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Original Research Article

Assessing Sexual activity, Emergency Contraception Knowledge, Attitude and Practice among Female Students from the University of Rwanda/Huye campus

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: Undergraduate female students, aged 18-25 years old, registered with the University of Rwanda, Huye campus (former National University of Rwanda) during the academic year 2013-2014, were randomly recruited to complete a structured self-administration 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, but less than half had adequate knowledge about EC (47.64%) while 20% used modern contraception including 3% for EC.

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,

INTRODUCTION

Each year there are globally around 85 million pregnancies in the world, of which 40% are unintended pregnancies, and 50% of these undergo induced unsafe abortion [1-3]. According to the same authors, 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. The toll 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[4].

Unwanted pregnancies in Higher Education Institutes pose major public health problems in developing and developed countries as well [5]. Adolescent pregnancy affects the health of mother and child and has a devastating impact in social, psychological and educational lifespan

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of girls [6, 7]. Despite the fact that different modern contraceptive methods exist, 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 [5, 8].

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 mitigating unsafe abortions and reducing maternal deaths [9]. 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 [10]. One distinguishes two types of ECs that 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 [11]. IUDs are effective if inserted within 5 days of unprotected sexual intercourse[12]. 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.

According to the research conducted by GUTTMACHER institute for Rwanda, 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 [13]. This means that each year there are 25 induced abortions per 1,000 women aged 15–44 [13,14]. Other figures show that 63% of births are unplanned births and 15% end in miscarriage [15]. The number of sexually active women is growing and single women aged 15–29 are especially vulnerable to unintended pregnancy and induced abortion[15].

However, not much information exists among female students in Rwandan Higher Education institutions regarding sexual activity, and Knowledge, Attitudes and Practices (KAP) of EC. 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 to mitigating unplanned pregnancies through the use of EC whenever it is needed.

METHODS

Study design and setting

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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.

Study population and sample

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: $n = \frac{z^2.[p(1-p)/D^2]}{1+z^2.\left[\frac{p(1-p)}{D^2}\right]/P}$, Assuming z=1.96, p=30%, D= 5%, P=3530; with p=expected proportion frequency, z= area under normal curve corresponding to the desired confidence level, D=degree of significance, and P= all students registered.

Data collection

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, reproductive, and KAT characteristics. 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.

Data analysis

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 (Chi-square tests).

Operational measures

Demographics: Age range: 18-20, 21-23, 24-25 years***;*** Religion: Protestant, Muslim, Catholic, other***;*** Province region: North, West, East, South***;*** Sexually activity: having history of vaginal sexual intercourse.

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***Knowledge*:** awareness**,** circumstances of use**,** source of information.
***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.
Practices: assessed using items related to prior sex experiences and use of contraception.

RESULTS

Participants' Demographics

Table-1 shows the frequency distributions by regional origin, age and religion. By origin, there were 53(17.91%) from North, 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. By religion, 45.95% were Protestants, followed by 39.86% Catholics, 12.84% Muslims and 1.35% independents. The majority of Protestants and Catholics belong to the North and South provinces, while the majority of Muslims came from West and East provinces. The distribution of the respondents' age shows that the youngest respondent was 18 years old and the oldest 25 years, with an average of 21.5 ±2.4 years.

Sexual Activity and Pregnancy decision making

Table 2 describes the findings about previous sexual activity and related problems. Out of 296 respondents, 29.1% agreed they were sexually active, 59.1% denied, and the remaining 11.8% skipped the question. To the question asking whether someone ever experienced a situation with the risk of getting pregnant, nearest the half 49.32% said yes. The threatening circumstances were described as having had unprotected sex (51.37%), having had forced sex (6.16%), having forgotten taking pills (2.7%), having failed protective like condom split (15.1%); and 20.6% did not precise such situations.

To the question asking whether respondents ever had been involved in an unwanted sexual encounter, 15(5.1%) said yes, of which 3% have had forced sex or rape. The most fear felt after having experienced the unwanted sexual encounter was getting pregnancy for 12 respondents out of 15 against 2 respondents who said HIV/AIDS. To reduce the worries, some of the victims shared the case with friends (20%) or attended health facility (13.3%) or did nothing (6.7%). Nine respondents (60%) out of those 15 skipped the question.

Assessing the prevalence of unwanted pregnancies, 6 (4.1%) of 146 sexually active respondents had gotten unwanted pregnancy, of which 3 from forced sex and 3 from wanted but unprotected intercourse.

Table 1 Frequency distribution of respondents by Province-Age-Religion for valid cases

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Demographics		Origin province of the respondent							
		North	South	East	West	Kigali	Other	Total	
Age	Years	N	N	N	N	N	N	N	%
	18-20	13	22	15	16	18	4	88	29.7
	21-23	35	58	28	28	32	2	183	61.8
	24-26	5	7	5	5	2	1	25	8.5
	Mean 21.5±2.4								
Religion	Catholics	35	39	10	14	19	1	118	39.9
	Protestants	16	45	23	26	24	2	136	46.0
	Muslims	2	3	15	9	8	1	38	12.8
	Others	0	0	0	0	1	3	4	1.4
Total	N	53	87	48	49	52	7	296	100
	%	17.9	29.4	16.2	16.6	17.6	2.4	100	

N=frequencies; %=percent

Knowledge about contraception

For knowledge or awareness (Table 3), the indicators were having heard, being able to cite some modern contraceptive methods and describe the functions of EC. While almost 97.3% had heard about general modern contraception methods and cited some, only 47.6% had heard about EC. Regarding the sources of information about contraception, 58.9% got it from friends, 29.1% from health workers, 7.8% from teachers, 2.13% from internet, and 0.7% from media. The first named method known was condom, followed by pills, collier and injection (implant); only one named explicitly morning after course (EC pills). However when asked to describe the circumstances to use EC, 19.1% of 141 respondents made clear unprotected sex within 72 hours, 41.1% said unprotected sex, 30.3% said to prevent unwanted pregnancy, 2.8% said after being raped. Only 5.7% wrongly thought it can prevent HIV.

Table 2: Sexually activity and related behaviours

	Assessing questions	Responses	Frequency	%	Valid %
1	Being sexually active? N=296	-Yes	86	29.05	32.95
		-No	175	59.12	67.05
		-Missing	35	11.82	
2	Having faced any risk-situation of getting pregnant? N=296	-Yes	146	49.32	49.83
		-No	147	49.66	50.17
		-Missing	3	1.01	
3	If yes, type of the risk-situation? N=146 Open question	-Unprotected sex	75	51.37	53.57
		-Forced sex	9	6.16	6.43
		-Failed Method	22	15.07	15.71
		-Forgetting the pills	4	2.74	2.86

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		-Other	30	20.55	21.43
		-Missing	6	4.11	4.29
4	Having involved in unwanted Sexual encounter? N=296	-Yes	15	5.07	5.1
		-No	279	94.26	94.9
		-Missing	2	0.68	
5	Biggest worry after unwanted Intercourse N=15 Open question	-Getting Pregnancy	12	80.00	85.71
		-HIV/AIDS	2	13.33	14.29
		-Missing	1	6.67	
6	Action taken to reduce worries N=15 Open question	-Nothing	1	6.67	16.67
		-Comforted by a friend	3	20.00	50.00
		-Went to health facility	2	13.33	33.33
		-Missing	9	60.00	
7	Carried unwanted pregnancy N=146	-Yes	6	4.11	4.20
		-No	137	93.84	95.80
		-Missing	3	2.05	

Practice of general contraception and EC

Table 4 shows that 63(21.3%) respondents said having used any modern contraceptive methods while 16(5.4%) declared having used EC method. If the analysis is limited to 146 respondents who agreed having faced a situation where there was risk of getting pregnant, 42.36% used modern contraception method. The methods mentioned in those cases were condom, EC, Pills and spermicidal gel.

Attitudes towards Emergency Contraception

As noted in Table 5, the majority of respondents had a positive attitude towards EC. On average 67.1% of respondents agreed they could use themselves EC or recommend it to friends. On the Likert scaling rates, the score of strongly agree (SA) dominated in all statements tested but remained however at 40.9% on average. About 75% of respondents strongly agree about giving information on EC to adolescent girls; however, only 27.7% strongly believe that EC would help reduce the rate of class drop out.

Table 3 Knowledge and sources of information about modern contraception and EC

Questions assessing Knowledge about contraception methods			Frequency	Percent
1	Ever heard of any contraception method	-Yes	288	97.3
		-No	8	2.7
2	Having information on EC N=296	-Yes	141	47.6
		-No	155	52.4
3	Source of information about EC N=141	-Friend	83	58.9
		-Health worker	41	29.1

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	Close-ended question	-Media	1	0.7
		-Teacher	11	7.8
		-Internet	3	2.1
		-No answer	2	1.4
4	Circumstances or reason to use EC N=141 Open question	-Unprotected sex within 72 hrs	28	19.9
		-Unprotected sex	58	41.1
		-Prevent unwanted pregnancy	43	30.5
		-After being raped	4	2.8
		-Prevent HIV	8	5.7
5	Any method known? N=296 Open question	-Condom	81	27.4
		-Pills	80	27.0
		-Collier	53	17.9
		-Injection	32	10.8
		-Abstinence	20	6.8
		-Vasectomy	20	6.8
		-Natural method	6	2.0
		-Sterilisation	6	2.0
		-Norplan	4	1.4
		-Diaphragm	2	0.7
		-Jelly	2	0.7
		-Quinquina	2	0.7
		-Breast feeding	1	0.3
		-Calendar	1	0.3
		-Morning after Pills	1	0.3
		-Tubule ligation	1	0.3

Association between demographics and dependent variables

Table 6 shows the association relationship between demographics and KAT scores. A statistical significant difference is observed only for religion-knowledge, region-attitude, region-sexuality, and region-pregnancy. For instance, concerning getting pregnant, the ratios of yes/no were for North 2/51 (OR=0.039), South 4/82(OR=0.049), East 0/48, West 0/49, Kigali 0/52, 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. However, students under 21 years old were likely more informed about contraceptive methods than the older (OR=1.316), and Muslims were more reluctant to recommend EC than Catholics and Protestants.

Table 4 Practice of general contraception and EC

Have used modern contraception		Any method		EC method	
		N	%	N	%
	Yes	63	21.3	16	5.4

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	No	230	77.7	279	94.3
	Missing	3	1.0	1	.3
	Total	296	100.0	296	100.0
Type of contraceptive used		Single count		Cumulative count	
	Condom	39	27.1	52	70.3
	EC	4	2.8	9	12.2
	Pills	2	1.4	4	5.4
	Spermicidal	3	2.1	9	12.2
	EC+ Condom	5	3.5		
	Pills+ Condom	2	1.4		
	Spermicidal+ Condom	6	4.2		
	Total	61	42.4	74	100

Table 5: Participants' attitudes towards emergency contraception expressed as percentage

		Response		Rate on Likert scale				
	Opinion inquired	Yes	No	SA	A	D	SD	NC
1	Would use EC in future	64.5	35.5					
2	Would recommend ECs to someone	69.6	30.4					
3	Inform ECs to all young girls and women			75.0	16.2	1.4	6.8	0.7
4	Parents to support use of EC by daughters			38.5	25.7	15.2	14.9	5.7
5	Parents should often talk EC with daughters			40.5	26.0	12.2	14.9	6.4
6	EC should be made easily available			41.9	19.9	12.8	13.2	12.2
7	EC can reduce the rate of induced abortions			31.1	24.0	12.2	11.8	20.9
8	EC can reduce deaths resulting from abortion			31.4	23.6	11.1	10.8	23.0
9	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

SA (strongly agree); A(agree); D(disagree); SD(strongly disagree); NC(No choice)

Table 6 Association between demographic variables and outcomes expressed as ratio YES: NO

Independent Variable		**Knowledge** Have you ever heard about EC?	**Practice** Have you ever used EC?	**Attitude** Would you recommend EC?	**Sexuality** Experienced some sexual situation?	**Pregnancy** Ever carried a pregnancy?
Age	*P-value*	*0.059*	*0.923*	*0.089*	*0.654*	*0.832*
	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*	*0.013**	*0.260*	*0.230*	*0.555*	*0.126*

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	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*	*0.116*	*0.706*	*0.005**	*0.017**	*0.032**
	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

***P value significant (<0.05; SPSS Chi-square tests: Linear-to-linear association, Likelihood, Pearson)**

DISCUSSION

Demographics

The age window of respondents fell within 18 and 25 years, with 22 years as the mode. This is compatible with the normal expected age of Higher Education students from fresh to terminal levels in many countries. As NUR campus is located in the South province, about the third of students come from this Province. The findings show that the first religion of the respondents was Protestant before Catholic and Muslim. Protestants include both the old confessions and the new created churches. The multiplication of churches is a new social phenomenon observed in many countries, particularly among youths. The majority of Protestants and Catholics come from South and North provinces, while the majority of Muslim belongs to the East and West provinces.

Sexual Experience

In this study, only 29% of female students have admitted of being sexually active. However, nearest half (49%) of them agreed they ever had experienced a situation with the risk of getting pregnant. The threatening circumstances were described as having had unprotected sex (51%), having forced sex (6%), forgetting taking pills (3%), failed protective method (15%); 21% did not precise such situation. This indicates that students made difference between having regular sex and having had an occasional intercourse. The high percentage (12%) of those who skipped the question of being sexually active may be attributed to the fact that students are less likely to admit being sexually active for fear of being judged. Studies from other countries have reported 33.9% in Uganda [16], 56.6% in Ethiopia [17] and 64.48 % in Nigeria [18].There are no independent variables showing a statistically-significant association with sexual practice, except the religion. To the question asking whether respondents were ever had been involved in any unwantedsexual encounter, 5% (15) replied yes, of which 3% have had forced sex or rape. The most fear or worry felt after having experienced the unwanted sexual encounter was getting pregnancy for 12 respondents out of 15 (80%) against 2 respondents for HIV/AIDS. To reduce

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the worries, some of the victims shared the case with friends (20%) or attended health facility (13.3%) or did nothing. Assessing the prevalence of unwanted pregnancies, 6 (4%) of 146 sexually active respondents got unwanted pregnancy, of which 3 from forced sex and 3 from unprotected willing intercourse.

Knowledge about contraceptive methods

The results show that 47.6% of students had ever heard about EC. The results of this study show slightly lower knowledge level compared to similar studies done in other countries e.g. in a study done among university students in Tanzania 57%[19], Ethiopia 69.9%[17] and Pakistan 79%[20].A similar study among female undergraduate students in Ogun state of Nigeria showed that 58.4% of the students had general knowledge about EC[18, 21]. Another study done in Durban South Africa among students of tertiary institutions showed that 56.5% had heard about EC [22]. This lower knowledge level could be due to the fact that media and teachers are not the main source of information of participants' knowledge of EC.

Use of EC

Regarding the use of emergency contraception, 16(5.4%) students reported that they had used EC. There is a slightly lower usage level, compared with similar studies conducted in other countries, for example in a study conducted among Ethiopian undergraduate female students 32.3% reported to ever used EC [23],Tanzania (11.04%)[24] and Nigeria 29.9%[25].The low level of use could still reflect the inadequate knowledge among study participants. Other reasons for the low use could be the misconception about family planning like 'family planning cause cancer and infertility', which were evidently of concern among the students. Those with strong Christian values may also not use EC because of the misconception that it causes abortion, even though religion didn't affect knowledge in this study. The factors statistically and significantly associated with use of emergency contraception were having ever used modern contraception, being afraid of getting pregnant, and ever having been involved in an unwanted sexual encounter.

Attitude towards EC

Regarding the attitudes, the participants generally had positive attitudes towards emergency contraception. The majority of the participants thought emergency contraception would lead to reduction in the number of unwanted pregnancies and hence induced abortions and school dropouts. They also thought that parents should discuss with their children about EC.

CONCLUSION

More than half of 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

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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, maternal morbidity or class drops out.

CONSENT

The consents from participants' students 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 right not to be involved in the study or not to 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.

References

1. Sedgh G, Singh S, and Hussain R. Intended and Unintended Pregnancies Worldwide in 2012 and Recent Trends. *Studies in Family Planning*. 2014; *45*(3):301-3014.
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 http://www.who.int/reproductivehealth/topics/unsafe_abortion/.pdf March 30, 2015
3. Santhyaa KG, & Jejeebhoy SJ. Sexual and reproductive health and rights of adolescent girls: Evidence from low- and middle-income countries. *Global Public Health: An International Journal for Research, Policy and Practice*. 2015; *10*(2):189-221. doi: 10.1080/17441692.2014.986169
4. Sedgh G, Finer LB, Bankole A, Eilers MA, & Singh S. Adolescent Pregnancy, Birth, and Abortion Rates Across Countries: Levels and Recent Trends. *Journal of Adolescent Health*. 2015; *56*(2):223-230.
5. 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
6. Acharya DR, Bhattarai R, Poobalan A, Teijlingen ER & Chapman G. Factors associated with teenage pregnancy in South Asia. www.HSJ GR . 2010; 4(1): 3-14.
7. 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.

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8. Animaw W & Bogale B. Awareness and attitude to liberalized safe abortion services among female students in University and Colleges of Arba Minch Town, Ethiopia. *Science Journal of Public Health.* 2014; *2*(5): 6. doi: 10.11648/j.sjph.20140205.20
9. WHO. *Ensuring human rights in the provision of contraceptive information and services: guidance and recommendations*. http://apps.who.int/iris/bitstream/ March 30, 2015
10. International Consortium for Emergency Contraception. Emergency contraceptive pills, Medical and Service Delivery Guidelines. ICEC publications.2012 http://www.cecinfo.org/publications-and-resources/icec-publications/ March 30 2015
11. 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
12. McKay RJ & Gilbert L. Use of IUDs for emergency contraception: current perspectives. *Open Access Journal of Contraception*. 2014; 53. doi: 10.2147/oajc.s56399
13. Basinga P, Moore AM, Singh S, Audam S, Carlin L, Birungi F, & Ngabo F. Abortion Incidence in Rwanda. http://paa2011.princeton.edu/papers/110387
14. National Institute of Statistics of Rwanda Ministry of Finance and Economic Planning. Rwanda Demographic and Health Survey 2010. Kigali,Rwanda 2012.
15. Basinga P, Moore AM, Singh S, Carlin EE, Birungi F, & Ngabo F.. Abortion incidence and postabortion care in Rwanda. *Studies in family planning*. 2012; *43*(1): 11-20.
16. Mehra D. *Sexual behaviour among Ugandan university students: A gender perspective* (2013). http://lup.lub.lu.se/luur/download? 4067571
17. 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.
18. Wright KO, Fabamwo AO, & Akinola OI. Emergency contraception: A different perspective on knowledge and use among female undergradutes in a non-residential tertiary institution in Nigeria. *International Journal of Medicine and Medical Sciences.* 2014; *6*(10):215-223.
19. 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.
20. Alam K, Snover A, Sultana N, Munir TA, & Shah SS. Emergency contraception: knowledge, attitude and practices among doctors of a tertiary care hospital. *Journal of Ayub Medical College, Abbottabad: JAMC.* 2013; *25*(1-2):141.
21. Aziken ME, Okonta PI, & Ande AB. Knowledge and perception of emergency contraception among female Nigerian undergraduates. *Int Fam Plan Perspect*. 2003; 84-87.
22. 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.

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23. Kassa A, & Wolde-Mariam M. 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.

24. Bekele T, & Deressa W. Experience of Sexual Coercion and Associated Factors among Female Students of Ambo University in Ethiopia. *Science Journal of Public Health.* 2014;*2*(6): 532-538.

25. 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*: 647-655.