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## Factors Associated with the use of Emergency Contraception Among Female Students Aged 18 to 30 at the Bobuin Foundation School of Health Professionals: a Cross-Sectional Study

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### ABSTRACT

pregnancies following unprotected sex or contraceptive failure. This study aimed to identify the factors associated with its use among female students aged 18 to 30 at the Bobuin Foundation School of Health Professions.

Methods: A cross-sectional study was conducted from October 2024 to July 2025. Anonymized data were collected using a questionnaire administered to a sample of female students selected by systematic sampling, following informed consent. The analysis was based on descriptive statistics and multivariate binary logistic regression, with a significance level set at 5%.

Results: A total of 168 students were included, with a median age of 22.5 years (IQR: 21-25). The mean age at first sexual intercourse was  $19.11 \pm 1.95$  years. Only 14.3% had good knowledge of emergency contraception. In multivariate analysis, having previously heard of emergency contraception (aOR = 0.14; 95% CI: 0.04-0.52; p = 0.00), level of knowledge (aOR = 2.90; 95% CI: 1.05-7.97; p = 0.03), and knowledge of side effects (aOR = 0.27; 95% CI: 0.12-0.61; p = 0.00) were significantly associated with its use.

Conclusion: The low level of knowledge observed highlights the need to strengthen sexual health education interventions in university settings to improve the informed use of emergency contraception.

**Keywords :** Associated factors - emergency contraception - female students - Boboin – Douala

## INTRODUCTION

Emergency contraception (EC), also known as postcoital contraception, is an essential method for preventing unintended pregnancies following unprotected or inadequately protected sexual intercourse. It primarily includes emergency contraceptive pills containing levonorgestrel or ulipristal acetate, as well as the copper intrauterine device (IUD) [1]. According to the World Health Organization (WHO), EC can prevent more than 95% of pregnancies if used within five days of sexual intercourse, with maximum effectiveness when administered early [2].

Unwanted pregnancies remain a major public health problem worldwide. It is estimated that approximately 121 million unwanted pregnancies occur each year, of which 73.3 million end in abortion nearly 61% of all cases [3]. Globally, nearly 46% of the 208 million pregnancies that occur each year are unplanned, with a particularly high proportion in sub-Saharan Africa, where approximately 14 million such cases are recorded [4]. These pregnancies are associated with numerous factors, including limited knowledge of contraception, socioeconomic constraints, contraceptive failure, sexual violence, and certain demographic factors [5]. Their consequences include unsafe abortions, maternal morbidity and mortality, psychological disorders, malnutrition, and vertical transmission of HIV [6,7]. In sub-Saharan Africa, these risks are exacerbated, with a significant impact on the health and well-being of women and their families [5].

Young women, particularly college students, represent a particularly vulnerable group due to often irregular sexual activity and inconsistent use of contraceptive methods [8]. However, within this population, students in paramedical programs occupy a unique position. Because of their training, they are expected to have a deeper understanding of reproductive health and, ultimately, to play a key role in community health education. Nevertheless, several studies suggest that possessing theoretical knowledge does not automatically translate into appropriate contraceptive practices, thereby exposing these students to risks similar to or even comparable with those of their non-medical peers.

In Cameroon, unplanned pregnancies have significant consequences, including disruption of schooling, social stigma, recourse to high-risk clandestine abortions, and complications that can lead to maternal morbidity and mortality. Due to the restrictive nature of abortion legislation, the true extent of these practices remains difficult to estimate [8,9]. Although some studies have explored the determinants of modern contraceptive use, particularly in Yaoundé [10], as well as knowledge, attitudes, and practices regarding emergency contraception among female students in Dschang [8], data specific to female students in paramedical training remain limited.

In this context, it seems relevant to explore the use of emergency contraception among a population of female health students, whose behaviors may influence not only their own

reproductive health but also their future professional practices. Thus, the present study aimed to identify the factors associated with the use of emergency contraception among female students aged 18 to 30 at the Bobuin Foundation School of Health Personnel.

## METHODS

### Study Design

An analytical cross-sectional study was conducted to identify factors associated with the use of emergency contraception (EC) among female students.

### Study Setting and Population

The study took place at the Bobuin Foundation School for Health Personnel Training (EFPSFB), located in the Bangue Health District, Douala 5th Arrondissement, Littoral Region (Cameroon). It was conducted between March and September 2025, with data collection taking place from July to September 2025. The study population consisted of female students aged 18 to 30 who were enrolled during the 2024-2025 academic year, were sexually active, and had provided informed consent. Systematic sampling was used. Students who had not yet become sexually active or who had withdrawn their consent were excluded.

### Data Collection and Variables

Data were collected using a structured questionnaire that had been pre-tested in a pilot study. The variables collected included:

- (i) sociodemographic characteristics (age, field of study, educational level, marital status, age at first sexual intercourse);
- (ii) knowledge regarding emergency contraception;
- (iii) attitudes and practices related to emergency contraception.

Data collection was conducted by the principal investigator, assisted by a trained interviewer. The data were entered using CS Pro version 7.5.

### Sample Size

The minimum sample size was calculated using a prevalence of 7.4% from a previous study conducted in Cameroon, with a 95% confidence interval and a margin of error of 5%, resulting in a minimum sample size of 105 participants.

### Data Analysis

The data were analyzed using IBM SPSS version 23. Quantitative variables were summarized using the median and interquartile range (age) or the mean and standard deviation (age at first sexual intercourse). Qualitative variables were presented as counts and proportions.

A bivariate analysis was first conducted to identify variables associated with emergency contraception use. Variables with a p-value < 0.20 in the bivariate analysis, as well as those deemed clinically relevant or identified in the literature, were included in the multivariate binary logistic regression model. The results were expressed as adjusted odds ratios (aOR) with their 95% confidence intervals. The

threshold for statistical significance was set at  $p < 0.05$ .

### **Ethical Considerations**

The study was approved by the Littoral Regional Ethics Committee for Human Health Research (No. 68/2025/CE/CRERSH-LITTORAL, dated July 2, 2025). Informed consent was obtained from all participants. Data confidentiality and anonymity were ensured throughout the study, in accordance with the principles of the Declaration of Helsinki (2013).

## **RESULTS**

### **Sociodemographic Characteristics**

This study included 168 female students with a median age of 22.5 years and an interquartile range of 21 to 25 years. The mean age at first sexual intercourse was  $19.11 \pm 1.95$  years. These participants were primarily enrolled in paramedical programs, were mostly single, and were Christian (Table 1).

### **Knowledge of Emergency Contraception and Side Effects**

The results indicate that 14.3% of respondents demonstrated good knowledge of emergency contraception, highlighting the need for educational initiatives to improve young women's knowledge. More than half of the students were aware of adverse effects, with menstrual disorders (46.1%) and headaches (27.8%) being the most common, highlighting the importance of raising awareness about these effects (Table 2).

### **Attitudes and Practices**

The female students showed a strong interest in emergency contraception, with 78% of them saying they would recommend it in the event of rape and 94% wanting information about it to be included in school curricula, although less than a quarter had concerns about side effects; nevertheless, 77.4% would recommend it to other women. According to the data, 44.6% of the female students have used emergency contraception, primarily to prevent pregnancy after unprotected sex. Pills containing ulipristal acetate and levonorgestrel were used by 6.7% and 93.3% of female students, respectively, with 85.3% having used them multiple times since the beginning of the year (Table 3).

### **Factors Associated with the Use of Emergency Contraception**

The bivariate analysis shows that age is significantly associated with the use of emergency contraception (OR = 0.90; 95% CI: 0.81–0.99;  $p = 0.04$ ), suggesting that as age increases, the use of emergency contraception decreases. However, after adjustment, this association disappears (aOR = 0.93; 95% CI: 0.84–1.03;  $p = 0.26$ ), indicating that age is not an independent factor. Having previously heard of emergency contraception appears to be a major protective factor. Female students who had previously heard of this method were significantly less likely to use EC, both in the unadjusted analysis (OR = 0.10; 95% CI: 0.03–0.37;  $p = 0.00$ ) and after adjustment (OR<sub>a</sub> = 0.14; 95% CI: 0.04–0.52;  $p = 0.00$ ), reflecting the robustness and independence of this association.

Regarding the level of knowledge about emergency contraception, no significant association was observed in the bivariate analysis ( $p = 0.10$ ). However, after adjustment, this variable became significantly associated ( $OR_a = 2.90$ ; 95% CI: 1.05–7.97;  $p = 0.03$ ), indicating that good knowledge increases the likelihood of EC use. Finally, knowledge of the adverse effects of EC is strongly associated with a decreased likelihood of EC use in both bivariate and multivariate analyses (Table 4).

## DISCUSSION

This study aimed to identify factors associated with the use of EC among female students aged 18 to 30 at EFPSFB.

The median age of the participants was 22.5 years, with an interquartile range of 21 to 25 years; the majority fell within the 18- to 25-year-old age group. A similar study conducted in the municipality of Moshi, in the Kilimanjaro region of Tanzania [11], also found a median age of 22 years. This consistency may be explained by the fact that both studies were conducted in university settings. However, the observed difference in the predominant age groups could be related to educational contexts and the terms of access to higher education.

The average age at first sexual intercourse was  $19.11 \pm 1.95$  years, higher than that reported by Meguize et al. [12] as well as by other Cameroonian studies [13,14]. This difference could be explained by the specific nature of our population, which consisted of female students

who are generally older and follow a structured academic path.

The students came from various paramedical fields: general nursing assistants (7.14%), State-Certified Nurses (27.98%), midwives (23.81%), medical laboratory technicians (5.36%), medical imaging technicians (13.10%), pharmaceutical technicians (14.29%), and dental technicians (8.33%). This diversity of fields reflects the structure of the educational offerings at paramedical schools and suggests that exposure to reproductive health content varies depending on the program. Furthermore, the majority of respondents were single (87.50%), and Christianity was the predominant religion (98.21%). These sociodemographic characteristics are generally comparable to those reported by Ng'unda A et al. [11], in which 98.4% of participants were single and 69.4% were Christian. However, a notable difference was observed regarding fields of study, as that study focused primarily on students in medical school (53.8%), laboratory sciences (34.1%), and physical therapy (12.1%), unlike our exclusively paramedical population. These discrepancies can be explained by contextual differences, including geographic diversity, educational systems, and the academic profiles of the populations studied. In particular, the fact that our study was conducted at a paramedical training school could influence not only the level of knowledge but also perceptions and practices regarding emergency contraception. Indeed, educational content, clinical exposure, and future professional responsibilities differ across programs, which may influence the

understanding of concepts related to reproductive health.

Only 14.3% of the participants had good knowledge of emergency contraception, a result lower than that reported by Deressa et al. [15]. This low proportion highlights a lack of information despite the participants' educational level. However, as some studies suggest, knowledge tends to improve with age and exposure to information [16].

Regarding attitudes, a significant proportion of the students wanted to recommend emergency contraception in cases of rape and to integrate education about it into academic curricula. These results are higher than those observed in South Africa [17]. However, 31% of the participants expressed reservations related to side effects, which is consistent with observations made in Bamenda [18]. This reflects persistent concerns regarding the safety of the method, despite an overall favorable attitude.

The prevalence of emergency contraception use was 44.6%, lower than that reported by Ako Takang et al. [18] and Alhassan et al. [19]. The main reason for use was to prevent pregnancy after unprotected intercourse, consistent with the findings of Alhassan et al. [19]. This high rate of use reflects a real need for fertility control among female students, as suggested by Barbian et al. [20].

Levonorgestrel was the most commonly used method (93.3%), which is consistent with the literature [21]. This prevalence could be

explained by its availability, affordability, and widespread recognition.

A key finding of this study is that 85.3% of users had used EC multiple times. This repeated use raises important clinical implications. On the one hand, it may indicate a reliance on emergency contraception as the primary method, which is not recommended. On the other hand, it may reflect a lack of access to or adherence to regular contraceptive methods. This situation exposes users to an increased risk of contraceptive failure and underscores the need to strengthen contraceptive education and access to modern methods. As some studies suggest, repeated use of EC is often associated with gaps in contraceptive planning [22].

The multivariate analysis identified several factors associated with EC use.

Having previously heard of emergency contraception appears to be a protective factor, which may seem counterintuitive. One possible explanation is that exposure to information does not guarantee appropriate use. Indeed, the information received may be incomplete, inaccurate, or influenced by misconceptions, leading to a negative perception of emergency contraception. Furthermore, some informed women may prefer regular contraceptive methods, thereby reducing their reliance on EC. This finding differs from that of Palermo et al. [23], where use increased with educational level. This discrepancy underscores the importance of the quality of information rather than its mere availability. Furthermore, in the African context,

limited awareness and sociocultural barriers continue to hinder the use of EC [24].

Overall knowledge about EC was positively associated with its use, which is consistent with studies conducted in Cameroon and Ghana [8,19]. This confirms that adequate knowledge promotes appropriate use. Furthermore, knowledge plays a mediating role between information sources and the intention to use EC [25].

Conversely, awareness of adverse effects was associated with a decrease in the use of emergency contraception. Contrary to a simplistic interpretation, this result does not mean that information protects against use, but rather suggests that the perception of side effects can generate fears and deter use. Several studies have shown that fears related to infertility, hormonal effects, or social judgment constitute major barriers [26]. Thus, even when adverse effects are known, they may be exaggerated or misinterpreted, leading to reluctance to use emergency contraception. Furthermore, Kongnyuy et al. [9] have shown that insufficient or erroneous knowledge can lead to negative attitudes and limit use.

These results highlight the need to provide clear, accurate, and reassuring information about emergency contraception, emphasizing its safety and mechanism of action, in order to reduce negative perceptions and promote appropriate use.

**Limitation:** For the assessment of knowledge about emergency contraception, each participant provided only one answer per question. Several factors often in combination explain the observed variations in knowledge: the heterogeneity of training received, educational level and clinical experience, the quality of information sources, sociocultural and religious beliefs, personal attitudes, and response biases.

**Conclusion:** Our study of these female students reveals that their first sexual intercourse occurred, on average, before the age of 20. Fewer than 15 percent of them demonstrated a sufficient level of knowledge. Having heard of emergency contraception, the level of knowledge, and awareness of side effects were found to be significantly associated with the use of emergency contraception. It therefore appears essential to strengthen sexual health education programs in universities, with the aim of promoting an informed and responsible use of emergency contraception.

### **What Is Known About This Topic**

- The proportion of women who had heard of emergency contraception ranges from 2% in Chad to 66% in Colombia, and the proportion of sexually active women who had used it ranges from 0.04% in Chad to 12% in Colombia;
- A later age at first sexual intercourse, good knowledge, and a positive attitude are significantly associated with the use of emergency contraception;

- Living with both parents, not living with one's mother, an inability to discuss sexuality with peers, the practice of anal intercourse, and a lack of knowledge about injectable contraceptive methods are factors that prevent the use of modern contraceptive methods.

### What does this study contribute?

- The average age at first sexual intercourse was  $19.11 \pm 1.95$  years;
- A low level of accurate knowledge about emergency contraception;
- The prevalence of emergency contraception use in this study was 44.6%;
- Knowledge of adverse effects was strongly associated with a lower likelihood of using emergency contraception.

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### Authors' Contributions

**Study design:** Bernardin Jeff Tsimi Mala, Jodrelle Momo Mehegui. **Data collection:** Jodrelle Momo Mehegui. **Data analysis and interpretation:** Bernardin Jeff Tsimi Mala, Kelly Ambassa Edoa. **Manuscript drafting:** Bernardin Jeff Tsimi Mala, Kelly Ambassa Edoa, Aïssa Soonoung. **Critical review of the manuscript for significant intellectual content:** Bernardin Jeff Tsimi Mala, Kelly Ambassa Edoa. **Approval of the final version of the manuscript for publication:** Bernardin Jeff Tsimi Mala, Kelly Ambassa Edoa, Aïssa Soonoung.

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**Table 1:** Distribution of Participants by Marital Status, Religion, and Field of Study

| Variables                          | Frequencies<br>(N=168) | Percentage (%) | 95% CI       |
|------------------------------------|------------------------|----------------|--------------|
| <b>Marital Status</b>              |                        |                |              |
| Single                             | 147                    | 87.5           | 82.1 - 92.3  |
| Married                            | 21                     | 12.5           | 7.7 - 17.9   |
| <b>Religion</b>                    |                        |                |              |
| Christian                          | 165                    | 98.2           | 95.8 - 100.0 |
| Muslim                             | 3                      | 1.8            | 0.0 - 4.2    |
| <b>Fields of Study</b>             |                        |                |              |
| General Nursing Assistant          | 12                     | 7.1            | 3.6 - 11.3   |
| State-Certified Nurses             | 47                     | 28.0           | 20.8 - 34.5  |
| Midwives                           | 40                     | 23.8           | 17.9 - 29.8  |
| Medical Laboratory Technicians     | 9                      | 5.4            | 2.4 - 8.9    |
| Medical Imaging Technicians        | 22                     | 13.1           | 8.3 - 18.5   |
| Dental and Oral Health Technicians | 14                     | 8.3            | 4.2 - 12.5   |
| Pharmaceutical Technicians         | 24                     | 14.3           | 8.9 - 20.2   |

**95% CI:** 95% confidence interval

**Table 2:** Distribution of female students by level of knowledge and known side effects of emergency contraception

| Emergency contraception          | Frequencies (N=168) | Percentage (%) | 95% CI      |
|----------------------------------|---------------------|----------------|-------------|
| <b>Levels of knowledge</b>       |                     |                |             |
| No knowledge                     | 144                 | 85.7           | 80.4 - 90.5 |
| Good knowledge                   | 24                  | 14.3           | 9.5 - 19.6  |
| <b>Knowledge of side effects</b> |                     |                |             |
| Yes                              | 115                 | 68.5           | 61.3 - 75.6 |
| No                               | 53                  | 31.5           | 24.4 - 38.7 |
| <b>Known side effects</b>        |                     |                |             |
| Headaches                        | 32                  | 27.8           | 20.0 - 36.5 |

|                      |    |      |             |
|----------------------|----|------|-------------|
| Lower abdominal pain | 5  | 4.3  | 0.9 - 8.7   |
| Fatigue              | 3  | 2.6  | 0.0 - 6.1   |
| Nausea and vomiting  | 6  | 5.2  | 1.7 - 9.6   |
| Weight gain          | 4  | 3.5  | 0.9 - 7.0   |
| Breast tenderness    | 5  | 4.3  | 0.9 - 8.7   |
| Menstrual disorders  | 53 | 46.1 | 36.5 - 55.6 |
| Dizziness            | 7  | 6.1  | 1.7 - 10.4  |

**Table 3:** Participants' Attitudes and Practices Regarding Emergency Contraception

| Emergency contraception (EC)                                                 | Frequencies<br>(N=168) | Percentage<br>(%) | 95% CI      |
|------------------------------------------------------------------------------|------------------------|-------------------|-------------|
| <b>Attitudes toward EC</b>                                                   |                        |                   |             |
| <b>Have ever wanted to learn more about EC</b>                               |                        |                   |             |
| Yes                                                                          | 131                    | 78.0              | 72.0 - 84.5 |
| No                                                                           | 37                     | 22.0              | 15.5 - 28.0 |
| <b>Desire to obtain information about EC</b>                                 |                        |                   |             |
| Yes                                                                          | 158                    | 94.0              | 90.5 - 97.6 |
| No                                                                           | 10                     | 6.0               | 2.4 - 9.5   |
| <b>Reluctance to use EC due to fear of side effects</b>                      |                        |                   |             |
| Yes                                                                          | 52                     | 31.0              | 23.2 - 38.1 |
| No                                                                           | 116                    | 69.0              | 61.9 - 76.8 |
| <b>Recommendation to other women to use emergency contraception</b>          |                        |                   |             |
| Yes                                                                          | 130                    | 77.4              | 70.8 - 83.9 |
| No                                                                           | 38                     | 22.6              | 16.1 - 29.2 |
| <b>Practices regarding EC</b>                                                |                        |                   |             |
| <b>Have you ever used EC?</b>                                                |                        |                   |             |
| Yes                                                                          | 75                     | 44.6              | 36.9 - 51.8 |
| No                                                                           | 93                     | 55.4              | 48.2 - 63.1 |
| <b>Reason for using EC</b>                                                   |                        |                   |             |
| To prevent a potential pregnancy                                             | 68                     | 90.7              | 84.0 - 96.0 |
| After unprotected sex                                                        |                        |                   |             |
| Out of curiosity                                                             | 7                      | 9.3               | 4.0 - 16.0  |
| <b>Type of EC used</b>                                                       |                        |                   |             |
| Contraceptive pill containing ulipristal acetate                             | 5                      | 6.7               | 1.3 - 12.0  |
| Contraceptive pill containing levonorgestrel                                 | 70                     | 93.3              | 88.0 - 98.7 |
| <b>Number of times this EC has been used since the beginning of the year</b> |                        |                   |             |
| Only once                                                                    | 11                     | 14.7              | 8.0 - 22.7  |
| Several times                                                                | 64                     | 85.3              | 77.3 - 92.0 |

**Table 4:** Factors Associated with the Use of Emergency Contraception: Bivariate and Multivariate Analyses of Determinants.

| Variables                    | OR (95%CI)         | p-value | aOR (95%CI)      | p-value |
|------------------------------|--------------------|---------|------------------|---------|
| Age                          | 0.90 (0.81 - 0.99) | 0.04    | 0.93 (0.84-1.04) | 0.26    |
| Having heard of EC           | 0.10 (0.03 - 0.37) | 0.00    | 0.14 (0.04-0.52) | 0.00    |
| Levels of knowledge about EC | 2.17 (0.85 - 5.55) | 0.10    | 2.90 (1.05-7.97) | 0.03    |
| Knowledge of side effects    | 0.24 (0.11 - 0.50) | 0.00    | 0.27 (0.12-0.61) | 0.00    |

**OR: odds ratio**

**aOR : adjusted odds ratio**

#### CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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