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Knowledge and Usage of Emergency Contraceptives among University Students in Ghana

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Abstract

This study examines the knowledge and usage of emergency contraceptives (ECs) among university students in the Republic of Ghana. Data from 1,871 students at the University of Ghana were collected using a structured questionnaire. The results show that the majority (87.9 percent) of students were aware of some regular contraceptives and ECs. Results also reveal that despite the knowledge of these contraceptives among students, the majority (70.4 percent) had never used a contraceptive. The authors recommend that the university should use social media to facilitate student awareness and knowledge of contraceptives, including ECs.

Keywords

Ghana, emergency contraceptives, university students, knowledge, unintended pregnancy

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Introduction

Globally, about eighty-five million pregnancies, representing 40 percent of all pregnancies were unintended in 2012 (Sedgh, Singh, and Hussain 2014). Unintended pregnancies can pose dire consequences for women and their families, including possible unsafe abortion, increased maternal morbidity and mortality, among others (Singh, Sedgh and Hussain 2010; Santelli et al. 2003).

Unwanted pregnancies can influence the progress and future careers of students (Kagashe, Maregesi and Mashaka 2013). In Ghana, unintended pregnancies often adversely affect students' studies and contribute to interrupted and truncated education, especially among female students. The question is what happens to these unintended pregnancies? Some of these pregnancies end up in induced abortions. According to a report by the Ghana Statistical Service (GSS), Ghana Health Service and Macro International (2009), 15 percent of women in Ghana had experienced an induced abortion. The same report indicated that the main reason given by about 20 percent of women for having an induced abortion was that they lacked money to take care of a baby. Furthermore, about 10 percent of women who had an abortion took more than one action to end their most recent pregnancies because the first action was not effective in terminating the pregnancy. This implies that these women were determined to get rid of their unwanted pregnancies and may have used ECs if available to them.

According to the latest Demographic and Health Survey (DHS) data in Ghana, 14 percent of women between the ages of 15-19 years were pregnant for the first time (Ghana Statistical Service 2015). One can speculate that most of these women had not completed school and were not ready to have a child. Unplanned pregnancies have been found to be high among women below age 20 and among unmarried women. Research has shown that there is a direct relationship between level of education, socio-economic status and the likelihood of an unplanned pregnancy. For example, Omane-Adjepong, Oduro and Annin (2012) found that the higher the education of a woman the less likely it was for her to have an unplanned pregnancy, and that women who live in towns and those who do not earn any wages or salaries experience higher cases of unplanned pregnancies. Married women – and women in general – often suffer complications that come from unwanted pregnancies (e.g. unsafe abortion). Many maternal deaths worldwide are the result of unsafe abortions, with Africa having a higher percentage (30-50 percent) of such deaths than Asia (20-25 percent) (see Popov 1991). More than 60 percent of unwanted/unintended pregnancies are among adolescents, resulting from non-usage of contraception, contraception method failure and rape (Altankhuyagin, Falkingham and Brown 2007; Gliem and Gliem 2003).

Students in higher institutions are at higher risk of unintended pregnancies and sexually transmitted infections (STIs), including HIV/AIDS, mainly due to the fact that they are typically involved in sex-related probing, discovering, and experimentation. Thus, they are often engaged in unsafe sex (Abler and Sedlacek 1989). Against this background, students have used contraceptives as a pre-emptive measure to curb pregnancy. While contraceptive usage has received attention by researchers in most countries, including Ghana, the usage of contraceptives in sub-Saharan Africa has been far lower compared to those of Latin America, the Caribbean and Europe (Westoff 2012).

Contraceptives are used for various reasons and different purposes. Statistics show that approximately one third of women in Ghana who want to postpone the birth of their next child or do not want to have any more children are not using contraceptives to achieve this (Ghana Statistical Service 2015). This is an issue of concern for both women and their partners. Contraceptive methods are not, however, 100 percent effective. There are situations that result in failure of barrier methods, such as slippage,

breakage/misuse of a condom, failed coitus interruptus, and repeatedly unused oral contraceptive pills; hence, ECs become necessary (International Consortium for Emergency Contraception 2003). According to the World Health Organisation (2012), EC refers to methods that can be used to prevent pregnancy in the first few days after sexual intercourse. EC – also known as emergency birth control, emergency post-coital contraception, and post coital contraception – has been in existence for over 40 years (Tilahun, Assefa and Belachew 2010).

Trussell, Raymond and Cleland (2016) argue that ECs give women a last chance to prevent unintended pregnancy. There is growing interest in the potential impact that ECs could have on unwanted pregnancies and unsafe abortions in sub-Saharan Africa, where 99 percent of maternal mortality worldwide occurs and nearly 20 million unsafe abortions take place each year (AbouZahr and Wardlaw 2001). The need for ECs is widely discussed in the literature (Dupont, Webber, Dass and Thornton 2002). For example, Nayyar (2000) pointed out that in India many girls had unprotected sex and used indigenous concoctions as post coital contraception. The need for ECs is also borne out by the fact that women have reported to clinics requesting some form of EC. Many of these women appear to know the stipulated time for usage of an EC, as they reported within 72 hours of unprotected sex (Shawe, Ineichen and Lawrenson 2001). It has also been observed that women who are most likely to need and use ECs are those using barrier methods (George et al. 1994).

Since the introduction of ECs in the 1970s, most of the studies conducted on them have been in developed countries, especially in the United States of America. Many of the studies in the developed world have focused mainly on the medical aspects of ECs, such as the composition of pills, how pills should be administered and how they prevent pregnancy.

ECs were introduced in Ghana in 2000 (Emergency Contraception in Africa 2013), but the media did not start advertising them until 2014 (Ghana News 2014). Currently, there are few advertisements on EC usage in Ghana. Missing in the literature within the Ghanaian context is research that examines the factors that influence the usage of ECs. Most of the previous studies on ECs in Ghana give almost no attention to the views of males. Baiden, Awuni and Clerk (2002) and Appiah-Agyekum and Kayi (2013) did, however, include both males and females as respondents.

In the present study, females were asked to indicate whether they had ever used ECs; males were asked if their partner had ever used an EC. The study also provides the baseline information on knowledge and usage of ECs among university students in Ghana. It represents a “research platform” upon which further studies can be conducted to provide a holistic picture of the situation under consideration. The objectives of this study are to:

- Identify students’ knowledge of when to use ECs in relation to their sex.
- Identify the extent to which students use ECs in relation to their sex (for male students, in reference to their female sexual partners).
- Discover the reasons for non-usage of ECs by students.
- Explore the relationship between college of students and their knowledge and usage of ECs.

Methodology

Research design

As stated by Merriam (1998, p.198), “being able to trust research results is especially important to professionals in applied fields, such as education, in which practitioners intervene in peoples’ lives”. To ensure high validity and reliability of the present study, we employed a robust research design that we hoped would facilitate the collection and analysis of data and provide a holistic picture of the situation under consideration. Our study is situated within a positivist research paradigm where emphasis is based on observation and reason as means of understanding human behavior. This approach is based on the belief that a researcher needs to concentrate on facts and must consider the world to be external and objective. This means the researcher should maintain minimal interaction with research participants when carrying out research. Another reason for using the positivist research paradigm is that study samples have to be large so that the findings can be generalized to the larger population. The survey approach was considered appropriate for the present study because almost nothing is known about knowledge of ECs among university students within the Ghanaian context, and the researchers were interested in increasing awareness among students on knowledge and usage of ECs by collecting data from a larger sample.

Sample and sampling procedure

A total of 1,871 students from all the four colleges (that is, Education, Basic and Applied Sciences, Health Sciences, and Humanities) at the University of Ghana were sampled. Students from all of the colleges at the university were included in the sample because all students belong to one college or the other. Self-administered questionnaires were completed by second, third and fourth-year students. First-year students were not included because they had not yet been admitted to the university at the time the researchers were collecting data. Lecturers from these colleges permitted the research team to use about twenty minutes of their lecture time for students to fill the questionnaire.

Ethical considerations

Ethical clearance was received from University of Ghana’s Research Ethics Committee (Ethics Committee for the Humanities). Also, students who completed the questionnaires were made to sign a consent form to indicate their willingness to participate in the study. Other ethical issues that were adhered to were anonymity and confidentiality.

Research instrument

The instrument used for the study was a self-administered questionnaire. The questionnaire had five different sections. This first section elicited information from the respondents regarding their biographic data. The second section gathered information on the reproductive history of respondents. The third section elicited information on the respondents’ knowledge of ECs. The fourth section collected data on the respondents’ attitudes toward ECs. The final section collected data on the respondents’ usage of regular contraceptives and ECs.

Data collection and analysis procedures

A total of 2,000 questionnaires were administered in the first semester of the 2016/2017 academic year of which 1,871 were fully completed, representing a response rate of 93.5 percent. All copies of the questionnaires were examined to check for accuracy and completeness. The questionnaires were numbered serially, edited, coded and fed into the computer where SPSS software (version 21) was used for the analyses. Descriptive and inferential statistics were employed.

Results

Characteristics of respondents

The distribution of some selected characteristics of the respondents is presented in Table 1, which shows that there were slightly more females (50.6 percent) than males (49.4 percent). In terms of age distribution, the students were fairly young as 92.8 percent were 25 years or below. There were relatively more students in their final year compared to the other years: year 4, 39.9 percent; year 3, 28.8 percent; and year 2, 31.3 percent. Due to the relatively young ages of the students, 88.4 percent had never been married. The distribution of the students per college was such that there were more students in the Humanities (32.8 percent), followed by those in College of Basic and Applied Sciences (28.5 percent), Education (21.6 percent) and Health Sciences (17.1 percent).

Table 1. Selected characteristics of respondents

Characteristics		Number	Percentage
Sex	Male	925	49.4
	Female	946	50.6
Age*	15-20 years	745	40.2
	21-25 years	975	52.6
	26-30 years	84	4.5
	31-35 years	41	2.2
	36-40 years	9	0.5
	Year	Year 2	585
	Year 3	539	28.8
	Year 4	747	39.9
Marital*	Never Married	1615	88.4
	Married	68	3.7
	Status	Married Not Living together	137
	Divorced	7	0.4
College	Basic and Applied Science	534	28.5
	Education	404	21.6
	Health Science	319	17.1
	Humanities	614	32.8

Note: *Does not add up to total (1871) because of missing cases

Students' knowledge of the existence of ECs

To explore students' knowledge of the existence of ECs, the participants were asked to indicate whether or not they knew of any EC. The results show that an overwhelming majority of the respondents 1,645 (87.9 percent) (not shown in Table 1) knew of some form of EC, such as postinor 2 or plan B (pills).

An inferential statistical analysis (Table 2, next page) showed that there was a significant difference between sex and knowledge of ECs. A t-test analysis produced a P value of 0.002, indicating that females have more knowledge about ECs compared to their male counterparts. While not shown in Table 2, the sources of information about ECs varied among respondents: 907 respondents (48.5 percent) indicated that they obtained knowledge of ECs from the media, and 682 (36.5 percent)

claimed that they received knowledge of ECs from friends and relatives. The rest of the respondents 282 (15 percent) indicated that they got information from a health worker.

Table 2. Sex of respondents and knowledge of ECs

Respondents	Sex	N	%	Mean	SD	F	P
Knowledge of ECs	Male	578	46.7	2.38	2.67	26.3	0.002
	Female	659	53.3	1.99	2.34		

Students' knowledge of when to use ECs

Figure 1, depicts respondents' knowledge of when to use ECs.

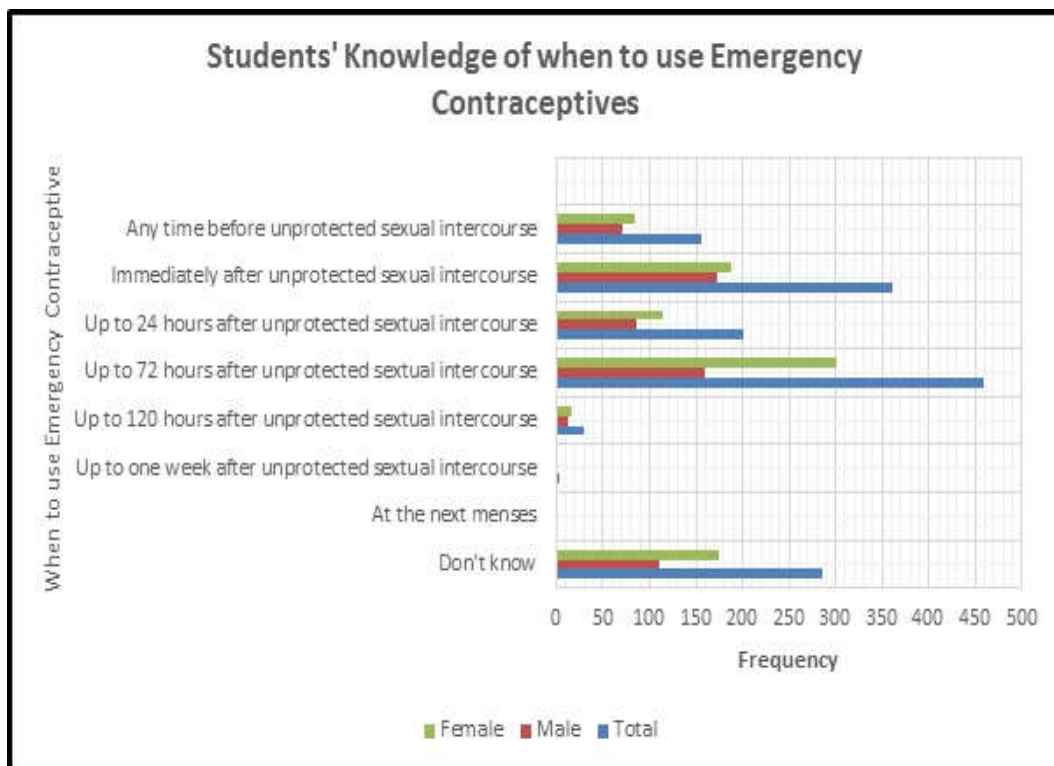


Figure 1. Students' knowledge of when to use ECs

Figure 1 shows that students had some knowledge about when to use ECs. Of the 1,494 (79.8 percent) students who had knowledge of ECs, the majority (78.7 percent) knew when it was appropriate to use an EC. Among this group, there were relatively more females than males. Both males and females (more females than males) indicated that an EC should be used within 72 hours after having unprotected sex (although up to 120 hours is also correct). From Figure 1, it can be argued that the majority of the respondents showed that they had accurate knowledge of when to use ECs. Knowledge of ECs is critical in the quest to avoid unwanted pregnancies among students, which could have a negative impact on their academic work.

A t-test analysis on students' knowledge on when to use an EC showed that there is a significant difference ($p=0.004$) between females and males. More females than males stated that an EC should be used up to 72 hours after unprotected sex.

Extent to which students use ECs

Respondents were asked to indicate whether they had ever used ECs. Despite 1,256 (67.1 percent) indicating they had knowledge of ECs, only 237 (12.7 percent) had ever used an EC. One of the factors accounting for this is the fact that majority of these students were abstaining (see Figure 2). The study went further to find out whether there is a relationship between sex of respondents and usage of ECs. Table 3 indicates that there is a statistical difference between the usage of ECs and sex of respondents. A t-test analysis shows that females have used ECs more than male students (that is, the sexual partners of these male students).

Table 3. Sex of respondents and EC use

	Sex of respondents	N	percent	Mean	SD	F	P-value
Usage of EC	Male	96	40.9	3.87	3.02	43.4	0.01
	Female	139	59.1	3.37	2.79		

Reasons for non-usage of ECs

On the issue of non-usage of ECs, students were asked to indicate their agreement to some statements. In all, a total of 1,114 (59.5 percent) students responded (see Figure 2).

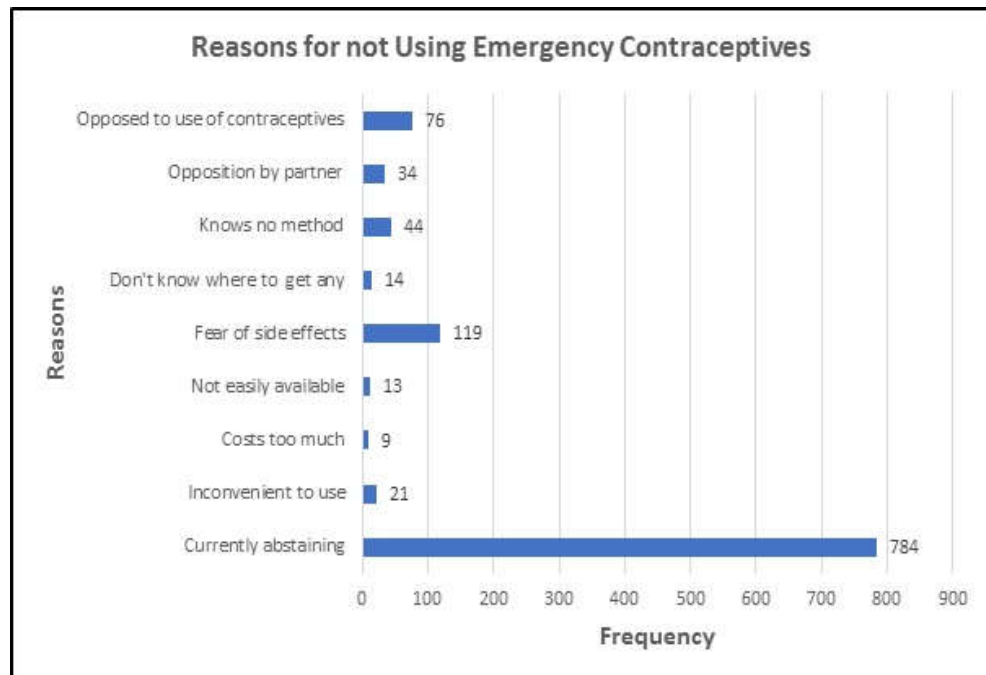


Figure 2. Reasons for not using ECs

Even though students acknowledged they knew about ECs as well as where to find them, Figure 2 indicates that the majority (81.1 percent) were not using any EC due to abstinence (70.4 percent) or fear of side effects (10.7 percent).

Relationship between college of respondents and knowledge and usage of ECs

To understand the relationship between the college of respondents, and their knowledge and usage of ECs, a cross-tabulation analysis was done. The results are depicted in Figure 3.

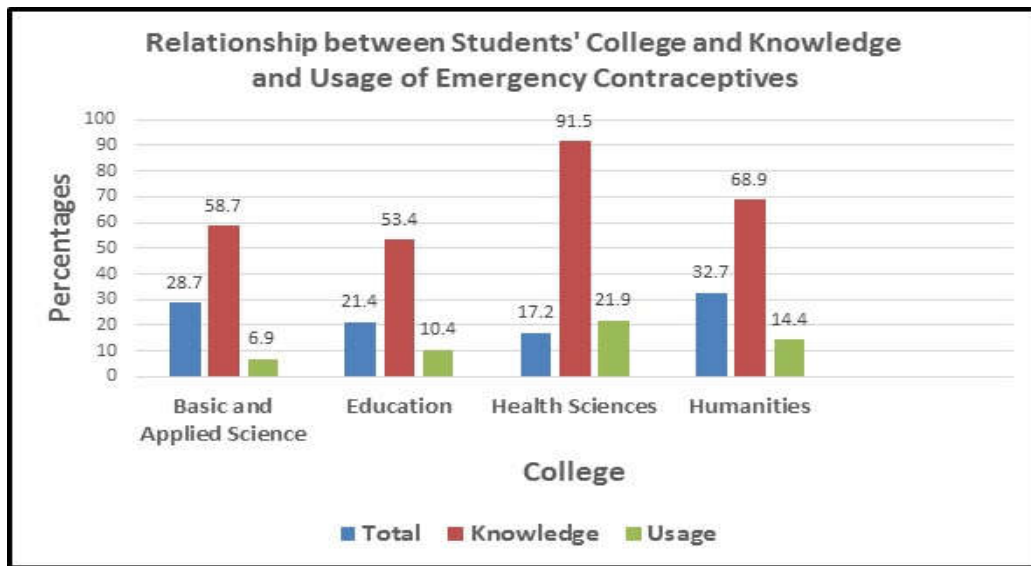


Figure 3. Relationship between students’ college, and knowledge and usage of ECs

Figure 3 shows that 32.7 percent of students who took part in the study were from the College of Humanities, 28.7 percent from Basic and Applied Sciences, 21.4 percent from the College of Education, and 17.2 percent from the College of Health Sciences. The results indicate that a very high percentage (91.5 percent) of students from the College of Health Science knew about ECs as compared to their counterparts from the other colleges (for example, only 53.4 percent of students from the College of Education had knowledge about an EC). In addition, the percentage of students who had used any form of EC was higher (21.9 percent) in the College of Health Sciences, followed by the College of Humanities (14.4 percent), College of Education (10.4 percent) and College of Basic and Applied Sciences (6.9 percent). These differences could be attributed to the fact that students from the College of Health Sciences were more aware of contraceptives as it forms part of their programme of study. They may, therefore, know the advantages of ECs and also know how to use them effectively.

Discussion and implications

Awareness and knowledge of ECs has become an issue of concern in schools and higher education institutions. As pointed out, students, including the ones in higher institutions, face a high risk of unintended pregnancies as a result of not having knowledge about ECs and their use. Students’ awareness of contraceptives, and ECs in particular, is therefore an important area of research. It is

evident from the results of the present study that the majority (79.8 percent) of the students who took part in the study had knowledge of ECs. This suggests that, since 2002, when Baiden, Awini and Clerk (2002) conducted a similar study among students at the University of Ghana, there has been an increase in knowledge of ECs among students. At that time 43.2 percent had heard of ECs. Given this finding, the Careers and Counselling Centre at the University of Ghana should enhance the reproductive health programmes of students and encourage the University Health Care Service to include these issues in the orientation programmes for freshman students.

Knowledge of ECs seems to be high in other parts of the world. In a study in Hong Kong, for instance, as many as 67 percent of women had heard of ECs. It must be noted, however, that this knowledge may have very little depth. This is because although 33 percent of the respondents in that study claimed they knew the correct timing for the use of ECs, only 11 percent actually answered correctly on the appropriate time for use (Lee, Wai, Lai and Ho 1999).

The results in the present study show that very few (only 12.7 percent) of the students had ever used an EC. This is in spite of the high knowledge (almost 90 percent) of ECs among them. Similar observations have been made in places such as The Republic of Korea (see Kang and Moneyham 2008), Nigeria (see Zeleke, Zebenay and Weldegerina 2009; Obiechina et al. 2010, cited in Kagashie et al. 2013; Kolawole, Abubakar and Zaggi 2015; and Arowojolu and Adekunle 2000), United Republic of Tanzania (see Kagashe et al. 2013), and South Africa (see Roberts, Moodley and Esterhuizen 2004). Most of these studies, especially those from Nigeria, focused on students.

In the present study, most of the respondents were aware of ECs but had never used any. The implication is that many students – even relatively younger students – are likely to experience unplanned pregnancies because they have the tendency to be sexually active. This result supports the findings of Kolawole et al (2015).

As suggested by Omame-Adjepong et al. (2012), unwanted pregnancies have become an issue of concern to many students, and there is the need for university authorities to provide students with the needed information on regular contraceptives and ECs. It has been observed in Bangladesh, for instance, that providing adolescents with information on sexual and reproductive health increases their knowledge on these issues (Bhuiya 2006). There may also be the need for programme managers and service providers to advocate for inclusion of family planning in programmes of national institutions, as suggested by Fernández-Cerdeño et al. (2009).

The results from the present study show that students from the Colleges of Basic and Applied Sciences and Health Sciences know more about ECs than their colleagues from other colleges. This is similar to the findings of Shelat, Hihoriya and Kumbar (2003), who found that students with medical and health related backgrounds are more likely than those without these backgrounds to know about ECs.

Conclusion

Knowledge about ECs benefits students, the university and the nation. This knowledge helps students to understand the importance of ECs and challenges associated with them. Even though most of the students in our study knew about ECs, very few of them had ever used an EC. This, therefore, calls

for further research to understand how these students protect themselves from unwanted pregnancies, and the effectiveness of the methods they use.

The results show that students get information about ECs mainly from the media. Considering the calibre of students and their desire for social media platforms, it is necessary to make very good use of these platforms as a means of informing students about ECs. The university authorities and those in charge of reproductive health issues at the university should be proactive and use social media as one of the means of communicating and creating awareness on issues concerning students, especially those on reproductive health.

If the respondents (students) in the present study are sexually active, aware of ECs and have knowledge about how to use an EC, the question then is why are many students not using ECs? The main reason given by students for not using an EC is that they were abstaining from sex. However, not all students were abstaining. So, for those not abstaining, it remains unknown as to how they were preventing themselves from getting pregnant. Research in the future could find an answer to this question.

Although the majority of these students reported that they are abstaining, it is important that they become aware of the importance of ECs and how to use them in the event that they need them. These students are the future of this country and significant agents of change. Overall, knowledge and usage of ECs by tertiary students is limited. A pressing need exists for the construction of carefully designed educational programmes on ECs in Ghana.

References

- Abler, R. M., and W. E. Sedlacek (1989). "Freshman sexual attitudes and behaviours over a 15-year period." *Journal of College Student Development* 30 (3): 201-209.
- AbouZahr, C. and T. Wardlaw (2001). "Maternal mortality at the end of a decade: signs of progress?" *Bulletin of the World Health Organisation* 6 (79): 561-568.
- Altankhuyagin, G., J. Falkingham, and J. Brown (2007). "Determinants of current contraceptive usage and method choice in Mongolia." *Journal of Biosocial Science* 39(6): 801-817.
- Appiah-Agyekum, N. N. and E. A. Kayi (2013). "Students' perceptions of contraceptives in University of Ghana" *Journal of Family and Reproductive Health* 7 (1): 39-44.
- Arowojolu, A.O. and A. O. Adekunle (2000). "Perception and practice of emergency contraception by post-secondary school students in southwest Nigeria." *African Journal of Reproductive Health* 4(1):56-65.
- Baiden, F. E. Awini, and C. Clerk (2002). "Perception of university students in Ghana about emergency contraception." *Contraception* 66 (1): 23-26.
- Bhuiya, I. et al. (2006). "Improving Sexual and Reproductive Health of Female Adolescents in Bangladesh by Providing Information and Services." *Population Review* 45(2): 60-71
- Dupont, S., J. Webber, K. Dass and S. Thornton (2002). "Emergency Contraceptive Pill (ECP) and sexual risk behaviour." *International Journal of STD and AIDS* 13 (7):482-485.
- Emergency Contraception in Africa (2013). "Sexuality, contraception, unplanned pregnancies and abortion in West Africa and Morocco: The ECAF Survey." *Population* 68 (1): 7-14.
- Fernández-Cerdeño, A. et al. (2009) "Introduction and Scaling-up of Emergency Contraception: Lessons Learned from Three Regions." *Population Review* 48 (1): 119-134.
- George J. et al. (1994). "Women's knowledge of emergency contraception." *British Journal of General Practice* 44 (387): 451-454.
- Ghana News (2014). "Ghana's market witnesses new contraceptives." [<https://www.newsghana.com.gh/ghanas-market-witnesses-new-contraceptive>, assessed January 25, 2017].
- Ghana Statistical Service (GSS), Ghana Health Service (GHS) and Macro International (2009). *Ghana Maternal Health Survey 2007*. Calverton: Maryland, USA: GSS, GHS and Macro International.
- Ghana Statistical Service (2015). *Ghana Demographic and Health Survey 2014*. Rockville, Maryland, USA: GSS, GHS and ICF International.
- Gliem, J. A. and R. R. Gliem (2003). "Calculating, interpreting, and Reporting Cronbach's Alpha Reliability Coefficient for Likert, Type Scales." Midwest Research to Practice Conference in Adult, Continuing, and Community Education, The Ohio State University, Columbus, October 8-10, 2003.
- International Consortium for Emergency Contraception (2003). *Emergency Contraceptive Pills: Medical and Service Delivery Guidelines* (2nd ed.), Washington, DC.

- Kagashe, G. A. B., S. M. Maregesi, and A. Mashaka (2013). "Availability, awareness, attitude and knowledge of ECs in Dar Es Salaam." *Journal of Pharmaceutical Science and Research* 5 (11): 216-219.
- Kang, H. S. and L. Moneyham, (2008). "Usage of Emergency Contraceptive pills and Condoms by College Students: A Survey." *International Journal of Nursing Studies* 45 (5): 775-783.
- Kolawole, T.O.C.A., M. Abubakar and H. Zaggi (2015). "Emergency Contraceptives Usage among Female Students at Ahmadu Bello University, Zaria Kaduna State." *Online Journal of New Horizon in Education* 5(3): 41-48.
- Lee, S.W. H., M. F. Y. Wai, L. Y. H. Lai, and P. C. Ho (1999). "Women's knowledge of and attitudes towards emergency contraception in Hong Kong: questionnaire survey." *Hong Kong Medical Journal*, 5 (4): 349-352.
- Merriam, S. B. (1998). *Qualitative Research and Case study Applications in Education*. San Francisco: Jossey-Bass Publishers.
- Nayyar, A. (2000). "Increasing access to emergency contraception in India." *Health and Population-Perspectives and Issues* 23(3): 123-133.
- Omane-Adjepong, M., F. T. Oduro, and K. Annin (2012). "Multinomial regression analysis of unplanned pregnancies in Ahafo Ano South district, Ghana." *American International Journal of Contemporary Research*, 2 (12): 90-97.
- Popov, A. A. (1991). "Family planning and induced abortion in the USSR: basic health and demographic characteristics." *Studies in Family Planning* 22(6): 368-377.
- Roberts, C.,_J. Moodley, and T. Esterhuizen (2004). "Emergency contraception: knowledge and practices of tertiary students in Durban, South Africa." *Journal of Obstetrics and Gynaecology* Taylor and Francis online 24(4):441-445.
- Santelli, J., et al. (2003). "The measurement and meaning of unintended pregnancy." *Perspectives on Sexual and Reproductive Health* 35(2): 94-101.
- Shawe, J., B. Ineichen and R. Lawrenson (2001). "Emergency contraception: Who are the users?" *Journal of Family Planning* 27 (4): 209-212.
- Shelat, P. R., N. H. Hihoriya, and S. Kumbar (2003). "Knowledge and attitude towards the usage of emergency contraceptive pills among college students." *International Journal of Basic and Clinical Pharmacology* 1(2): 77-84
- Sedgh, G., S. Singh, and R. Hussain (2014). Intended and unintended pregnancies worldwide in 2012 and recent trends. *Studies in family planning*, 45 (3), 301-14.
- Singh, S., G. Sedgh, and R. Hussain (2010). "Unintended pregnancy: Worldwide levels, trends, and outcomes." *Studies in Family Planning* 41(4): 241-250.
- Tilahun, F.D., T. Assefa, and T. Belachew (2010). "Predictors of Emergency Contraceptive usage among regular female students at Adama University, Central Ethiopia." *The Pan African Medical Journal* 7: 16.
- Trussell, J., E. G. Raymond and K. Cleland (2016). "Emergency contraception: A last chance to prevent unintended pregnancy." Princeton University, Princeton.

- World Health Organization (2012). *Emergency contraception, Factsheet No. 244* [<http://www.who.int/mediacentre/factsheets/fs244/en/>] accessed March 21, 2014.
- Westoff, C. F. (2012). *Unmet Need for Modern Contraceptive Methods. DHS Analytical Studies No. 28*. Office of Population Research Princeton University.
- Zelege, G., Z. Zebanay and B. Weldegerina (2009). “Knowledge, attitude, and practice of emergency contraception among female Bahir Dar University Students, Northwest Ethiopia, *Journal of Reproductive Health*, 3 (1): 59-64.