



# Emergency contraception: an untapped resource among sexually active college students in Osogbo metropolis, Nigeria

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**Introduction:** Unwanted pregnancies and unsafe abortions result in the death of thousands of women, while millions suffer from permanent or temporary disabilities, problems that the use of emergency contraception can ameliorate. This study was therefore carried out to assess the knowledge, attitude, and practice of emergency contraception (EC) among college students in Osogbo metropolis.

**Materials and methods:** This descriptive cross-sectional study was carried out among 594 college students in Osogbo metropolis in Osun State, Nigeria, using pretested, semistructured questionnaires. Respondents were selected by multistage sampling. Data were analyzed using SPSS software, version 15.

**Results:** The mean age of the respondents was  $23.45 \pm 3.63$  years. Mean age at first sexual exposure was  $19.34 \pm 4.34$  years. Awareness about EC was fairly high among the respondents, (403, 67.8%), with categorized scoring of outcome variables showing that 60.8% of respondents had good general knowledge and only 27.9% had a positive attitude towards EC. However, only 66 (29.9%) of the sexually active respondents had ever used EC before the study, while 26 (21.5%) of the 121 sexually active female respondents admitted to having had an abortion. Bivariate analysis revealed that respondents' knowledge of, and attitude towards, EC were significantly related to age ( $P < 0.00000001$ ), respondents' course of study ( $P < 0.00000001$ ), and their level in college ( $P = 0.0000002$ ), while the use of EC among the sexually active students was significantly related to respondents' knowledge of EC ( $P = 0.017$ ).

**Conclusion:** Fairly high awareness, good general but poor comprehensive knowledge, negative attitudes, and poor use characterized the practice of EC among our study population. There is therefore a need for health-education initiatives about EC, addressing specific areas of poor knowledge and clarification of common misconceptions.

**Keywords:** knowledge, attitude, practice, college students, emergency contraception

## Introduction

Emergency contraception (EC) refers to a group of birth-control modalities that when used after an unprotected intercourse and within defined time limits can prevent an unwanted pregnancy.<sup>1,2</sup> EC remains the only form of hormonal contraception that can reduce the risk of pregnancy after unprotected sexual intercourse, when a planned contraceptive method (like condoms) fails, or in cases of rape. Increasing the availability and promotion of EC, therefore, has the potential to reduce the incidence of unintended pregnancies if used correctly, and in turn reduce associated social and health-care costs.<sup>3–5</sup>

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EC has been found to be a safe, effective, and cheap way to prevent unintended pregnancies, and its appropriate use could prevent up to 75% of unplanned pregnancies.<sup>6,7</sup> However, EC is largely underutilized worldwide and has been referred to as one of the best-kept secrets in reproductive health.<sup>2,8,9</sup> Each year, about 210 million women around the world become pregnant.<sup>10</sup> Among them, about 75 million pregnancies (36%) are unplanned and/or unwanted.<sup>11</sup> It is estimated that between 8 and 30 million pregnancies each year result from contraceptive failure, either due to inconsistent or incorrect use of contraceptive methods or failure of the method itself.<sup>12</sup>

Unintended pregnancy poses a major challenge to reproductive health in developing countries.<sup>13</sup> Nigeria currently has one of the highest rates of maternal mortality in the world,<sup>14</sup> and about 40% of these maternal deaths are due to complications of unsafe abortions as a response to unwanted pregnancy.<sup>15,16</sup> EC may therefore be an effective way to reduce maternal mortality, by reducing the number of unwanted pregnancies and induced abortions in the country.<sup>13</sup>

One of the groups that are particularly vulnerable to unsafe abortions is young people (10–24 years). This is a period of psychological, social, and sexual changes associated with experimentation and discovery. Because of this, they are exposed to such risks as unwanted pregnancies.<sup>2</sup> Adolescent and young adult women are characteristically less consistent users of contraception, they perceive higher barriers to accessing reproductive care, and they are more likely to report having either sporadic sex or sex that is initiated under the influence of alcohol, especially when first becoming sexually active.<sup>17</sup> EC is an effective compensatory method to prevent pregnancy following unprotected intercourse and is increasingly available to this group of women.<sup>17</sup>

In a Nigerian study, a total of 76.4% of the respondents were aware of EC, but only 18.5% of the sexually experienced students had used EC pills previously.<sup>18</sup> However, an increasing trend of awareness but persistent low utilization of EC among youths has been reported by several other studies within and outside Nigeria.<sup>19–21</sup> A major barrier to the use of EC is lack of relevant and appropriate knowledge about EC.<sup>22</sup> In many low-income countries, the lack of knowledge about and access to EC may result in women resorting to unsafe abortions, which contribute significantly to maternal morbidity and mortality.<sup>23</sup> Baseline information that could guide awareness-creation efforts and policy decisions are mandatory in order to assist women in making informed choices. This study was therefore carried out to

assess the knowledge, attitude and practice of EC among college students in Osogbo metropolis, Nigeria, with a view to making necessary recommendations that would further help to reduce maternal mortality in Nigeria.

## Materials and methods

### Study area

The study was carried out in Osogbo, the capital of Osun State. It was conducted among both males and females in three colleges in Osogbo metropolis, namely College of Health Sciences, Ladoke Akintola University of Technology (LAUTECH), the Osun State School of Nursing, Asubiaro, and Osun State University, Osogbo campus. There are about twelve primary health care centers and one general and one teaching hospital within the metropolis. There are numerous community pharmacy shops where EC can be purchased by women in Osogbo.

### Study design and population

This was a descriptive cross-sectional study of EC use among college students. These were registered students of any of the three colleges that took part in the study.

### Sampling size estimation

Using the formula for calculation of minimum sample size for population > 10,000 and an EC use prevalence rate of 35.5%,<sup>13</sup> a minimum sample size of 352 was calculated. This sample size was increased to 600 in order to make allowance for respondents' nonresponse and give proper and larger representation.

### Sampling method

The multistage sampling technique was used to select the respondents. One faculty per college was selected using random sampling employing simple balloting. In stage two, two departments per faculty were selected using random sampling employing simple balloting. In stage three, two classes/arms were selected per department using random sampling employing simple balloting. In stage four, a systematic sampling of one in three students based on their sitting arrangement for that day was used in selecting participants or study respondents.

### Data collection

The pretested and semistructured questionnaire used for this study was self-administered and supervised by trained research assistants. Questionnaires were proportionately allocated among classes/arms. Students were visited in their

classes at the end of lecture periods. A total of 600 questionnaires were administered, but only 594 (99.0%) were properly filled and analyzed. Study variables in the questionnaire included sociodemographic characteristics, sexual history, knowledge, attitude, and practice of EC.

## Scoring of outcome variables

### Knowledge score

Ten questions on the study instrument were used to assess respondents' knowledge of EC. One mark was awarded for every correct answer and 0 marks awarded for every wrong answer. All scores were added and the mean score calculated. Respondents who scored below the mean value were categorized as having poor knowledge, while those who scored above the mean value were categorized as having good knowledge.

### Attitude score

Fifteen questions on the study instrument were used to assess the respondents' attitude. One mark was awarded for a positive attitude and 0 marks for a negative attitude and undecided (indecision). All scores were added and the mean score calculated. Respondents who scored below the mean value were categorized as having poor attitude, while those who scored above the mean value were equivalent to good attitude.

## Data management

The questionnaires were manually sorted and data entered into the computer. Validity of data was ensured through double entry and manual random checks. SPSS (IBM, Armonk, NY, USA) version 15 was used for data analysis. Frequency tables were generated and appropriate bivariate analysis and test statistics were applied, with significance set at  $P \leq 0.05$  at a 95% confidence interval.

## Ethical considerations

Ethical clearances to conduct the study were obtained from the LAUTECH Teaching Hospital ethical review committee. Permission was also obtained from the provost of each college. Informed consent was obtained from each respondent before going ahead with the study.

## Results

A total of 594 out of 600 respondents returned completely filled questionnaires, giving a response rate of 99.0%; 468 (78.8%) respondents were between 20 and 29 years of age, with a mean age of  $23.45 \pm 3.63$  years. The majority

of them were females (358, 60.3%), single (548, 92.3%), Christian (473, 79.6%), and of the Yoruba ethnic group (548, 92.3%). (Table 1).

A total of 221 (37.2%) of the respondents had had sex before the study, and 168 (77.1%) had their first sexual intercourse between 15 and 24 years old, with a mean age of  $19.34 \pm 4.34$  years. Of the 221 respondents who were sexually active, 217 responded to the question of number of sexual partners: 99 (45.6%) had just one sexual partner, while 38 (17.5%) and 80 (36.9%) had two, and more than two, sexual partners, respectively. Twenty-six respondents (21.5%) of the 121 sexually active female respondents admitted to having had an abortion (Table 2).

**Table I** Sociodemographic characteristics of respondents

Variable	Frequency	Percentage
Age-groups (years)		
15–19	99	16.7
20–24	257	43.3
25–29	211	35.5
30–35	27	4.5
Mean age-group	$23.45 \pm 3.63$	
Sex		
Male	236	39.7
Female	358	60.3
Marital status		
Married	46	7.7
Single	548	92.3
Religion		
Christianity	473	79.6
Islam	120	20.2
Others	1	0.2
Tribe		
Yoruba	548	92.3
Hausa	9	1.5
Igbo	24	4.0
Others	13	2.2
Institution		
Osun State University, Osogbo Campus	125	21.0
School of Nursing, Asubiaro	56	9.4
LAUTECH College of Health Sciences, Osogbo	413	69.5
Course of study		
Medicine	321	54.0
Nursing	144	24.3
Medical laboratory technology	38	6.4
Medical laboratory sciences	91	15.3
Level of study		
100	135	22.7
200	11	1.9
300	73	12.3
400	132	22.2
500	133	22.4
600	110	18.9

**Abbreviation:** LAUTECH, Ladoke Akintola University of Technology.

**Table 2** Sexual history of respondents (n = 594)

Variable	Frequency	Percentage
Had sex before		
Yes	221	37.2
No	373	62.8
Age at first sex (n = 221)		
Less than 10 years	5	2.3
10–14 years	16	7.2
15–19 years	90	40.7
20–24 years	81	36.7
25 years and above	29	13.1
Mean age	19.34 ± 4.34 years	
Number of current sexual partners (n = 217)		
One	99	45.6
Two	38	17.5
More than two	80	36.9
Last sexual exposure (n = 217)		
Within the last week	45	21.1
Within the last month	50	23.0
Within the last 3 months	41	18.8
Within the last 6 months	25	11.3
Within the last year	30	13.6
Others	26	12.2
Frequency of sexual intercourse (n = 217)		
Daily	4	1.6
Alternate days	29	13.4
Weekly	38	17.6
Monthly	51	23.5
Others	95	43.9
Had an induced abortion (sexually active females, n = 121)		
Yes	26	21.5
No	95	78.5

On the knowledge of respondents about EC, 403 (67.8%) were aware of EC. The main source of information was from the schools in 332 (55.9%) respondents, followed by from friends and magazines in 93 (15.7%) and 84 (14.1%), respectively. Only 184 (31.0%) knew the correct timing for the use of EC. After scoring of outcome variables, 361 (60.8%) respondents were categorized as having good general knowledge of EC, while 428 (72.1%) had negative attitudes towards EC. Sixty-six (29.9%) of the sexually active respondents had used EC, and their main source for EC was the chemist (47, 71.2%). Only 146 respondents (24.6%) said they will use EC in future, and 147 (24.7%) of them said they will promote its use among their friends and colleagues (Tables 3–5).

There was a statistically significant relationship between knowledge about EC and age ( $P < 0.00000001$ ), respondents' course of study ( $P < 0.00000001$ ), and their level in college ( $P < 0.00000001$ ). Respondents studying medicine and those with increasing age and level in college had significantly better knowledge about EC (Table 6). Similarly, the attitude

**Table 3** Knowledge of emergency contraception (EC) among respondents (n = 594)

Variable	Frequency	Percentage
Possible to prevent pregnancy after unprotected sexual intercourse		
Yes	479	80.6
No	115	19.4
Awareness about EC		
Yes	403	67.8
No	191	32.2
Source of information about EC (multiple response)		
School	332	55.9
Magazine	84	14.1
Friends	93	15.7
Family	19	3.2
Television/radio	45	7.6
Leaflet/posters	18	3.0
Partners	22	3.7
Awareness about the mechanism of action of EC		
Yes	243	40.9
No	351	59.1
EC can protect against HIV/STI		
Yes	46	7.8
No	416	70.0
Don't know	132	22.2
Timing of EC usage		
Know correct timing	184	31.0
Do not know correct timing	410	69.0
Categorized knowledge score		
Poor	233	39.2
Good	361	60.8

**Abbreviation:** STI, sexually transmitted infection.

of the respondents towards EC was found to be statistically significantly related to their ages ( $P < 0.00000001$ ), course of study ( $P = 0.0000002$ ), their levels in college ( $P < 0.00000001$ ), and their knowledge category about EC ( $P < 0.00000001$ ) (Table 7). However, respondents' use of EC (among the sexually active) was significantly associated only with their knowledge category about EC ( $P = 0.017$ ), such that those with better knowledge were more likely to have used EC (Table 8).

## Discussion

Earlier studies in Nigeria have shown that young people are becoming more sexually liberated,<sup>24</sup> and this was buttressed by the fact that nearly four out of ten of our respondents were sexually active. Furthermore, more than half of those sexually active had more than one sexual partner, and almost one-tenth of the female respondents had had an induced abortion. With about 40% of maternal deaths in Nigeria due to complications of unsafe abortions as a response to unwanted pregnancy,<sup>15,16</sup> EC is therefore an important contraceptive option, especially for young people.

**Table 4** Attitude of respondents towards emergency contraception (EC) (n = 594)

Attitudinal statements	Agree	Undecided	Disagree
EC is an important option	406 (68.4)	82 (13.8)	106 (17.8)
EC is not a reliable form of contraception	226 (38.1)	149 (25.0)	219 (36.9)
Women who use EC are irresponsible	74 (12.5)	119 (20.0)	401 (67.5)
EC is a form of abortion	143 (24.1)	119 (20.0)	332 (55.9)
Effectiveness of EC depends on correct time frame of use	498 (83.8)	76 (12.8)	20 (3.4)
Effectiveness of EC depends on the type of EC used	407 (68.5)	127 (21.4)	60 (10.1)
EC should be used only for rape victims	116 (19.5)	82 (13.8)	396 (66.7)
EC can be used as a routine contraceptive method of choice	178 (30.0)	166 (27.9)	250 (42.1)
I disapprove of use of EC by adolescents and schoolgirls	303 (51.0)	90 (15.2)	201 (33.8)
EC can cause serious side effects	297 (50.0)	167 (28.1)	130 (21.9)
EC can cause birth defects	223 (37.5)	200 (33.7)	171 (28.8)
EC affects ability of users to get pregnant in the future	140 (23.6)	211 (35.5)	243 (40.9)
EC can protect against pregnancy from future sex acts	119 (20.0)	138 (23.3)	337 (56.7)

Two-thirds of the respondents were aware about EC, and six out of ten respondents had good but general knowledge about EC. This level of awareness is similar to what was reported among college students in Kathmandu (66%),<sup>25</sup> but higher than that found in an earlier study among undergraduates in Nigeria,<sup>13</sup> and in other African countries like Kenya,<sup>26</sup> Ghana,<sup>27</sup> and Cameroon.<sup>28</sup> This may be due to the fact that many of our respondents were studying either medicine or related courses in school, and this is corroborated by the fact there was a significant relationship between knowledge about EC and the respondents' course of study in school. Knowledge about EC was also found to be significantly associated with age and level in school, such that respondents studying medicine, those in higher levels, and those with increasing age had better knowledge about EC. This corroborates similar studies from the US<sup>29</sup> and Finland.<sup>30</sup>

**Table 5** Respondents' use of emergency contraception (EC)

Variable	Frequency	Percentage
Used EC (among sexually active respondents, n = 221)		
Yes	66	29.9
No	155	70.1
Source of EC*		
Hospital	7	10.6
Chemist	47	71.2
Sexual partner	9	13.6
Friends	7	10.6
Will use EC in the future (n = 594)		
Yes	146	24.6
No	169	28.5
Undecided	279	47.0
Will promote the usage of EC among friends (n = 594)		
Yes	147	24.7
No	256	43.1
Undecided	191	32.2

Note: \*Multiple responses.

Despite this fairly high level of awareness and good general knowledge about EC among respondents, some specific knowledge about EC, especially about the correct timing for usage, was poor, with more than six out of ten respondents not having any clue as to the correct timing of EC use. This pattern has also been reported by other studies.<sup>3,28</sup> This shows that intensification of education of the public,

**Table 6** Association between sociodemographic variables and knowledge about emergency contraception (EC) (n = 594)

Variable	Knowledge (%)		$\chi^2$	P-value
	Poor	Good		
Age (years)				
15–19	67 (67.7)	32 (32.3)		
20–24	119 (46.3)	138 (53.7)	76.97	<0.00000001*
25–29	41 (19.4)	170 (80.6)		
30 and above	6 (22.2)	21 (77.8)		
Sex				
Male	86 (36.4)	150 (63.6)		
Female	147 (41.1)	211 (58.9)	1.27	0.259
Marital status				
Married	13 (28.3)	33 (71.7)		
Single	220 (40.1)	328 (59.9)	2.51	0.113
Course of study				
Medicine	77 (24.0)	244 (76.0)		
Nursing	69 (47.9)	75 (52.1)	78.8	<0.00000001*
Medical laboratory technology	29 (76.3)	9 (23.7)		
Medical laboratory sciences	57 (62.6)	34 (37.4)		
Level in college				
100	102 (75.6)	33 (24.4)		
200	6 (54.5)	5 (45.5)		
300	37 (50.7)	36 (49.3)	136.5	<0.00000001*
400	45 (34.1)	87 (65.9)		
500	36 (26.9)	97 (73.1)		
600	8 (7.3)	102 (92.7)		

Note: \*Statistically significant.

**Table 7** Association between sociodemographic variables and attitude towards emergency contraception (EC) (n = 594)

Variable	Attitude (%)		$\chi^2$	P-value
	Negative	Positive		
Age (years)				
15–19	86 (86.9)	13 (13.1)		
20–24	200 (77.8)	57 (22.2)	35.2	<0.0000001*
25–29	129 (61.1)	82 (38.9)		
30 and above	13 (48.1)	14 (51.9)		
Sex				
Male	162 (68.6)	74 (31.4)		
Female	266 (74.3)	92 (25.7)	2.26	0.133
Marital status				
Married	29 (63.0)	17 (37.0)		
Single	399 (72.8)	149 (27.2)	2.01	0.156
Course of study				
Medicine	200 (62.3)	121 (37.7)		
Nursing	117 (81.2)	27 (18.8)	33.76	0.0000002*
Medical laboratory technology	33 (86.8)	5 (13.2)		
Medical laboratory sciences	78 (85.7)	13 (14.3)		
Level in college				
100	109 (80.7)	26 (19.3)		
200	6 (54.5)	5 (45.5)		
300	62 (84.9)	11 (15.1)	43.32	<0.00000001*
400	96 (72.7)	36 (27.3)		
500	98 (73.7)	35 (26.3)		
600	53 (48.2)	57 (51.8)		
Categorized knowledge score				
Poor	168 (72.2)	65 (27.8)	71.54	<0.0000001*
Good	132 (36.6)	229 (63.4)		

Note: \*Statistically significant.

especially high-risk groups like college students, about EC still needs to be done. Health promotion, information, and education and communication programs should address areas where poor knowledge about EC has been consistently demonstrated. The main source of information for more than half of the respondents was the school. This is different from what has been previously reported, as most earlier studies reported friends and family as the major source of information about EC among college students.<sup>13,28</sup> This finding is, however, encouraging, as the informal sources, like friends and family, have been said to be unreliable.<sup>28</sup> In addition, many respondents could have passed through educational settings where family life health-education programs were being taught in schools.

About three-quarters of the respondents had negative attitudes towards EC, with about half disapproving of its use by adolescent girls. Nearly half of the respondents also thought EC had serious side effects, about a third of them thought EC could cause birth defects, and a quarter opined that EC is an

**Table 8** Association between sociodemographic variables and usage of emergency contraception (EC) (sexually active = 221, EC users = 66)

Variable	Usage of EC among the sexually active n (%)		$\chi^2$	P-value
	Used	Never used		
Age (years)				
15–19	5 (27.8)	25 (72.2)		
20–24	23 (42.6)	49 (57.4)	4.30	0.231
25–29	33 (42.3)	63 (57.7)		
30 and above	5 (35.7)	18 (64.3)		
Sex				
Male	29 (39.7)	71 (60.3)		
Female	37 (40.7)	84 (59.3)	0.07	0.799
Marital status				
Married	10 (32.3)	36 (67.7)		
Single	56 (42.1)	119 (57.9)	1.83	0.176
Level in college				
100	11 (32.4)	41 (67.6)		
200	3 (45.5)	8 (54.5)		
300	8 (34.8)	21 (65.2)	8.16	0.148
400	8 (40.0)	20 (60.0)		
500	14 (36.6)	39 (63.4)		
600	22 (50.0)	26 (50.0)		
Categorized knowledge				
Poor	22 (19.8)	89 (80.1)	10.74	0.001*
Good	44 (40.0)	66 (60.0)		
Categorized attitude				
Negative	42 (28.4)	106 (71.6)	0.47	0.492
Positive	24 (32.9)	49 (67.1)		

Note: \*Statistically significant.

abortifacient and/or a form of abortion, while others thought that EC is an unimportant form of contraception. Thus, it is clear why the practice of EC among this target group considered to be at high risk for unwanted pregnancy is low: this is because of their poor comprehensive knowledge and attitude. This is similar to a study done among female undergraduates in Eastern Nigeria, where it was believed that increased utilization of EC is plagued with fear of infertility, anovulation, ill health, and sexually transmitted infection.<sup>31</sup> Hence, their practice of EC was low. Similar concerns have been reported by other studies,<sup>31–34</sup> and this underscores the need for proper education of the public about EC, especially addressing these common misconceptions. This is corroborated by the fact that there was a significant association between knowledge about, and attitude towards, EC: those with better knowledge had positive attitudes towards EC. Emergency contraception thus needs to be presented and positioned as an option that is safe and effective.<sup>6,7</sup>

Only about one-third (29.9%) of the sexually active respondents had ever used EC by the time of the study, and this is lower than the 35.5% previously reported by Akani et al

in the Niger Delta region of Nigeria,<sup>13</sup> but higher than what was reported from Cameroon (7.4%),<sup>28</sup> Uganda (2%),<sup>2</sup> and South Africa (4%).<sup>3</sup> The use of EC is generally low, and this confirms the fact that EC is largely underutilized worldwide and has been referred to as one of the best-kept secrets in reproductive health.<sup>2,8,9</sup> This, however, is a cause for concern, because unintended pregnancies and consequent abortions constitute serious health challenges in developing countries like Nigeria.<sup>13,15,16</sup> Viewed against the background of the fact that almost a quarter (21.5%) of the sexually active female respondents in this study had abortions, this calls for urgent action. The World Health Organization estimates that 84 million unwanted pregnancies occur annually worldwide.<sup>11</sup> In Nigeria, a study found that abortion was one of the three major causes of death.<sup>35</sup> If knowledge of EC is widespread among the high-risk group, it will impact on its uptake and thus contribute to reducing the rate of unwanted pregnancies and their consequent complications. This finding also stressed the need for continuous and sustained health-promotion and education programs targeted at youths in Nigeria, as well as making our family planning programs and services more youth-friendly.

## Conclusion and recommendations

In spite of the fairly high level of awareness, lack of comprehensive knowledge of EC, especially about appropriate timing of usage, coupled with a high level of negative attitudes toward EC translated into a very low level of usage of EC among the respondents. The reported high incidence of premarital sexual activity and poor use of EC among Nigerian undergraduates calls for EC as a second-chance approach if the incidence of unintended pregnancy and clandestine abortions are to be kept to the barest minimum. In order to reduce the gap between knowledge and utilization of emergency contraceptives, there is a need for health-education initiatives about EC targeting students and addressing specific areas of poor knowledge. Extensive campaigns through seminars, television talk shows, radio programs, school-based programs, and printed media should be employed to encourage a positive attitudinal change and improve the utilization of EC among undergraduates in Nigeria.

## Disclosure

The authors report no conflicts of interest in this work.

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