all participated in the design, data analysis, and interpretation of the result. OO, AO and AA were involved in data acquisition and writing of the draft manuscript as well as editing it per the suggestions of the co-authors. AO critically reviewed the manuscript. All authors read and approved the manuscript.

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