



Sexual Activity and Emergency Contraception among Female Students in the University of Rwanda

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Authors' contributions

This work was carried out through collaboration between all authors for protocol design, data analysis, and manuscript preparation. Author JU was principal investigator. Authors JBN and MFM managed the literature searches. Author JNK provided general supervision of the study. All authors read and approved the final manuscript.

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ABSTRACT

Background: Less is known about sexual activity, unwanted pregnancy rate, and emergency contraception decision-making among female students in Rwandan Higher Education. By gathering such information, we are better able to develop preventive efforts that can reduce the likelihood of such incidents occurring over the students' lifespan. The study explores sexual activity and describes how this group learns about, feels about and practices contraception in general with emphasis on emergency contraception (EC).

Methods: 296 undergraduate female students, aged 18-25 years old, registered in the University of Rwanda, Huye campus (former NUR-National University of Rwanda) during the academic year 2013-2014, were randomly recruited to complete a structured self-administrated questionnaire.

Results: The toll of sexually active students floated between 29% and 49%. Among them 5% agreed having been involved in unwanted sex, 3% had forced sex and 2% carried unintended pregnancy. The majority showed positive attitudes towards EC (67%), but less than half had adequate knowledge about EC (47.64%) and only 5.4% used EC.

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Conclusion: More than half of UR female students could be sexually active and the risk of getting unintended pregnancy is not negligible. There is need to mount proper strategies to largely disseminate information about EC, not for encouraging sex practices among students but to prevent unwanted pregnancy and correlated unsafe abortions, maternal morbidity or class drops out.

Keywords: Emergency contraception; knowledge; attitude; use; pregnancy.

1. INTRODUCTION

The analysis of Sedgh G. et al. [1] estimated that 85 million pregnancies, representing 40 percent of all pregnancies (213 million), were unintended in 2012, of which 50 percent ended in abortion, 13 percent ended in miscarriage, and 38 percent resulted in an unplanned birth. According to a new report by The Alan Guttmacher Institute (AGI), of the estimated 210 million pregnancies that occur throughout the world each year (182 million in developing countries and 28 million in developed countries), about 38% are unplanned, and 22% end in abortion [2]. The number of deaths due to unsafe abortion represents 13% of all maternal deaths worldwide and this continues to be a major public health problem particularly in low-income countries [3].

It is globally estimated that 11% of annually births are given by adolescent girls of age 15-19, and 95% of these births are in low income countries [4]. Each year, adolescent women account for 16% of all births in Sub-Saharan Africa [2]. Adolescent pregnancy affects the health of mother and child and has a devastating impact in social, psychological, health and educational lifespan of girls [5-7]. Unwanted pregnancies in young Higher Education female students pose major public health problems in developing and developed countries as well [8-10].

Looking unsafe abortion as preventable cause of maternal mortality and morbidity, the WHO has recommended interventions like modern contraceptive services including emergency contraception (EC) as a way to mitigate unsafe abortions and reduce maternal deaths [11]. EC is a type of modern contraception which is indicated after unprotected sexual intercourse, following sexual abuse, misuse of regular contraception or nonuse of contraception [12-14]. One distinguishes two types of emergency contraceptives (ECs) which are emergency contraceptive pills (ECPs) and intrauterine devices (IUDs). The ECPs include combined oral contraceptive pills (COCs), and a progestin only

pills (POPs). ECPs method is found to be effective if used as soon as possible within 72 hours after unprotected sexual intercourse [13]. IUDs are recommended to be inserted within 5 days of unprotected sexual intercourse [14]. EC is said to be safe with minor side effects like nausea and vomiting in case of pills and infection for intrauterine devices if not used properly. Despite the availability of different modern contraceptive methods, the problem of unintended pregnancy still exists worldwide; this could be due to gap in awareness, negative attitudes towards contraception, low accessibility or as a result of sexual assault.

According to the research conducted by AGI for Rwanda in 2012, despite the notable gain in contraceptive use and decrease in unmet need for contraception over the past decade, nearly half (47%) of all pregnancies in Rwanda are unintended, of which an estimated 22% end in induced abortion [15]. This means that each year there are 25 induced abortions per 1,000 women aged 15–44 [16]. Other figures show that 63% of births are unplanned births and 15% end in miscarriage; the number of sexually active women is growing and single women aged 15-29 are especially vulnerable to unintended pregnancy and induced abortion [17].

However, not much information exists for female students in Rwandan Higher Education regarding sexual activity, and emergency contraceptives. Considering the importance of EC in preventing unintended pregnancy, this study was designed to explore sexual activity among female undergraduate students in the University of Rwanda, to describe how this group learns about, feels about and practices contraception in general with emphasis on EC, with the assumptions that the major factors that can limit the use of ECs in Rwanda may be inadequate information about their effectiveness and unfavorable opinions about their safety due to misinformation. So, the findings generated from this study will help the Rwandan Ministry of Health, the Universities and affiliate youth projects to better plan strategies aimed at

mitigating unplanned pregnancies through the use of ECs whenever it is needed.

2. METHODS

2.1 Methodology

The research was designed as exploratory-descriptive survey targeting female students registered in the University of Rwanda, Huye Campus (former National University of Rwanda or NUR) during the academic year 2013-2014 with the above-mentioned objectives.

NUR was, at the time, the biggest campus in the country with 3560 registered females. All students regardless of study orientation, religion, study level or age were eligible except those who were married, mentally handicapped or unwilling to participate in the study. The minimum required sample size was 296, calculated using one-sample population proportion formula:

$$n = \frac{z^2 \cdot [p(1-p)/D^2]}{1 + z^2 \cdot [p(1-p)]/P}$$
, Assuming $z=1.96$, $p=30\%$

(expected proportion of those who may be aware of EC from a preliminary survey); $D=5\%$, $P=3530$; with, z = area under normal curve corresponding to the desired confidence level, D =degree of significance, and P = all students registered.

2.2 Data Collection and Analysis

The data was collected using a structured self-administered questionnaire, containing both open and close-ended questions written in English. The questionnaire was tailored to include relevant items as described in literature and was pre-tested in 20 students to assess whether the instrument covered all dimensions of the construct, including demographics, sexuality, and EC knowledge, attitudes and practice (KAP). The questionnaires were distributed to the selected students in their rooms. Respondents were quickly briefed about the purpose and objectives of study by the investigators. In the consent form, details were given on rights and requirements, procedures and confidentiality. Those who consented had to fill the form themselves in privacy. At the end, the questionnaires were collected, gathered and checked for completeness by the principal investigator. In this study, a total of 296 students answered the questionnaire (100% response rate) even partially.

The operational measures were defined as follow:

2.2.1 Demographics

Age range (18-20, 21-23, 24-25 years); Religion (Protestant, Muslim, Catholic, other); Province region (North, West, East, South, Kigali, Foreigners); Sexual activity (having history of vaginal sexual intercourse).

2.2.2 Knowledge

Awareness, circumstances of use, source of information.

2.2.3 Attitudes

Items rated on a Likert scale (i.e. strongly agree, agree, disagree and strongly disagree, neither agree nor disagree). Strongly agree or agree was considered as positive attitude; disagree and strongly disagree as a negative attitude.

2.2.4 Practices

Assessed using items related to prior sex experiences and use of contraception.

The data was captured and analyzed using the program statistical package for social sciences SPSS version 17. Different approaches like descriptive statistics, and cross-tabulation were applied to calculate valid frequencies and missing cases to each question. Probabilities of less than 5% were taken to be of significant difference.

3. RESULTS

3.1 Respondents' Demographics

The youngest respondent was 18 years old and the oldest 25 years, with an average of 21.5 ± 2.4 years. On religion basis, there were grouped as Protestants, 138 (45.95%); Catholics, 118 (39.86%); Muslims, 38 (12.84%); and independents 4 (1.35%). Of them, 53 (17.91%) came from North province, 87 (29.39%) from South, 48 (16.22%) from East, 49 (16.55%) from West, 52 (17.57%) from Kigali and 7 (2.36%) foreigners. The majority of Catholics and Protestants came from North and South provinces, whereas the majority of Muslims were from Eastern and Western provinces.

3.2 Sexual Activity and Unwanted Pregnancy

As shown in Table 1, 29.1% of 296 respondents openly agreed they were sexually active; 59.1% answered no, the remaining 11.8% skipped the question. However nearest half (49.3%) agreed having been involved at risk of getting pregnant. The risk situation was described as having unprotected sex (25.3%), having forced sex (3%), having forgotten taking pills (1.4%), having failed protection like condom split (7.4%), or other (12.2%). Unwanted sexual encounter was noticed by 15 (5.1%) students out 146 who had faced risk situation, of whom 3% as forced sex and 2% rape. As consequence to this unwanted sex, 12 respondents said they were frightened of getting pregnant and 2 respondents frightened of contracting HIV. Asked what they did to reduce their worries after sex, 3 respondents shared the case with friends, 2 others rushed to health facility, one said nothing, but 9 out of fifteen skipped the question. Unintended pregnancy was declared by 6 (4.1%) respondents out of 146 supposed to be sexually active, of whom 3 from forced sex and 3 from wanted but unprotected intercourse.

3.3 Level of Knowledge, Attitudes and Practice about Contraceptives

Table 1 also shows the essential findings about knowledge and use of contraceptives. Almost everybody (97.3%) had heard about contraceptives in general and named at least one method; only 141 (47.6%) had heard about EC. The first three cited methods were condom (27.4%), pills (27%) and CycleBeads (17.9%). Other methods named were Injection (10.8%), Abstinence (6.8%), Vasectomy (6.8%), Natural method (2.0%), Sterilisation (2.0), Norplan (1.4), Diaphragm (0.7%), Jelly (0.7%), tubule ligation (0.3%). Of those who had heard about EC, only 19.1% made it clear EC is for unprotected sex within 72 hours, 41.1% said it is for unprotected sex, 30.3% said it is to prevent unwanted pregnancy, 2.8% said after being raped, and 5.7% wrongly thought it is to prevent HIV. Their sources of information were friends (58.9%), health workers (29.1%), teachers (7.8%), internet (2.13%), and media (0.7%).

For the practice, about 63(21.3%) respondents had used any modern contraceptive method solely or in combination. Among them, 16 (5.4%) had used ECs.

Table 2 shows the result related to respondents' attitudes. A series of arguments were presented. On one hand, respondents were asked whether they can use ECs themselves in future or recommend it to friends. On the other hand, a Likert scale was used for some items. About 64.5% against 35.5% respondents were favourable to use ECs; 69.6% against 30.4% were favourable to recommend ECs to friends. On average the positive attitude is expressed by 67% against 33%. On Likert scaling, the rate of strongly agree (SA) dominate in all statements tested. For instance, 75% of respondents strongly agreed it is important to give information on EC to all adolescent girls against only 6.8% who strongly disagreed; 41.9% strongly accepted to make ECs available against 13.2% who strongly disagreed. However, only 31% or less were strongly convinced that the use of ECs would reduce abortion rates and related deaths, or reduce the rate of class dropout.

Table 3 shows the potential influence of demographics on the measurement outcomes. The values are reported as simple ratios of YES over NO scores. For instance, concerning getting pregnant, the statistical difference may be significant ($p=0.037$); the ratios of yes/no were, for North province (2/51; $R=0.039$), South (4/82; $R=0.049$), East (0/48; $R=0$), West (0/49; $R=0$), Kigali (0/52; $R=0$), meaning that all the 6 pregnancy cases were declared by 4 students from south province and 2 from North province, and zero from other provinces. Students under 21 years old are more likely well informed about contraceptive methods than the older students ($R=1.316$; $p=0.044$). Muslims with ($R=1.375$) seem to be lesser willing to recommend EC than Catholics ($R=2.668$) or Protestants ($R=2.317$). Catholics ($R=1.127$) would be more sexually active than Protestants ($R=0.875$) or Muslims ($R=0.850$). However a statistical significant difference ($p<0.05$) is observed only for age-knowledge-attitude, religion- knowledge, province- knowledge- attitude- sexuality-pregnancy.

Table 1. Levels of sexual activity, knowledge and use of contraceptives

Outcomes measurement	Frequency (n)	Percent (%)
Agreed being sexually active (N=296)	86	29.1
Faced risk situation of getting pregnancy (N=296)	146	49.3
Unprotected sex	75	25.3
Forced sex	9	3.0
Rape	6	2.1
Failed method	22	7.4
Forgetting the pills	4	1.4
Other	30	10.1
Involved in unwanted sex (n=146)	15	10.3
Carried pregnancy (n=146)	6	4.1
Heard about any contraceptive methods (N=296)	288	97.3
Condom	81	27.4
Pills	80	27.0
Cycle beads	27	9.1
Other	100	33.8
Heard about emergency contraceptives (N=296)	141	47.6
Source of information (n=141)		
Friends	83	58.9
Health workers	41	29.1
Media	1	0.7
Teacher	11	7.8
Internet	3	2.1
Use of contraceptives by sexually actives (n=146)		
Any type of contraceptives	63	21.3
Emergency contraceptives	16	5.4

Table 2. Participants' attitudes towards emergency contraception expressed as percentage

Opinion inquired	Response		Rate on Likert scale				
	Yes	No	SA	A	D	SD	NC
Would use EC in future	64.5	35.5					
Would recommend ECs to someone	69.6	30.4					
Inform ECs to all young girls and women			75.0	16.2	1.4	6.8	0.7
Parents to support use of EC by daughters			38.5	25.7	15.2	14.9	5.7
Parents should often talk EC with daughters			40.5	26.0	12.2	14.9	6.4
EC should be made easily available			41.9	19.9	12.8	13.2	12.2
EC can reduce the rate of induced abortions			31.1	24.0	12.2	11.8	20.9
EC can reduce deaths resulting from abortion			31.4	23.6	11.1	10.8	23.0
ECs can help in preventing school drop outs			27.7	26.4	10.1	11.1	24.7
Total mean	67.1	33.0	40.9	23.1	10.7	11.9	13.4
±SD	3.6	3.6	16.0	3.8	4.4	2.8	9.5

4. DISCUSSION

Looking on demographic characteristics, the age window fell within 18 and 25 years, with 22 years as the mode. This is compatible with the normal expected age among Higher Education students from fresh to terminal levels in many countries. As NUR campus is located in the South province, about third of students come from this Province. The findings showed the first religion of the respondents is Protestant before Catholic and Muslim. This is the picture of the three main

religious confessions known in the country. Protestants include both the old confessions and the new created churches. The multiplicity of churches is a new social phenomenon observed in many countries, particularly among youths [18,19]. The reason and impact of this on the society is beyond the current study. Even though the statistical analysis was not very deep in this survey, there is indication that age, religion and cultural environment may be associated with the differences observed in the responses given.

Table 3. Association between demographic variables and outcomes expressed as ratio Yes/No

Variable		Knowledge	Practice	Attitude	Sexuality	Pregnancy
Age	P-value	0.044 ⁿ	0.846	0.047 ⁿ	0.855	0.696
	18-20 y	1.316	0.060	2.259	1.071	0.011
	21-23 y	0.820	0.052	2.640	0.898	0.023
	24-25 y	0.471	0.087	0.923	1.000	0.042
Religion	P-value	0.049 ⁿ	0.689	0.116	0.340	0.678
	Catholic	1.208	0.035	2.688	1.127	0.009
	Protestant	1.231	0.080	2.317	0.875	0.046
	Muslim	0.846	0.027	1.375	0.850	0.000
Province	P-value	0.013 ⁿ	0.766	0.005 ⁿ	0.018 ⁿ	0.034 ⁿ
	North	1.208	0.060	3.818	1.167	0.039
	South	1.231	0.062	3.143	1.417	0.049
	East	0.846	0.043	2.429	1.417	0.000
	West	0.581	0.065	1.333	0.548	0.000
	Kigali city	0.625	0.040	1.600	0.700	0.000

Legend: *P value significant (<0.05; SPSS ^lLinear-by-linear, ⁿNominal by nominal test). Knowledge is assessed with "have heard or not about EC"; Practice by "have used or not EC"; Attitude by "accept or not to recommend EC to friend"; Sexuality by "having or not sex intercourse"; Pregnant or not

Concerning the sexual activity of students, only 29% of respondents firmly declared to be sexually active, whereas nearest the half (49%) agreed to have experienced some situation at the risk of getting pregnant. This indicates that students made a difference between having regular sex and having occasional intercourse. The high percentage (12%) of those who skipped the question may be attributed to the fact that some students are less likely to openly admit being sexually active for fear of being judged. Thus we consider the 49% level as the more likely true rate. Studies from other countries have reported the rates of 70.4% in Tanzania [20], 43% in Nigeria [21]. However we found that the figures reported in different studies inside the same country may vary according to the university location. Socially a low rate of sexual activity is preferred and should be promoted by education to curve the risk of unintended pregnancies and HIV/AIDs.

The study also revealed that some students have been sexually abused or raped. The rate of unwanted pregnancies amongst those engaging in sex was low (4%) compared to one reported in Ethiopia (78.3%) [22]. The cases may occur among students themselves on the campus or elsewhere. After all, this situation is very embarrassing for the victims as some get out with pregnancy and others remain very distressed. It is for sure that some pregnancies ended by induced abortion even though that was not assessed. This is backed by the internal report within the university suspecting the case of dead babies thrown. Thus the education should

be extended to male students as well so they can take their solely responsibilities.

The findings about KAP showed that 47.6% of participating students had heard about EC. The rate is slightly low compared to similar studies done in sub-Saharan Africa; e.g. among university students in Tanzania (57%) [23], Nigeria (58.4%) [24], Ethiopia (69.9%) [25] and South Africa (56.5%) [26]. This low knowledge level could be due to the fact that the media and teachers are not the main sources of information about EC. Also inside the university no educational campaign has been organized according to students' dire. Both the students and the university authorities should be implicated to tackle this issue.

Regarding the use of EC, the rate of 5.4% is also low compared with 11.04% in Tanzania [23] and 29.9% Nigeria [27], 32.3% in Ethiopia [25]. As stated in the introduction, despite the notable gain in contraceptive use and decrease in unmet need for contraception over the past decade, nearly half of all pregnancies in Rwanda are unintended. The notable use may concern particularly family planning contraceptives. Efforts need to be focused also on emergency contraceptives. The low level of use could reflect the inadequate awareness among study participants. Other reasons for the low use could be the misconception about family planning like 'family planning cause cancer and infertility'; that was evidently a concern among the respondents. Moreover those with strong religious values may also not use EC.

Interestingly, the participants generally showed positive attitudes towards the use of EC. The results from other studies above mentioned have reported similar positive attributes. But in this study, still a number of respondents seem not firmly convinced that the use of EC will significantly reduce the rate of unwanted pregnancies, the rate of induced abortion, or the rate of school dropouts. Half of them were not favourable with the idea of having parents engaged in exchange about EC with their daughters. This is really a tricky question in our society where sex is a taboo. We may anticipate that the future mothers among educated students will be able to break the taboo.

5. CONCLUSION

The findings show that about half or more UR female students could be sexually active and the risk of getting unintended pregnancy is not negligible. However the level of awareness and use of EC is low in comparison to results obtained in other countries. There is need to mount proper strategies to largely disseminate information about EC, not for encouraging sex practices among students but to prevent unwanted pregnancy and correlated unsafe abortions, or class dropout.

CONSENT

The consents from participants were obtained. The purpose of the study was explained to all study participants; they were also informed that all of their responses are confidential and anonymous, and they have all the rights to not be involved in the study or not answer any of the questions. Collected information was used only for the study's purpose and confidentiality was guaranteed in order to respect the privacy of everyone involved in the study.

ETHICAL APPROVAL

Before the data was collected, official permission from Research Commission of the School of Medicine and Pharmacy/NUR was obtained.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Sedgh G, Singh S, Hussain R. Intended and unintended pregnancies worldwide in

- 2012 and recent trends. *Studies in Family Planning*. 2014;45(3):301-3014.
Available:http://www.guttmacher.org/media/nr/abortww_nr.html/ May 9, 2015
2. Grimes DA, Benson J, Singh S, Romero M, Ganatra B, Okonofua FE, Shah IH. Unsafe abortion: the preventable pandemic. *The Lancet Sexual and Reproductive Health*; 2006.
Available:<http://www.who.int/reproductivehealth/topics/unsafe-abortion/>.pdf March 30, 2015
3. Available:<http://www.who.int/maternal-child-adolescent/topics/maternal/adolescent-pregnancy/en/> May 2015
4. Scott-Jones Diane, Turner Sherry L. The impact of adolescent childbearing on educational attainment and income of Black females. *Youth & Society*. 1990; 22(1):35-53.
Available:<http://dx.doi.org/10.1177/0044118X90022001003>
5. Wilson-Mitchell K, Joanna Bennett J, Rosain Stennett R. Psychological health and life experiences of pregnant adolescent mothers in Jamaica. *Int. J. Environ. Res. Public Health*. 2014;11: 4729-4744. DOI:10.3390/ijerph110504729.
6. Christofides NJ, Jewkes RK, Dunkle KL, Nduna M, Shai NJ, Sterk C. Early adolescent pregnancy increases risk of incident HIV infection in the Eastern Cape, South Africa: A longitudinal study. *J Int AIDS Soc*. 2014;17:18585.
7. Qiaoqin Ma, Masako Ono-Kihara, Liming Cong, Guozhang Xu, Xiaohong Pan, Saman Zamani, Shahrzad Mortazavi Ravari, Dandan Zhang, Takayuki Homma and Masahiro Kihara. Early initiation of sexual activity: A risk factor for sexually transmitted diseases, HIV infection, and unwanted pregnancy among university students in China. *BMC Public Health*. 2009;9:111.
DOI: 10.1186/1471-2458-9-111.
8. Animaw W, Bogale B. Abortion in university and college female students of Arba Minch town, Ethiopia. *Sexual & Reproductive Healthcare*. 2014;5(1):17-22.
DOI: 10.1016/j.srhc.2013.12.001
9. Winer RL, Lee Shu-Kuang, Hughes JP, Adam DE, Kiviat NB, and Koutsky LA. Genital Human Papillomavirus Infection: Incidence and Risk Factors in a Cohort of Female University Students. *Am J Epidemiol*. 2003;157:218–226.

11. WHO. Ensuring human rights in the provision of contraceptive information and services: Guidance and recommendations. Available:<http://apps.who.int/iris/bitstream/> March 30, 2015.
12. International Consortium for Emergency Contraception. Emergency contraceptive pills, Medical and Service Delivery Guidelines. ICEC publications; 2012. Available:<http://www.cecinfo.org/publications-and-resources/icec-publications/> March 30 2015
13. Rodrigues I, Grou F, Joly J. Effectiveness of emergency contraceptive pills between 72 and 120 hours after unprotected sexual intercourse. Am J Obstet Gynecol. 2001; 184(4):531-537. DOI: 10.1067/mob.2001.111102
14. McKay RJ, Gilbert L. Use of IUDs for emergency contraception: Current perspectives. Open Access Journal of Contraception. 2014;53. DOI: 10.2147/oajc.s56399.
15. Basinga P, Moore AM, Singh S, Audam S, Carlin L, Birungi F, Ngabo F. Abortion Incidence in Rwanda. Available:<https://www.guttmacher.org/pubs/unintended-pregnancy-Rwanda.pdf>
16. Basinga P, Moore AM, Singh S, Carlin EE, Birungi F, Ngabo F. Abortion incidence and postabortion care in Rwanda. Stud Fam Plann. 2012;43(1):11-20.
17. National Institute of Statistics of Rwanda Ministry of Finance and Economic Planning. Rwanda Demographic and Health Survey 2010. Kigali,Rwanda; 2012.
18. International Society for the Sociology of Religion; 2015. Available:<http://www.sisr-issr.org/Francais/Newsletters>
19. De Boeck F. The Sacred and the City - www.academia.edu/.../De_Boeck_F._2013_April_2015
20. Somba MJ, Mbonile M, Obure J, Mahande MJ. Sexual behaviour, contraceptive knowledge and use among female undergraduates' students of Muhimbili and Dar es Salaam Universities, Tanzania: A cross-sectional study. BMC Womens Health. 2014;14:94. DOI: 10.1186/1472-6874-14-94.
21. Aziken ME, Okonta PI, Ande AB. Knowledge and Perception of Emergency Contraception among Female Nigerian Undergraduates. Int Fam Plan Perspect. 2003;29(2):84–87. DOI: 10.2307/3181062.
22. Nibabe WT, Mgutshini T. Emergency contraception amongst female college students-knowledge, attitude and practice. African Journal of Primary Health Care & Family Medicine. 2014;6(1):1-7.
23. Wright KO, Fabamwo AO, Akinola OI. Emergency contraception: A different perspective on knowledge and use among female undergraduates in a non-residential tertiary institution in Nigeria. International Journal of Medicine and Medical Sciences. 2014;6(10):215-223.
24. Kagashe G, Maregesi S, Mashaka A. Availability, Awareness, Attitude and Knowledge of Emergency Contraceptives in Dar Es Salaam. J. Pharm. Sci. & Res. 2013;5(11):216-219.
25. Abinet Kassa, Messay Wolde Mariam. Knowledge, attitude and practice of emergency contraceptive pills among female students of Hosanna College of Health Sciences, Hosanna, South Ethiopia. Journal of Chemistry and Pharmaceutical Sciences. 2014;7(3):185-193.
26. Hoque ME, Ghuman S. Knowledge, practices, and attitudes of emergency contraception among Female University Students in KwaZulu-Natal, South Africa. PLoS One. 2012;7(9):e46346.
27. Asekun-Olarinmoye E, Adebimpe WO, Olugbenga-Bello AI. Emergency contraception: An untapped resource among sexually active college students in Osogbo metropolis, Nigeria. International Journal of Women's Health. 2013;5:647.

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