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FACTORS ASSOCIATED WITH EMERGENCY CONTRACEPTIVES USE AMONG REPRODUCTIVE AGE WOMEN IN TWO TERTIARY INSTITUTIONS IN THE GREATER ACCRA REGION

BY

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DECLARATION

DECLARATION BY CANDIDATE

I hereby declare that except for references to work of other researchers, which have been referenced accordingly, this original dissertation is a product of my own research carried out under supervision in accordance with regulations of the School of Research and Graduate Studies, University of Ghana. I further declare that this dissertation has neither in whole nor in part been presented for another degree elsewhere and that I am exclusively accountable for any errors in this work.

Signature……. Date….July 27, 2022….

DECLARATION BY SUPERVISORS

We declare that the practical work and presentation of this dissertation were supervised by us in accordance with guidelines on supervision of thesis laid down by the University of Ghana.

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COCP Combined Oral Contraceptive Pills

CU Central University

DMPA Depot-Medroxyprogesterone Acetate

EC Emergency Contraceptive

GHS Ghana Health Service

GSS Ghana Statistical Service

IUD Intrauterine Contraceptive Device

LH Luteinizing Hormone

LNG Levonorgestrel

NET-EN Norethisterone Enanthate

POP Progestin Only Pill

UG University of Ghana

UPA Ulipristal Acetate

WHO World Health Organization

DEFINITON OF TERMS

Emergency contraceptives: Specific types of contraceptives that are used within 72 h after sexual intercourse without protection to prevent pregnancy

Utilization of ECS: The use of emergency contraceptives

Abuse of EC: Misuse of emergency contraceptives

ABSTRACT

Introduction: Emergency contraception (EC) is a method of preventing unwanted/unplanned pregnancy after unprotected sexual intercourse, mismanagement of regular contraception or non-use of contraception. This will help curb the increasing incidence of unsafe abortions in developing countries. The national data on contraceptives in Ghana shows a high level of knowledge of EC among the people but its usage is very low. Factors including the socio-economic, socio-demographic, and sexual and reproductive history affecting the use are yet to be fully understood.

This study sought to assess the factors influencing the use of EC among female students of the University of Ghana.

Method: The study was an cross-sectional study involving 473 female students from the University of Ghana and Central University. The participants were selected randomly for the study from various halls in both schools. Self-administered structured questionnaire was used to collect the data from the study participants. Chi Square test was used to determine the statistical association between emergency contraceptive use and independent variables of interest. SPSS version 25 software was used for the analysis. P-value ≤ 0.05 was considered statistically significant. Descriptive statistics was done for each variable. The association between the dependent (EC use) and inde

alyzed using logistic regressions. The result of the logistic regression analysis was reported as odds ratios (OR) at 95 % CI.

Results: The mean age of the reproductive age women was 23.3 years ± 4.4. Majority of the participants were sexually active (63.7%). The mean age for the first sexual intercourse among the participants was 19.5 years ± 3.1. About 77.4% of the study participants had heard of EC. Friends (77.6%) were the main sources of information about EC. Most of the students correctly used EC and only few misused it (in terms of stipulated time of use and the required doses taken). The study showed that availability of EC on campus (P=0.006), safety of EC (P<0.001), comfortability of EC use (P<0.001), heard of EC (P<0.001**)** sexually active (P<0.001) and effectiveness of EC (P<0.001**)** were all statistically associated with EC use. Age, marital status, religion, tribe, college, sexually active, number of men slept with in your entire life, ever had abortion, any concern about EC, working along schooling were all statistically significant with EC use.

Conclusion: This study showed that the socio-demographic, sexual and reproductive history and socio-economic status were all significantly associated with EC use.

CHAPTER ONE

INTRODUCTION

1.1 Background

Emergency contraceptive is a type of recent contraceptive method used to avert pregnancy after sexual intercourse arising from unprotected sexual intercourse, contraceptive failure, incorrect use of contraceptives, and sexual assault without the use of contraceptive (WHO, 2018). Emergency contraceptives (EC) are able to prevent up to over 95% of pregnancies when taken appropriately - within 5 days after sexual intercourse (WHO, 2018). Varied forms of EC exist. The main methods of emergency contraception are copper-bearing intrauterine devices (IUDs) and emergency contraceptive pills (ECPs) (WHO, 2018). The ECPs recommended by the WHO (2018) is ulipristal acetate (UPA), levonorgestrel, or combined oral contraceptive (COC) containing a combination of ethinyl estradiol and levonorgestrel.

ECPs work by delaying ovulation while Copper IUDs prevent fertilization by causing chemical changes in the sperm and egg before they meet. Copper-bearing IUDs for emergency contraception should be inserted within five days after unprotected sex. It however usually recommended for women who want to a start long-acting and highly effective method of contraception as it is 99% effective. ECs, when used appropriately, could prevent the risk of unplanned pregnancy and further reduce unsafe abortions (Summers, 2013). Other forms of ECPs may also contain Progestin alone or a combination of progestin and oestrogen. Some common brands in Ghana may include "Lydia", "N-tablet" and "Postinor 2".

In developing countries, the percentage of young women with unintended pregnancies and unmet need for contraception is increasing (Akintade Pengpid, & Peltzer, 2011). In South Africa, it was revealed that 49.8% of the female University students had heard of EC before the study but only a

few (29.5%) students said it could be used up to 72 hours after unprotected sexual intercourse. About 61.8% recommended the use of EC (Hoque, & Ghuman, 2012).

In Nigeria, it was revealed that although 27.8% of the female University students had good knowledge of emergency contraception, the majority of them (87.2%) had never used emergency contraception. Majority of the students who had ever used emergency contraception (85.7%) used it incorrectly, for more than 72 hours after sex (Babatunde, Ibirongbe, Omede, Babatunde, Durowade, Salaudeen, & Akande, 2016). Similarly, in Nigeria, Arisukwu et al. (2020) also revealed that only 14.5% of the female University students had good knowledge of emergency contraceptives although 52.8% of the sample had heard of them. A recent study in South Ethiopia by Shiferaw, Gashaw, and Tesso (2016) also showed that only 24.1% of the female University students had good knowledge about emergency contraceptives. Only 68(36.2%) had used emergency contraceptive methods.

In Ghana, Addo and Tagoe-Darko (2009) observed that 51.4 % of the students had heard of ECs and only 4.2% had ever used EC but 73.9% wished it were provided on campus. An earlier study by Baiden, Awini, and Clerk (2002) also revealed that 43.2 % of the University students had heard of modern EC methods where only 11.3 % correctly indicated the commended time of usage after unprotected sexual intercourse.

Another study in Ghana by Darteh and Doku (2016) also revealed that 57% of the University students had ever heard of EC and 36 % had ever used EC but the proportion of use and abuse, and the factors (socio-economic, socio-demographic factors, and sexual and reproductive history) associated with EC use in Ghana are yet to be fully understood among female students of the University of Ghana and Central University. There is a paucity of data on the proportion of use and abuse, and the factors associated with EC use hence the interest was provoked to assess the

factors influencing the use of EC among female students of the University of Ghana and Central University

1.2 Problem statement

The national data on contraceptives in Ghana shows a high level of knowledge among the people but its usage is very low (Ghana Statistical Service (GSS), Ghana Health Service (GHS), & ICF Macro, 2009). Many female students admitted to the university are possibly sexually active, and therefore not left out of the use and unmet need for emergency contraceptives. In Ghana, earlier studies have shown that female university students had heard of EC although only a few appropriately endorsed that emergency contraceptive pills (ECPs) are to be taken within time after unprotected sexual intercourse (Addo & Tagoe-Darko, 2009; Baiden et al., 2002). Again, several studies on the knowledge, attitudes and practices on the use of EC in South Africa, Ethiopia, and Nigeria have shown some positive responses on EC knowledge level but usage of EC seems to be poor (Shiferaw et al., 2016; Babatunde et al., 2016; Hoque, & Ghuman, 2012).

ECs play a very significant role in preventing unwanted pregnancies, especially in several African countries where abortion is forbidden and unsafe, contributing about 9% of all maternal deaths. (Abortion in Africa, 2018); impliedly, the low usage or misuse of emergency contraceptives will result in uncomfortable consequences. Reasons for low usage of EC may be attributed to EC, not being 100% safe, may cause infertility, irregular vaginal bleeding, and menstrual cycle, weight gain and fatigue (WHO, 2018; Addo &Tagoe-Darko, 2009). The efficacy of the EC can be affected if not used appropriately, hence desired results may not be achieved. Unwanted pregnancies may result leading to abortions which may be unsafe.

Many factors may influence why a female may use, or abuse emergency contraceptives. They may be educational background, socioeconomic, age-related, family educational background. A person's socioeconomic status may determine whether they can afford the price of EC for use or not. Also, one's educational status may influence their knowledge of the use of EC. People who have a lower educational status are more likely to abuse EC as compared to those who have a higher educational level. For the younger female who have parents with a relatively lower level of education, they are less likely to benefit from sexual health education of which contraception may be part.

A study in Ghana by Darteh and Doku (2016) revealed that 57% of the participants had ever heard of EC and 36 % had ever used EC but the proportion of use and misuse, and the factors associated with EC use are yet to be fully understood due to paucity of data. The use of EC among female students from the University of Ghana and the Central University may be associated with socio-economic, socio-demographic factors, and sexual and reproductive history. The proportion of use may affect the efficacy of the EC or have some detrimental effects on the students, hence provoking the interest to assess the factors influencing the use of EC among female students of the University of Ghana and Central University.

1.3 Significance of the study

EC also known as postcoital contraception or morning-after pills is a method used by females to prevent unintended or unwanted pregnancy after unprotected sexual intercourse. According to WHO (2018), contraceptive failure, incorrect use of contraceptives, and sexual assault without the use of contraceptives may warrant the use of EC. According to Union et al. (2014), timely access to EC is an important component of the contraceptive services provided to women to ensure their

reproductive health and rights. In Ghana, it has been revealed that most female students had enough knowledge on EC, but usage was very poor although ECs are cost-effective.

So, this study is to bring out the varied factors affecting the use of EC for the health institutions to scale up timely access to quality emergency contraceptive methods in universities. This will also prompt school authorities, the Ghana Health Service, and the Ministry of Health to put up measures such as education and communication campaigns to support the University about sexual and reproductive health services and emergency contraception usage.

1.4 Conceptual Framework of the Factors Associated with EC Use Among Reproductive Age women

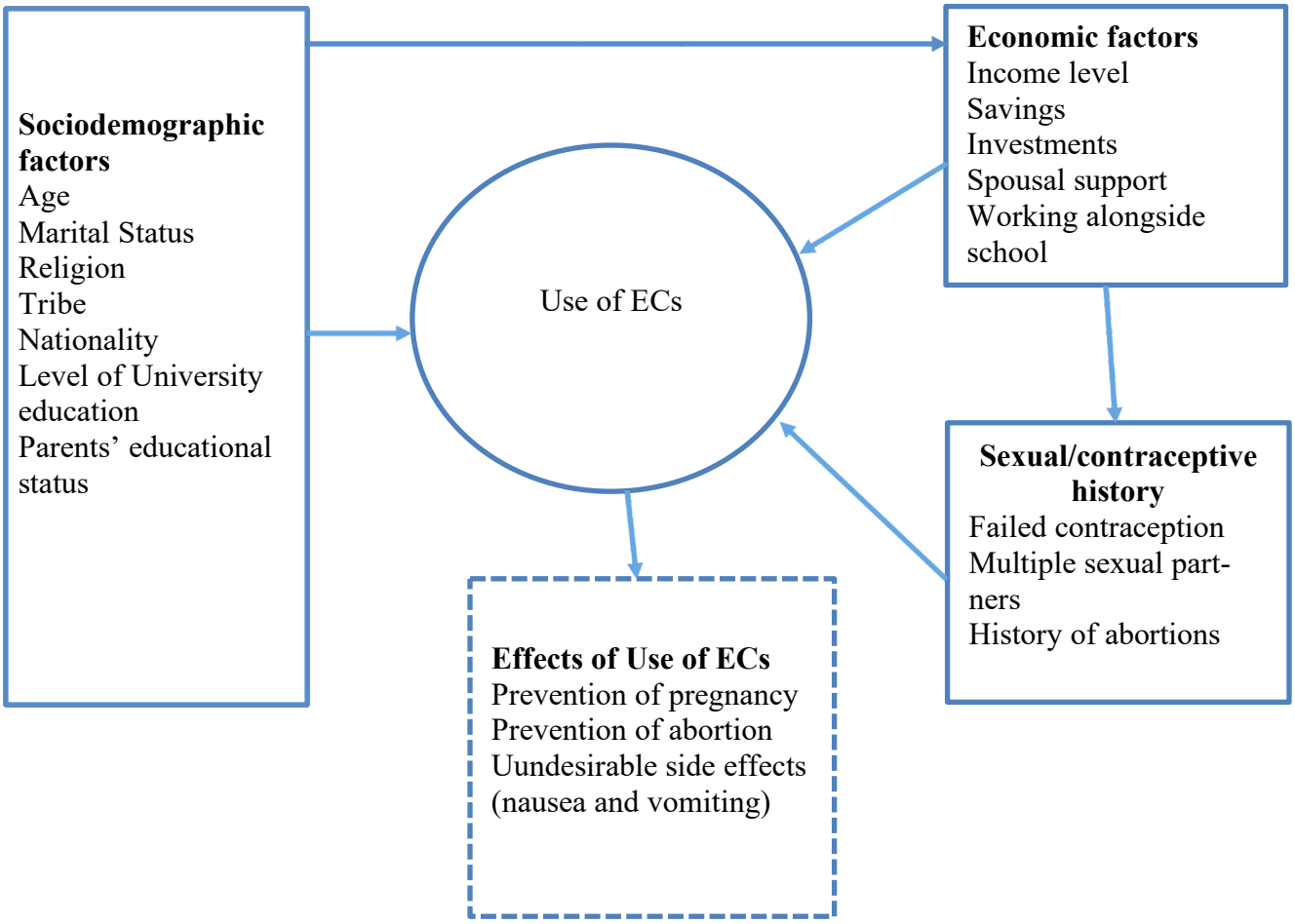

Figure 1 Conceptual framework on EC use

From Figure 1 above, several factors come into play and are considered when the issue of emergency contraceptive use is raised. These factors generally include sociodemographic, economic, as well the individual's sexual and reproductive history. Under these general factors include other sub-considerations such as age, religion tribe, low or high income, undesirable side effects of ECs, previous failed ECs, and multiple sex partners among others.

It is also noted the factors that affect the use of EC may influence one another. For instance, the level of income and one's culture may affect the number of sexual partners a person may keep. Also, one's educational background could influence the failure of ECs.

The effects of EC use include prevention of unwanted pregnancies and abortions and undesirable effects such as nausea and vomiting

1.5 Research questions

- What is the knowledge level of EC among female students of the University of Ghana and Central University?
- What is the proportion of EC use among female students of the University of Ghana and the Central University?
- What are the sociodemographic, sexual/contraceptive and economic factors influencing the use of EC among female students of the University of Ghana and Central University?

1.6 General objective

To assess the factors influencing the use of EC among female students of reproductive age at the University of Ghana and Central University.

1.7 Specific Objectives

- To assess the knowledge level of EC among female students of reproductive age at the University of Ghana and Central University.
- To determine the proportion of EC use among female students of reproductive age at the University of Ghana and Central University.
- To assess the sociodemographic, sexual/contraceptive and economic factors influencing the use of EC among female students of reproductive age at the University of Ghana and Central University.

CHAPTER TWO

LITERATURE REVIEW

2.1 Definition of EC

It is a type of recent contraceptive method used to avert pregnancy after sexual intercourse arising from unprotected sexual intercourse, contraceptive failure, incorrect use of contraceptives, and sexual assault without the use of contraceptive (WHO, 2018).

2.2 Methods of emergency contraception

According to WHO (2018), there are 4 methods of emergency contraception which include:

- Emergency contraceptive pills (ECPs) containing ulipristal acetate (UPA).
- ECPs containing levonorgestrel (LNG).
- Combined oral contraceptive (COC) pills.
- Copper-bearing intrauterine devices.

2.3 Dosage recommendation

WHO (2018) has recommended the following drugs below to be used as emergency contraception:

- ECPs with UPA, taken as a single dose of 30 mg.
- ECPs with LNG taken as a single dose of 1.5 mg, or LNG taken in 2 doses of 0.75 mg each, 12 hours apart.
- COCs, taken as a split dose, one dose of 100 μg of ethinyl estradiol plus 0.50 mg of LNG, followed by a second dose of 100 μg of ethinyl estradiol plus 0.50 mg of LNG 12 hours later (Yuzpe method).

2.4 Mechanism of Action

The mechanism of levonorgestrel ECPs have been broadly studied. A study has shown that levonorgestrel ECPs can prevent luteinizing hormone (LH) surge if taken before LH surge has begun. This disrupts the process of ovulation thereby making it ineffective (Noe, Croxatto, & Maria Salvatierra, 2011). There are no effects if the pill is taken after implantation has occurred (Zhang et al., 2009). The treatment does not affect an existing pregnancy or surge the rate of miscarriage (Zhang et al., 2009).

ECP with UPA prevents ovulation before and after the LH surge has started (but before LH reaches its peak), suspending follicular rupture for a minimum of 5 days (Brache, Cochon, Jesam, Maldonado, Salvatierra, Levy, Gainer, & Croxatto, 2010). The effectiveness of ECP with UPA as against ECP with levonorgestrel is because the former is effective after the beginning of LH surge but levonorgestrel is not (Levy et al., 2014). There is also no increased risk of miscarriage among women who took ECP with UPA when already pregnant or became pregnant due to UPA failure (Levy et al., 2014). There is also no risk of developing birth defects among babies in utero (Levy, Jager, Kapp, & Abitbol, 2014).

Although the exact action of a copper intra-uterine device (IUD) is not known, it is known that the ions released from the copper may inhibit the function of sperms in the uterine cavity (Gemzell-Danielsson, Berger, & Lalitkumar, 2013). The copper-bearing IUD prevents fertilization by causing a biochemical transformation in the sperm and egg before they meet (WHO, 2018).

Combined ECP prevents the fertilized egg from embedding itself to the uterine wall (Mittal, 2014). Other actions that have been hypothesized include suspending or subduing ovulation, interfering with corpus luteum function, and making fluctuations in the endometrium that inhibits implantation (Gemzell-Danielsson, Rabe, & Cheng, 2013).

2.5 Situations ECs are used

According to WHO (2018), the following occurrences in which emergency contraception can be used following sexual intercourse are:

- No use of contraceptives.
- When the woman was not protected by an active contraceptive method during Sexual assault.
- When there is a potential contraceptive failure, from improper or incorrect use, such as*:*
    - Condom breakage, slippage, or incorrect use.
    - 3 or more successively missed combined oral contraceptive pills
    - More than 3 hours late from the normal time of intake of the progestogen-only pill (minipill), or more than 27 hours after the previous pill
    - More than 12 hours late from the normal time of intake of the desogestrel-containing pill (0.75 mg) or more than 36 hours after the previous pill
    - More than 2 weeks late for the norethisterone enanthate (NET-EN) progestogen-only injection
    - More than 4 weeks late for the depot-medroxyprogesterone acetate (DMPA) progestogen-only injection;
    - More than 7 days late for the combined injectable contraceptive (CIC);
    - Dislodgment, breakage, tearing, or early removal of a diaphragm or cervical cap;
    - Failed withdrawal (e.g., ejaculation in the vagina or on external genitalia)
    - Failure of a spermicide tablet or film to melt before intercourse

- Inaccuracy of the abstinence period, or failure to abstain or use a barrier method on the fertile days of the cycle when using fertility awareness-based methods
- Removal of an intrauterine contraceptive device (IUD) or hormonal contraceptive implant.

2.6 Side effects of EC

The side effects associated with ECPs are nausea and vomiting, infertility, slight irregular vaginal bleeding, and weight gain and fatigue (WHO, 2018; Addo &Tagoe-Darko, 2009).

2.7 Knowledge about EC

Unintended pregnancy and HIV among the youth and particularly women are due to the global insufficient knowledge in sexual and reproductive health among the youth. There are both positive and negative aspects of these sexual behaviours. The positive behaviours include the use of condoms and abstinence, and the negative practices include unplanned pregnancy and the transmission of sexually transmitted diseases (STDs) among the youth.

Globally, over the years, numerous studies have identified unsafe abortion as an important trial associated with women's reproductive health (Akani, Enyindah, & Babatunde, 2008; Family Health International 2005). Therefore, awareness of contraceptives and their utilization are critical pointers of sexual health among the youth (Grindlay, Dako-Gyeke, Ngo, Eva, Gobah, Reiger, Chandrasekaran, & Blanchard, 2018).

Arisukwu, Igbolekwu, Efugha, Nwogu, Osueke and Oyeyipo. (2020) revealed the majority (78.6%) of the university students (girls-only school) indicated that EC pills should be taken before unprotected sexual intercourse whereas only a few (15.0%) correctly indicated that it should be used within 72 hours of unprotected sexual intercourse. Furthermore, on the awareness of emer-

gency contraception, most of the students from the (girls-only school) indicated male/female condoms (79.1%) as an example of EC followed by pills (Postinor) (20.0%) and IUD (0.9%). It was therefore recommended that awareness programs on the use of emergency contraceptives should be increased among adolescents. This study employed a mixed method to examine the knowledge and perceptions such that more descriptive and diversified opinions were registered, it however focused on only adolescents, leaving the experiences of older female groups.

In Turkey, Golbasi, Erenel, and Tugut (2012) in their study on the knowledge and opinions of university students about contraceptive methods and emergency contraception (EC) from two different universities in the 2007-2008 semester revealed that only 29% of the students have heard about the idea of EC and 79.8% defined it correctly. Most of the students (46.8%) stated that contraceptive pills were used for emergency contraception (EC). While the study involved 1680 participants – a relatively large sample size, with the advantage of producing more reliable results, it failed to explore how the students utilize the knowledge they have at hand

Also, Warri and Gurmu (2018) carried out a study to assess the knowledge, attitude, and practice of progestin-only emergency contraceptives on 270 female students of Jimma Training College in Ethiopia. It was revealed that most of the students (n=131, 48.6%) correctly identified the recommended time of EC use (to be used within 72 hours after sex). Also, more than half of the students (n=140, 51.8%) indicated that one tablet two times 12 hours apart should be taken as the recommended dose. It was further revealed that trusting each other was the main reason for using EC (39.93%) followed by an increase in sexual pleasure (20.46%) with the least response being others (0.33%).

Similar study by Kgosiemang and Blitz (2018) was carried out among female students at the Botswana University with the aim of assessing the knowledge, attitude, and practices of emergency

contraception. This descriptive study involved 371 female students. Data was collected using self-administered questionnaires and analysis done using SPSS version 20 and excel. Results showed that most of the students (n=141, 38.2%) correctly identified the recommended time limit for taking the 'morning-after pills' after sexual intercourse (i.e., within 72 hours after sex), 20.3% the number of doses (i.e., two doses) and 17.9% the time interval between doses (i.e., 12 hours apart). In situations where EC should be taken, majority indicated ruptured condoms during intercourse (62.2%), followed by forced sex or rape (50.8%), failure of contraceptives (20.8%) with the least being missed contraceptive pills (7.8%). On the effectiveness of preventing pregnancy, 52.3% indicated they did not know, 26.7% indicated it was effective and 19.4% indicated it to be highly effective. Only 0.5% indicated that it was not effective at all.

Another study by Mamabolo (2017) was conducted to assess the knowledge of and barriers against emergency contraception among secondary school learners. A total of 469 learners aged 14 - 18 years were used for the study. Self-administered questionnaires were used for the data collection. Results showed that most of the students (34.5%) correctly identified the recommended time of EC use (to be used up to 72 hours after sex). On the effectiveness of preventing pregnancy, the majority (48.8%) indicated it was 100% effective.

In Ghana, Manortey, Duah and Baiden (2016) conducted a study at the Takoradi Polytechnic and findings revealed that the majority (74.7%) of the participants were aware of emergency contraceptive awareness, but usage was low (28.4%). Nonetheless, it was revealed that after unprotected sex, those who knew about EC lacked a detailed understanding of the content, efficiency, and timing schedule. This study despite filling the knowledge gap, had some of the information gathered subject to recall bias as most respondents do not keep written records of such activities

Moreover, Morgan, Keesbury and Speizer (2014) carried out a study among university students in South India and it was revealed that there was a low level of awareness of EC pills in about one-third of university students. More so, more than three-fourth of the students thought EC pills should be provided with adequate guidance and advice by health care professionals.

2.8 Sources of information about EC

Rana and Ranjitkar (2018) in their descriptive cross-sectional study involving 174 participants on the knowledge, attitudes, and practices of EC among reproductive-aged women revealed that television (92.63%) and radio (69.47%) were the main sources of information on EC.

Abiodun (2015) conducted a cross-sectional study among 1,328 sexually active, never-married female university students to determine the correlates of uptake of emergency contraception among university students. A self-administered questionnaire was used to collect data from the students. On the sources of information about EC, it was revealed that friends (32.9%) were the main source of information about EC. This was followed by the media (20.0%), health workers (13.1%), parents/guardians (12.1%), school (9.6%), and place of worship (3.1%) with the least being others (2.2%). This study has an advantage of producing more accurate averages in the results due to the results due to the larger sample size, yet it could have also employed mixed method to explore the lived experiences of the never-married women

Isa, Ibrahim, Kullima, and Bako (2016) on the awareness and utilization of emergency contraception among female undergraduates in a Nigerian University. A descriptive cross-sectional study was used and 450 female undergraduate students were recruited for the study. It was revealed that the most common source of initial information about EC was health personnel (50.1%), followed by friends (36.3%) with school (3.7%), and parents (1.4%) being the least. Levonorgestrel only

pills (Postinor-2R) and combined pills (Yuzpe) were the most frequently used EC accounting for 43.1% and 40.3% respectively.

Nyambura, Kiarie, Orang'o, and Okube (2017) conducted an institution-based cross-sectional, quantitative study among 383 female undergraduate students at the University of Nairobi to determine the knowledge and use of Emergency Contraception. Data were collected using self-administered questionnaires. On the sources of information about EC among the female students who have heard of EC, mass media was the principal source of information (82.2%) followed by peers (54.4%). Other major sources of information included lecturers (21.1%), books/magazines (9.1%), and the internet (8.5%), and health workers (7.3%). Most of the respondents (51.7%) reported that they had found the said sources of information informative.

Davis, Sarasveni, Krishnan, Bhat and Kodali (2020) also carried out a cross-sectional study among 758 college students of Thiruvarur district, Tamil Nadu, India. Data were collected by administering a pretested semi-structured questionnaire. The commonest source of information was the internet (49.7%) followed by textbooks (37.7%), television (35%), doctors (30.6%), friends (29%), hospital (26.8%) with radio (5.5%) being the least source. This study explored the knowledge and attitudes about the use of EC among not just female students but male students also. The use of convenient sampling in the study however questions the representativeness of the results and makes it challenging to replicate the study

2.9 Use of EC and factors associated with it

According to Larsson and Stanfors (2014), the majority of the proportion of women who have ever used EC in the UK is 61%, followed by Sweden (59%) with Germany being the least with a proportion of 13%. Usage of EC is about 20 percent in most countries. In countries where EC pills are reachable without a prescription, the majority of the females appear to prefer to obtain their

EC pills straight from the pharmacy and a lesser amount (10%) receive a prescription first. While this study found that education affects usage of ECs, it did not categorize the levels of education and determine to what extent each of levels inform the use of EC among married women

Abraha, Welu, Berwo, Gebretsadik, Tsegay, Gebreheat and Gebremariam (2019) also carried out a study to assess the knowledge of and utilization of emergency contraceptives and its associated factors among women seeking induced abortion in public hospitals, Eastern Tigray, Ethiopia, 2017. 380 women were used for the study and a systematic random sampling technique was used for data collection. Findings revealed that majority of the women (n=174, 47.2%) indicated that EC prevents pregnancy but only few (n=15, 4.0%) indicated it could prevent sexually transmitted infections (STIs). Also, most of the women (n=216, 58.5%) did not know the time limit to take EC, nonetheless, a major proportion (n=75, 20.3%) were also able to indicate that EC should be taken within 72 hours after sex. When asked of the situations EC could be used, more than half of the women indicated they did not know (n=199, 53.9%) but most of them also correctly answered that it could be used when raped (n=116, 31.4%) followed by condom breakage (n=111, 30.1%), missing pills (n=22, 6%) and no contraceptive accounting for 10.3% (n=38). Questionnaires used for data collection during the study were translated to the local language and then back to English language for consistency but a mixed method would have better used to described the lived experiences of the women seeking abortion.

In West Showa, Ethiopia, a cross-sectional survey was conducted on 350 female students of Ambo University and it was revealed that only a few (n=74, 36.5%) of the participants had utilized EC. Pills (n=55, 74.3%) were the most commonly used EC (Lenjisa, Getachew, Tola, Kifle, Getachew, Bekele, & Woldu, 2013).

Another study in Nigeria also revealed that the majority of the female University students (87.2%) had never used emergency contraception. Majority of the students who had ever used emergency contraception (85.7%) used it incorrectly, for more than 72 hours after sex (Babatunde et al., 2016). Morgan et al. (2014**)** also found out in Nigeria that a major percentage of current EC users used EC more than once a month. This shows the need for increased knowledge of the dynamics of repeat use, and the importance of ensuring availability and access to effective, short-term, woman-controlled barriers and hormonal methods.

In Ethiopia, Yemaneh, Sayih, Niguse, Lema and Tsegaye (2018) revealed that 82.97% of the students indicated utilizing EC pills after having sexual intercourse. Among those with unprotected sex, 95% utilized EC pills. Sexually active female undergraduate students who had unprotected sexual intercourse utilized increased levels of EC pills.

Another study was conducted among 582 female University students in South Africa by Hoque and Ghuman (2012). This study was a cross sectional study making it easy to conduct, yet employed a multi-stage sampling technique which may be challenged with high level of subjectivity It was revealed that 49.8% of the female University students had heard of EC before the study but the utilization of EC among the sexually active students was relatively low (21.2%). 61.8% recommended the use of EC. In addition, a South African cross-sectional study conducted among sexually active women in Western Cape Province attending public health clinics reported that only 13% of the women ever used EC (Myer, Mlobeli, Cooper, Smith, & Morroni, 2007).

In Ghana, Addo and Tagoe-Darko (2009) observed that 51.4 % of the students had heard of ECs but only 4.2% had ever used EC. 73.9% wished it were provided on campus. An earlier study by Baiden et al. (2002) also revealed that 43.2 % of the University students had heard of modern EC methods where only 11.3 % correctly indicated the commended time of usage after unprotected

sexual intercourse. Manortey et al. (2016) in Ghana also revealed that 67.0% had used EC pills more than once a year and that usage did not match a high level of ECP knowledge (74.7%) in this student population. Abuse and frequent use of EC could be prevented by educating young adults on emergency contraception with importance on content, efficacy, and proper timing of use through multiple channels of communication.

In southern Ethiopia, a study by Shiferaw et al. (2016) also showed that only 68 (36.2%) had used EC methods. It was further revealed that female students' knowledge about EC [AOR: 3.24; 95 % CI 1.32, 7.98], age at first sexual intercourse (i.e., ≥20 years) [AOR: 4.04; 95 % CI 1.72-9.52], history of pregnancy [AOR: 3.12; 95 % CI 1.34-7.24] and previous use of regular contraceptives [AOR: 5.01; 95 % CI 2.23-11.27] were significant predictors of EC utilization.

A cross-sectional study at Wachamo University in Ethiopia revealed from bivariate logistics regression that age, marital status, religion, residence before joining University (rural or urban), current residence (on or off the campus), mother's educational status, father's educational status, knowledge and attitude towards emergency contraceptive had statistically significant ($p<0.005$) association (factors) with EC use. Additionally, the multivariate analysis also revealed that female students who have good knowledge, and ever got married were more likely to use EC than their counterparts ($P<0.05$) (Hailemariam, Tesfaye, Melese, Alemayehu, Kenore, Lelamo, Saul, & Seifu, 2015).

Sendo and Fikadu (2021), in an institution-based study involving 271 female ALKAN Health Science Business Technology College, Addis Ababa campus students to assess the practice of emergency contraception and associated factors among the female students revealed that factors significantly associated with the use of emergency contraception were user being sexually active

[AOR=124.0, 95%CI=33.4-61.1)], age less than or equal to 20 years [AOR=5.7, 95%CI=2.35-3.91)], and being single [AOR=6.2, 95%CI= 1.91-20.0)].

Tolossa, Meshesha and Abajobir (2013) also revealed that emergency contraceptive use was more among students whose age at menarche was 14years and above (AOR = 1.42, (95% CI: 1.23 - 2.14) than the earlier age. Although this study applied random sampling to select students from the various departments and campuses, which may be not representative enough, an adequate sample size of 776 students partook in the study.

Teye (2017) reported that about 97% of female participants from the University of Ghana were aware of a variety of modern contraceptives but only 16% utilized them. The socio-demographic determining factors of the usage of modern contraceptive by females such as the level of education, place of residence, and status of job significantly influenced modern contraceptive use.

The above listed studies together with several other studies have contributed immensely to the body of knowledge with regards to knowledge and practices of the use of EC. However, not many of these studies have been done in Ghana across more than one university to seek varied answers on factors that affect EC use. This current study seeks to fill in that gap and add to the body of knowledge

CHAPTER THREE

METHODS

3.1 Study Design

This study employed an institution-based cross-sectional design for data collection and analysis for two selected institutions (University of Ghana, Legon, and the Central University). The quantitative method was used in gathering the information for the study. An analytical study was used to assess the associations between the exposures and outcome, and determine the factors associated with EC use.

3.2 Study sites

This study was carried out at the University of Ghana, Legon, and the Central University, Miotso, close to Dawhenya, off the Accra - Aflao Road, both in the Greater Accra Region, of Ghana.

The University of Ghana was founded in 1948 as the University of College of the Gold Coast. The campus of the University lies about 13 kilometers northeast of Accra, the capital of Ghana, at an altitude of between 300 and 400 feet. From the main University gate on Dodowa Road, University Avenue extends to Commonwealth Hall on Legon hill. Along it is grouped other halls of residence, departments, lecture theatres, and laboratories. Midway, an open space - the University Square - with an ornamental pool is overlooked by the Balme Library (named after David Mowbray Balme, the first Principal of the University College). Across the Accra-Dodowa Road from the main University gate is a police station, and behind it is a university hospital. The College of Health Sciences has its administration as well as the medical, dental, allied health sciences schools located at the Korle-Bu Teaching Hospital, which is about three kilometres west of the centre of Accra, and about 18 kilometres from the main University campus. The current student population is about 53, 643 (representing male=27, 543 and female=26,100).

The academic life of the University of Ghana is centered on colleges, faculties, institutes/ schools, and centres of research/learning. In the college of health sciences, there is a medical school, dental school, school of allied health sciences, school of public health, Noguchi Memorial Institute for Medical Research, and school of nursing. In the college of agriculture and consumer sciences, there is the school of agriculture and agricultural research centres. Under faculties, there are arts, law, science, social studies, business school, and engineering sciences. In the research institute too, we have the following: Institute of African studies, institute of adult education, institute of statistical, social and economic research, Noguchi Memorial Institute for Medical Research, Regional Institute for Population Studies. In the centres of research/learning, we have the following: Regional Training Centre for Archivists, Language Centre, Centre for Tropical Clinical Pharmacology and Therapeutics, Legon Centre for International Affairs (LECIA), the International Centre for African Music and Dance, Centre for Gender Studies and Advocacy, Centre for Migration Studies and Research http://www.ug.edu.gh/. The university of Ghana has 16 halls/hostels on campus, out of which only one is an all-female hall (Volta Hall). The university has a students' clinic on which serves only students and attends to minor to moderate ailments of students. The students' clinic makes referrals, when necessary to the University Hospital which is just close by. Family planning and contraceptive services are offered at the University Hospital and not the Students Clinic (www.ug.edu.gh).

Central University is an educational ingenuity of the International Central Gospel Church (ICGC). It started as a short-term Pastoral training institute in October 1988 by ICGC. It was later merged, in June 1991 under the name, Central Bible College. Once more, the name was changed to Central Christian College In 1993. The College later advanced its programmes to the baccalaureate level.

The College later expanded its programmes in line with national aspirations to include an integrated and practice-oriented business school, named Central Business School. The campus is stunningly landscaped and provides a good environment for academic and spiritual quests. The University's administrative offices, lecture theatres, Johnson Kanda and VPY Gadzekpo Buildings, Trinity Hall, University Library, Central Students Plaza, Hostels, and other academic and residential complexes are all located in the Miotso Campus. Currently, the university had a total student population of 5211 students, comprising 2629 males and 2582 females. The school has 7 schools for undergraduates which include the central business school, the school of pharmacy, the school of engineering and technology, the school of medicine and health sciences, the faculty of law, and the faculty of arts and social sciences. Postgraduate programmes offered at the Central university school of graduate studies include MPhil theology, and economics, MA religious studies and teaching English, MBA finance, marketing general management, and human resource management, MSC marketing research, and executive master's in leadership and governancehttp://www.central.edu.gh/. The Central University has five main halls/hostels, three of which are all female hostels. The University has a students' clinic which attends to the mild to moderate ailments of students. The Prampram Polyclinic is a nearby facility (about 15 minutes' drive away) which offers family planning services and reproductive health services (www.central.edu.gh)

3.3 Study Variables

3.3.1 Dependent variable (outcome variable)

Use of emergency contraceptives

3.3.2 Independent variables (group exposure variables)

- Socio-demographic characteristics

- Socio-economic
- Sexual and reproductive history.

3.3.3 Operational Definitions of Variables

Table 1. Operational Definitions of Variables

Variable	Operational Definition
Dependent Variable	
EC Use	The intake of oral or IUD emergency contraceptive to prevent unwanted pregnancies
Independent Variables	
Socio-demographic characteristics	Age, marital status, nationality, tribe, religion, educational level, parent s' educational background of reproductive age women
Socio-economic factors	Average income, savings, and investments of reproductive age women
Sexual and reproductive history	Whether participants are sexually active or not, their age of first sexual intercourse, number of sexual partners, history of abortion and history of pregnancy of reproductive age women

3.4 Study participants

Reproductive age women from the University of Ghana and the Central University from level 100 to level 400 as well as post-graduate students aged 16- 49years were recruited for the study.

3.5 Inclusion criteria

- Female University students aged 16-49 years.
- Students must be officially registered in the schools

3.6 Exclusion criteria

- Students who were on admission at the time of the study.
- Students who were writing exams at the time of data collection.

3.7 Study Population

All female students in their reproductive ages from the University of Ghana and the Central University were used as the study population. The population of University of Ghana students is 53,643 while the student population of Central University is about 5,211. The study targeted female students from various faculties and colleges of health sciences, humanities, education, and basic and applied sciences.

3.8 Sample size

The sample size was calculated using Cochran's formula with a known study prevalence.

$\mathbf{n_o}=\frac{Z2pq}{(e)^2}$

$n_{o=}$ desired sample size

e=is the desired level of precision (i.e., the margin of error) =5%

P= Prevalence of EC use= 40% as described in the works of Amalba, Mogre, Appiah and Mumuni (2014).

q=1-p

$\mathbf{n_o}=\frac{Z2pq}{(e)^2}$

$\mathbf{n_o}=\frac{1.96x1.96x0.4x0.6}{(0.05)^2}$

$\mathbf{n_o}$=369 participants

Asssumig a non-response rate of 30%

=(30% x 369) + 369

=479.7

=480 participants

Using the share ratio formula to calculate the number of participants to be recruited from both Universities

RS1=In1 x (no ÷ NT)

RS1=Sample ratio for UG

RS2= Sample ratio for Central University

In1= Sample size for UG

In2=Sample size for Central University.

no= Desired sample participants

NT= Total population

For RS1 (UG)

=26100 x (480÷28682)

=437

For RS2 (Central University)

=2582 x (480÷28682)

=43

Overall, a total of 431 and 42 participants were recruited from UG and Central University (CU) respectively.

3.10 Data Quality Control

3.9.1 Training of research assistants

Research assistants were recruited and trained for 5 days to assist with data collection. They were taken through the standardized questionnaires to prepare them to assist with questionnaire administration, proper handling of questionnaires to prevent damage, and the data collection procedures.

3.9.2 Pre-testing and review of instruments/tools

Pre-testing of the standardized questionnaire was done at the University of Professional Studies, with 20 female students. After this, the questionnaires were assessed for reliability and validity, and the items were reviewed to produce the final questionnaire (Appendix II). In addition, peculiar challenges in the pilot study were noted and addressed before the actual data collection.

Participation in the study was made voluntary and participants were given the freedom to withdraw from the study at any time. Informed consent was sought from the participants before their inclusion in the study. Supervision during the data collection period was done by the principal investigator (s). The questionnaires were later checked for completeness and consistency. The questionnaires were numbered to ensure correct entry of data, and errors that were perceived were checked before collection of the questionnaires.

3.10 Sampling Procedure

This study involved the multistage sampling technique. Simple random sampling technique was used for the selection of participating tertiary institutions. The first stage involved selecting two universities for the study. The names of all 42 universities (both private and government tertiary universities in Greater Accra Region) were written on a piece of paper and then put into a basket. Then the lottery method was used to select randomly, two universities to be used for the study. The two universities selected were Central University and the University of Ghana.

The second stage involved selecting halls. With a total of 15 halls in UG (including one all male hall, one all-female hall and 13 mixed halls), the all-male hall was omitted from the sampling frame since the sex of interest was female only. The sampling frame for the selection of hall was then left with 14. 50% (7) halls were selected by simple random method.

The third stage involved proportioning the sample size of UG (431) according to number of students in the hall. The next stage included selection of rooms in the hall using systematic sampling and then finally the selection students in the rooms. These last three stages could not be effectively carried out because most had left their halls of residence for their homes. The halls were largely disserted due to the limitations on movement and physical meetings imposed by the government and the university management, due to Covid-19 pandemic. In addition, the University Teachers

Association of Ghana had also embarked on a strike action around the same time. Study participants were therefore selected from the seven(7) selected halls moving from one hall to the other until, the sample size for UG was reached.

At CU, with a total number of halls being 5 (3 all-female and 2 all-male hall). All three female halls were selected leaving the male halls. (Males were of no interest in the study). Since all halls had the same size and number of students, proportionate sampling was used to share the sample size equally among the three halls of residence. Each hall therefore had 14 samples to be taken from it. Again, due to Covid-19 restrictions, systematic sampling of the rooms and the selection of students by simple random method could not effectively materialise. Fourteen students were therefore conveniently chosen from the halls

In both universities, their eligibility (age) was ascertained before they were introduced to the study. The purpose of the study was explained to them, and they were allowed to opt-out if they felt busy or did not want to participate.

Covid-19 protocols were strictly ensured by making sure all participants were in facemasks. The questionnaire excluded an identity of the participants (i.e., no name, no index number). The data was structured based on the objectives and reviewed literature.

3.11 Ethical Consideration

The following ethics component in the research were considered and applied:

- **Ethical clearance**

Ethical clearance (Appendix III) for this study was acquired from the Ethics Review Committee of the Ghana Health Service (**Protocol Identification Number: GHS-ERC: 073/04/21**) before

data collection started. All measures outlined in the GHS-ERC Guidelines to mitigate the spread Covid-19 were strictly adhered to.

- **Informed consent**

Information about the study and the consent form were made clear. Participants were asked to decide to participate in the study (through signing or thumb printing) after the purpose and nature of the study have been wholly explained to them. This explanation included possible risks and benefits of the study. The participants were made aware that they could withdraw from the study anytime without reason including data already given out. Participants were assured of confidentiality. It was explained that the results were for academic purposes and their identities will not be disclosed.

- **Anonymity**

  Anonymity was ensured by excluding a "name column" on the questionnaire. By so doing, no participant's name was collected, hence they were kept anonymous throughout the study

- **Confidentiality**

Confidentiality was totally assured in this study. All information were used for the purpose of the study only. Questionnaires were kept in a cabinet and locked up after they had been completed by

participants. Researcher's computer was only accessible by the researcher through her secret password. The researcher and the supervisor for this study were the only possible persons authorized to have access to the data.

- **Right to Withdraw**

Participation in this study was voluntary, and participants could decide to withdraw from the study at any time without being penalized or having to give reason

- **Benefits or Risks**

This study was safe to the participants as it posed no threats to life. Data collection was only required participants to respond to questions on a paper. It did not involve any invasive procedure. The study allowed the participants to contribute towards building the knowledge base through research. There were no compensations for participating in this study.

Due to current occurrences, there was a general potential risk of COVID-19 to the participant and the research team. These measures were ensured to reduce the risk of transmission:

- Face masks were worn by both participants and the research team
- Social distancing was maintained at the time of filling the questionnaire
- Participants were required to fill the questions on COVID-19 as seen on the first page of the questionnaire sheet

3.12Data collection procedure

Students were selected from their halls. The selected students were informed about the purpose of the study, the importance of their participation, and verbal consent/written consent were ensured. Based on their willingness to participate in the study, the questionnaires were distributed out by the researcher and her trained research assistants to the participants to complete. The questionnaires were taken soon after they have been completed

3.13 Data collection tool

Self-administered questionnaires (Appendix I) were used for the study. The questionnaires were developed in English. The questionnaires were set based on the study-specific objectives. The questionnaires were divided into five parts: knowledge about EC, socio-demographic characteristics, socio-economic factors, sexual and reproductive history, and use of emergency contraceptive methods.

3.14 Data Management

The variables were entered into the data view in SPSS version 25 and the data collected were entered into the data view. In the variable view, the variables were coded using numbers. Data were cleaned and edited before entering into the software.

Descriptive statistics were used to describe the knowledge and proportion of EC use and the results were presented in frequencies and percentages. The mean age and age at first sexual intercourse were calculated. Results from the descriptive study were presented in tables and charts. Univariate variables were analysed using percentages and frequencies. Bivariate and multivariate analyses were done using binary logistics regression. Pearson's chi-square at 95% confidence interval (CI) was used to determine the association between some selected variables and EC use. Logistics re-

gression was used to determine the factors (socio-demographic, sexual history, and socio-economic history) associated with EC use. P-value ≤ 0.05 was considered statistically significant

CHAPTER FOUR

RESULTS

4.1 Socio-demographic Characteristics of Reproductive Age Women

Table 2 shows the results of the socio-demographic characteristics of the study. The mean age of the reproductive age women was 23.3 years ± 4.5 with the highest age range being 20-24 years followed by 15-19 years. Most of these women were single (n=386, 81.6%) and currently at level 100 (n=176, 39.6%). Concerning the tribe, 47.9% (n=210), indicating the majority of the students were Akans with the least number being Northerners (n=62, 14.2%). Most of the students were Charismatics (n=197, 41.6%) followed by Pentecostals (n=126, 26.6%) with the least religion being Moslems (n=17, 3.6%). All the participants were Ghanaians (n=473, 100.0%). About 29.6% (n=122) forming majority of the students were from the College of humanities, followed by students in College of Health Sciences (n=113, 27.4%), students from College of Education (100, 24.3%), and students from Basic and Applied Sciences (n=77, 18.7%). The highest level of mother's education was Secondary/Vocational accounting for 41.1% (n=174) and that of the father's education was Tertiary accounting for 51.7% (n=215).

Table 2. Socio-demographic characteristics of the Reproductive Age women

Characteristics	Frequency(N)	Percent (%)
Age in years		
15-19	102	22.5
20-24	189	41.7
25-29	61	13.5
30-34	75	16.6
35-39	26	5.7
Marital status		
Single	386	81.6
Married	71	15.0
Co-habiting	16	3.4
Current level		
100	176	39.6
200	69	15.5
300	65	13.7
400	87	19.6
Postgraduate	47	10.6
Tribe		
Akan	210	47.9
Ga/Adangbe	68	15.5
Ewe	98	22.4
Northerner	62	14.2
Religion		
Catholics	66	14.0
Charismatic	197	41.6
Pentecostal	126	26.6
Moslem	17	3.6
Others	67	14.2
Nationality		
Ghanaian	473	100.0
College		
Health sciences	113	27.4
Humanities	122	29.6
Education	100	24.3
Basic and applied science	77	18.7
Mother's education		
None	31	7.3
Primary/JHS	120	28.3
Secondary/Vocational	174	41.1
Tertiary	99	23.3
Father's education		
None	15	3.6
Primary/JHS	36	8.6

Secondary/Vocational	150	36.1
Tertiary	215	51.7

4.2 Sexual and reproductive history of Reproductive Age Women

Table 3 presents the sexual and reproductive history of the participants. Most of the participants were sexually active (n=260, 63.7%) whereas only a few were not sexually active (n=148, 36.3%). The mean age for the first sexual intercourse among the participants was 19.5 years ± 3.1. Most of the participants had their first sexual intercourse at the age range of 20-24 (n=91, 37.3 %) followed by 15-19 (n=89, 36.5%) with the least age range being 10-14 (n=30, 12.3%) and the primary reason for engaging in sexual intercourse was love (n=186, 63.3%), followed by desire (n=32, 10.9%), peer pressure (n=28, 9.5%), married (n=23, 7.8%), money and gifts (n=13, 4.4%) and 2.4% (n=7) and 1.7% (n=5) accounted for the least reason for rape and others respectively. More than half of the participants (n=376, 94.0%) were not pregnant at the time of filling the questionnaire and only 6.0% (n=24) were pregnant. Only 24.9% (n=103) had ever become pregnant but the majority (n=311, 75.1%) had never become pregnant before. In terms of how the pregnancy occurred, the majority (n=99, 74.4%) responded that pregnancy was not planned. 34.4% (n=62) indicated to have had pregnancies aborted whereas the majority (n=118, 65.6%) indicated not to have aborted any pregnancy.

Table 3. Sexual and Reproductive History of Reproductive Age Women

Characteristics	Frequency (N)	Percent (%)
Sexually active		
Yes	260	63.7
No	148	36.3
Age of first sexual intercourse		
10-14	30	12.3
15-19	89	36.5
20-24	91	37.3
25-29	34	13.9
Primary reason for engaging in sexual intercourse		
Love	186	63.3
Desire	32	10.9
Peer pressure	28	9.5
Married	23	7.8
Money and gifts	13	4.4
Rape	7	2.4
Others	5	1.7
Men you have had sex within your whole lifetime		
1-2	93	32.5
3-4	80	28.0
5-6	68	23.8
>6	45	15.6
Number of Sexual Partners you are keeping now		
1-2	205	80.1
3-4	24	9.4
5-6	27	10.5
Pregnancy		
Yes	24	6.0
No	376	94.0
Ever been pregnant		
Yes	103	24.9
No	311	75.1
How pregnancy occurred		
Planned	34	25.6
Not planned	99	74.4
Any pregnancy aborted		
Yes	62	34.4
No	118	65.6

The mean age for the first sexual intercourse, 19.50 years ± 3.1

4.3 Socio-economic status of Reproductive Age Women

Table 4 below shows the socio-economic status of the reproductive age women. In terms of schooling and working at the same time, 36.6% (n=157) responded yes, and the majority (n=272, 63.4%) responded no. Out of the 36.6% (n=157) who responded combining work with schooling, the average earning per month for the majority of the participants was within the range of 300-600 cedis (n=32, 52.4%). Majority of the students received 300-600 cedis (n=175, 44.1%) as the average pocket money per month. Most of the students saved 100-300 cedis (n=163, 50.5%) per month out of their pocket money. With regards to investment, only 7.9% (n=15) did not invest, nonetheless, most of the participants invested <100 cedis (n=96, 50.3%) per month.

Table 4. Socio-economic Status of the Reproductive Age Women

Characteristics	Frequency	Proportion (%)
Working alongside schooling		
Yes	157	36.6
No	272	63.4
Average earning per month if working		
<300	7	11.5
300-600	32	52.4
>600	22	36.1
Average pocket money per month		
<300	119	30.0
300-600	175	44.1
>600	103	25.9
Amount saved every month		
<100	143	44.3
100-300	163	50.5
>300	17	5.3
Amount invested every month		
<100	96	50.3
100-300	76	39.8
>300	4	2.0
None	15	7.9

4.4 Knowledge of Emergency Contraceptive Use Among Reproductive Age Women

As shown in Table 5 below, most of the students (n=154, 36.2%) agreed that emergency contraceptives (EC) were safe. Majority (n=137, 32.9%) were neutral when asked whether EC use was very comfortable, but to those who responded, most of them (n=117, 28.1%) agreed that EC use was very comfortable. Similarly, 28.7% (n=121) were neutral when asked if there were times of the month that ECs work most effectively. Also, most of the students (n=130, 30.6%) indicated that there were special groups of women (e.g., married women, raped women) that should use EC. About 27.5% (n=116) indicating majority of the students strongly agreed that EC was the best option for women who have been raped. When asked whether EC was readily available on campus, the majority (n=109, 26.7%) were neutral while 26.2% (n=107) agreed that EC was readily available on campus.

Table 5. Knowledge of Emergency Contraceptive Use among Reproductive Age Women

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
Emergency contraceptives (EC) are safe.	50 (11.8%)	35 (8.2%)	94 (22.1%)	154 (36.2%)	92 (21.6%)
EC use is very comfortable.	42 (10.1%)	76 (18.3%)	137 (32.9%)	117 (28.1%)	44 (10.6%)
There are times of the month when ECs work most effectively.	40 (9.5%)	62 (14.7%)	121 (28.7%)	132(31.4%)	66 (15.7%)
There are special groups of women e.g., married women, raped women, that should use EC.	68 (16.0%)	80 (18.8%)	72 (17.0%)	130 (30.6%)	75 (17.6%)
EC is the best option for women who have been raped.	60 (14.3%)	73 (17.3%)	64 (15.2%)	116(27.5%	108 (25.7%)
ECs are readily available on campus.	63 (15.4%)	51 (12.5%)	109 (26.7%)	107 (26.2%)	79 (19.3%)

4.5. Bivariate Analysis of the Association between EC use and Significant Variables

Table 6 shows a Pearson chi-square test at a 95% confidence interval done to establish any relationship between emergency EC use and other significant variables.

The study showed that availability of EC on campus (P=0.006), the safety of EC (P<0.001), and comfortability of EC use (P<0.001) were significantly associated with EC use

Also, the participants who had heard of EC (P<0.001**),** those sexually active (P<0.001), and the effectiveness of EC were all statistically associated with EC use.

Table 6. Association between EC use and significant variables

Variable	Use of EC				Measure of direction	
	Yes, n (%)	No n (%)	Chi-square (X^2)	P-value	Cramer's V/Phi	P-value
ECs are readily available on campus			14.6	**0.006**	**0.194[c]**	**0.006**
Strongly disagree	31 (15.8)	29 (15.1)				
Disagree	33 (16.8)	15 (7.8)				
Neutral	41 (20.9)	65 (33.9)				
Agree	45 (23.0)	50 (26.0)				
Strongly agree	46 (23.5)	33 (17.2)				
ECs are safe			63.3	**<0.001**	**0.397[c]**	**<0.001**
Strongly disagree	15 (7.5)	35 (17.4)				
Disagree	4 (2.0)	28 (13.9)				
Neutral	35 (17.5)	56 (27.9)				
Agree	75 (37.5)	64(31.8)				
Strongly agree	71 (35.5)	18 (9.0)				
EC use is very comfortable			36.1	**<0.001**	**0.303[c]**	**<0.001**
Strongly disagree	7 (3.6)	35 (17.9)				
Disagree	28 (14.3)	45 (23.0)				
Neutral	63 (32.1)	62 (31.6)				
Agree	72 (36.7)	36 (18.4)				
Strongly agree	26 (13.3)	18 (9.2)				
Heard of EC			68.7	**<0.001**	**0.391[p]**	**<0.001**
Yes	223 (92.9)	126 (60.3)				
No	17 (7.1)	83 (39.7)				
Sexually active			139.6	**<0.001**	**0.641[p]**	**<0.001**
Yes	176 (95.1)	66 (33.2)				
No	9 (4.9)	133 (66.8)				
Effectiveness of EC			24.4	**<0.001**	**0.271[p]**	**<0.001**
100%	98 (42.4)	17 (16.8)				
90%	68 (29.4)	54 (53.5)				
75%	41 (17.7)	19 (18.8)				
50%	24 (10.4)	11 (10.9)				

C=Cramer's, P=Phi

Figure 2 showed that 77.4% (n=364), which is the majority of the study participants have heard of EC while 22.6% (n=106) have not.

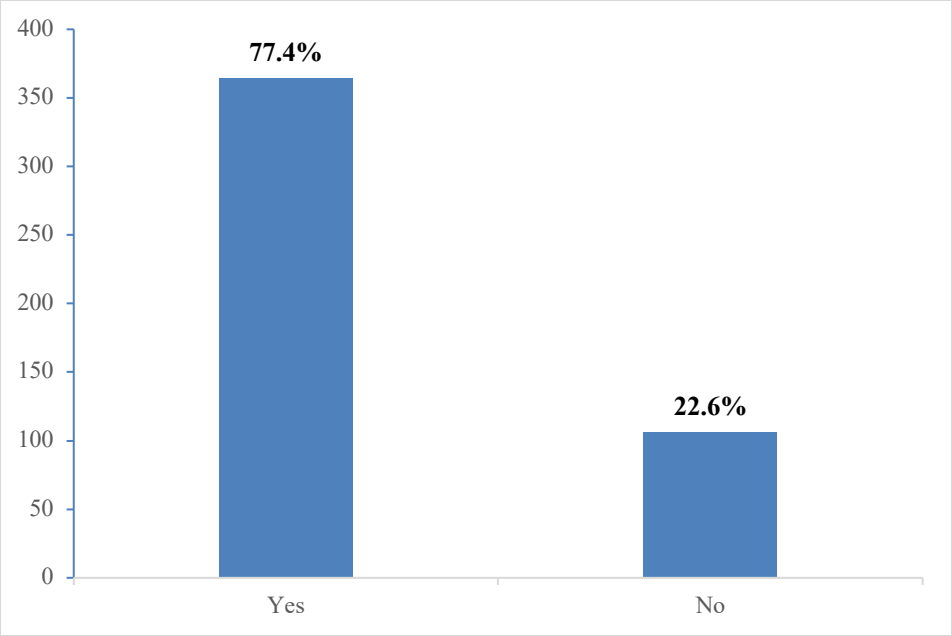

Figure 2 Awareness of EC (Ever heard of EC) among Reproductive Age Women

Figure 3 showed friends (n=298, 77.6%) were the main sources of information about EC, followed by social media (n=139, 36.2%) and classroom (n=2, 0.5%) being the least source of information.

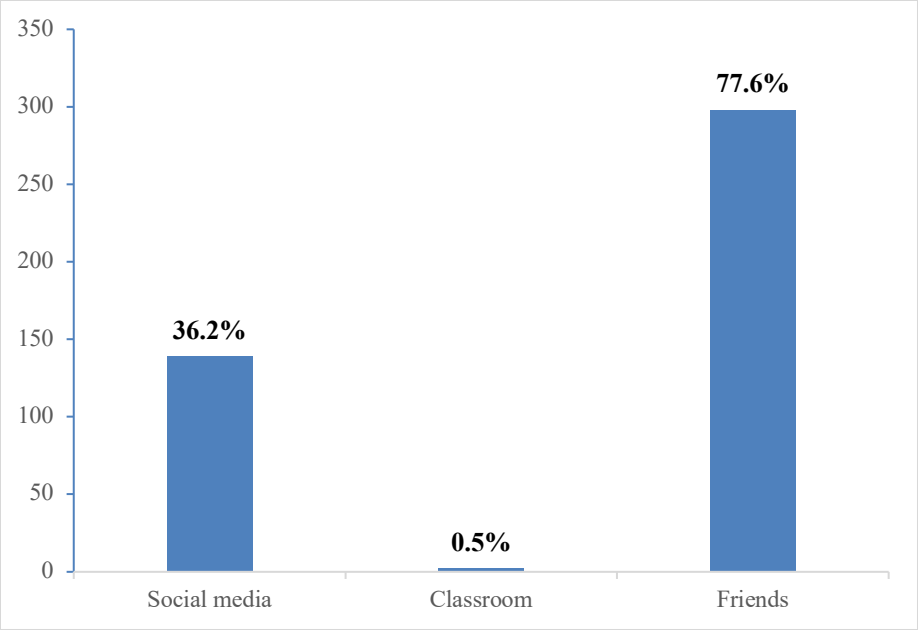

Figure 3 Sources of information about EC

Responses do not add up to 100% because it is a multiple-choice response

4.6 Proportion of EC use and misuse among Reproductive Age Women

Table 7 below shows the proportion of use of EC among the women of reproductive age women, 53.5% (n=240) representing most of the students reported to have ever used EC and the type of EC most commonly used was the pill (n=200, 92.2%). Lydia (n=357, 79.7%) was the most used brand by the study participants. In terms of taking ECs, most of the students (n=322, 84.3%) took the required (correct) doses of EC. Most of the students (n=283, 90.1%) responded reported not being pregnant after taking EC. In terms of duration of EC intake after unprotected sex, 45.6% (n=141) representing the majority of the participants used EC within 24-72 hours. Most of the participants (n=128, 36.6%) indicated that EC was 90% effective. When the participants were asked if they had any concerns about EC, more than half of the participants (n=347, 78.9%) indicated ‘‘yes’’. The major reason for their concern about EC was that EC could affect fertility (n=240, 61.5%)

Table 7. Proportion of EC Use among Reproductive Age Women

Characteristics	Frequency	Proportion (%)
Ever used EC		
Yes	240	53.5
No	209	46.5
Type of EC used		
EC pill	200	92.2
Copper bearing IUD	13	6.0
None	4	1.8
Brands of EC use[$]		
Lydia	357	79.7
Postinor 2	339	75.7
Contra 72	104	23.2
N-tablet	56	12.5
Other	12	2.7
Ever taken more than the required dose of EC		
Yes*	40	10.5
No[#]	322	84.3
Not sure*	20	5.2
Pregnancy after taking EC		
Yes	31	9.9
No	283	90.1
Stipulated time of EC intake after unprotected sex		
Within 24 hours[#]	132	42.7
24-72 hours[#]	141	45.6
5 days*	7	2.3
Not sure*	29	9.4
Effectiveness of EC		
100%	118	33.7
90%	128	36.6
75%	66	18.8
50%	38	10.9
Any concerns about EC		
Yes	347	78.9
No	93	21.1
Reasons for such concerns[$]		
Not familiar	83	21.3
Cause health problems	213	54.6
It can affect fertility	240	61.5
Can harm a foetus if it fails	103	26.4
Others	21	5.4

#Correct use, * misuse, $ multiple response choice do not add up to 100% because it is a multi-ple-choice question

4.7 Socio-demographic factors influencing EC use

The Table 8 showed that participants within the age range of 20-24 years, 25-29 years, 30-34 years and 35-39 years were less likely to use EC with a COR of 0.6 (0.37-1.01), 0.4 (0.19-0.74), 0.2 (0.10-0.39) and 0.0 (0.00-0.21) respectively when compared to those within the age range of 15-19 years. Married participants ($p < 0.014$) were less likely to use EC at COR of 0.2 (0.07-0.74) compared to the co-habiting ones. Participants in level 100 ($p < 0.001$), level 300 ($p < 0.006$), level 400 ($p < 0.001$) were more likely to use EC with COR of 5.8 (2.56-13.14), 3.6 (1.43-8.99) and 8.7 (3.57-21.21) when compared to postgraduates. Northerners ($p=0.027$) were more likely to use EC with COR of 2.0(1.68-8.42) when compared to other tribes. Participants in Health sciences ($p < 0.009$), humanities ($p=0.001$) and basic and applied sciences ($p < 0.001$) were more likely to use EC at COR of 2.2(1.22-3.87), 2.7 (1.51-4.86) and 4.2 (2.18-7.95) when compared to participants from education respectively. Participants with father's highest education being primary ($p = 0.025$) was significantly associated with EC use and were more likely to use EC (AOR=2.3, CI 1.11-4.95) compared to Tertiary. Participants with mother's highest education being primary, secondary and those with no education were more likely to use EC wit COR of 1.8 (1.00-3.07), 1.9 (1.10-3.11), and 2.4 (1.03-5.82) respectively compared to tertiary.

With regards to the multivariable analysis, independent variables such as marital status, religion and being sexually active were adjusted for. There was still significant association between the age ranges 25-29 years ($p < 0.02$), 30-34 years ($p < 0.001$) and 35-39 ($p = 0.002$) and participants within the same age ranges were less likely to use EC with AOR of 0.4 (0.22-0.88), 0.3 (0.12-0.54) and 0.0 (0.00-0.30) respectively when compared to age range 16-19 years. Being single ($p=0.049$) and married ($p=0.002$) were less likely to use EC at AOR of 0.3 (0.09-0.99) and 0.1 (0.03-0.45)

respectively when compared to co-habiting. Being a Northerner (p <0.001) was more likely associated with EC use at (AOR=3.8, CI 1.68-8.42) compared to Akans. Catholics (p=0.038), and Moslems (p=0.013) were more likely to use EC at AOR of 3.1 (1.06-8.89) and 6.5 (1.49-27.88) respectively when compared to other religions. Being in the Health sciences (p=0.0025), Humanities (p=0.005) and Basic and Applied Sciences (p <0.001) were significantly associated with increased EC use at 2.0 (1.09-3.55), 2.3 (1.29-4.26), and 3.7 (1.94-7.22) respectively when compared with education. Participants with father's highest education being secondary (p=0.023) were more likely to use EC (AOR=1.8, 1.093.07) when compared to Tertiary.

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Table 8. Socio-demographic factors influencing usage of EC among Reproductive Age Women

Variable	Use of EC: Yes N (%)	No N (%)	Crude (COR) [95%CI]	P-value	Multiple (AOR) [95%CI])	P-value
Age in years						
15-19	36 (15.2)	60 (31.3)	REF			
20-24	90 (38.0)	91 (47.4)	0.6 (0.37-1.01)	0.053	0.6 (0.38-1.03)	0.067
25-29	35 (14.8)	22 (11.5)	0.4 (0.19-0.74)	0.005	0.4 (0.22-0.88)	0.020
30-34	54 (22.8)	18 (9.4)	0.2 (0.10-0.39)	<0.001	0.3 (0.12-0.54)	<0.001
35-39	22 (9.3)	1 (0.5)	0.0 (0.00-0.21)	0.001	0.0 (0.00-0.30)	0.002
Marital status						
Single	178 (74.2)	193 (92.3)	1.4 (0.51-3.82)	0.519	0.3 (0.09-0.99)	0.049
Married	53 (22.1)	9 (4.3)	0.2 (0.07-0.74)	0.014	0.1 (0.03-0.45)	0.002
Co-habiting	9 (3.8)	7 (3.3)	REF			
Current Level						
100	79 (34.6)	94 (49.0)	5.8 (2.56-13.14)	<0.001	2.0 (0.77-5.00)	0.155
200	48 (21.1)	15 (7.8)	1.5 (0.59-3.97)	0.388	1.1 (0.37-3.33)	0.844
300	34 (14.9)	25 (13.0)	3.6 (1.43-8.99)	0.006	1.1 (0.37-3.46)	0.826
400	28 (12.3)	50 (26.0)	8.7 (3.57-21.21)	<0.001	1.8 (0.63-5.39)	0.266
Postgraduate	39 (17.1)	8 (4.2)	REF			
Tribe						
Akan	112 (51.4)	88 (44.4)	REF			
Ga/Adangbe	49 (22.5)	48 (24.2)	1.0 (0.58-1.80)	0.931	1.4 (0.72-2.93)	0.302
Ewe	36 (16.5)	29 (14.6)	1.2 (0.77-2.03)	0.374	0.9 (0.39-2.14)	0.837
Northerner	21 (9.6)	33 (16.7)	2.0 (1.08-3.70)	0.027	3.8 (1.68-8.42)	<0.001
Religion						
Catholic	28 (11.7)	29 (13.9)	0.6 (0.30-1.26)	0.186	3.1 (1.06-8.89)	0.038
Pentecostal	61 (25.4)	62 (29.7)	0.6 (0.33-1.11)	0.105	1.6 (0.63-3.95)	0.332
Charismatic	121 (50.4)	67 (32.1)	0.3 (0.19-0.59)	<0.001	2.2 (0.85-5.72)	0.106

Moslem	5 (2.1)	9 (4.3)	1.1 (0.32-3.56)	0.910	6.5 (1.49-27.88)	0.013
Others	25 (10.4)	42 (20.1)	REF			
College						
Health sciences	57 (29.1)	55 (28.6)	2.2 (1.22-3.87)	0.009	2.0 (1.09-3.55)	0025
Humanities	49 (25.0)	59 (30.7)	2.7 (1.51-4.86)	0.001	2.3 (1.29-4.26)	0.005
Basic and Applied sciences	27 (13.8)	50 (26.0)	4.2 (2.18-7.95)	<0.001	3.7 (1.94-7.22)	<0.001
Education	63 (32.1)	28 (14.6)	REF			
Father's education						
None	5 (2.6)	10 (5.0)	2.3 (0.78-7.12)	0.131	2.2 (0.72-6.74)	0.164
Primary/JHS	12 (6.3)	24 (11.9)	2.3 (1.11-4.95)	0.025	2.1 (0.98-4.48)	0.058
Secondary/Vocational	65 (34.2)	76 (37.6)	1.4 (0.89-2.12)	0.151	1.3 (0.87-2.08)	0.179
Tertiary	108 (56.8)	92 (45.5)	REF			
Mother's education						
None	11 (5.6)	17 (8.4)	2.4 (1.03-5.82)	0.043	2.3 (0.98-5.61)	0.055
Primary/JHS	54 (27.3)	60 (29.7)	1.8 (1.01-3.07)	0.046	1.6 (0.90-2.80)	0.109
Secondary/Vocational	76 (38.4)	89 (44.1)	1.9 (1.11-3.11)	0.019	1.8 (1.09-3.07)	0.023
Tertiary	57 (28.8)	36 (17.8)	REF			

4.8 Sexual reproductive factors influencing EC Use Among Reproductive Age Women

Table 9 shows the sexual reproductive factors influencing EC use among the study participants. The study participants who were sexually active were less likely to use EC compared to those who were not sexually active (COR=0.0, 95% CI 0.01-0.05, p <0.001).

In terms of the number of men participants have had sex in their entire life, it was less likely for the participants who have had sex with 5-6 men in their entire lives to use EC (COR=0.1, 95% CI 0.02-0.37, p=0.001) compared to those who have kept more than 6 men. The participants who had never been pregnant were more likely to use EC (COR=6.4 95% CI 2.53-16.21, p <0.001) when compared to those who had been pregnant.

Participant who had never had abortion were significantly associated with increased use of EC (COR=6.4, 95% CI 2.3-17.7) when compared to those who had ever had abortions.

Those participants who did not have any concerns with the use of EC were more likely to use EC (COR=2.2, 95% CI 1.40-3.61, p=0.002) than those with concerns.

Multivariable analysis was done with other independent variables such as total men you have slept with, number of sexual partners you are keeping now, being sexually active, and ever being pregnant. Results from the multivariable analysis revealed that being sexually active was significantly associated with decreased use of EC (AOR=0.3, 95% CI 0.13-0.93, p=0.001) when compared with those not being sexually active. Participants having sex with 5-6 men in their entire life were less likely to use EC (AOR=0.1, 95% CI 0.0-0.40, p=0.002) when compared to >6 men.

Participants who had never had abortion were more likely to use EC (AOR=4.86, 95% CI 1.69-13.72, p=0.003) when compared with those who have not had abortion.

Having no concerns about EC use was significantly associated with EC use (p=0.001) and participants without EC concerns were more likely to use EC (AOR=2.2, 95% CI 1.40-3.61).

Table 9. Sexual Reproductive Factors influencing EC use among Reproductive Age Women

Variable	Use of EC		COR [95%CI]	P-value	AOR [95%CI])	P-value
	Yes N (%)	No N (%)				
Sexually active						
Yes	176 (95.1)	66 (33.2)	0.0 (0.01-0.05)	<0.001	0.3 (0.13-0.94)	0.001
No	9 (4.9)	133 (66.8)	REF			
Age at first sexual inter-course						
10-14	25 (14.6)	2 (3.4)	REF			
15-19	59 (34.5)	27 (46.6)	5.7 (1.26-25.91)	0.024	4.7 (1.00-21.69)	0.050
20-24	63 (36.8)	23 (39.7)	4.6 (1.00-20.81)	0.05	3.6 (0.77-16.75)	0.104
25-29	24 (14.0)	6 (10.3)	3.1 (0.57-17.03)	0.188	3.0 (0.54-16.22)	0.213
Number of men you have had sex within your whole lifetime						
1-2	58 (29.9)	29 (40.8)	1.1 (0.51-2.46)	0.787	1.0 (0.43-2.25)	0.959
3-4	50 (25.8)	27 (38.0)	1.2 (0.54-2.69)	0.650	1.0 (0.45-2.35)	0.959
5-6	57 (29.4)	2 (2.8)	0.1 (0.02-0.37)	0.001	0.1 (0.02-0.40)	0.002
>6	29 (14.9)	13 (18.3)	REF			
Number of sex-ual partners you are keep-ing now						
1-2	135 (79.9)	55 (83.3)	1.0 (0.38-2.76)	0.971	0.8 (0.29-2.20)	0.664
3-4	19 (11.2)	5 (7.6)	0.7 (0.17-2.58)	0.548	0.7 (0.17-2.58)	0.548
5-6	15 (8.9)	6 (9.1)	REF			
Ever been pregnant						
Yes	65 (33.0)	23 (11.7)	REF			
No	132 (67.0)	173 (88.3)	6.4(2.53-16.21)	<0.001	1.4 (0.72-2.52)	0.344
Ever had abor-tion						
Yes	47 (43.9)	6 (10.9)	REF			
No	60 (56.1)	49 (89.1)	6.4 (2.29-17.65)	<0.001	4.8(1.69-13.72)	0.003
Do you have EC concerns						
Yes	199 (84.7)	133 (71.1)	REF			
No	36 (15.3)	54 (28.9)	2.2 (1.40-3.61)	0.001	2.5 (1.45-4.41)	0.001

4.9 Socio-economic History Affecting use of EC among Reproductive Age Women

Table 10 shows the socio-economic factors influencing EC use among the study participants. The study revealed that the participants who were not combining schooling with work (COR=3.0, 95% CI 1.95-4.54, p <0.001) were more likely to use EC when compared to those working alongside schooling. The participants whose average pocket money per month ranged between 300-600 Cedis (COR=2.0, 95% CI 1.89-3.34, p=0.009) were more likely to use EC when compared to those whose average income was >600

Multivariable analysis revealed that students who were not schooling with other independent variables such as age and marital status were more likely to use EC (AOR=3.0, 95% CI 1.76-4.34, p <0.001) when compared to those who were working and schooling along side

Table 10. Socio-economic Status Affecting Use of EC Among Reproductive Age Women

Variable	Use of EC		COR [95%CI]	P-value	AOR [95%CI])	P-value
	Yes N (%)	No N (%)				
Working along-side schooling						
Yes	98 (49.0)	50 (24.4)	REF			
No	102 (51.0)	155 (75.6)	3.0 (1.95-4.54)	<0.001	3.0 (1.76-4.34)	<0.001
Average earn-ing per month if working						
<300	4 (11.4)	3 (13.0)	1.0 (0.18-5.63)	1.000	1.0 (0.15-6.18)	0.969
300-600	19 (54.3)	11 (47.8)	0.8 (0.25-2.41)	0.656	0.6 (0.15-2.36)	0.451
>600	12 (34.3)	9 (39.1)	REF			
Average pocket money per month						
<300	61 (33.0)	55 (29.3)	1.3 (0.75-2.264)	0.344	0.6 (0.31-1.15)	0.123
300-600	69 (37.3)	95 (50.5)	2.0 (1.19-3.34)	0.009	1.1 (0.60-2.01)	0.760
>600	55 (29.7)	38 (20.2)	REF			
Amount saved every month						
<100	57 (38.0)	74 (49.7)	1.3 (0.43-3.91)	0.643	1.1 (0.37-3.56)	0.821
100-300	86 (57.3)	45.6)	0.8(0.27-2.36)	0.674	1.0 (0.32-3.08)	0.993
>300	7 (4.7)	7 (4.7)	REF			
Amount in-vested every month						
<100	50 (58.1)	37 (48.1)	REF			
100-300	36 (41.9)	40 (51.9)	1.5 (0.81-2.79)	0.198	1.8 (0.91-3.70)	0.092

CHAPTER FIVE

DISCUSSION

5.1 Knowledge of EC among Reproductive Age women

Findings from the study revealed that the greater proportion of the study participants had heard of EC and demonstrated fair knowledge of EC use. Most of the students agreed that emergency contraceptives (EC) were safe and very comfortable. The main source of information about EC was from friends. Awareness of EC (ever heard of EC) was significantly associated with EC use. Also, Colleges such as the Health Sciences, Humanities, and Basic and Applied Science had significant association with EC use. The participants from these Colleges were more likely (higher odds) to use EC. These findings could imply that the extensive education on EC may have increased the knowledge level of the participants. The education however may not have taken place in the classroom as the classroom represented the least source of information about EC. Moreover, to buttress previous assertions, it was found that friends were the main source of information on EC. This may be understood that those friends who were educated may share the knowledge obtained with colleague friends who may have not gotten the chance to be educated. The media is playing a little role (36.2%) in educating the population with regards to EC use. These findings are therefore consistent with a study by Addo and Tagoe-Darko (2009) whose studies revealed that majority of the participants were aware of EC and had knowledge about it. This study was carried out at the University of Ghana employing 2,393 students in the study. This current study does not agree with another study carried out in Turkey by Golbasi et al. (2012), among 1,689 students in two different universities which revealed that only few of the students have heard about the idea of EC and had low knowledge.

Also, Abiodun (2015) carried a study among 1,328 sexually active female students in Nigeria and findings revealed that friends were the main source of information about EC, and this agrees with the current study.

5.2 Proportion of EC Use Among Reproductive Age Women

From this study, it was revealed that most of the students reported to have ever used EC and the type of EC most used were the pill and postinor 2. In terms of taking more than the required dose of EC, only few misused it and took more than the required dose, but majority used the required dose. Most of the participants took the pills within the recommended duration (i.e., within the 72 hours) but only few were not sure and used it outside the recommended time. Majority indicated that EC prevented pregnancy although most of the participants indicated that EC was 90% effective. When the participants were asked if they have of any concerns about EC, more than half of the participants indicated yes. The major reason for their concern about EC was that EC could affect fertility. Participant's good knowledge on EC may have influenced proper use of EC. Although there was few who misused EC (i.e., duration of use, and recommended dose), majority demonstrated positive usage of EC in terms of the required dose and duration of use.

A cross-sectional study by Abraha et al. (2019) on 380 women in Ethiopia revealed that majority of the women indicated that EC prevents pregnancy. Although there was few who misuse in terms of the time limit to take the EC which the participants did not know, a major proportion was also able to indicate that EC should be taken within 72 hours after sex. This affirms this current study. Similarly, Yemaneh et al. (2018) carried out an institution based cross-sectional study among 324 undergraduate female students of Mizan-Tepi University in Southwest Ethiopia and findings revealed that most common EC used after unprotected sex was the pill. Sexually active female

undergraduate students who had unprotected sexual intercourse however misused EC by increasing doses of EC pills.

The proportion of EC misuse in this study was relatively low compared to correct use in terms of stipulated time of use and dosage. This is in contrast with a study by Babatunde et al. (2016). He carried out a cross-sectional study on 273 students in Nigeria and results revealed that majority of the students who had ever used EC (85.7%) misused it for more than 72 hours after sex. It was therefore recommended that abuse and frequent use of EC could be inhibited by educating young adults on EC with importance on content, efficacy and proper timing of use through multiple channels of communication.

5.3 Factors Associated with EC Use among Reproductive Age Women

The study revealed that history of pregnancy and age ≥20 years were not significantly associated with EC use although the participants who had not become pregnant before were more likely to use EC. This may be suggestive of the fact that EC prevents pregnancy, and they may not want to become pregnant as students which may jeopardize their studies. This current study does not agree with a study in a university in South West Ethiopia by Shiferaw et al. (2016) whose findings revealed that history of pregnancy and age ≥20 years were significant predictor of EC use.

The current study further revealed that students who were sexually active, age less than 20 years (15-19 years) and being single were significantly associated with EC use. This therefore agrees with another study by Sendo and Fikadu (2021) who carried out an institution-based study among 271 students in Addia Ababa campus. Findings revealed that being sexually active, age less than or equal to 20 years and being single were significant factors associated with the use of EC.

Moreover, the current study revealed that the participants who were sexually active were less likely to use EC and this agrees with another study by Hoque and Ghuman (2012) who carried out a

cross-sectional study among 582 female university students from South Africa. Findings also revealed that utilization of EC among the sexually active students was relatively low.

The study has shown a significant association between "not working alongside school" with EC use. Generally, it could be assumed that students who do not have to work alongside school have a sustainable source of income while they school. It may be explained that this group of students may afford ECs because of their stable income source, for which reason they use ECs. The association of affordability and EC use has also been suggested in a cross-sectional study by Amalba et al (2014) among 200 women of reproductive age in Tamale, Ghana

5.4 Limitations of the study

There was an increased disproportionation in the number of participants used for the study from both universities due to the great differences in the population size.

The study failed to employ a mixed method involving quantitative and qualitative design which could be used to quantify data and at the same time understand the real-life experiences and decisions of the participants

Due to Covid-19-related restrictions on movement and meetings, and University Teachers Association of Ghana (UTAG)'s strike action (at the time of the study), the multistage sampling technique could not be utilised effectively, especially in the selection of students at the halls and various departments

Some of the participants did not answer some of the questions in the questionnaires because they had difficulty recalling old events**.** Again, cultural and social stigmatization regarding sexual-related topics and issues made these women of reproductive age shy away from some question although students were given all the privacy and confidentiality they nee

CHAPTER SIX
CONCLUSION AND RECOMMENDATIONS

6.1 Summary and conclusion

This study was set to examine the factors influencing the use of EC among female students of the University of Ghana and Central University. An institution-based analytical study cross-sectional design was used. Self-administered questionnaire was used to collect data from 473 female students. Pre-testing was done at University of Professional Studies (UPSA) and Covid-19 protocols were followed during data collection. SPSS version 25 software was used for the analysis. Data was cleaned, edited, and coded before entering into the software. P-value ≤ 0.05 was considered statistically significant. Inferential statistics using Chi-square and logistic regression analysis were used to assess the association between the independent and the dependent variables.

The findings from the study revealed that most of the participants have heard of EC. The main source of information about EC was from friends. Most of the participants had ever used EC before and the most common type of EC used was the pill. The most common brands used were Lydia and Postinor 2. A proportion of the participants misused EC in terms of overdose of dosage and duration of EC use after unprotected sex, although most of them correctly utilized EC. The major concerns about the use of EC were the ability of it affecting fertility and causing health problem. Age, marital status, religion, colleges, father's and mother's education, sexually active, age at first sexual intercourse, number of men you have had sex with your entire life, ever had abortion, any concerns about EC, and working alongside schooling, were all significantly associated with the use EC.

6.2 Recommendation

Although majority of participants were aware of and had fair knowledge in ECs, the major source of this knowledge was friends. It is important that reproductive aged women get credible information from the right sources to make the right decisions. It is recommended that the Ghana Education Service collaborates with the Ghana Health Service to organise education and communication campaigns to support women of reproductive ages access sexual and reproductive health related information

The study revealed that young women aged less than 20years had a significant association with EC use. It is therefore recommended that Ghana Health Service in the future will consider extending contraceptive education and services to girls within this age range, majority of whom may be found at the SHS level. It also becomes very important that the Health Promotion Unit of the Ghana Health Service sensitises the general populace to avoid stigmatizing these young women who use contraceptive services.

With a high proportion of women in their reproductive age being sexually active and using EC, the Reproductive and Child Health Unit of Ghana Health should collaborate with NGOs like Marie Stopes to appoint "ambassadors of EC" in all tertiary institutions across Ghana, who will champion promote the appropriate use of ECs. This will go a long way to address the unmet needs of contraception in Ghana

It was noted in this study that there was a significant association between EC use and young women who had never had an abortion. This revelation may emphasize the effectiveness of EC. It is hence recommended that Reproductive and Child Health Units together with Health Promotion units of the various facilities improve communication on EC being the first option especially for young women who have experienced rape or defilement for the prevention of unwanted pregnancies.

Brand owners of Lydia EC and Postinor 2 (most commonly used ECs) should consider putting up massive EC campaigns as they are likely to make more impact because of their fame on the pharmaceutical/contraceptive market.

Considering the cultural, religious and social dynamics related to contraceptives as indicated in the results, the Child and Reproductive Health Unit of Ghana Health Service should consider involving traditional and religious leaders during policy planning. In effect, their views and interests will be factored into policies, ensuring that they own these policies and further sell it out to their folks.

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APPENDICES

APPENDIX I
CONSENT FORM

Title of research: 'Factors associated with Emergency Contraceptive Use Among Female Students at University of Ghana and Central University'

Principal investigator: Belinda Osei-Akoto, Department of Epidemiology and Disease Control, School of Public Health, University of Ghana, Legon Campus. Telephone number: +233240808392 (Mobile). Email: Oseiakotobelinda@gmail.com

General Information about the Research

I am Belinda Osei-Akoto, a final year MPhil student from the Department of Epidemiology and Disease Control, School of Public Health, University of Ghana, Legon Campus. I am conducting research on the topic 'Factors associated with Emergency Contraceptive Use Among Female Students at University of Ghana and Central University'. The purpose of this study is to bring out the varied factors affecting the use and abuse of EC for the health institutions to scale up access to quality emergency contraceptive methods in universities. This will also prompt school authorities, the Ghana Health Service, and the Ministry of Health to put up measures such as education and communication campaigns to support the University about sexual and reproductive health services and emergency contraception usage.

Possible Risks and Discomforts

There are no major risks participating in this research work. Nonetheless, you may experience minimal discomforts arising from the time spent filling out the questionnaire.

Possible Benefits

You may not benefit directly for now as an individual. However, your response will help the University and the country to put up measures that will increase awareness and availability of EC for use to curb unwanted pregnancies.

Confidentiality

All information gathered will not be disclosed to anyone from the time of the research to the publication of the findings.

Participation and Withdrawal from the Research

Participation in this research is voluntary. You may decide to withdraw from the study without penalty or loss to any benefit to which you are otherwise entitled.

Statement of Consent/Participant Agreement

The above document describing the benefits, risks, and procedure for the research has been read and explained to me in detail. I have been given the chance to ask any question (s) about the research and my question (s) have been answered appropriately. I agree to participate in the study

---------- ----------

Date signature/thumbprint of volunteer

---------- ----------

Date signature/full name of principal investigator

Statement of Witness

If the volunteer cannot read themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered, and the volunteer has agreed to participate in the research.

---------- ----------

Date signature/thumbprint of witness

---------- ----------

Date signature/full name of principal investigator

APPENDIX II
QUESTIONNAIRE

Covid Risk Mitigation

To lower the risk of COVID-19 transmission, kindly tick where applicable

<table>
<tr><th>No</th><th>Question</th><th>Response</th></tr>
<tr><td>1.</td><td>Have you experienced any of these symptoms within the past 14 days? Please tick as many as applicable</td><td>
<table>
<tr><td></td><td>Severe chest pain</td><td></td><td>Loss of taste</td></tr>
<tr><td></td><td>Difficulty in breathing</td><td></td><td>Loss of smell</td></tr>
<tr><td></td><td>Fever</td><td></td><td>Fatigue</td></tr>
<tr><td></td><td>Muscle ache</td><td></td><td>Runny nose</td></tr>
<tr><td></td><td>Sore throat</td><td></td><td>Congested nose</td></tr>
<tr><td></td><td>Diarrhoea</td><td></td><td>Vomiting</td></tr>
<tr><td></td><td>Other</td><td></td><td></td></tr>
<tr><td colspan="4">Please specify other:</td></tr>
</table>
</td></tr>
<tr><td>2</td><td>Have you been in contact with any confirmed Covid-19 case(s)?</td><td>Yes ……. Don’t know……
No …….</td></tr>
<tr><td>3</td><td>For Q2 above, if yes, when?</td><td>…….</td></tr>
<tr><td>4</td><td>Haven you tested for Covid -19 in the past 14 days?……..</td><td>Yes……..
No……</td></tr>
<tr><td>5</td><td>For Q4 above,
a. if yes, when did you take it?
b. What was the result</td><td>……..
Positive …. Negative….. Not ready…..</td></tr>
<tr><td colspan="3">SOCIODEMOGRAPHIC CHARACTERISTICS
Please tick the correct option in the dotted space provided and provide an answer in the open space where needed.</td></tr>
</table>

NO	QUESTION	RESPONSE	OTHER INSTRUCTIONS
1	Age in years:		
2	Sex	Male…… Female…….	
3	Marital status:	Single…… Married……..... Divorced…… Separated……. Widowed…… Cohabitating….	Tick where applicable
4	Current Level:	100..... 200……. 300….. 400…. Post Grad….. Post Doc…..	
5	Tribe:	…….	
6.	Region of origin	…….	
7	Religion	Catholic….. Pentecostal….. Charismatic….. Moslem…… Traditionalist…. . Hindu…… Buddhist…… Eckankar…. Other…….	If Other, please specify……
8.	Nationality	…….	
9	College	Health Sciences…… Humanities…… Education…. Basic and Applied Sciences…….	
10	Mother's educational background	None….. Primary….. Secondary….. Tertiary…..	
11.	Father's educational background	None….. Primary….. Secondary….. Tertiary…..	
SEXUAL AND REPRODUCTIVE HEALTH			
12.	**Are you sexually active?**	**Yes….. No…….**	
13.	At what age did you first engage in sexual intercourse	…….	
14	What was your primary reason for engaging in sexual intercourse	Love…… Desire……. Peer pressure….. Married….. Money and gifts…….. Rape……..	If other, please specify…….

		Other ……..	
15.	In your whole lifetime, about how men have you had sex with	……	
16.	How many sexual partners are you keeping at the moment?	……	
17.	Are you pregnant?	Yes…… No…… Not sure..….	
18.	Have you ever been pregnant?	Yes…….. No……	If yes, how many times? …….
19.	How did the pregnancy happen	Planned……. Not planned……..	If you have been pregnant more than once, indicate how many were planned and how many were not. No planned…… No unplanned……..
20.	Was any of these pregnancies aborted?	Yes…….. No ……..	If yes, how many of them? …….
SOCIO-ECONOMIC STATUS			
21	Do you work alongside being a student??	Yes…….. No……	If yes, what is your average earning for a month……
22	What's your average pocket money per month on campus	GHC……..	
23	How much are you able to save every month	GHC……..	Indicate "none" if you save nothing
24	How much do you invest every month	GHC……..	Indicate none if you invest nothing
KNOWLEDGE OF EMERGENCY CONTRACEPTIVES			
Please circle the correct numeric response to each question			

Question	Survey Scale: 1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly agree
25. Emergency contraceptives (EC) are safe	1 2 3 4 5
26. EC use is very comfortable	1 2 3 4 5
27. ECs are readily available on campus	1 2 3 4 5
28. There are times of the month that ECs work most effectively	1 2 3 4 5
29. There are special groups of women e.g., married women, raped women, that should use EC	1 2 3 4 5
30. EC is the best option for women who have been raped	1 2 3 4 5

C			
31.	If you engage in un-protected sex, raped, condom broke, forgot to use a contraceptive method, what can you do?	Nothing …….. Take some herbs. …….. Quickly urinate to let semen out ……. Take EC …….. Wait to get pregnant and abort….	
32	Have you ever used any method of contra-ception?	Yes…….. No……. Other	If other, please spec-ify……..
33	Which method have you ever used?	Pills…….. Implants…….. Intrauterine device (IUD)…… Natural method……. Emergency contraceptive……. Other ……..	Tick as many as ap-plicable If other, please spec-ify……..
34	Have you ever heard of ECs, also known as “morning-after pill”?	Yes …….. No……	
35	How did you first hear of it?	Social media…… Friends…… Classroom…… Other……...	If other, please spec-ify……

36	Have you ever used EC	Yes…… No……. Not sure…….	
37	Which type of EC did you use?	Emergency contraceptive pill…… Copper bearing IUD…….. None……..	
38	Which brands of EC do you know?	Lydia ……. Postinor 2…….. Contra 72…… N-tablet ……. Other ……	Tick as many as apply. If other, please specify……
39	For those ticked for Q38 (above) what is the required dose?	…… …… ……	
40	Have you ever taken more than the required dose to make it work effectively?	Yes……. No…….. Not sure…….	If yes, how many doses did you take …….
41	Did it fail (Did you get pregnant)?	Yes…….. No……	
42	How long after unprotected sex did you take EC	Within 24hrs…… 24-72hrs…….. 5 days after……. Not sure……	
43	How effective is EC when used effectively	100%..... 75% …….. 90%..... 50%.....	
44	Do you have any concerns about ECs?	Yes……. No……	
45	If any concerns, what are they?	Not familiar…….. Cause health problems…….., It can affect fertility…… Can harm a foetus if it fails…….. Other……	Tick as many as apply. If other, please specify ……

APPENDIX III

ETHICAL CLEARANCE

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

My Ref. GHS/RDD/ERC/Admin/App 121260
Your Ref. No.

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Digital Address: GA-050-3303
Mob: +233-50-3539896
Tel: +233-302-681109
Fax + 233-302-685424
Email: ethics.research@ghsmail.org
7th July, 2021

Belinda Osei-Akoto
School Of Public Health, University of Ghana
P.O. Box 3129, Kumasi

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	**GHS-ERC: 073/04/21**
Study Title	Factors Associated with Emergency Contraceptive Use among Female Students of the University of Ghana and Central University
Approval Date	7th July, 2021
Expiry Date	6th July, 2022
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of a yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

You are kindly advised to adhere to the national guidelines or protocols on the prevention of COVID -19

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol.

SIGNED... .....
Dr. James Akazili
(Head, Ethics & Research Management Department)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra