



COLLEGE OF MEDICINE AND HEALTH SCIENCES
SCHOOL OF MEDICINE AND PHARMACY
DEPARTMENT OF GYNECOLOGY AND OBSTETRICS

**FACTORS ASSOCIATED WITH THE USE OF EMERGENCY
CONTRACEPTION AMONG FEMALE STUDENTS AT THE
UNIVERSITY OF RWANDA-**

*Dissertation Submitted in Partial Fulfillment of the Requirements for the Award of
Degree of Master of Medicine in Obstetrics and Gynecology of the University Of*

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KIGALI, AUGUST 2020

Declaration

The researcher:

I hereby declare that this dissertation “**Factors associated with the use of emergency contraception among female students at the University of Rwanda**” is my own work and it has not been submitted by any other university for the award of a degree.

Signed

Date 17/08/2020

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I hereby declare that this dissertation “**Factors associated with the use of emergency contraception among female students at the University of Rwanda**” was submitted by Dr Pasteur Mberimbere.

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DEDICATION

To the Almighty God who cares about us.

To my Parents, NDIHOKUBWAYO Claire and MINANI Jean-Bosco, I owe my success

To my lovely Sister Minani Daniela

I dedicate this work.

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Precis

Factors associated with the use of emergency among female students at the university of Rwanda.

ABSTRACT:

Objective: Emergency contraception (EC) is an effective method to reduce unintended pregnancies. Despite the notable gains in contraceptive use and decrease in the unmet need for contraception over the past decade, nearly half (47%) of pregnancies in Rwanda are unintended. Unintended pregnancy increases the risk of unsafe abortion and thus maternal mortality and morbidity. The objective of the study was to examine the knowledge and use of EC among female students at the University of Rwanda.

Methods: A cross-sectional survey of female students from 7 urban and rural colleges of the University of Rwanda was conducted from December 2019 through January 2020. Informed written consent was obtained. Correlation analysis were done using alpha value at 0.05 and 95% confidence interval.

Results: A total of 386 female students were recruited. Most of the students (84%) were less than 24 years old with one third between 18 - 20 years. Most were single (96%), 54% were in relationship and 44% had had sex at least once. The mean age at first sexual intercourse was 18.7 ± 3.2 years. Of the 170 women who had sexual intercourse, 62% were still sexually active, 51% had had more than one sexual partner and 52% had had unprotected sexual experience at least once. Sixty five percent of the cohort did not use any contraception. Most students (81%) knew what EC was, but 53% stated EC was not accessible, 65% didn't know the correct timing and 52% did not plan to use it in the future. Women with prior sexual experience were significantly more likely to have knowledge of EC (87.6%, $p=0.003$) and had intent to use it (57.1%, $p=0.002$) but were not more knowledgeable about types of EC. Among students who used other methods of family planning, were currently sexually active or had had unprotected sex, knowledge of EC was not higher than students without the exposure.

Conclusion: Female students at the University of Rwanda had limited knowledge or intent to use EC despite being sexually active. This represents a significant gap in public health. Knowledge of EC and access within the educational system are necessary as this can significantly impact continuing education and human resource potential for a developing country.

Keywords: Emergency contraception; reproductive health; global health

Table of contents

Declaration.....	II
Dedication.....	V
Acknowledgement.....	VI
Precis.....	VII
Abstract:.....	VIII
List of tables.....	X
List of tables.....	X
List of figures.....	XI
List of abbreviations.....	XII
Introduction.....	1
Methods.....	2
Results.....	3
Discussion.....	5
Conclusions.....	6
References.....	7
Appendices.....	13
Appendix 2. Informed consent form.....	17
Appendix 3. IRB approval.....	18

List of tables

TABLE 1. SOCIODEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS:9
TABLE 2. SEXUAL HISTORY AND USE OF CONTRACEPTIVES 10
TABLE 3. FACTORS ASSOCIATED WITH KNOWLEDGE AND USE OF EC. 11

List of figures

Figure 1. Source of information on emergency contraceptives12

List of abbreviations

EC: Emergency Contraception

IRB: Institutional review board

MoH: Ministry of Health

WHO: World Health Organization

CAEVM: College of Agriculture, Animal sciences and Veterinary Medicine

CASS: College of Arts and Social Sciences

CE: College of Education

CBE: College of Business and Economics

CMHS: College of Medicine and Health Sciences

CST: College of Science and Technology

Introduction

Emergency contraception is recognized as a type of modern contraception used after unprotected sexual intercourse without other active contraceptive when pregnancy is not desired.¹ Emergency contraceptive pills (EC) and intrauterine contraceptive devices are the most widely used. Unintended pregnancies can be reduced by more 75% if emergency contraception is within 72 hours following sexual intercourse. If used correctly emergency contraception could potentially reduce the rate of induced abortion.² A study published in Rwanda in 2012 demonstrated that nearly half of all pregnancies were unintended and the rate of unmet contraception need was still high.³ In addition, more than one-third of births in Rwanda are unplanned and 22% of all unintended pregnancies end in induced abortions and 63% in unplanned births.^{3,4} Unsafe abortion is a significant cause of maternal death which is preventable with the use of regular and emergency contraception.^{5,6} Emergency contraceptive use is underutilized and needs to be expanded to improve women's ability to avoid unwanted pregnancy after unprotected intercourse. It is the least known method and remains the least available from the facilities offering contraception.^{7,8}

The global incidence of unplanned pregnancies at higher educational institutions every year continues to increase despite high awareness and knowledge on regular modern contraceptives among students.⁹ This can significantly impact continuing education and human resources for a developing country. There is limited information about the extent of factors associated with the EC utilization among higher institutions female students in Rwanda. Therefore, the aim of this study is to assess the prevalence and factors associated with the utilization of EC among female students at the University of Rwanda in order to design appropriate preventive interventions and educational programs.

Methods

A cross-sectional survey of female students from 7 urban and rural colleges of the University of Rwanda was conducted from December 2019 through January 2020. The sample size was calculated using a single population formula with confidence interval of 95% and margin error of 5% and in addition a 10% non-response rate was added to the calculated sample size, the targeted sample size was 382. A self-administered questionnaire used contained questions on socio-demographic factors, knowledge, and practice of emergency contraception and the questionnaire was adapted from a similar study and consent was obtained from the corresponding author.¹⁰

SPSS software version 25 was used for data analysis. Logistic regression analysis was done with the calculation of the p-value, and OD ratio at 95% confidence interval to identify the determinants of uptake of EC and a P value of <0.05 was considered significant.

This research was approved by the Institutional Review Board at the University of Rwanda (N*480/CMHS IRB/2019). Prior to questionnaire administration, the purpose of the study was explained to the participants. Furthermore, all data collected were kept confidential by omitting their personally identifiable information such as names from the questionnaire and by giving a coding number related to the college and/or campus at each questionnaire.

Results.

During our study period, 386 students were recruited from 7 colleges of the University of Rwanda. Among the recruited participants, more than half were aged 21 to 24 years while one third was aged between 18 to 20 years. 96% were single women either in relationship (54%) or not in relationship (42%). Most of these women were Christian (90%). Table 1 represent the sociodemographic characteristics of the study population. Furthermore, 170 (44%) of our participants had had sex at least once in their lifetime as shown in table 2 representing responses on knowledge and use of emergency contraception. The lowest age and mean age at first sexual intercourse were 11 and 18.7 respectively. Of the 170 women who had sexual intercourse, 62% were still sexually active, 51% had had more than one sexual partner and 52% had had unprotected sexual experience at least once.

More than three-fourths (81%) of the respondents reported that they have heard about emergency contraceptive methods while 53% stated EC was not accessible. Furthermore, over half of our respondents (51%) thought that EC is effective in preventing pregnancy and sixty-five percent of the cohort did not use any contraception. Approximately 65 % of participants said they did not know the correct timing and over half (52%) did not plan to use it in the future. With regards to sources of information, health professional, friend and mass media ranked the highest respectively 44%, 36.5%, and 32.8%. The least source was from parents (Figure 1).

Factors influencing knowledge and use of emergency contraceptives are presented in table 3. Women with prior sexual experience were significantly more likely to have knowledge of EC (87.6%, $p=0.003$) and had intent to use it (57.1%, $p=0.002$) but were less knowledgeable about types of EC. Among these women, those who have had experience of unprotected sexual intercourse were more likely to have knowledge on single pill (78.4%, $p<0.001$) as a form of EC and were expressed significant awareness on when and how to use the pill ($p<0.05$). On the other hand, prior use of contraceptives, being currently sexually active and prior history of unprotected sexual intercourse were not significant predictor of awareness on emergency contraceptives.

Participants who responded to have access to emergency contraception had a significant knowledge on when to use emergency contraceptives (p -value <0.05). In addition to that, having access to emergency contraception was significantly associated with intent to use EC

and these respondents expressed significant awareness of emergency contraceptive pills (single pill and OCP) and also the correct dosage of the pills ($p\text{-value}<0.05$) (Table 3).

Female students who were currently sexually active were significantly more knowledgeable on indications for EC such as unprotected sexual intercourse (72.4%, $p=0.023$) and condom rupture during intercourse (89.1%, $p=0.006$) but significant knowledge on dosage was only on EC taken as single dose (56.2%, $p=0.008$) and were less knowledgeable on the two doses regimen (24.4%, $p=0.087$).

Discussion.

This study aimed to assess factors associated with emergency contraceptive use among female undergraduate students at University of Rwanda. We found close to half of our respondents had had sexual intercourse, and more than half were currently sexually active. Awareness of EC was much higher among Rwanda's students compared to students from a private university in Nigeria (60,6%), 2 Southern Ethiopian universities (63% and 67,8%), Ghana (57%) and Kampala, Uganda (45.1%).¹⁰⁻¹⁴ The level of Rwandan student's awareness of EC was similar to reported rates in Botswana (95%), Addis Ababa, Ethiopia (84,2%), Nigeria (72,6%).¹⁵⁻¹⁷ However, as shown in this study, accurate knowledge and utilization of EC was limited. Incorrect time of use of EC has also been previously demonstrated.^{10,14-16}

Most of our participants obtained EC awareness from health workers. These findings significantly differ from previous results reported in southwest Ethiopia, Kampala, Uganda, Botswana and Nigeria where the main sources of information about emergency contraception were friends.^{10,14,15,17} A variety of sources have been demonstrated to be important for increasing awareness to EC. Parental level of education has an influence to parent adolescent communication and reproductive health issues. For instance, educated parents have the patience to talk orally and face to face with their youths.¹⁸

A significant association was observed between the sexual history and knowledge of EC in our study. Similar findings were observed in Ghana where there was a significant relationship between numbers of sexual partners and knowledge on EC with students with more 4 or more partners being 3.6 times more likely to know of ECs compared to those with one partner.¹³ The other finding of this study is that there was no statistical association between family planning use, sexual history and knowledge of EC use. These findings contrast with the results of a south-west Ethiopian university that showed level of knowledge, time of first sexual intercourse, previous use of regular contraceptives and history of being pregnant were the major predictors for EC utilization among female students.¹⁰ As it would have been expected, the lessons learned from the previous pregnancy experience would increase EC utilization among female students with history of previous pregnancy. Surprisingly in our findings, we observed that having awareness, previous use of contraceptives and history of pregnancy does not necessary translate into usage.

The practice of EC in our study is 35%. This is higher than those found among Nigerian students (10,6%), Ugandans students (14,59%), South Africa (21,2%), Botswana (22%). ^{11, 14,19,15} Some African studies indicated higher prevalence rate of EC use (74,5%,78%). ^{19,12} Their studies were carried only among sexually active participants.

As a limitation, our study design was a cross-sectional, therefore it cannot highlight cause and effect relationship. Social desirability bias cannot be totally eliminated as the study touches sensitive issues that can lead to under reporting. This study was conducted in one public university. This will limit the generalizability of the findings to the entire population of university students in Rwanda. However, this study focused exclusively its interest on EC uptake considering a sub-population that are most at risk of unintended pregnancy-unmarried, sexually active female university students. In addition, the sample size taken was considerable giving a statistical power adequate to control for the possible cofounding effect of socio-demographic factors and other known determinants of risky behavior in the multivariate analysis.

Conclusions

Although overall awareness of EC was very high, female students at the University of Rwanda had limited knowledge or intent to use EC despite being sexually active. Awareness of contraception do not commensurate contraceptive use among female undergraduate students since sexual history and access influence usage.

Accurate knowledge about EC should be more emphasized, and student's health services should be able to explain and take the lead by helping EC more easily accessible and well known. Knowledge of EC and access within the educational system are necessary as this can significantly impact continuing education and human resource potential for a developing country. Programs to support parents to become more involved and communicate with their adolescent children need to be implemented.

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Table 1. Sociodemographic characteristics of respondents:

		N	%
Age groups	18-20	119	31%
	21-24	206	53%
	>=25	61	16%
Marital status	Married/ cohabitate	14	4%
	Divorced/separated	2	1%
	Single in relationship	209	54%
	Single not in relationship	161	42%
Religion	Catholic	228	59%
	Protestant	118	31%
	Muslim	7	2%
	Others	33	9%
Year of study	1st year	133	34%
	2nd year	27	7%
	3rd year	93	24%
	4th year	95	25%
	5th year	38	10%
School	CAEVM	64	17%
	CASS	5	1%
	CBE	62	16%
	CE	24	6%
	CMHS	161	42%
	CST	70	18%
campus location	Rural	208	54%
	Urban	178	46%
Mother's education status	Illiterate	26	7%
	Primary school	102	26%
	Secondary school	103	27%
	University	155	40%
Father's education status	Illiterate	13	3%
	Primary school	82	21%
	Secondary school	95	25%
	University	196	51%

Table 2. Sexual history and use of contraceptives

		N	%
Have you ever had sexual intercourse	yes	170	44%
	No	216	56%
Have you ever had sexual intercourse	yes	170	44%
	No	216	56%
Age at first sexual intercourse (<i>11-27, mean 18.7, Mode 18</i>)	<18	54	32%
	18-20	70	41%
	>=21	46	27%
Number of sex partners	1	83	49%
	2-3	70	41%
	>3	17	10%
Number of sex partners	1	83	49%
	>1	87	51%
are you currently sexually active	yes	105	62%
	no	65	38%
Have you ever had unprotected sexual intercourse	yes	88	52%
	no	82	48%
Do you use any contraception?	yes	60	35%
	no	111	65%
Was the pregnancy intended	yes	16	70%
	no	7	30%
Ever heard about EC?	Yes	312	81%
	No	74	19%
Is EC always accessible in your area?	yes	183	47%
	no	203	53%
Do you know where to get EC in case?	yes	269	70%
	no	116	30%
Ever used any digital platform to order for EC	yes	28	17%
	no	141	83%
Do you intend to use EC in the future?	yes	186	48%
	no	200	52%
Have you ever experienced any side effect form EC?	yes	30	18%
	no	140	82%

Table 3. Factors associated with knowledge and use of EC.

Measurements	Ever had sex			Prior use FP		unprotected sex			Active sex			Access		Rural		
	n=170	p	RR	n=60	p	n=88	p	RR	n=105	p	RR	n=183	p	n=208	p	RR
Intent to use EC	57.1%	0.002	1.39	61.7	0.40	58.0%	0.807	-	59.0%	0.506	-	59.0%	0.00	41.0%	0.004	0.74
know EC	87.6%	0.003	1.16	88.3	0.86	92.0%	0.070	-	89.5%	0.345	-	90.70%	0.00	79.30%	0.418	0.96
Types of EC																
Single Pill	61.8%	0.078	1.17	56.7	0.35	78.4%	0.000	1.79	65.7%	0.178	-	68.3%	0.00	49.5%	0.002	0.76
OCP	20.6%	0.995	1.00	13.3%	0.09	21.6%	0.738		22.9%	0.352	-	25.1%	0.04	18.0%	0.173	-
IUD	19.4%	0.001	2.44	16.7%	0.52	26.1%	0.022	2.14	19.0%	0.879	-	16.4%	0.06	5.3%	0	0.10
When to use EC																
Condom rupture	74.7%	0.006	1.21	83%	0.08	80.7%	0.063	-	89.1%	0.006	1.30	78.7%	0.00	74.0%	0.002	1.24
Unprotected sex	65.9%	0.002	1.32	62%	0.37	81.8%	0.000	1.68	72.4%	0.023	1.31	69.9%	0.00	46.2%	0	0.66
Rape	61.8%	0.013	1.26	55%	0.17	79.5%	0.000	1.86	66.7%	0.095	1.24	64.5%	0.00	44.2%	0	0.66
IUD use up to 5 days as EC	26.5%	0.000	3.38	35%	0.06	27.3%	0.806		31.4%	0.063	-	21.4%	0.01	15.2%	0.55	-
Dosage of ECP																
One dose	48.2%	0.000	2.42	55%	0.18	64.8%	0.000	2.13	56.2%	0.008	1.59	49.2%	0.00	36.5%	0.059	1.33
Two doses	20.6%	0.000	7.41	27%	0.14	26.1%	0.084	-	24.8%	0.087	1.79	15.3%	0.01	10.1%	0.717	-

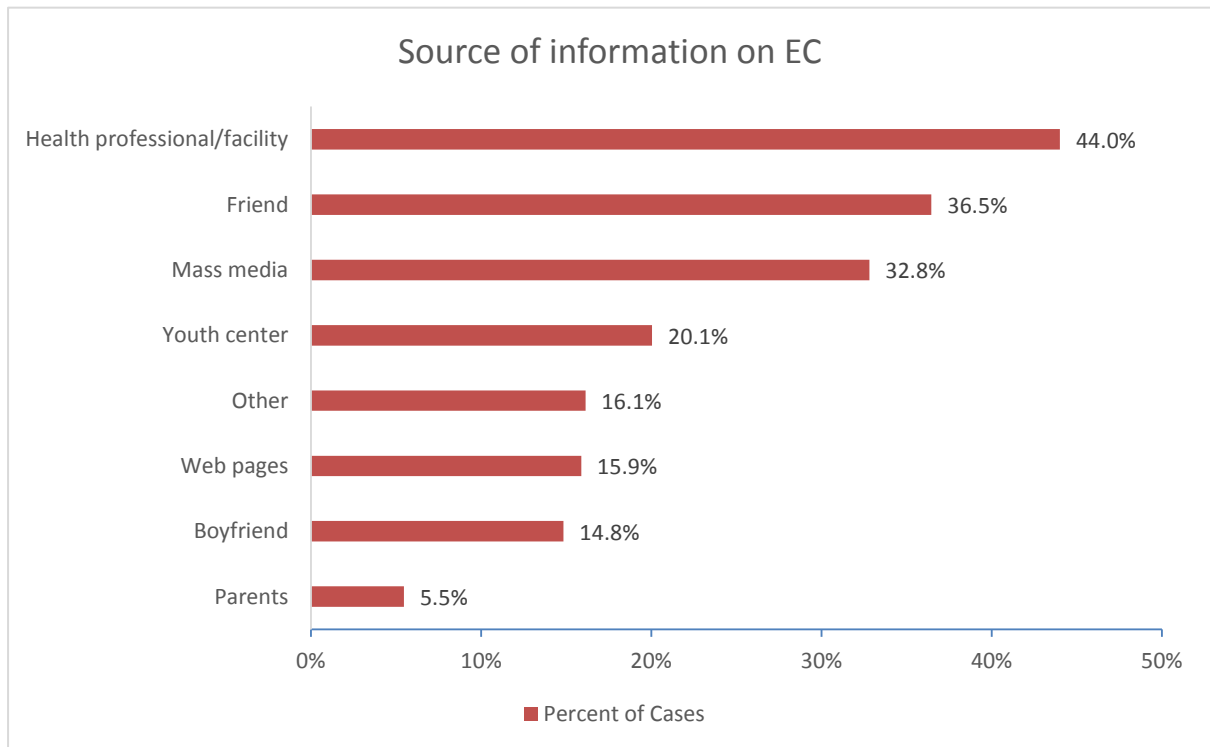


Figure 1. Source of information on emergency contraceptives

Appendices

Appendix 1. Data collection tool

I) **Socio-demographic characteristics of female students at University of Rwanda**

1. Age (.....)
2. Marital status
 1. Married
 2. Cohabitate
 3. Divorced/ Separated
 4. Single in relationship
 5. Single not in relationship
3. Religion
 1. Catholic
 2. Protestant
 3. Muslim
 4. Others.....
4. Year of study
 1. First year
 2. Second year
 3. Third year
 4. Fourth year
 5. Fifth year
5. School of.....
6. Campus/ department location
 1. Rural
 2. Urban
7. Origine (what is the name of place you grew-up?) District.....
8. Mothers educational status:
 1. Illiterate
 2. Primary school
 3. Higher school
 4. Higher education
9. Fathers educational status
 1. Illiterate
 2. Primary school
 3. Higher school
 4. Higher education

II) **Sexual and reproductive history of female students**

10. Age at first sex (.....)
11. Are you currently sexually active?
 1. YES
 2. NO
12. History of unprotected sex?

1. Yes
 2. No
13. Do you use a contraceptive method?
1. Yes
 2. No
14. If yes, What contraceptive do you use? _____
15. Total number of sex partners. _____
16. Have you ever been pregnant after sex?
1. Yes
 2. No
17. If yes to 16 , was the sex performed with consent (wanted sex)?
1. Yes
 2. No
18. If yes to 16, Was the pregnancy unintended? (**unwanted/unplanned** pregnancy at the time of conception)
1. Yes
 2. No

III) Utilization of EC (emergency contraception) and its effects

19. Have you ever used any method of emergency contraception (eg pills,) before?
1. Yes
 2. NO
20. Do you have always access to emergency contraception in your area?
1. Yes
 2. No
21. Do you know where to get emergency contraception services by yourself when required?
1. Yes
 2. No
22. Had a history of well approach by Emergency contraception service provider (person working in health facility or in a youth center came to you and explained about emergency contraception)
1. Yes
 2. No
23. Do you ever used any digital platforms to order Emergency contraception pills? (Eg CASHA, mobile payment system in Kigali which anonymously provides emergency contraceptive pills by motorbike)?
1. Yes
 2. No
24. Do you intend using emergency contraception methods in the future?
1. Yes
 2. No
25. Have you ever experienced any side effects from any method of EC methods used?

1. Yes
2. No
3. Haven't used EC

IV) What is your Source of information about emergency contraception?

1. Friends
2. Boyfriend
3. Mass media
4. Health professional facility
5. Youth center
6. Web pages
7. Other sources.....

V) Knowledge about emergency contraception among female students

Knowledge assessment items (for this section, you can circle 1 or more answers)

26. Do you know what emergency contraception is?
 1. Yes
 2. No

27. Which one of the following can be used for emergency contraception
 1. Single pill
 2. Family planning pills
 3. injectables
 4. Intrauterine device (Sterilet) agapira ko mu mura
 5. Antibiotics like ampicilline
 6. I don't know
28. When taken early, emergency contraception can prevent sexually transmitted infections
 1. YES
 2. NO
 3. I don't know
29. Situation(s) that emergency contraception should be taken
 1. If a condom ruptured during intercourse
 2. In case of unprotected intercourse with no other current contraception
 3. In case of rape when forced to have sex
 4. I don't know
30. The recommended maximum time limit to take emergency contraception pills
 1. Within 24hrs after sex
 2. Within 72hrs after sex
 3. Within 5 days after sex
 4. I don't know

31. Effectiveness of emergency contraceptive pills in preventing pregnancy:
 1. Effective
 2. Not effective
 3. I don't know

32. Recommended number of doses of EC pills
1. One dose
 2. Two doses
 3. Three doses
 4. I don't know
33. Recommended time between the doses of EC pills
1. Before sex
 2. immediately after sex
 3. Twelve hours apart
 4. Twenty-four hours apart
 5. Seventy-two hours apart
 6. I don't know
34. The intrauterine device called Sterilet and agapira ko mu mura in Kinyarwanda can be used as emergency contraception and be inserted up to 5 days after unsafe sex?
1. Yes
 2. NO
 3. I don't know

Appendix 2. Informed consent form

My name is Dr MBERIMBERE PASTEUR -As part of obtaining a Master's Degree in gynaecology and obstetrics I am conducting a research on factors associated with emergency contraceptive use among female undergraduate students, by interviewing female undergraduate students studying at the university of Rwanda.

You will be selected voluntarily participate in the study by giving me permission to interview you and to complete an anonymous questionnaire on the topic of emergency contraception.

Your name will remain confidential throughout the study. You can withdraw from the study at any stage. The information which you provide will remain anonymous at all stage of the study. You will not receive any form of remuneration for participating in the study.

By providing with your honest views on the matter, we will be able to use the collective data to understand the prevalence and factors associated with emergency contraceptive use. The information based on the study will assist health authorities to establish policies that promotes the use of emergency contraceptive, and as a result in order to design appropriate preventive interventions and educational programs.


If you have read the above information and you agree to participate in the study, please complete the following section. I understand the purpose and value of the study. I further understand my rights and my responsibility to provide honest response to the questions in the questionnaire. I take note of the facts that I will not receive any remuneration and that as an individual will remain anonymous and the information, I provide is confidential. I agree that I participate in this study voluntarily

Signature_____

Date_____

Contact: 0781423949 / Mberimbere Pasteur

Appendix 3. IRB Approval



UNIVERSITY of
RWANDA

COLLEGE OF MEDICINE AND HEALTH SCIENCES
DIRECTORATE OF RESEARCH & INNOVATION

CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Dr MBERIMBERE Pasteur
School of Medicine and Pharmacy, CMHS, UR

Approval Notice: No 480/CMHS IRB/2019

Your Project Title *“Prevalence Of And Factors Associated With Emergency Contraception Use Among Female Undergraduates Students In The University Of Rwanda”* has been evaluated by CMHS Institutional Review Board.

Kigali, 15th/October/2019

Name of Members	Institute	Involved in the decision		
		Yes	No (Reason)	
			Absent	Withdrawn from the proceeding
Prof Kato J. Njunwa	UR-CMHS	X		
Prof Jean Bosco Gahutu	UR-CMHS	X		
Dr Brenda Asimwe-Kateera	UR-CMHS	X		
Prof Ntaganira Joseph	UR-CMHS	X		
Dr Tumusiime K. David	UR-CMHS	X		
Dr Kayonga N. Egide	UR-CMHS	X		
Mr Kanyoni Maurice	UR-CMHS		X	
Prof Munyanshongore Cyprien	UR-CMHS	X		
Mrs Ruzindana Landrine	Kicukiro district		X	
Dr Gishoma Darius	UR-CMHS	X		
Dr Donatilla Mukamana	UR-CMHS	X		
Prof Kyamanywa Patrick	UR-CMHS		X	
Prof Condo Umutesi Jeannine	UR-CMHS		X	
Dr Nyirazinyoye Laetitia	UR-CMHS	X		
Dr Nkeramihigo Emmanuel	UR-CMHS		X	
Sr Maliboli Marie Josec	CHUK	X		
Dr Mudenge Charles	Centre Psycho-Social	X		

After reviewing your protocol during the IRB meeting of where quorum was met and revisions made on the advice of the CMHS IRB submitted on 14th October 2019, **Approval has been granted to your study.**

Please note that approval of the protocol and consent form is valid for **12 months.**

Email: researchcenter@ur.ac.rw

P.O Box 3286 Kigali, Rwanda

www.ur.ac.rw


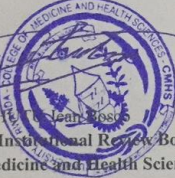
You are responsible for fulfilling the following requirements:

1. Changes, amendments, and addenda to the protocol or consent form must be submitted to the committee for review and approval, prior to activation of the changes.
2. Only approved consent forms are to be used in the enrolment of participants.
3. All consent forms signed by subjects should be retained on file. The IRB may conduct audits of all study records, and consent documentation may be part of such audits.
4. A continuing review application must be submitted to the IRB in a timely fashion and before expiry of this approval
5. Failure to submit a continuing review application will result in termination of the study
6. Notify the IRB committee once the study is finished

Sincerely,

Date of Approval: The 15th October 2019

Expiration date: The 15th October 2020



Professor GAH
Chairperson Institutional Review Board,
College of Medicine and Health Sciences, UR

Cc:

- Principal College of Medicine and Health Sciences, UR
- University Director of Research and Postgraduate Studies, UR