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THE USE OF EMERGENCY CONTRACEPTION AMONG THE FEMALE UNDERGRADUATE STUDENTS OF UNIVERSITY OF GHANA, LEGON

BY

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DECLARATION

I, TIMOTHY KWABLA SENUNYEME, the author of this dissertation, do hereby declare that with exception of references to literature and works of other researchers, which have been duly cited, this work is the result of my original research. No part of this dissertation has been presented for another degree in this university or elsewhere.

……. ……

TIMOTHY K. SENUNYEME **PROF. AUGUSTINE ANKOMAH**

(Student) (Supervisor)

Date……. Date……

DEDICATION

This work is dedicated to my wife, Seyram and my children Klenam, Mawuenam and Selikem for their support throughout the program. To God be the glory.

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I am grateful to the almighty God for the strength and grace to go through this programme successfully, and for His continues blessing and favour upon my life.

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ABSTRACT

All over the world, unwanted pregnancies and associated unsafe abortions have been identified as a major public health issues especially among teenagers and students. Unsafe abortions have been known to contribute to maternal mortality and morbidity. The role of contraception use as a strategy to tackle the phenomenon cannot be under-estimated. . Perceptions about side effects have been found to be one of challenges to increased family planning use in Ghana, especially hormonal contraceptive methods. This challenge is a major factor affecting contraceptive uptake.

This study, therefore, sought to find the context and extent, including the side-effects from the use of emergency contraceptive pills (Postinor-2) among the female undergraduate students of UG.

A cross-sectional quantitative study design was used with a hand-delivered self-administered questionnaires. Data was collected from 200 female undergraduate students of University of Ghana.

Data was analysed using Microsoft Excel and 14th version of Stata. The descriptive statistics results were expressed in proportions or percentages. The association between socio-demographic variables and the use of EC pills was determined, using Fisher test (p-value<0.05 was considered to be significant) and logistic regression.

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LIST OF ABBBREVIATIONS

CDC	- Centre for Disease Control
EC	- Emergency Contraception
FP	-Family Planning
GDHS	- Ghana Demographic and Health Survey
HCs	-Hormonal Contraceptives
HERC	- Highly Effective Reversible Contraceptive.
IUD	- Intrauterine Device
KAP	- Knowledge, Attitudes and Perceptions
LNG	- Levonogesterol
LNG-ECP	- Levonogesterol Emergency Contraception Pill
UG	-University Of Ghana
UNFPA	-United Nations Fund for Population Affairs
UPSA	-University of Professional Studies, Accra.
WHO	-World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background

EC is a post-coital contraceptive system that is used to avoid unintended pregnancy which arises from having sexual intercourse without protection, failure of regular contraceptive method or incorrect use of regular method (Tajure, Knowledge, Attitude and Practice of Emergency Contraception among Graduating Female Students of Jimma University, Southwest Ethiopia, 2011).Emergency Contraception are therefore different from the regular contraceptive methods which are pre-coital. Emergency contraception reduces the risk of pregnancy for up to 120 hours after sexual intercourse without protection or contraceptive failure. But it is most effective if used in the first 24 hours of unprotected intercourse. The indications for the use of emergency contraception include sexual assault, unprotected intercourse, breakage of condom or slippage of condom, and missed or late doses of long-term hormonal contraceptives, including the oral contraceptive pill, contraceptive patch, contraceptive ring (that is, improperly placed or loss/expulsion), and injectable contraception (Village, 2012).

According to Tajure et al (2011) EC, therefore, becomes relevant to prevent accidental pregnancies as well as the unsafe abortions that often follow. Again, according to the WHO (2011) complications from unsafe abortion are responsible for 13 % of all maternal death. The numbers of unsafe abortions will continue to increase unless women are empowered to have access to safe abortion and contraception services. These empowerment of women include their freedom to decide whether and when to have a child(WHO, 2011).

Bleeding from the vagina remains one of the side effects of EC (LNG). Hindin et al (2014) on the other hand found side effects from hormonal contraceptive methods, especially

menstrual irregularities to be of concern to women who were part of a focused group discussion in hospitals around Legon.

Again, according to Senderowicz et al (2015) concerns about being permanently infertile was cited by many respondents for non-use of hormonal contraceptives. Respondents also blamed miscarriages or inability to conceive on prior hormonal contraception use. Also of concern is the desire for future children as reasons for not using hormonal contraception. Addressing these beliefs will, therefore, increase hormonal contraceptive uptake.

Additionally, excessive menstrual flow have been identified by Chebet et al (2015) as a reason that women and their partners choose not sign onto family planning altogether. This may lead to discontinuity of contraceptive uptake, switch methods or use methods in irregular manner.

Welling et al (2013) also identifies other side-effects of hormonal contraceptives (HCs) use. These include psychobehavioural effects, including depression and sexual dysfunction. Also, HC use may alter attraction to sexual mates, as well as the ability to retain one's sexual mate. Among parous women, HC may affect satisfaction from sex negatively.

The ECs are examples of HCs.

This study, therefore, looks at one of the physical side effects; menstrual cycle irregularities associated with the use of LNG-ECs.

1.2 Problem Statement

The University of Ghana has a large population of female students and, by current academic year records the total students population is thirty-seven thousands nine hundred and forty

(37,940), with a male to female ratio of about 1.4:1 (which is equivalent to a female population of about fifteen thousands, eight hundred and eight, 15,808) (UG, 2016). Adolescents account for a large number of unsafe abortions and attendant maternal morbidity and mortality. Majority of the female students on campus age from 17 years and above.

Akani et al (2008) underscore the critical role EC services can play in a high social activity setting such as the crude oil exploration region of Niger Delta in Nigeria which is associated with high unwanted pregnancies, unsafe abortions and its related maternal morbidity and mortality. The authors also find the EC (LNG)-only pills, as well as the combined oral contraceptive pills as the most common ECs. These high social activities are equally available on University campuses all over the world.

Despite the important role EC plays in reduction of unwanted/ unintended pregnancy and unsafe abortion and its maternal mortality and morbidity, there is anecdotal evidence of large number of female students reporting daily at the University Hospital, Legon, with complaints of changes in their patterns of menstrual flow after having used Levonogesterol Emergency Contraception Pill (LNG ECP) frequently as a regular contraceptive method. The Emergency Contraceptive Pills(LNG ECP) have been known to cause changes in pattern of menstrual bleeding as well as the length of the menstrual cycle , (Gainer et al 2006). There are also significant changes observed in menstrual cycle after LNG EC use in women with a regular menstrual cycle. These menstrual cycle changes include the length of the cycle, how long the period lasts, duration of menstrual appearance as well as increased incidence of intermenstrual bleeding. Concerns about side effects posses challenges to increased family planning use in Ghana. A focus group discussions from three different

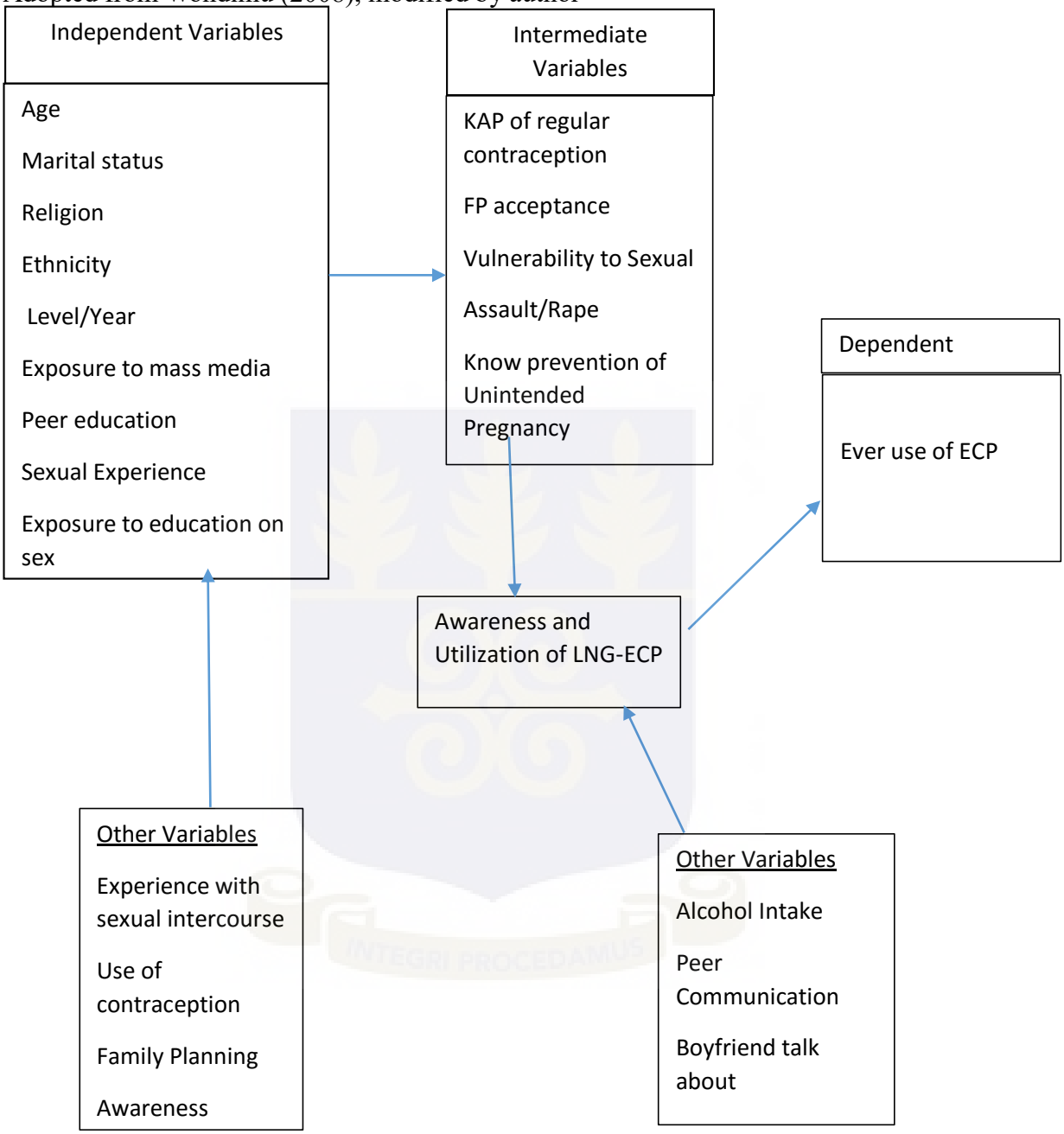
clinics within Legon Hospital in Accra, Ghana , found women to be most concerned with menstrual irregularities caused by hormonal contraceptive methods (Hindin et al., 2014) .

Several studies (F. Baiden et al (2002),V. Addo et al (2009), D. Tilahun et al (2010),B. Parey et al (2010),N Tajure et al (2011),F. Ahmed et al (2012) have been done which looked at the knowledge, attitude and practice concerning emergency contraception use among university students. Few have looked at relationship between socio-demographic variables and the use of EC pills.

This study, therefore, seeks to determine the relationship between socio-demographic variables and the use of LNG-ECP, among female undergraduate students of UG. The study also seeks to contribute to existing literature and bridge the knowledge gap on the side effects associated with the frequent use of ECs, as well as help to provide credible and important information that will help in policy formulation.

Figure 1 Conceptual Framework of the Study

Adopted from Wondimu (2008), modified by author



1.3 Justification

The study will contribute to evidence based knowledge and research and inform policy.

1.4 General Objectives

To determine the use of emergency contraception among the female undergraduate students of University of Ghana, Legon.

1.5 Specific Objectives

- To assess the knowledge of the respondents about the LNG (ECP)
- To determine the proportion of the students who have ever used emergency contraceptive
- To ascertain the sources of the emergency contraceptive pills use on UG campus.
- To determine the relationship between socio-demographic characteristics and the use of ECP

1.6 Research Question

What is the level of knowledge of emergency contraception among the university of Ghana Undergraduate students?

- What is the proportion of undergraduate students who have ever used EC?
- Where do female undergraduate students get EC pills on campus?
- Is there any relationship between socio-demographic characteristics and the use of EC pills?

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents a review of literature related to the objectives of this study. It

Comprises the background to the review, types of emergency contraception, contraceptive use in Ghana, factors influencing contraceptive use, knowledge of contraception use, access to contraception methods, socio-demographic characteristics and consequences of unintended pregnancy.

2.1 Background

Family planning in general can reduce poverty and hunger and also leads to reduction of maternal mortality deaths by 32% and childhood deaths by 10%.These are possible especially in countries with high birth rates. It also contributes substantially to empowerment of women, achievement of universal primary schooling, and long-term environmental sustainability. Additionally, 40 years of family-planning programmes have played a major part in raising the prevalence of contraceptive practice from less than 10% to 60% and reducing fertility in developing countries from six to about three births per woman. However, in half the 75 larger low-income and lower-middle income countries in Africa, contraceptive practice remains low and fertility, population growth, and unmet need for family planning are high. (Cleland, Family planning: the unfinished agenda, 2006).

Peterson(2013) also highlighted the unacceptably high unmet need for modern contraception in the world's poorest countries. They again identified the benefits of meeting this need, including the right to contraceptive information and services, improvement of the health of women, children, and families. The Lancet Series on family planning in 2012 also

provided compelling evidence for these assertions. These series also identified the works of Ahmed and colleagues (Chowdhury, 2009) who had estimated that contraceptive use averted 272 040 maternal deaths in 2008, and that meeting unmet need for contraception could prevent an additional 104 000 maternal deaths per year. Furthermore, the Series highlighted the economic consequences of family planning as assessed by Canning and Schultz including positive outcomes for economic growth, such as increases in women's earnings and participation in paid employment, healthier and better educated children, and an increased proportion of people of working age.

Additionally, the UNFPA, OUTLOOK (2008), identified 63 % of women in developing countries to be using a method of family planning today. In 1960 , the percentage was just 10% .There is therefore unmet need for family planning despite this increase, and as many as 1 in 6 married women in developing countries, has unmet need for family planning (that is, the woman wants to postpone her next pregnancy or stop having children altogether but for whatever reason is not using contraception) .

Again, according to Cleland(2014) unmet need for family planning has reduced markedly, with the exception of sub-Saharan Africa. Sexually active unmarried women, who contribute almost 20 percent to total unmet need in developing countries. Among the reasons for the high unmet need in low contraceptive uptake situations include communal resistance and inadequate information concerning methods. As contraceptive use rises, the importance of these reasons diminishes, but worries concerning side effects and health influence remain a barrier, and discontinued users, due to side effects, form a large percentage of those with unmet need.

This high unmet need accounts for 76million women in developing countries experience unintended pregnancy yearly, and 19millions result in unsafe abortion with its attendant maternal mortality and morbidity.

2.2 Types of Emergency Contraception

For definition of a Modern contraception method, Hubacher D.,Trussel, (2015), propose the following, 'A product or medical procedure that interferes with reproduction from acts of sexual intercourse `. Hubacher D., Trussel ,(2015) , therefore, classify sterilization (male and female), intrauterine devices and systems , implants, Oral contraceptives , condoms (both male and females), injectable , emergency contraceptive pills, patches, diaphragm/cervical caps, spermicidal agents, vaginal rings and sponges as modern contraceptive methods and fertility awareness approaches, withdrawal , locational amenorrhea as well as abstinence are classify as non-modern contraceptive methods' .

The role of emergency contraception (EC) as one of the modern methods to achieve this important strategy cannot be underestimated. Ahmed et al(2012) defines EC as a modern contraception used after unprotected sexual intercourse when the regular contraceptive methods are not in use. Ahmed et al (2012), also emphasis the role of EC in avoiding unwanted pregnancies, unsafe abortions and reducing maternal morbidity and mortality respectively. They also highlight the need for availability and appropriate use of EC as a back-up during instances where regular modern contraceptive methods are not used, misused, failed or when there is rape.

According to Tajure et al (2011) when a female misses out on her regular family planning method(s) or during rape or condom tear during sexual activity , EC use becomes very important to prevent accidental pregnancy as well as unsafe abortion . Trussel J et al (2016) also conclude that EC provides women with a last chance to prevent pregnancy after

unprotected sex, and that women deserve the last chance. Nemours Foundation (1995) also defines Emergency contraception (EC) as a way to prevent unwanted pregnancy and women after unprotected intercourse can take the hormone pills, also called morning after pills within 72 hours' time and up to five days to prevent production and fertilization of the egg. The authors also recommend EC for teens that are forced to have intercourse, not for girls who are already pregnant.

Additionally Acog (2010) also defines emergency contraception, as a postcoital contraception, a treatment used to prevent pregnancy after an unprotected or inadequately protected act of sexual intercourse. Women seeking emergency contraception typically are younger than 25 years, have never been pregnant, and have used some form of contraception in the past (1–3).Also, common indications for emergency contraception include contraceptive failure (e.g., condom breakage or missed doses of oral contraceptives) and failure to use any form of contraception. Increasing emergency contraception awareness and knowledge are significant priorities in the effort to prevent accidental pregnancy. Means of emergency contraception include administration of progestin-only or combination estrogen–progestin oral contraceptives, synthetic and conjugated estrogens, antiprogestins, or the insertion of a copper intrauterine device (IUD).

According to WHO, (2016) Media centre, the EC is operational few days following intercourse, and before ovulation and fertilization occur. The EC is not active when the process of implantation has begun and it will not cause abortion.

And there are three methods of emergency contraception, namely;

- Levonogesterol Emergency Contraception pills (LNG-ECP).
- Combined oral contraceptive pills, also called Yuzpe method and
- Copper IUD (Copper-bearing IUD).

According to WHO (2016) , Levonogesterol (LNG) 1.5mg pills as an example of ECP (original treatment schedule was one 0.75mg dose within 72 hours after unprotected intercourse, and a second 0.75mg dose 12 hours after the first dose), and Ulipristal acetate 30mg pills exist as emergency contraceptive pills (ECPs) . Base on conclusion from Natalia N et al (2006), there is a support of the concept that the LNG ECP has little or no effect on post ovulation events but is highly effective when taken before ovulation. For Ulipristal (a second-generation antiprogestin), it has been found to be highly effective and well tolerated and it is marketed under the brand name Ella ,(Baird, Trussell, & Webb, 2015) .

Akani et al (2008) underscore the critical role EC services can play in a high social activity setting such as the crude oil exploration region of Niger Delta in Nigeria which is associated with high unwanted pregnancies, unsafe abortions and its related maternal morbidity and mortality. The authors also find the LNG-only pills, as well as the combined oral contraceptive pills as the most common Emergency Contraceptive methods available in that setting. These high social activities are equally available on University Campuses all over the world.

On the level of knowledge and attitude to EC, (Desta & Regassa, 2011) conclude that the overall level of awareness is fair, but the actual knowledge is very low (25.7 percent) among the female students of Haramaya University. And among those who have ever heard of EC, 76.5 percent of them have favourable attitude towards EC. The authors through their findings also documented that knowledge and attitudes of the female University students are affected by a wide range of personal characteristics and family background namely; age, grade level , religion , sex education , and alcohol .

Additionally, Tajure N., Pharma B (2010) also show in their study among regular graduating students from Ethiopia's Jemma University that awareness and knowledge of

EC as well as access to EC services were low and even among those who were aware, the detail knowledge and practice of EC was very low. This low awareness according the authors affect the potentially high utilization of EC services .The authors recommend the setting up of health education program for the benefit of the students. With respect to side-effects (Akintade, Pengpid, & Peltzer, 2011)) observed that despite the high awareness of family planning, 97.5 percent, and utilization among female students, condom being the most commonly used method , there is a great deal of misconceptions of contraception ,examples like "family planning causes cancer'' and that some family planning methods can "prevent sexually transmitted infection'' are identified among the respondents in their study. Again, Shohel et al (2014) through randomized, double-blind trials, a methodical review of effectiveness and safety of different regimens of levonorgestrel oral tablets for emergency contraception involving healthy women with regular menstrual cycles, who requested emergency contraception within 72 h of unprotected coitus, to one of three regimens: 1.5 mg single dose levonorgestrel, two doses of 0.75 mg levonorgestrel given 12 h apart or two doses of 0.75 mg levonorgestrel given 24 h apart . The primary conclusion has been accidental pregnancy; other outcomes were side-effects and timing of next menstruation. The trial successfully recognised the contraceptive effectiveness of levonorgestrel, regardless of the dosing regimes, for preventing unintended pregnancy and its key side effect was found to be recurrent menstrual irregularities.

Trussell J et al (2016), also identify nausea, vomiting, abdominal pains, breast tenderness, headache, dizziness and fatigue as side effects of EC. According to the authors, these side effects do not occur for more than a few days after treatment , and generally resolve within 24 hours.(Raymond et al., 2006) also found LNG ECP in the first 3 weeks of the menstrual cycle considerably reduced that cycle as compared to those with the usual cycle length and with the cycle duration in a comparison group. The magnitude of this effect was greater the

earlier the pills were taken. In comparison, the duration of the first menstrual period after treatment increased significantly with cycle week of treatment and was longer in women who used the treatment than in those who did not. Intermenstrual bleeding occurred in only 5% of women in the first cycle after treatment. The authors also found the effect of the single-dose levonorgestrel ECP treatment on the timing and duration of the next menstrual period to depend on when during the cycle the pills are taken and that intermenstrual bleeding following treatment is rare.

Additionally, Gainer et al (2006) also observed through a prospective study, substantial but brief changes in menstrual cycle after LNG EC use in women with a regular menstrual cycle. The menstrual cycle characteristic changes vary; in a group of 232 participants (mean age, 25 years), the authors observed 34 (14.7%) cases of occasional intermenstrual bleeding and statistically significant changes in menstrual cycle length, menstrual period length and menstrual appearance compared to baseline patterns that differed according to whether EC was taken well before, close to or well after the expected ovulation for that cycle. The majority of these changes disappeared in the following cycle. Levonorgestrel EC is, therefore, associated with significant but transient changes in menstrual patterns in a substantial percentage of the users. (Alano, Costa, Miranda, & Galato, 2012) , through a cross-sectional observational study identified adverse reactions described by 20.9% of the respondent, the most common being menstrual cycle changes (44.8%) and nausea (44.8%) after emergency contraception was used 2.4 times, and 87.1% had used contraceptive methods within 24 hours after sexual act.

(Halpern, 2014) identified frequent use of post-coital hormonal contraception to be not currently recommended due to the higher risk of side effects and lower contraceptive effectiveness compared to other modern methods of contraception.

2.3 Contraceptive Use in Ghana

According to the GSS et al 2015, further one in four currently married women (27%) in Ghana are using some method of contraception and, and 22 out of a hundred of married women use modern methods, and only 5 out of a hundred use traditional methods. And amongst, the modern methods, injectable (8 percent) are most widely used, followed by the pill and implants (5 percent each). Among the sexually active unmarried women, 45 out of a hundred are currently using a contraceptive method (32 out of a hundred are using a modern method, and 13 out of a hundred are using a traditional method). The male condoms, the pill, and the rhythm (8 percent each) are the most commonly used methods among the sexually active unmarried women, followed by injectable (7 out of a hundred), implants (5 out of a hundred), and withdrawal (5 out of a hundred).

With respect to unmet need in lieu of family planning , the Ghana Demographic and Health Survey , GSS et al (2015,p16) report documented 30 out of a hundred of currently married women have unmet need for family planning and among the unmarried sexually active women 42 out of a hundred have unmet need for family planning and 45 out of a hundred are currently using a contraceptive method .The total demand for family planning among the unmarried sexually active is 87 out of a hundred, and only 51 out of a hundred of the potential demand are being satisfied. Modern Contraception use has been found to be an important intervention in the prevention of accidental pregnancies, unsafe abortions, as well as maternal morbidity and mortality.

The EC was introduced into the Ghana National family planning program in 1996, and Levonogesterol 1.5mg pills specified for EC use appeared on the 2010 essential drug list. It can be purchased in most pharmacies without prescription and it is available throughout Ghana, Ghana Standard Treatment Guideline, (2010). Additionally, there are three

Levonogesterol 1.5mg products registered and marketed in Ghana, namely*; Norlevo* (*HRA Pharma*), Postinor-2 (*Gideon Richter*), *Pregnon* (*Famycare*) and Lydia. The Postinor-2 brand happens to be the commonest brand on the Ghanaian market currently.

2.4 Factors Influencing Contraceptives Use

A systematic review of literature concerning factors that influence the use of contraceptive in 58 sub-Sahara countries between 2005 and 2015 by Blackstone et al (2017) identified women's misconceptions of contraceptive side–effects, male partner disapproval, and social/cultural norms surrounding fertility as negative factors and education, employment, and communication with male partner as positive factors respectively. To increase contraceptive use in sub-Sahara Africa therefore must involve community and systems wide response to counteract these negative factors and misinformation.

Again, Marrone et al (2014) who looked at the predictors of contraceptive use among adolescents in Ghana, identified one's dwelling place and marital status to be the most main predictors of contraceptive use among sexually active adolescents. Adolescents resident in countryside are less likely to use contraceptives as compared to adolescents in the city.

Adjei et al (2014) who also looked at the psychosocial factors affecting contraceptive usage in Ghana, however identified knowledge of access to contraceptive method as the most important variable among other equally significant variables.

As well, Eliason et al (2014) in a case-control study in Nkwanta district of Ghana identified lack of formal education among women, socio-cultural beliefs and spousal communication to influence modern family planning use. Furthermore, favourable opening hours of the facilities as well as distance to health facilities were found to influence the use of modern contraceptives. Again, despite the high awareness and knowledge (over 90%) of modern

family planning among these women, actual use of such contraceptives was found to be inadequate in the study population.

Teye et al (2013) on the other hand found, level of education, place of residence, and work status as significant factors influencing modern contraceptive use among women in the study area, Asuogyaman district of Ghana. Fear of side effects, desire for more children, and partner's disapproval were also found to be the main barriers to modern contraceptive use in the study area. Some of the solutions suggested by the authors, among others, include making family planning services available and accessible, and address of attitudinal factors such as fear of side effects and penchants for high fertility by health workers.

Moreover, Crissman et al (2012) examined the association between women's sexual empowerment and contraceptive use in Ghana among nonpregnant married and partnered women not desiring to conceive in the afterward three months. They identified increasing levels of sexual empowerment to be associated with use of contraceptives, even after correcting for demographic predictors of contraceptive use. They also found the association to be weakened by wealth. Formal education, increasing wealth, and being in an unmarried partnership were found to be associated with contraceptive use, whereas women who identify as being Muslim are less likely to use contraceptives than those who identify as being Christian. These conclusions suggest that to achieve universal access to reproductive health services, including contraception services, gendered differences in sexual empowerment, mainly among economically disadvantaged women, must be attended to.

Furthermore, Tiruneh et al (2016) also identified improvement in women education, providing employment opportunities for women, as well as providing training to family planning providers as essential to increasing contraceptive use among married women in Ethiopia.

Other socio-demographic factors such as mother's education, presence of an elder sibling in the family, motivation for engaging in sexual intercourse, talking with friends, in addition to self-assessment of the knowledge about contraception have been identified by Bjelica A (2008) as factors that influnce contraception use among female University students in Serbia.

On the other hand, non-use of contraception among the University students of Uganda differs from males to females according to Mehra et al (2012) probably due to gendered power relationships. The authors, therefore recommend sexual and reproductive health policies and programmes to be designed to tackle these differences.

2.4.1 Knowledge of Contraceptive Methods

Frost et al (2012), who looked at young adults' Contraceptive Knowledge, Norms and Attitudes found additional half of young men and a quarter of young women who were surveyed received low marks on knowledge of contraceptives and 60 percent of them underestimated the effectiveness of oral contraceptives.

However, Somba et al (2014) in a cross-sectional research amongst female undergraduates students of Muhimbili and Dar es Salaam Universities in Tanzania found most of the students had knowledge of contraception. Despite this high knowledge about contraception, the rate of usage was low, though bulk of the sampled students were sexually active at a young age.

Additionally, qualitative research done by Biney et al (2011) about contraceptive knowledge and use among women who are undergoing elective termination of pregnancy in the Greater Accra Region, Ghana, found women not to have knowledge of contraceptive methods prior

to the termination. Others did not use contraception due to side effects to previous bad experiences with modem contraceptive method.

2.4.2 Knowledge of Contraception Use

Contraception use has been found to have increased generally according to Creanga et al (2011),though there are slight decline in other countries.And upon adjusting for fertility intentions, women in richer wealth brackets are found by the authors to be more likely than those in the poorest wealth brackets to practice long-term contraception.They , therefore, concluded that the success of family planning interventions in sub-Sahara Africa depends on social segments, nevertheless there are issues of inequality in all countries.

Additionally, a multicountry analysis of data on knowledge and use of emergency contraception by Palermo et al (2014) showed a big difference or gap between knowledge of emergency contraception and proportion of the surveyed population that used emergency contraception.And the odds of having knowledge or use of EC increases with wealth. And urban residential status in some countries was also found to be associated with having knowledge.

2.4.3 Access to Contraceptive Methods

Access to modern conraceptive methods are now considered as human rights,since it aids in enhancing the health and welbeing of females,familes and citizens of the world.Despite these important role of contraception,access remains very low and uneven. (Welsh, 2006).Several barriers hinder access to modern contraceptive methods.These include irregularity in supply and few service delivery points. Other barriers such as geographic,

economic, inappropriate or lack of information, psychosocial and administrative barriers may undermine access to modern contraceptive methods.

2.4.4 Socio-demographic Characteristics versus Contraception

Apart from male and female sterilization, all other methods of contraception are indicated for all age groups. There is, therefore, the need to counsel young people appropriately about the risks and benefits of each contraceptive methods, so that they can make appropriate choices. (French, 2009).

Pérez et al (2010) looking at the determinants of oral contraception use in a southern European setting, found marital status not to be associated with oral contraceptive use.

Furthermore, religious and cultural factors have been identified by Srikanthan et al (2008) as potential influences both for approval and the use of contraception by couples from different religious and cultural circumstances in a very unique way. Additionally, individual sects within a particular religious group may interpret religious teachings differently. However, Gyimah et al (2012) using pooled data from Demographic and Health Survey(1998-2003),found no difference in contraceptive behaviour between women of different christian faiths. Non-christian (i.e Muslims and Traditionalists) women on the other hand are less probable to use contraception as compared to the christaian women.

Level of education, among other factors , has been found by Teye et al (2013) to significantly influence the use of modern contraceptive among the women in the study area. Other social investments aside female education are essential to achieve universal access to family planning and contraception according to Emina et al (2014).

Exposure to mass media through campaigns according to Wakefield et al (2010) will produce either positive or negative changes in behaviours which relates especially to health.

For exposure to sexual experience and the use of contraceptives among teens CDC (2012), found almost 60 percent of sexually experienced teens to be using very effective contraceptive methods such as intrauterine device [IUD] or hormonal methods. However, systematic review of the literature by Sanderset al (2014) on extremely effective reversible contraception (HERC) and sexual experiences found no improvements or no change in sexual experience and function outcomes with the HERC use.

Formal sex education according to Mueller et al (2008) may effectively reduce adolescent sexual risk behaviours when provided before sexual initiation. Sex education was identified to be particularly important for subgroups that are traditionally at high risk for early initiation of sex and for contracting sexually transmitted diseases. Again, for those who are at high risk of early sex initiation, sexual education was found to be very essential. Formal sexual education also helps in prevention contracting of STDs/STIs.

2.5 Consequences of Unintended Pregnancy.

Unintended pregnancy remains a global health problem, with 41% of all pregnancies worldwide are unintended, and there are high rate of unintended pregnancy in less developed regions than more developed regions. (Secura, 2013).

The use of long acting and reversible contraceptive methods under the Affordable Care Act according to Pickle et al (2014) have the greatest potential to decrease unintended pregnancy. (Trussell, 2007) , estimated the direct medical cost of unintended pregnancy in the US to be US$5billions,and the direct medical cost savings to be made from using contraception to be US$19billions.Unintended pregnancy is therefore very expensive in the US.

Additionally, estimates of the number of unintended pregnancy in sub-Sahara Africa was 14millions. (Hubacher, 2008).

According to Peipert et al (2012), unintended pregnancy may be reduced by providing no-cost contraception and also by promoting the most effective contraceptive methods available.

There is anecdotal evidence of large number of the female students at UG reporting at the students' clinic with complaints of menstrual disorders, including changes in menstrual patterns, and intermenstrual bleeding after repeated use of the LNG ECP. These students normally present with no underlying disease apart from having used LNG ECP repeatedly in preceding months. This study is, therefore, aimed among other things, to help determine objectively data on menstrual cycle characteristics patterns among female undergraduate students of UG who use LNG ECP. It also helps to determine any relationship between socio-demographic variables and use of LNG ECP and changes in pattern of menstrual cycle among the female undergraduate students of UG who use ECP. And also to predict the menstrual cycle changes to expect by the users as well as to inform policy.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This section seeks to describe the study methods and materials used to achieve the objectives of the study. It provides information about the study area, study population, study design, sampling technique as well as sample size calculation. The section will also look at data collection techniques/procedures, data entry and processing and data analysis. Also to be discussed in this section are ethical issues.

3.1 Study Design

A cross-sectional quantitative study design was used to collect the data on the use of LNG ECP (EC) as well as the changes in the pattern of menstrual cycle among female undergraduate students of UG who use EC.

3.2 Study Area

The study was conducted in University of Ghana (UG), Legon. UG is located within the Ayawaso sub-metro Area of Accra Metropolitan Assembly (AMA), largely based at Legon, about 12 kilometres northeast of the centre of Accra, the capital city of republic of Ghana, Accra. The University has a minor campus in the city of Accra .The University of Ghana was founded in 1948 and established by an Act of Parliament on October 1, 1961 (Act 79). There are eight public Universities in Ghana and UG is the oldest and the largest of them. The current students population is thirty-seven thousands nine hundred and forty (37,940), with a male to female ratio of about 1.4:1.0 (which is equivalent to a female population of about fifteen thousands, eight hundred and eight, 15,808).UG, (2016). The University provides both residential and non-residential facilities to the students and some of the

academic staffs and senior professional staffs are provided accommodation facility on campus. (UG, Enrolment Facts, 2016.

UG operates a collegiate system and comprises the following colleges:

- College of Basic and Applied Sciences
- College of Education
- College of Health Sciences and
- College of Humanities.

There are also a number of research institutions/centres for learning and research, these include Noguchi Memorial Institute for Medical Research (NMIR) , Centre for Tropical, Clinical Pharmacology and Therapeutics, Regional Institute for Population Studies, Institute for Environmental and Sanitation Studies and Institute for Statistiscal,Social and Economic Research.

3.3 Study Population

The study covered all the female undergraduate students of University of Ghana, Legon, ranging from level 100 to level 400. A large proportion of the undergraduate students admitted to UG are within the age bracket of 17 to 30 years, and the total undergraduate student population for the 2016/17 academic year was thirty –two thousands and fifty-nine (32,059) which gives total female undergraduates population of thirteen thousands three hundred and fifty eight (13,358) for 2016/17 academic year, using the ratio of male to female population of 1.4: 1.0. (UG, 2016). This population of female undergraduate students was further stratified into faculties of arts and sciences respectively. I did approximate 90 percent of the 13,358 female undergraduate students to fall within the age bracket, 17 to 30 years, and this gave a total study population of 12,022.

3.3.1 Inclusion Criteria

To be involved in the study one must first be a female student of UG, and must also be an undergraduate.

3.3.2 Exclusion Criteria

One is excluded from the study if the individual is not a female undergraduate student of UG.

3.4 Variables

The study used the following individual's socio-demographic variables to explain the use of Levonogesterol Emergency Contraception among the female undergraduate students of University of Ghana.

Dependent Variables

The dependent variable of this study is 'Ever use of Emergency Contraception '.

Independent Variables

The independent variables that are used to explain the dependent variable in multivariate analysis are grouped under the following headings: socio-demographic, and other variables. These are ages, marital status, religion, and ethnicity, and level, exposure to mass media, peer education, sexual experience, and exposure to education on sex. Other independent variables include, experience with sexual intercourse, use of Contraception, family planning awareness, alcohol intake, peer communication and boyfriend talk about Reproductive Health.

Intermediate Variable

The intermediate variables includes knowledge , attitude and perception of the use of regular contraception , acceptance of family planning services , vulnerably to sexual assault, including rape as well as having the knowledge of preventing unintended pregnancy .

3.5 Sample Size Calculation

The minimum required sample size calculation was used to calculate the sample size, using the total study population of 12,022 female undergraduate students, using electronic calculator, aiming at 5 percent margin of error, 95 percent confidence level with an average proportion of 44 percent (WHO, 1998), finite population correction formula, and the 10 percent non-response rate, approximated study sample size of 200 was obtained.

3.6 Sampling Method

The 12,022 female undergraduate students who were aged between 17 to 30 years were eligible and participated in the study. The respondents who were found to be female undergraduate students of UG were contacted privately and introduced to the study. They were given opportunity to opt out if they did not want to participate. This process was adhered to strictly until the calculated sample size of 200 was attained. Although purposive sampling as a technique has bias as a weakness, it is very useful here, since I needed to reach the targeted population quickly and sampling for proportionality is not my concern here. Additionally, it enabled me in selection respondents that are very important in answering the questionnaires and fell within the undergraduate female student group.

3.7 Questionnaire Design and Administration

Three research assistants, with knowledge in ECP and the research topic were recruited and trained for one day. The training involved giving them explanation about the content of the questionnaires including seeking consent from the respondents. Each question was explained to the research assistants, as much as possible to reduce bias on the fields. They were also trained to adhere to strict ethical guidelines of the study.

A questionnaire was hand-held and self-administered in English Language after pretesting twenty pieces at University of Professional Studies (UPSA), a neighbouring tertiary institution, with similar demographic characteristics. The pre-test questionnaires was reviewed, since a lot of unanticipated problems were identified after the pre-testing, and the needed changes were, therefore, made to elicit the necessary responses to achieve the aim/objectives of the study. The questionnaire was then self - administered to collect data on the participants' socio-demographic characteristics, the context and extent of use of LNG ECP, as well as menstrual pattern changes associated with use. The participants were guaranteed confidentiality and privacy throughout the data collection process. Additionally, the participants were encouraged to complete the questionnaires in privacy, and all questionnaires were checked for completeness by the researcher.

3.8 Quality Control

Research assistants with basic knowledge about emergency contraception, as well as a data entry clerk were engaged, and trained before the administration of the questionnaires. The questionnaires were reviewed at the end of each day and those questionnaires which were found to be uncompleted were not entered. The dataset was cleaned before running the analysis.

3.9 Data Processing and Analysis

The data was collected on daily basis and meeting were held after close of day and matters arising were discussed and completed questionnaires were checked to ensure completeness. On daily basis coded questionnaires were given to research assistants after the day's work based on the number of questionnaires projected to be administered the following day. Completed questionnaires were coded within a day and data were cross-checked thoroughly before entering into the database of Microsoft Excel. The socio-demographic characteristics of the respondents were described using frequency and percentages to find the distribution. Chi Square test and Cramer's V tests were used to determine the relationship between the socio-demographic variables and the use of EC pills among the study population.

3.10 Data Storage/Protection of Data

Hard copies of the respondents' answers were kept and stored by the researcher in a locked cupboard in bedroom for a minimum of five years for future research and academic purposes. The electronic information was also stored on a password protected computer. Future use of the stored data shall be subject to further GHS-ERC approval. If the need arises, the hard copies will be shredded and/or the electronic copies will be permanently deleted from the hard drive of the computer using the appropriate software programme.

3.11 Ethical Review

Approval for the study was obtained from the Ghana Health Service Ethical Review Committee of the Research and Development Division of the Ghana Health Services. The participants were presented with and contacted in privacy, and informed about the purpose of the study in privacy.

3.11.1 Confidentiality: The respondent had the right to insist that her name was not recorded anywhere and apart from me (the researcher) and identified members of the research team, nobody knew about respondent's involvement in the study. Additionally, the questionnaires were filled in an enclosed place to ensure privacy**.**

3.11.2 Anonymity: The respondent's name was not recorded anywhere and no one would be able to connect her to the answers she gave throughout the data collection process. Additionally, the responses were assigned a code number and this will be referred to in this way in the data, and any publications, or other research reporting methods as well as conference records. The respondents were free to opt out, if they so desire after the objective of the study was explained to them. Additionally, only the 200 participants were consented and, therefore, given the questionnaire. The study will serve to contribute to evidence based knowledge and research and inform policy.

3.11.3 Compensation There was no compensation for the respondents or any financial benefit offered for participating in this study. Their input/contribution were however recognised and highly appreciated.

3.11.4 Voluntary consent

Throughout the administration of questionnaires, voluntary consent was sought from the respondents before data was collected. Participation was therefore very voluntary. Respondents were also allowed to stop anytime they felt tired and opt out of the study.

3.11.5 Conflict of interest

I have no personal interest in this study, apart from the academic and public health importance.

CHAPTER FOUR

RESULTS

4.0. Introduction

This chapter presents the findings of the study in accordance with the stated objectives and research questions. The chapter is in six sections. Section one presents Socio-demographic characteristics of respondents. Section two presents the assessment of the knowledge of respondents about LNG (ECP) and its side effects. Section three presents the proportion of the respondents who had ever used emergency contraceptive as well as intention to use by those who had never used. Section four presents the reasons for the method of contraception. Section five presents the respondents' source of emergency contraceptive pills and the nature of advice provided them at the point of purchase and section six presents the chapter summary.

4.1. Demographic characteristics of respondents

Table 4.1a and 4.1b present the socio-demographic characteristics of respondents in the study. A total of 200 respondents were surveyed. Table 4.1a shows that the average age of the respondents was 24.3 (SD= 4.8) years while the minimum and maximum ages were 17 years and 44 years respectively.

Table 4.1a: Age of respondents

Variable	Observations	Mean	Standard deviation	Min	Max
Age (years)	200	24.3	4.8	17	44

Table 4.1b shows that majority, 105 (52.5%) of the respondents were Akans, 34 (17.0%) were Ewes while 30 (17.0%) were Gas/Dangbes. More than two-thirds 170 (85.0%) of the respondents were single while 24 (12.0%) were married. Majority 178 (89.0%) of the respondents were Christians and 18 (9.0%) were Muslims. More than one-third 75 (37.5%) of the respondents were in Level 400, 50 (25.0%) were in Level 300, 38 (19.0%) were in Level 100 while 37 (18.5%) were in Level 200. Majority 117 (58.5%) of the respondents were studying Arts related program while 83 (41.5%) were studying Science related program. More than half 102 (51.0%) of the respondents were resident on campus while 98 (49.0%) were either non-resident or 'perching' (i.e. nonresident student sharing apartment space with resident student on campus).

Table 4.1b: Socio-demographic characteristics

Variable	Frequency (N=200)	Percent (%)
Ethnicity		
Ga/Dangbe	30	15.0
Ewe	34	17.0
Akan	105	52.5
Northerner	17	8.5
Others	14	7.0
Marital status		
Married	24	12.0
Single	170	85.0
Divorced	2	1.0
Co-habiting	2	1.0
Others	2	1.0
Religion		
Christian	178	89.0
Moslem	18	9.0
Traditionalist	1	0.5
No religion	1	0.5
Others	2	1.0
Educational level		
Level 100	38	19.0
Level 200	37	18.5
Level 300	50	25.0
Level 400	75	37.5
Program of study		
Science related	83	41.5
Arts related	117	58.5
Residence		
Resident	102	51.0
Non-resident	98	49.0

4.1c. Age at first sexual intercourse by respondents

Table 4.5 shows the respondents' age at first sexual intercourse. The mean age was 19.7 (SD= 3.3) years while the minimum and maximum ages were 10 years and 32 years respectively.

Table 4.5: Age at first sexual intercourse by respondents

Variable	Observations	Mean	Standard deviation	Min	Max
Age (years)	162	19.7	3.3	10	32

4.2. Sexual activity among the respondents

Table 4.2 presents the sexual activity among the respondents. More than two-thirds 168(84.0%) of the respondents have had sexual intercourse before while 32 (16.0%) never had. Close to half 83 (49.4%) of those who ever had sexual intercourse stated love as the reason for the act, 59 (35.1%) stated love, 10 (6.0%) mentioned marriage and 8 (4.8%) said they were under the state of alcohol. More than half 93 (55.4%) of those who have ever had sex did nothing after the sexual intercourse, 42 (25%) said they told their friends while 20 (11.9%) said they bought emergency contraceptive pills.

Majority of the respondents confirmed they did not have the sexual intercourse against their will while 43 (25.6%) said they were coerced. More than half 105 (62.5%) 0f the respondents had one sexual partner, 28 (16.7%) had two while 15 (8.9%) had more than two sexual partners.

Table 4.2: Sexual activity among the respondents

Variables	Frequency	Percent (%)
Have you had sexual intercourse before?		
Yes	168	84.0
No	32	16.0
Total	200	100
What are the reasons for having first intercourse		
Love	83	49.4
Curiosity	59	35.1
Marriage	10	6.0
State of school	8	4.8
Not applicable	5	3.0
Violence/rape	3	1.8
Total	168	100
What did you do after the act?		
Did nothing	93	55.4
Told a friend	42	25.0
Bought emergency contraceptive pills	20	11.9
Others	8	4.8
Report to police	3	1.8
Report to the hospital	2	1.2
Total	168	100
Have you ever had sexual intercourse against your wish before?		
No	121	72.0
Yes	43	25.6
Not applicable	4	2.3
Total	168	100
Number of sexual partners		
None	20	11.9
One	105	62.5
Two	28	16.7
More than two	15	8.9
Total	168	100

Totals differ based on number responding to the question.

4.3. Cost of Emergency Contraception (EC) Pills

Table 4.3 present the cost of the emergency contraception pills in the study as provided by the respondents. The mean cost of the EC pill was 15.4 (SD= 11.8) Ghana Cedi (GHS) while the minimum and maximum costs were 1GHS and 75 GHS respectively.

Table 4.3: Costs of EC

Variable	Observations	Mean	Standard deviation	Min	Max
Cost (GHC)	126	15.4	11.8	1	75

4.4. Levonogesterol emergency contraception (LNG-ECP) by respondents

Table 4.4 shows the medical history of respondents in the study. Respondents were asked whether they normally protect themselves against pregnancy during sexual intercourse. Majority 112 (66.7%) said they do protect themselves, while 53 (35.4%) stated they do not. Out of the 168 respondents who had sexual intercourse, 91 (54.2%) mentioned EC pills (postinor-2) as what they used for protection while 29 (17.3) stated they used non-emergency contraception method.

Close to half of the respondents mentioned television as the medium through which they got to know about contraception, 49 (24.5%) mentioned friends and relatives while 16 (8.0%) stated they heard it from their boyfriends. More than half 103 (51.5%) of the respondents knew of LNG-ECP (postinor-2), 61 (30.5%) knew of Lydia emergency contraceptive pills while 18 (9.0%) said they knew of the combined oral contraception pills (COCP).

Respondents were asked about the duration within which the EC is effective when used after unprotected sexual intercourse. Majority, 132 (66.0%) mentioned the EC is effective within 72 hours, 26 (13.0%) said they did not know while 25 (12.5%) stated within 60 hours.

Table 4.4: LNG-ECP use among the respondents.

Variable	Frequency	Percent (%)
Do you normally protect yourself during sexual intercourse?		
Yes	112	66.7
No	53	35.4
Not applicable	3	1.7
Total	168	100
What protection do you normally use?		
Emergency contraception pills (postnor-2)	91	54.2
Non-emergency contraception method	29	17.3
Not applicable	48	28.6
Total	168	100
Through what medium did you get to know about Contraception?		
Television	88	44.0
Radio	9	4.5
Friends/relatives	49	24.5
Print media	7	3.5
Clinic/health provider	15	7.0
Internet	16	8.0
My boyfriend	16	8.0
Total	200	100
Which type of Emergency Contraception do you know about?		
IUD (Copper T)	6	3.0
Combined oral contraception pills (COCP)	18	9.0
LNG-ECP (Postinor-2)	103	51.5
Lydia emergency contraceptive pills	61	30.5
Not applicable	12	6.0
Total	200	100
Within how many hours is EC effective of unprotected intercourse?		
120 hours	12	6.0
60 hours	25	12.5
72 hours	132	66.0
80 hours	5	2.5
Don't know	26	13.0
Total	200	100

Table 4.4(a) shows the continuation of the respondents' answers regarding the LNG-ECP use. When respondents were asked where they could obtain EC on campus, 109 (54.5%) of those who used EC pills mentioned campus pharmacy, 41 (20.5%) said the university hospital (the family planning unit) while 24 (12.0%) said they did not know where to obtain EC pills on campus. Out of the 91 respondents who used EC pills, 50 (54.9%) stated they used it within the last three months or more ago, 25 (27.5%) said less than 2 weeks ago and 12 (13.8%) said a month ago. Further, respondents 46 (50.5%) of the respondents confirmed they used EC pills once in the last six months, 27 (29.8%) said twice within the last six months while 7(7.7%) said more than four times in the last six months.

Respondents were asked when they normally use EC pills (postinor-2): 41 (45.1%) mentioned any time after sexual intercourse, 43 (47.3%) said sexual intercourse during ovulation while 8 (8.8%) said when they have sexual intercourse against their will.

Table 4.4a LNG-ECP use among respondents (Contd of Table 4.4)

Variable	Frequency	Percent (%)
Do you know where to obtain EC on campus?		
Campus pharmacy	109	54.5
University hospital (family planning)	41	20.5
From friend/peer	12	6.0
From boyfriend	14	7.0
Don't know	24	12.0
Total	200	100
When respondents last used EC-Postinor-2?		
Less than 2 weeks	25	27.5
A month ago	12	13.2
Two months ago	4	4.3
Three months plus	50	55.0
Total	91	100
How many times did you use EC (postinor-2) in the last six months?		
Once	46	50.5
Twice	27	29.8
Three times	15	16.7
Four times	3	3.3
More than four times	7	7.7
Not applicable	6	6.6
Total	91	100
When do you normally use EC pills (postinor-2)?		
Any time after I have sexual intercourse	41	45.1
Sexual intercourse during my ovulation time	43	47.3
When exposed to education on sexual intercourse	3	3.2
When I have sexual intercourse against my wish	8	8.8
Not applicable	7	7.7
Total	91	100

Totals differ based on number responding to the question.

4.4.2. Levonogesterol emergency contraception (LNG-ECP) use among the respondents.

Table 4.4(b) shows the continuation of LNG-ECP use among the respondents.

Majority 48 (52.7%) of the respondents who use EC pills confirmed they did have side effects upon using it while 36 (39.6%) said they did not. More than half 46 (50.5%) of the respondents mentioned bleeding /period not stopping as the side they experienced, 21

(23.1%) mentioned nausea / vomiting while 17 (18.7%) mentioned general weakness/ dizziness. However, most 57 (62.6%) of the respondents agreed that they were not told of the side effects of the EC pills by the pharmacists/dispenser.

When respondents were asked where EC education could be obtained on campus, close to half (93 (46.5%) mentioned the University hospital (family planning unit), 46 (23.0%) mentioned campus pharmacy while 26 (13.0%) said they did not know. Majority 139 (69.5%) of the respondents confirmed they had friends who used EC pills (postinor-2).

Table 4.4(b).Continuation of LNG-ECP use among respondents

Variable	Frequency	Percent (%)
Which side-effect did you experience (postinor-2)?		
Nausea / vomiting	21	23.1
General weakness/dizziness	17	18.7
Bleeding /period not stopping	46	50.5
Others	7	7.7
Total	91	100
Were you told about the side-effect of the drug (postinor-2) by the pharmacist/dispenser?		
Yes	26	28.6
No	57	62.6
Not applicable	8	8.8
Total	91	100
Information given last time EC pills (postinor-2) was bought?		
Pills would make me vomit/feel nauseous	18	19.8
It can affect my period/menses	40	44.0
It can make me feel weak/dizziness	8	8.7
Not applicable	25	27.5
Total	91	100
Where can EC education be obtained on campus?		
From boyfriend	15	7.5
From friend/Peer	20	10.0
University hospital (family planning)	93	46.5
Campus pharmacy	46	23.0
Don't know	26	13.0
Total	200	100
Do you have friends who use EC pills (postinor-2)?		
Yes	139	69.5
No	41	20.5
Don't know	20	10.0
Total	200	100
How many of your fiends are currently using EC pills?		
One	36	25.9
Two	33	23.7
Three	32	23.0
Four	13	9.4
Five and more	25	18.0
Total	139	100

Totals differ based on number responding to the question.

4.5. Pregnancy outcomes by respondent

Table 4.5 shows the pregnancy outcomes of the respondent in the study. Overall, 118 (70.2%) of those who ever had sex have never been pregnant while 50 (29.8%) had ever gotten pregnant. Half 25 (50.0%) got pregnant once while 10 (20.0%) had more than three pregnancies. Twenty (40.0%) of the respondents confirmed that they once had unintended pregnancy, 12 (24.0%) had it two times while 15 (30.0%) never had an unintended pregnancy. Out of the unintended pregnancy, 16 (45.7%) were without children, 13 (37.1%) had one child out of it while 4 (11.4%) had more than two children. Currently, 21 (42.0%) 0f those who ever gotten pregnant before have no children, 16 (32.0%) have one child while 13 (26.0%) have more than one. Out of the total pregnancies, 18 (36.0%) of the respondents had theirs aborted once, 13 (26.0%) aborted theirs two times. Out of the total abortions carried out, 16 (47.1%) were done by a medical doctor while 14 (41.2%) were self-induced.

Table 4.5: Pregnancy outcomes by respondent

Variable	Frequency	Percent (%)
Have you been pregnant before?		
Yes	50	29.8
No	118	70.2
Total	168	100
How many times you have been pregnant?		
Once	25	50.0
Twice	12	24.0
Three times	3	6.0
More than three times	10	20.0
Total	50	100
How many were unintended?		
None	15	30.0
One	20	40.0
Two	12	24.0
More than two	3	6.0
Total	50	100
How many children were born through the unintended pregnancies?		
None	16	45.7
One	13	37.1
Two	2	5.7
More than two	4	11.4
Total	35	100
How many children do you have?		
None	21	42.0
One	16	32.0
More than one	13	26.0
Total	50	100
How many pregnancies were aborted?		
None	16	32.0
One	18	36.0
Two	13	26.0
More than two	3	6.0
Total	50	100
By what methods were the pregnancies aborted?		
Self-induced (orthodox)	14	41.2
Self-induced (herbal medicine)	3	8.8
Done by a medical doctor	16	47.1
Done by a non-medical doctor	1	2.9
Total	34	100

Totals differ based on number responding to the question.

4.6. Association between socio-demographic characteristics and use of EC.

Table 4.6 presents the association between the socio-demographic characteristics of respondents and the use of EC. Overall, apart from the respondents who were married (p-value equals 0.047) and constituting 12% of the socio-demographic variable, marital status, all other socio-demographic variables did not have any statistically significant relationship with the use of EC ($p>0.05$), including age, religion, educational level, program of study and residence.

Table 4.6 Association between socio-demographic characteristics and use of EC.

Variables	Ever use EC	No. EC use.	Fisher's exact
	N (%)	N (%)	*p*-value
Age (years)			
≤18	1 (25.0)	3(75.0)	0.295
>18≤25	69(69.0)	31(31.0)	
>25≤30	31(63.3)	18(36.7)	
>30	14(60.9)	9(39.1)	
Religion			
Christian	104(67.5)	50(32.5)	0.088
Muslim	10(55.6)	8(44.4)	
Traditionalist	1(100)	0(0.0)	
No religion	0(0.0)	1(100.0)	
Others	0(0.0)	2(100.0)	
Level			
Level 100	18(56.3)	14(43.7)	0.526
Level 200	25(73.5)	9(26.5)	
Level 300	28(66.7)	14(33.3)	
Level 400	43(64.2)	24(35.8)	
Programme			
Science related	46(66.7)	23(33.3)	0.836
Art related	68(64.2)	38(35.8)	
Marital status			
Married	12(50.0)	12(50.0)	0.047
Single	99(67.8)	47(32.2)	
Divorced	0(00.0)	2(100.0)	
Co-habiting	2(100.0)	0(00.0)	
Residence			
Resident	56(65.1)	30(34.9)	0.541
Non resident	55(64.7)	30(35.3)	
Ethnicity			
Ga/Dangbe	19(70.4)	8(29.6)	0.165
Ewe	18(56.3)	14(43.7)	
Akan	61(70.1)	26(29.9)	
Northerner	12(70.6)	5(29.4)	
Others	5(38.5)	8(61.5)	

To explore further the level of association between the socio-demographic variables and the use of EC, logistic regression analysis was used, and the findings are shown by Table 4.7. The socio-demographic variables used include, Age, Religion, Level of education, Programme, Marital status, Residence and Ethnicity.

From Table 4.7, the variable Age, has age group 19-25 years with a p-value of 0.043(less than 0.05) and therefore statistically significant. The odds of having used an EC before is 14.07 times greater among those within the age group 19-25, compared to those age 18yrs or less. This means the age group 19-25 among the respondents has 14.07 times greater chance of using EC than those aged 18yrs or less. The confidence interval (CI) of the age group 19-25 is a wide (1.08-182.61), for the age group 26-30, the CI is (0.76-164.93) and for age group greater than 30, the CI is (0.74-256.32) respectively. These wide confidence intervals indicate that the sample was too small, this may therefore affect the conclusions to be drawn from the data. Conclusions may therefore be done with larger sample size.

Additionally, the Ewe within the variable, Ethnicity, has a p-value of 0.044(less than 0.05) and therefore statistically significant. There is also 85% reduced odds of having ever used an EC among the Ewes as compare to the Ga/Dangbes.

Table 4.7 Measured associations between socio-demographic Characteristics and Use of EC.

Variables	Emergency contraceptive use	
	Adjusted OR (95% CI)	P-value
Age (Ref: ≤18)		
19 - 25	14.07(1.08-182.61)	0.043
26 - 30	11.23(0.76-164.93)	0.078
>30	13.75(0.74-256.32)	0.079
Religion (Ref: Christian)		
Muslim	00.22(0.04-1.18)	0.077
Level (Ref: Level 100)		
Level 200	2.87(0.80-10.32)	0.106
Level 300	1.98(0.61-6.41)	0.253
Level 400	2.09(0.69-6.33)	0.192
Programme (Ref: Science related)		
Art related	0.89(0.41-1.91)	0.768
Marital status(Ref:Married)		
Single	2.04(0.52-8.03)	0.307
Residence:(Ref:Resident)		
Non resident	1.25(0.56-2.79)	0.592
Ethnicity:(Ref:Ga/Dangbe)		
Ewe	0.25(0.07-0.96)	0.044
Akan	0.63(0.19-2.10)	0.454
Northerner	1.89(0.26-13.88)	0.533
Others	0.19(0.04-0.100	0.047

4.7. Chapter summary

The chapter sought to determine the use of emergency contraception among the female undergraduate students of University of Ghana, Legon. Additionally, the association between the use of EC and socio-demographic variables were also determined as well as the measurement of the association. The next chapter presents discussions of the results in relation to literature.

CHAPTER FIVE

DISCUSSION OF RESULTS

5.0. Introduction

This chapter presents the results of the study in relation to reviewed literature on the research topic. The findings are discussed in accordance with the stated objectives and research questions. The study sought to determine the use of emergency contraception among the female undergraduate students of University of Ghana, Legon and consequently establish the relationship between the socio-demographic characteristics of the respondents and the use of EC. This chapter is in four sections. Section one presents the discussions on the knowledge of the respondents about the LNG (ECP). Section two presents the proportion of the respondents who have ever used emergency contraceptive. Section three is about the sources of the emergency contraceptive pills, and section four is about the relationship between socio-demographic characteristics and the use of EC and the measure of the association and section five presents the chapter summary, including the implications of the findings from this study on general contraceptive usage among the female students on UG campus.

5.1. Knowledge of the respondents about the LNG (ECP)

The study has revealed that more than half (51.5%) of the respondents knew of LNG-ECP (postinor-2) and 30.5% knew of Lydia emergency contraceptive pills. This seems fairly high compared to several other studies carried out in Ghana which showed lower knowledge of any type of contraceptive among young adults (Darteh & Doku, 2016; Awusabo-Asare, Abane & Kumi-Kyereme, 2014; Appiah-Agyekum and Kayi, 2013). However, knowledge about emergency contraceptives found in this study was lower compared to similar studies carried out in several other African universities (ranging 53.3 % to 86.3 %) (Ijirigho, 2016;

Somba et al, 2014). More outstanding was the findings by Nsubuga et al (2016) which found that 99.6% of the female undergraduates at Makerere University in Kampala, Uganda had knowledge of any contraceptive method. However, only 13.0% of the respondents in this study mentioned they did not know the duration of the effectiveness of EC when taken after sexual intercourse. The study also found that the main media through which respondents got to know about contraception were through television (44.0%), friends and relatives (24.5%) and boyfriends (8.0%). Similar findings were obtained by Akani et al (2008) and Babatunde et al, 2016).

In terms of the timing of the contraception usage, less than half (47.3%) of the respondents took the EC pills when they had sexual intercourse during the ovulation period. This indicates poor knowledge on the correct time-frame within which EC pills should be taken. This finding is consistent with previous study conducted among the intellectuals in one of the public Universities in Ghana (Appiah-Agyekum and Kayi, 2013). This suggests that sexually active university students stand a high risk of using contraceptives incorrectly due to their insufficient knowledge, and perhaps misinformation about the use of emergency contraceptive pills. Similarly this study confirms several other ones by (Babatunde et al, 2016; Awusabo-Asare, Abane & Kumi-Kyereme, 2014) where information about EC and prevalence of use were found to be small among the surveyed population. It is therefore not surprising that out of the 50 pregnancies recorded in the study, 70% were unintended. A similar study carried out among young adults in the entertainment industry in the Vientiane City of Lao PDR recorded that only 17.9% of the respondents knew of the correct time-frame for the effective use of EC pills (Sychareun et al, 2013).

5.2. Proportion of students who used emergency contraception

The study showed that majority (66.7%) of the respondents do protect themselves during or after sexual intercourse. This is higher compared to the findings obtained in the general Ghanaian population by the Ghana Demographics and Health Survey (GDHS) (2014) which stated that the current use of any method of contraception in Ghana is 23% among all women and 27% among currently married women. This difference observed may probably be because of the higher level of education among the respondents in this current study since they are tertiary students. The respondents might have researched to know the importance of contraception.

However out of the 168 respondents in this current study who had sexual intercourse, 54.2% used EC pills (postinor-2) while 17.3% used non-emergency contraception method. This is more than double the percentage obtained by the GDHS among adolescents in 2014. The GDHS (2014) reported lower (24.0%) levels of contraceptive usage among adolescents in Ghana. On the other hand, the rate of use in this study is lower than 79 % contraceptive used among females that were reported from a study done in Mbarara University in Uganda (Mehra et al, 2012) and other universities in Lesotho, Kenya and Ethiopia (Ochako et al, 2015; Erena & Kerbo, 2015) .

5.3. Sources of contraception on campus

The study showed that most (75%) of the respondents obtained EC on campus (either from the campus pharmacy or the University hospital) while 12.0% did not know where to obtain it. This is contrary to previous studies which showed that adolescents feel embarrassed going to health facilities for services pertaining to sex and contraception due to the fact that they perceive that they will be met with an unwelcoming attitude at the facility since the

service providers are the same adults that they live with, in the community (Ezebialu & Eke, 2013).

5.4 Relationship between socio-demographic characteristics and EC use

The study revealed that overall, apart from the variables, Age (19-25year group) and ethnicity (Ewe), (p<0.05), all other variables did not have any statistically significant (p>0.05) relationship with the use of EC. Similar findings were obtained by (Ahmed et al, 2012) when the knowledge, attitude and practice of EC were assessed among Ethiopian undergraduate female students.

5.5 Chapter Summary

The chapter has discussed the findings of the study and related them to existing literature. It has demonstrated knowledge gap in the timing of the usage of EC by the undergraduate female students of the University of Ghana. This gap in knowledge is therefore responsible indirectly to the high prevalence of side effects especially, intermenstrual bleeding, reported among the female undergraduate students on UG campus, since students take the EC anytime they have unprotected sex even when they are not in their fertile period.

The high prevalence of side effects among the EC users if not checked through education on frequency of dosing especially at the point of sale may affect general contraceptive usage negatively among this important segment of society.

Additionally, EC appears to be the first and only contraceptive method of the users. There is the need to have a total approach to contraception usage among the students of UG. Students should be educated on the need to be on regular contraceptive method and only use the EC as a backup, thereby reducing the frequency of dosing and for that matter the side effects.

Family planning clinic should be made an integral part of the students' clinic on campus and the city campus clinic. This should be championed by the University Health Directorates. The next chapter presents the conclusions and recommendations of the study.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.0. Introduction

This chapter presents the summary, conclusions and recommendations of the study. This is in four sections. Section one presents the summary of the study. Section two presents the conclusion of the study. Section three presents the recommendations of the study and future research and section four presents the limitations.

6.1. Summary of the study

The study was set to determine the use of emergency contraception among the female undergraduate students of University of Ghana, Legon. This was achieved by using quantitative research method to collect data. The data were analysed using Stata V14. Inferential statistics using Fisher's test and logistic regression analysis were used to assess the association between socio-demographic characteristics and the use of EC. The key conclusions presented as follows:

6.2. Conclusions

The study shows that knowledge among the respondents about emergency contraception is very high (82%, both 'Postinor-2' and 'Lydia'). The study however identified a knowledge gap in the timing of EC usage as majority of the female undergraduate students used EC even when sexual intercourse did not occur during the ovulation time or fertile periods i.e. more than 50%. The study further showed that majority of the respondents were not told of the side effects of the EC by the pharmacies or the dispenser (more than 60%). Lastly the

results revealed that EC side-effects were very common among the respondents (i.e. among the respondents who used EC, they experienced at least one side effect of EC).

With respect to the proportion of the students who ever used ECP, 91 (54.2%) out of the 168 respondents who are sexually active mentioned EC pills (postinor-2) as what they used for protection against unwanted pregnancy. The 29 (17.3%) stated they used non-emergency contraception methods and the rest 48(28.6%) used none of the methods.

Furthermore, sources of ECP on campus include the Campus pharmacy 109(54.5%), Family Planning Unit at University Hospital 41(20.5%), Boyfriends 14(7%), Friend/Peers 12(6.0%) and Don't know 24(12%) respectively. Campus pharmacy, therefore, constitutes more than half of all sources of the ECP use on UG campus.

As regards socio-demographic factors and use of ECP, the age group 19-25 and ethnicity (Ewe), (p less than 0.05) have statistically significant relation with use of ECP. All other socio-demographic variables did not have any statistically significant relation with use of ECP (p greater than 0.05). Similar findings were obtained by Ahmed et al (2012) when the knowledge, attitude and practice of ECP were assessed among Ethiopia undergraduate female students.

6.3. Recommendations and future research

Based on the findings from this research, the following recommendations were made:

There is urgent need to educate female undergraduates of the University of Ghana on when to EC to avoid pregnancy and reduce the side effects. This education should be spearheaded by the University Health Directorate, where health talks on general contraception usage and its importance would be given using campus radio station. Information on the need for

regular contraception usage among the students should be highlighted, including the usage of EC only as a backup.

Family planning services should also be extended to the students' clinics on both the main campus and city campus respectively. These clinics should have a wide range of contraceptive methods to meet the needs of the students. These clinics should be run by health workers who are trained in adolescent, sexual and reproductive health needs.

There is the need for all pharmacists/dispensers on campus to be directed by the University Health Directorate to explain to the female undergraduates the side effects of EC at the point of purchase.

National policy to incorporate sexual and reproductive health education as part of the general reproductive health education as a core subject either in the secondary school curriculum. This will help to provide a large mass of secondary school students' information on general sexual and reproductive health as well as general contraception and family planning options before they reach the tertiary level.

Furthermore, there is a need for qualitative research, looking at the use of EC among the female students of UG to better understand the extent and context of EC use among the female students of UG

6.4. Limitations to the study

1. The focus of the study was to determine the use of emergency contraception among the female undergraduate students of University of Ghana, Legon, any conclusions drawn from the study may not be applicable to every university in Ghana

2. Additionally, this is a Cross-Sectional study, the findings from this study cannot therefore be used to explain behaviour among the respondents over a period to time.

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APPENDIX 1

RESPONDENT'S INFORMATION SHEET

HOW WILL I BE INFORMED OF THE FINDINGS/RESULTS OF THE RESEACH?

If you would like to be informed of the final research findings, please contact Timothy Senunyeme on telephone no. 233(0)202930468 or email;tsenunyeme@ug.edu.gh. The findings will be available after November, 2017.

Should you require any further information or questions about your rights as a respondent, you can contact the Ghana Health Service Ethical Review Committee at the following address:

Hannah Frimpong

GHS-ERC Administrator

GHS-Ethical Review Committee

Research and Development Division

Ghana Health Service

P.O.Box MB 190

Accra-Ghana

Office: 233(0)243235225/0507041223

Email:Hannah.Frimpong@ghsmail.org

Thank you for taking time to read this information sheet and for participation in this study.

Thank you.

……..

Timothy Senunyeme.

CONSENT TO PARTICIPATE IN THIS STUDY

I……., confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipate inconvenience of participation.

I have read and understood the study explained in the information sheet.

I have had sufficient opportunity to ask questions and am prepared to participate in the study.

I understand my participation is voluntary and that I am free to withdraw at any time without penalty (if applicable).

I am aware that the findings of this study will be processed into a research report, journal publication and /or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

I agree to the recoding of the data collection method.

I have received a signed copy of the informed consent agreement.

Respondent's Name &

Surname…… (Please print)

Respondent

Signature …… Date …….

Researcher's Name &

Surname…… (Please print)

Researchers

Signature …… Date …….

Appendix 2

QUESTIONNAIRE

SCHOOL OF PUBLIC HEALTH

UNIVERSITY OF GHANA

MASTER OF PUBLIC HEALTH PROGRAM

Title of the Project: The use of Emergency Contraception among the Female Undergraduate Students of University of Ghana, Legon. The Characteristics of the Users.

Date of Interview: -----/-----/------- Time of Interview:

Consent Form

Hello, my name is Timothy Senunyeme, am an MPH student of School of Public Health, University of Ghana, Legon. I am conducting a study on "The use of Emergency Contraception among the Female Undergraduate Students of University of Ghana, Legon. The Characteristics of the Users''. The aim of this study is find out about the extent and context of Levonogesterol Emergency Contraception (Postinor-2) use, and the Characteristics of the users among the female undergraduate students on campus. There is no risk associated with the study, otherwise you may find some of the questions uncomfortable or you may not know the answer to a particular question.

The findings from the study will enable us to know the extent and context of Levonogesterol Emergency Contraception use. I, therefore, entreat you to participate to help contribute to

knowledge and research on Emergency Contraception use among the female undergraduates in University of Ghana, Legon.

Please, be assured that any information you provide will be strictly confidential, and will be used only for the intended purpose of this study and will never be used against you.

Additionally, you are free to skip any question if you feel uncomfortable answering it.

Please, do you have any question for me?

Do I have your permission to carry on? Yes …….. No……..

Respondent's Name/ Initials: …… Respondent's Signature/Thumbprint…...

Interviewer's Name/Initials: ……

A. DEMOGRAPHICS

1. How old are you?

   (Age at last birthday) | | | Year

2. Ethnicity?

   a) Ga/Dangme
   b) Ewe
   c) Akan
   d) Northern
   e) others

3. Religion?

   a) Christianity

   b) Islam

   c) Traditional

   d) No Religion

   e) Others (specify) ……..

4. Which level are you?

   a) Level 100

   b) Level 200

   c) Level 300

   d) Level 400

5. Which programme are you doing?

   a) Science related programme

   b) Arts related programme

6. Marital Status?

   a) Married

   b) Single

   c) Divorce

   d) Widowed

   e) Co-habiting

7. Residential Status?

   a) Resident

   b) Non-resident(‘perching’)

B. SEXUALITY & VUNERABILITY

8. Have you had sexual intercourse before?

a) Yes

b) No

How old were you when you first had sexual intercourse?

[ ] Years

9. What was the reason for your first sexual intercourse?

a) Marriage

b) Love

c) Curiosity

d) Violence/Rape

e) State of alcohol

f) Not Applicable

10. What did you do after the act?

a) Told a friend

b) Report to the Police

c) Bought Emergency Contraceptive pills

d) Report to the Hospital

e) Did not do anything

f) Other (please specify) ……

11. Have you ever had sexual intercourse against your wish before/rape?

    a) Yes

    b) No

    c) Not Applicable

12. How many Sexual Partners do you have?

    ……..

C. LEVONOGESTEROL EMERGENCY CONTRACEPTION (LNG-ECP)

13. Do you normally protect yourself during sexual intercourse?

    a) Yes

    b) No

    c) Not Applicable

14. What protection do you use?

    a) Emergency Contraception pill (postinor-2)

    b) Non-Emergency Contraception method

    c) Not applicable

15. Through what medium did you get to know about Contraception?

    a) Television

    b) Radio

    c) Friends/Relative

    d) Print media

    e) Clinic/Health Provider

    f) Internet

g) My Boyfriend

16. Which type of Emergency Contraception do you know about?

a) IUD (Copper T)

b) Combined Oral Contraceptive Pills (COCP)

c) LNG-ECP (Postinor-2)

d) Lydia Emergency Contraceptive Pills

e) Not Applicable

17. Emergency Contraception is effective within how many hours of unprotected intercourse?

a) 120hrs

b) 60hrs

c) 72hrs

d) 80hrs

18. Do you know where to obtain Emergency Contraception on campus, if you do need one?

a) Campus Pharmacy

b) University Hospital (Family Planning)

c) From my friend/Peer

d) From my boyfriend

19. When was the last time you used levonogesterol emergency contraception (Postinor-2)?

a) Less than 2 weeks

b) A month ago

c) Two months ago

d) More than three months

e) Not Applicable

20. How many times did you use emergency contraception (Postinor-2) in the last six months?

a) Once

b) Twice

c) Thrice

d) Four time

e) More than five times

f) Not Applicable

21. When do you normally use emergency contraception pill (Postinor -2)?

a) Anytime I have sexual intercourse

b) When I have sexual intercourse during my ovulation time/'danger' time.

c) When am exposed to education on sexual intercourse

d) When I have sexual intercourse against my wish

e) Not Applicable

22. Have you had any side-effects upon using emergency contraception pill (Postinor-2)?

a) Yes

b) No

c) Not Applicable

23. Which side-effect did you experience when you used emergency contraceptive pill (postinor-2)?

    a) Nausea/Vomiting

    b) General Weakness/Dizziness

    c) Bleeding/Period not Stopping

    d) Others

    e) Not Applicable

24. The last time you bought emergency contraceptive pill (Postinor-2), were you told about the side –effects of the drugs by the dispenser/pharmacist?

    a) Yes

    b) No

    c) Not Applicable

25. What information were you given the last time you bought emergency contraceptive pills (Postinor-2)?

    a) Pills would make me vomit/feels nauseous

    b) It can affect my period/menses

    c) It can make me feel weak/dizziness

    d) Others (Specify)……

    e) Not applicable

26. Where can you obtain education on emergency contraception on University of Ghana, Legon Campus?

    a) From my boyfriend

    b) From my girlfriend/ Peers

    c) Family Planning Unit (UG Hospital)

    d) Campus Pharmacy

27. Do you have friends who use emergency contraceptive pills (Potinor-2)?

    a) Yes

    b) No

28. How many of your friends are currently using emergency contraceptive pills (e.g. Postinor-2)?

    a) One

    b) Two

    c) Three

    d) Four

    e) Five

29. How much do you usually spend on a pack of emergency contraceptive pills (Postinor-2)? ……..

D. PREGNANCY OUTCOMES

30. Have you been pregnant before?

    a) Yes

    b) No

31. How many times have you been pregnant.....?

32. How many of the pregnancies were unintended.....?

33. How many children were born through these unintended pregnancies?

    a) None/Not Applicable

    b) One

    c) Two

    d) Three

    e) Four or more

34. How many children do you have?

    a) None/Not Applicable

    b) One

    c) More than one

35. How many pregnancies were aborted?

    a) None/Not Applicable

    b) One

    c) Two

    d) Three and above

36. By what methods were the pregnancies aborted?

a) Self-induced(Orthodox Medicine)

b) Self-induced(Herbal Medicine)

c) Done by a Medical Doctor

d) Done by a Non-medical Doctor

e) Not Applicable.

Any other comment...

Thanks