

Emergency contraceptive pills usage and its associated factors among female tertiary students in Ghana

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ABSTRACT

Background: The fear of unwanted pregnancy and sexually transmitted infections (STI) causes many to use emergency contraception pills (ECP) or morning-after pills. The use of ECP have become part of our community. This study seeks to assess the prevalence and factors associated with ECP usage.

Materials & methods: An institutional-based cross-sectional study was conducted on female students at the Kumasi Technical University in the Ashanti Region of Ghana. Data was collected from 517 respondents using a structured questionnaire. Chi-square and binary logistic regression model were used to determine the association between ECP usage and some selected variables.

Results: The prevalence rate of ECP usage among female students was 48.00% with awareness level of 98.00%. There was a significant association between ECP usage and marital status, age at first sex, ever been pregnant, STI contraction in the past, the number of lifetime sex partners, religion, and awareness levels. The logistic regression found marital status, ever-pregnant, lifetime sex partners, awareness of ECP, and ever-contracted STI as risk factors that significantly affect ECP usage among female tertiary students.

Conclusions: The prevalence of ECP usage among tertiary female students was high. There was a strong association between ECP usage and risk of STI. We therefore recommend that there should be continuous education among female students regarding the use, function, and effects of ECP.

Keywords: contraceptive pills, emergency, female students, knowledge, sexually transmitted infections

INTRODUCTION

Emergency contraception pills (ECP) are contraceptive methods used to prevent pregnancy after sexual intercourse. They are recommended for use within five days of unprotected sex but are mostly effective when taken immediately after sexual intercourse [1]. There are three types of emergency contraceptives: ECP, combined oral contraceptive pills, and copper-bearing intrauterine devices. The availability of ECP encourages women to take them rapidly after unprotected sex, maximizing their effectiveness [2].

Daily, there are more than 100 million instances of sexual intercourse worldwide, resulting in approximately three million conceptions, with 50.00% of them being unplanned and 25.00% obviously unwanted [3]. Unintended pregnancies have far-reaching consequences and are a global concern. An estimated 26.00% of pregnancies worldwide are terminated through induced abortions, both in developed and developing regions. In developing countries, out of the estimated 76 million unintended pregnancies occurring annually, 34 million results in unplanned births, 10 million ends in miscarriages,

and 32 million are terminated through induced abortion [4]. Most young women seek to avoid the distress of induced abortion, underscoring the importance of emergency contraception.

For women at high risk of acquiring HIV and not wanting to become pregnant, the choice of contraception is crucial. According to the United Nations Population Division, 49.0% of reproductive-age women use modern contraceptive methods in 2019. The third most common contraceptive method globally as well as the modern method in sub-Saharan Africa was oral contraceptives [5].

Emergency contraceptives are used to prevent pregnancy after unprotected intercourse, also known as “post-coital contraception.” They are less effective than regular contraception and are intended for occasional or emergency use, not as a regular method. The failure rate for ECP ranges from 0.20% to 3.00% [5]. In areas with a high prevalence of sexually transmitted infections (STI), hormonal contraceptive methods are frequently employed [6].

Reproductive health issues have been a global concern, particularly regarding adolescent reproductive health. Efforts

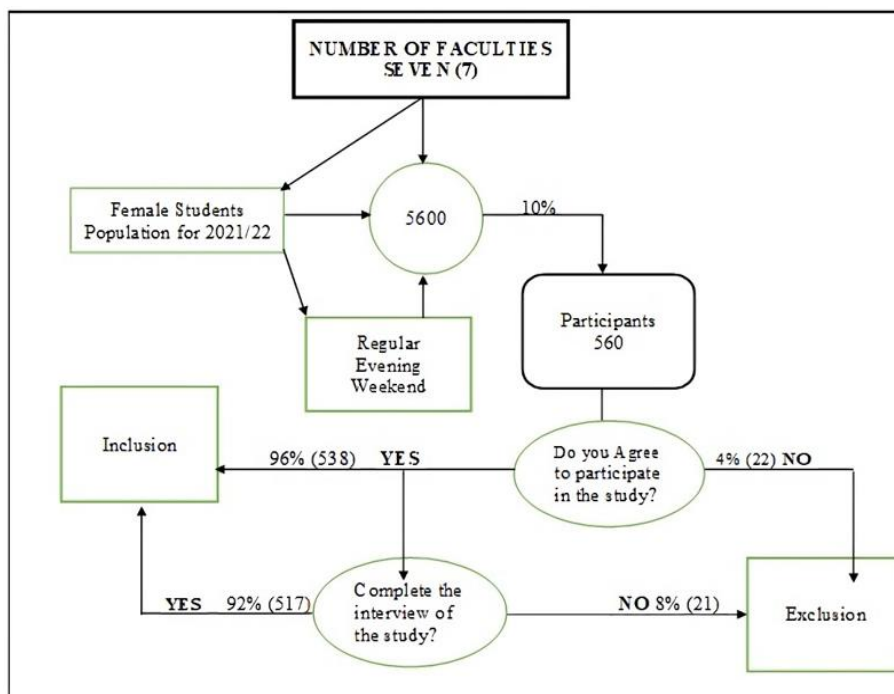


Figure 1. Schematic diagram of study design (Source: Authors' own elaboration)

to achieve the millennium development goals have highlighted these issues without achieving significant global progress. However, sustainable development goal (SDG) three underscores the importance of adolescent reproductive health research in achieving SDG objectives. Reproductive health significantly impacts young people's overall well-being as they transition into adulthood. Recent empirical evidence indicates that more than half of the global population is under the age of 25, raising concerns about risky sexual behavior [7].

Studies have raised concerns about the impact of increased access to ECP on sexual risk-taking behavior and STI among clinicians, pharmacists, and clients [8]. Questions have surfaced regarding whether emergency contraceptives may increase the risk of STI, especially among tertiary students who may have multiple sexual partners, hence the need for this study. Unintended pregnancies necessitate the efficient and effective use of emergency contraception. There is a growing concern about the potential impact of ECP on unplanned pregnancies and unsafe abortions in Ghana and sub-Saharan Africa as a whole [9]. Unplanned pregnancy poses a significant challenge to the reproductive health of young adults in developing countries [10].

Unplanned pregnancy is a major concern for young female students, as early childbearing can negatively impact their educational opportunities and future careers, often leading them to quit school. This is compounded by the stigma associated with unwanted pregnancies in many African societies, including Ghana, particularly among college and tertiary students who are not married. As a result, many individuals facing this situation may turn to ECP or resort to induced abortions under unhygienic conditions. This study aims to assess the prevalence of ECP pill use among female students and its association with STI.

MATERIALS & METHODS

Study Design & Setting

The study employed a quantitative research approach to examine contraceptive pill usage among tertiary female students. The study setting was Kumasi Technical University in the Ashanti Region of Ghana. A schematic diagram of the study has been shown in **Figure 1**.

Sampling Method, Size, & Data Collection

The study used primary data. The data was collected using a structured questionnaire. The questionnaire had four broad sections; socio-demographic characteristics, knowledge about ECP, prior experience with ECP and associated risk factors, and attitude toward ECP use.

Assessing the validity of the instrument is crucial to ensure that the data collected accurately represents what the study intends to achieve. To accomplish this, the researchers subjected the questionnaire through a rigorous process. The questionnaire was carefully developed under the guidance of the research objective and Gordor's guide to questionnaire surveys [11].

Also, expert review of the developed instrument was sorted from the dean of the school of public health, Kwame Nkrumah University of Science and Technology. Lastly, pilot testing was done, and data was analyzed to confirm that the questionnaire effectively captures the intended information. A sample of 517 participants were considered for the study. Some variables of interest included the age of the respondent, marital status, awareness of contraceptive pill usage as well as age at menarche. The purpose of the study was explained to participants and their consent was sought.

Table 1. Cross tabulation of ECP usage against some selected variables (n [%])

Variable	ECP usage		
	Yes	No	Total
Total	246 (47.60)	271 (52.40)	517 (100)
Age (years)			
Less than 20	31 (39.20)	48 (60.80)	79 (100)
20-29 years	205 (49.00)	213 (51.00)	418 (100)
30 & above	10 (50.00)	10 (50.00)	20 (100)
Awareness of ECP			
Yes	246 (48.50)	261 (51.50)	507 (100)
No	0 (0.00)	10 (100)	10 (100)
Marital status			
Single	180 (43.80)	231 (56.20)	411 (100)
Married	14 (44.70)	18 (56.30)	32 (100)
Consensual relationship	52 (70.30)	22 (29.70)	74 (100)
Age at menarche (years)			
Less than 10	2 (40.00)	3 (60.00)	5 (100)
10-12	58 (42.60)	78 (57.40)	136 (100)
13-15	143 (47.50)	158 (52.50)	301 (100)
16 & above	43 (57.30)	32 (42.70)	75 (100)
Age at first sex			
Never	0 (0.00)	4 (100)	4 (100)
Less than 10	7 (58.30)	5 (41.70)	12 (100)
10-14	134 (64.40)	74 (35.60)	208 (100)
15-19	98 (60.10)	65 (39.90)	163 (100)
20 & above	5 (3.80)	125 (96.20)	130 (100)
Have you ever been pregnant			
Yes	72 (77.40)	21 (22.60)	93 (100)
No	174 (41.00)	250 (59.00)	424 (100)
Have you ever contracted STI			
Yes	45 (80.40)	11 (19.60)	56 (100)
No	201 (43.60)	260 (56.40)	461 (100)
Lifetime sex partners			
0	0 (0.00)	4 (100)	4 (100)
1	198 (57.40)	147 (42.60)	345 (100)
2-3	28 (82.40)	6 (17.60)	34 (100)
4-6	19 (82.60)	4 (17.40)	23 (100)
7 & above	1 (0.90)	116 (99.10)	117 (100)

Data Analysis & Model Specification

Descriptive analysis was presented in tables using percentages. Also, a Chi-square test was employed to explore the association between ECP usage and some selected variables. We also fitted a logistic regression model like the one in [12], as shown in Eq (1):

$$\eta = \log\left(\frac{\tau}{1-\tau}\right) = \psi\beta + \varepsilon, \tag{1}$$

where η connects the linear function $\text{tolog}\left(\frac{\tau}{1-\tau}\right)$. We represent the probability of ECP usage with τ , ψ , and β represent the matrix of predictor variables and the vector of the regression parameters, respectively, and ε is the vector of random error terms.

Goodness of Fit Test

We used the deviance and Hosmer-Lemeshow (HL) test to assess the fitness of the stated model. HL test tells whether the observed event rate matches that of the expected event rate in a given subgroup [13]. HL test statistic can be evaluated using Eq (2):

$$G_{HL}^2 = \sum_{i=1}^{10} \frac{(o_i - e_i)^2}{e_i(1 - \frac{e_i}{n_i})} \sim \chi_8^2. \tag{2}$$

Table 2. Prior experience with ECP & associated risk factors

Factors	Frequency	Percentage
At what age did you start using ECP?		
<10	3	1.22
10-14	6	2.44
15-19	103	41.87
20-29	133	54.06
30+	1	0.41
What type of ECP do you often use?		
Lydia	144	58.54
Postinor-2	57	23.17
Levon	28	11.38
Post pills	5	2.03
Others	12	4.88
Who recommended this type for you?		
Friends	83	33.74
Family members	9	3.66
Health personnel	60	24.39
Partner	94	38.21
Do you use it anytime you have sexual intercourse?		
Yes	99	40.24
No	147	59.76
If no, what is the reason?		
Have sex during safe period	43	29.25
Partner withdraws	8	5.44
Have sex during ovulation	6	4.08
Because it affects my menstrual cycle	20	13.61
Side effects	19	12.93
Use condoms sometimes	17	11.56
Others	34	23.13
What is the main reason for you using ECP?		
Prevent pregnancy	231	93.90
Prevent STI	8	3.25
Do not Know	5	2.03
Other specify	2	0.81
What method did you or partner use to prevent contracting STI?		
Condom	281	54.35
Abstinence	96	18.57
Birth control pills	33	6.38
Other specify	107	20.70

RESULTS

Demographic Characteristics of Respondents Against ECP Usage

According to **Table 1**, almost half (47.60%) of participants have used ECP. Usage was very prevalent among those within 20-29 years (205 out of 246). This may be due to the setting of the study. Also, the majority (98.00%) of the participants were aware of ECP. Among these, 48.50% had used ECP before. ECP usage was more prevalent among consensual relationship (70.30%) and singles (43.80%). Majority of respondents (58.20%) experienced menarche at 13-15 years. Also, 40.20% of them had their first sex at age of 10-14 years and as such, their usage of ECP was high (64.40%). Also, ECP usage among those who have been pregnant before was high (77.40%). Again, ECP usage was also high (80.40%) among those who have ever contracted STI. Participants with single sex partner (57.40%) and those with two or three partners (82.40%) used ECP more as compared to those with seven and more sex partners.

Experience With ECP & Associated Risk Factors

Table 2 presents participants' experience with ECP. The results revealed that about 48.00% of the respondents have used ECP before.

Table 3. Pearson's Chi-square test of association

Variables	Chi-square value	df	p-value
Age	2.609	2	.271
Marital status	18.616	2	.001
Age at first sex	134.196	4	.000
Religion	8.070	2	.018
Awareness of ECP	9.257	1	.002
Ever been pregnant	40.476	1	.000
Lifetime partners	175.244	4	.000
Ever contracted STI	27.048	1	.000

Note. df: Degrees of freedom

Table 4. Parameter estimates for logistic regression model

Variable	B	SE	Wald	df	Sig.	E (B)
Marital status			9.846	3	.020	
Single	1.292	.504	6.578	1	.010	3.639
Consensual relationship	5.859	.602	7.324	1	.002	4.143
Ever pregnant (yes)	1.159	.377	9.439	1	.002	3.188
Lifetime sex partners			47.866	4	.000	
0	-1.038	.247	17.641	1	.000	.354
1	-1.357	.493	7.583	1	.006	.257
2-3	-1.341	.607	4.881	1	.027	.262
4-6	4.519	1.020	19.642	1	.000	3.751
Awareness of ECP (yes)	4.065	.729	6.225	1	.001	2.531
Ever contracted STI (yes)	1.339	.457	8.601	1	.003	3.817
Constant	-2.116	.581	13.266	1	.000	.121

Note. SE: Standard error; df: Degrees of freedom; & E: Exp

Almost 54.00% of the participants began ECP usage between the ages of 20-29 years. The commonly used ECP were Lydia (58.54%), Postinor-2 (23.17%), and Levon (11.38%). The results further showed that among students who used ECP, the type they used was usually recommended by their partners (33.74%) and friends (38.21%) whilst 24.00% were recommended by health personnel. This shows that these young ladies listen to their friends and partners on issues of ECP more than the health personnels. Furthermore, four out of ten of the participants used ECP frequently. The majority (93.90%) cited prevention of pregnancy as their main reason for using ECP. Engaging in sexual activities comes with its own complications, which include unwanted pregnancy as well as contracting STI. The result revealed that 10.83% of the study participants contracted STI in the past. As a result, more than half (54.35%) of the participants or their partners used condom contraceptives to prevent STI.

Prevalence of Emergency Contraception Pills Use & Associated Risk Factors

According to **Table 3**, there was a statistical association between EPC usage and some selected factors. Pearson Chi-square test revealed a significant association between ECP usage and marital status, age at first sex, ever been pregnant, lifetime sex partners, and whether the participant has contracted STI in the past ($p < 0.01$). Also, religion and awareness of ECP were found to be significantly associated with ECP usage ($p < 0.05$). Age and ECP usage were also found to be independent.

Based on **Table 4**, marital status, ever pregnant, lifetime sex partners, awareness of ECP and ever contracted STI were found as risk factors that significantly affect ECP usage among female tertiary students. The odds of a female tertiary student using ECP was 2.531 higher for those that were aware of ECP as compared to those who were not aware. Again, the chance that a female tertiary student who contracted STI in the past using

Table 5. Model fitting information & goodness of fit test

Model/test	-2 log likelihood	Chi-square	df	p-value
Model	461.3	254.2	10	.000
HL		3.394	6	.758

ECP was 3.817 higher compared with those who had not contracted STI before. The study also showed that female tertiary students who have ever been pregnant had a higher chance of using ECP as compared to those who had never been pregnant. Furthermore, the odds of a single female tertiary students using ECP was 3.639 times that of a married student. Likewise, the odds of a female tertiary student using ECP was 4.143 higher for those in consensual relationships as compared to those that were married.

Model Assessment

According to **Table 5**, there was a significant improvement in fit in the final model as compared to the null model. The Hosmer and Lemeshow test confirmed how good the model fitted the data.

DISCUSSION

The findings reveal that 48.00% of the respondents have utilized ECP previously. This is a matter of great concern, as approximately half of the female student population relies on ECP. This result is in line with the study [14], which was conducted in Ethiopia to assess the prevalence of ECP use. In our study, a vast majority (98.07%) of the respondents were aware of ECP, which is unsurprising given that the study was carried out in an academic setting. However, this awareness rate falls outside the range reported in the study [15] on ECP awareness among women of reproductive age in sub-Saharan Africa. In [15], the awareness in Ethiopia ranged from 10.10% to 93.50%. Our findings are consistent with the study [16] among female senior high students in the Volta Region of Ghana, which found that about 98.80% of them were aware of ECP. Similarly, the study [17] reported that approximately 96.15% of women of reproductive age in Kwadaso Municipality, Ghana, were aware of ECP. In contrast, the study [18], which was conducted in Kenya reported 74.00% awareness level among women. Also, the study [14] stated that only 34.10% of Ethiopian women seeking induced abortions in Eastern Tigray were aware of emergency contraceptives.

Most female student gained knowledge about ECP from health personnel and audio/visual media. This aligns with the results in [14], which also found that 40.40% of women were knowledgeable about ECP. However, their study noted that 56.30% of women in Eastern Tigray, Ethiopia, received information about ECP from health workers. Contrary, this contradicts the findings of [16], which reported that 41.60% of awareness about ECP among Ghanaian students came from mass media. In the study [18] in Nairobi, it was reported that family and friends were the primary sources of information about ECP. Interestingly, our study and that of [16] identified friends as the second most common source of ECP awareness.

The prevalence of ECP usage in our study was 47.58%, which is lower than the 76.90% reported in the study [17] conducted in Kwadaso, Ashanti Region. However, it is higher than the 33.90% usage rate among women in Denmark, Norway, and Sweden, as reported in [19]. Most females use EPs in the early years of their life.

Among the commonly used ECP is Lydia. This contradicts what the study in [15] reported, which is Postinor-2. Majority of the female students use EPS primarily for pregnancy prevention. Previous studies [16, 18, 20, 21] have also noted that emergency contraceptives are primarily used for preventing unintended pregnancies.

The study results highlight a significant association between ECP use and STI. Several factors, including marital status, history of pregnancy, lifetime number of sexual partners, religion, and awareness levels, were found to significantly affect ECP usage among female tertiary students, as confirmed by logistic regression analysis. These findings align with the study in [17], which also found a significant association between religion and ECP usage, although it contradicts their finding that marital status was not significantly associated with ECP usage.

CONCLUSIONS

The usage rate of ECP among female students stands at 48.00%. Approximately 98.00% of the respondents are aware of ECP. Over half of the respondents perceive ECP as a means of preventing early-stage abortions. Inappropriate use of ECP can lead to potential side effects such as headaches, abdominal discomfort, alterations in their menstrual cycle, or feelings of nausea. There is a correlation between the use of ECP and the incidence of STI among female tertiary students. Additionally, marital status, previous pregnancies, the number of lifetime sexual partners, awareness of ECP, and previous STI infections are significant factors that influence the utilization of ECP among female college students.

Author contributions: MAO, DN, & MFO: developed idea, designed study, run statistical analysis, & drafted first report; MAO, EKN, & AAA: reviewed literature & proofread first draft; & DN & AAA: collected data, cleaned data, & conducted data analysis. All authors have agreed with the results and conclusions.

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Ethical statement: The authors stated that the study was approved by Kumasi Technical University Research Ethics Committee. All methods were performed in accordance with the ethics and guidelines. Informed consent was obtained from all participants who took part in this study.

Declaration of interest: No conflict of interest is declared by the authors.

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