

## ORIGINAL ARTICLES

# Emergency Contraception and Fertility awareness among University Students in Kampala, Uganda

Josaphat K Byamugisha<sup>1,2</sup>, Florence M Mirembe<sup>1</sup>, Elisabeth Faxelid<sup>2</sup> Kristina Gemzell-Danielsson<sup>3</sup>

<sup>1</sup>Makerere University Faculty of Medicine, Dept of Obstetrics and Gynecology

<sup>2</sup>Karolinska Institutet, Dept. of Public Health sciences

Division of International Health (IHCAR)

<sup>3</sup>Karolinska Institutet, Dept. of Woman and Child Health

Division of Obstetrics and Gynecology

### ABSTRACT

**Background:** Uganda has a high maternal mortality ratio with unsafe abortions being one of the major causes. Young people are particularly vulnerable to unsafe induced abortion with its sequelae. Emergency contraception (EC) may reduce unsafe abortions if easily accessible and acceptable.

**Objective:** To determine knowledge about, ever use and attitudes towards EC among resident and non-resident female first year university students in Kampala.

**Methods:** This Cross sectional study was carried out at Makerere University from January to March 2005. Out of 5971 females admitted in the academic year 2004/2005, 379 answered a self administered questionnaire. The students were approached individually and given the questionnaire if they consented.

**Results:** The mean age of the participants was 21 years. Less than half (45.1%) had ever heard about emergency contraceptive pills (ECPs). The most common sources of information about EC were friends (34%), media (24.8%) and schools (19.4%). The ever pregnancy rate was 3.4 percent and 42 percent were in a steady relationship of three or more months. The contraceptive ever-use rate was 14.5 percent. Among the users the most common methods were condoms (48.9%) and withdrawal (23.4%). Emergency contraceptive pills had been used by seven students. Forty two percent did not know the time interval within which ECPs can work and one third thought it would interrupt an ongoing pregnancy. Thirty five percent did not know when in the menstrual cycle they were likely to conceive. The majority of the students were against over the counter (OTC) availability of EC because of fear of misuse.

**Conclusions:** Knowledge about Emergency contraception and fertility awareness is low among the female first year university students. Friends and the media are an important source of EC information. Awareness and knowledge of EC should be increased.

**Key words:** Emergency contraception, university students, Kampala

*African Health Sciences* 2006; 6(4):194-200

### Introduction

Emergency Contraception (EC) refers to a group of birth control modalities that, when used after an unprotected intercourse within defined time limits, can prevent an unwanted pregnancy (1). EC with combined contraceptive pills was initially described in 1974 by Albert Yuzpe, a Canadian physician (2). Emergency Contraception is largely underutilized world wide and has been referred to as one of the best kept secrets in Reproductive Health (RH) (3). In many low income countries, the lack of knowledge about and access to EC

may result in women resorting to unsafe abortions, which contribute significantly to maternal morbidity and mortality (4). Emergency contraception can reduce the number of unwanted pregnancies and is unique in that it is the only immediate option left for somebody who has had unprotected intercourse and is not ready for a pregnancy.

The contraceptive prevalence rate in Uganda is 23 percent and the unmet need for family planning is 35percent (5). The maternal mortality ratio has remained high at 505/100000 live births and about 21 percent of these deaths are due to induced abortions(6). This implies that two method opportunities have been missed i.e. using conventional family planning and using emergency contraception.

One of the groups that are particularly vulnerable to unsafe abortions is the young people (10-24 years) and Uganda has a predominantly young popu-

#### Corresponding author:

Josaphat K Byamugisha  
Makerere University Faculty of medicine,  
Department of Obstetrics and Gynecology  
P.O. Box 7072, Kampala Uganda  
Tel 256772580330; Fax no 25641533451  
e-mail: byamugisha2001@yahoo.com  
jbyamugisha@med.mak.ac.ug

lation. Young people are particularly at risk because they are in the transition period between childhood and adulthood. This is a period of psychological, social and sexual changes. Young people are in a state of experimentation and discovery. Because of this they are exposed to risks such as unwanted pregnancies. The teenage pregnancy rate in Uganda is 31 percent and is one of the highest in the world.

Emergency contraception was officially introduced in Uganda by the Ministry of Health in November 1998 with the aim of improving reproductive health (RH). Currently, various methods that can be used as emergency contraceptives are available in Uganda. These include: the low dose combined oral contraceptive pills (COCs) e.g. Lofemenal, Microgynon and pilplan, the progestin only pills (POPs) e.g. Ovrette and the copper T 380A intrauterine contraceptive device. However, the utilization has been low. There are no previous studies in Uganda that have looked at the reasons behind this low utilization. Since the efficacy of EC is highest when used soon after unprotected sexual intercourse, knowledge acceptability and accessibility need to be high.

Some of the university students are on the upper end of the teenage period i.e. 17 to 19 years. Students that have just joined University are in a state excitement and many exposures. These include transforming from being high school students and at times moving from a restricted rural to a liberal urban environment. In the interval between completing high school and joining university, there is a vacation period during which they are partying, going to disco dances, watching movies and holding beach bashes. All these put them at risk of unplanned sexual encounters.

The aim of the study was to determine knowledge about, ever use and attitudes towards EC among female first year university students in Kampala, Uganda.

## Materials and methods

The study was carried out at Makerere University among the first year female undergraduate students, both residents and non residents. There are three main Halls of residence for female students and there are many hostels around the main campus. The study period was January to March 2005. The students were identified from the halls they are attached to and hostels of residence. First the room numbers for first year students were obtained. In most of the rooms several (3-6) students resided. The students were then approached individually. Every fourth student was asked to participate in the study

until the sample size of 379 was attained. Those students who were not available at first visit were revisited until found. One researcher started with the halls of residence on main campus while the other one started from the Hostels outside the main campus.

A self administered questionnaire with closed and open ended questions was given to the students who consented to participate in the study. Twenty four students refused to participate because they were not interested and five did not return the questionnaires.

The questionnaire covered information about age, places of residence, course being done, history pertaining to a relationship, history of pregnancy and the outcomes, general contraceptive ever use and attitudes towards EC. Specific questions were asked about knowledge of EC such as mechanism of action, availability, use of condoms in relation to EC use and time in the menstrual cycle when someone is likely to get pregnant. The questionnaire also had open ended questions about the role of young people in provision of EC and parents' role in availability of contraceptives. The questionnaire was pilot tested and a few adjustments made. The questionnaires were filled out anonymously in private and picked by the research assistants at an agreed time. Most of the questionnaires were filled immediately and this depended mainly on the time the participant had.

The study was approved by the Department of Obstetrics and Gynecology, Makerere University, The Faculty of Medicine higher degrees research and ethics committee, The Uganda National Council of Science and Technology and the Karolinska Institutet ethics committee.

The number of female students in first year was 5971 at the time of the study. The sample size was calculated using the Kish and Leslie formula for cross sectional studies. The variable used for sample size calculation was knowledge. With a 95 percent confidence interval, a 5 percent margin of error and based on the data from a previous study done in Nigeria among female University undergraduates who reported knowledge of EC of 58 percent (7) the sample size needed was 374. Five more participants were included hence a total of 379. The extra number helped to adjust for the participants who were not answering all the questions and also to adjust for loss or withdrawals.

The data were entered in EPINFO V.6 package and exported to Stata Version 8.0 package. Errors and inconsistencies were checked in EPINFO before exporting the data. The main outcome variables were knowledge of EC, ever use of contraceptives, and ever use of EC. Analysis involved frequency distribution ta-

bles and cross tabulations of age group and halls of residence against the outcome variables. Statistical methods were used as appropriate. The chi square test was used to calculate significant differences between the different study groups while Odds ratio was calculated for being in a sexual relationship and using contraceptives. A p-value of 0.05 or less was considered to be significant for the Chi square test.

The open ended questions were coded and the content analyzed manually. The answers were read several times for familiarization with the data, preliminary categories were created. Boundaries and content of the various categories were examined, some were merged, thereafter all the statements were referred to particular categories.

Two members of the research team analyzed all statements and descriptions of the codes from the open ended questions.

## Results

### *Selected characteristics*

Three hundred seventy nine female students aged 18-25 years participated in the study and were included in the analysis. Selected basic characteristics of the participants are shown in table 1. The mean age was 21 years.

**Table 1 Selected characteristics of the female first year students**

<i>characteristic</i>	<b>No. total n=379</b>	<b>(%)</b>
Age18-19	27	7.1
20-25	331	87.3
not indicated	21	5.6
Ever been pregnant	131	3.4
Never been pregnant	356	94
Not indicated	10	2.6
Steady relationship	158	41.7
No relationship	215	56.7
Not indicated	6	1.6
Ever used contraceptives	55	14.5
Never used contraceptives	324	85.5

The majority of the respondents (72%) were attached to the three main female Halls of residence within main Campus. The rest were from 17 hostels around the University. The students came from 56 different courses.

Thirteen (3.4%) participants had ever been pregnant. Of the thirteen students that had been pregnant

nine had abortions/miscarriages, and four did not indicate the pregnancy outcomes.

Among the participants, 158 (42%) reported to be in a current relationship with a duration ranging from 3-48 months. Of the 108 students who indicated the duration, one half (49%) had been in the relationship for 3-12 months. Fifty five (14.5%) students had ever used contraceptives.

### *Knowledge of emergency contraception*

Less than half (45.1%) of the students had ever heard about EC (table 2). The main sources of information were friends, the media and school. One in every three students had got the information from friends and one in every four from the media. Posters were mentioned among the other sources.

Knowledge of the mechanism of action of EC was poor and one of every three of the students believed that EC would interrupt an ongoing pregnancy. They also expressed uncertainty about the time limit within which the pills can work. One in every five students thought that the pills could work up to a maximum of twenty four hours. There was no statistically significant difference between knowledge of EC and age groups (p value 0.66)

The greatest possible source for the EC tablets was pharmacies (29.1%), youth clinic (19.2%) and university health unit (12.3%).

### *Knowledge about fertile period in the menstrual cycle*

Knowledge about the fertile period in the menstrual cycle was limited (table 3). There was more fertility awareness among those staying within main campus compared to those staying outside campus (p value 0.006).

### *Ever use of contraceptives*

Among the methods of contraception used condoms and coitus interruptus were the most common (table 4). Of the seven students who had used EC, two had used it more than once. Some participants had switched methods i.e. had used one method and then changed to another and the reasons given were that they needed a more efficient method, convenience or that the relationship had become steady. A respondent who was in a sexual relationship was eight times more likely to be using contraceptives than one who was not (odds ratio 8.1. 95%CI: 3.77-18.14).

(Odds of 0.3986 for those who were in a relationship and 0.04931 for those who were not)

**Table 2: Knowledge about Emergency contraceptive pill (ECP) among the female first year students**

Topic	No	%
<i>Ever heard about ECP (n=377)</i>		
Yes	170	45.1
No	207	54.9
<i>Mechanism of action of ECP(n=202)</i>		
Prevents ovulation	9	4.5
Prevents fertilization	88	43.6
Interrupts an ongoing pregnancy	59	29.8
Don't know	46	22.8
<i>How long after sexual intercourse can EC work (n=198)</i>		
Maximum 120 hours	5	2.5
Maximum 72 hours	66	33.3
Maximum 24 hours	44	22.2
Don't know	83	41.9
<i>Source of EC drugs</i>		
Pharmacy (n=336)	109	29.1
Youth clinic	72	19.2
University health unit	46	12.3
Secretary for health	5	1.3
Nurse/midwife	42	9.6
Doctor	18	4.8
Other sources	44	11.7
<i>Source of information about E C(n=403*)</i>		
School	78	19.4
Nurse/midwife	19	4.7
TV, radio, newspaper(media)	100	24.8
parents	19	4.7
doctor	27	6.7
friends	137	34
Other sources	13	3.2
Don't remember	7	1.7

\*some respondents gave more than one source

**Table 3: Knowledge of Fertile period in the menstrual cycle among female first year students**

Window of fertility	n= 372	(%)
Just after the periods	24	6.5
Between two periods	82	22.0
Just before the periods	115	30.9
Others	22	5.9
Don't know	129	34.7

**Table 4 Ever use of contraceptives by the female first year students**

Method ever used	Number n=94*	
Withdrawal	22	23.4
Rhythm method	3	3.2
Combined oral pills	8	8.5
Intrauterine device	1	1.1
Emergency pills(ECP)	7	7.4
Progesterone only pills	4	4.3
condoms	46	48.9
others	3	3.2

\*number is higher than 55 because some students had ever used more than one contraceptive method

### *Over the counter availability*

The participants were asked whether they thought emergency contraceptive pills (ECP) should be sold over the counter (OTC) without prescription. Of the 374 who answered this question, the majority 237(63.4%), were not in favor of OTC use. Many reasons were given for this and included fear of misuse (30.8%), risk of complications(24.9%), need for more information before selling them over the counter (18.4%), increase in risky behaviour/moral decay (12.5%), fear of side effects (7%), and prescription is necessary (5%).

### *Role of young people in provision of EC*

We asked participants about the role young people could play in provision of EC. Of the 191 who answered this question Sixty one percent were in favor of the youth participating in education and provision of information to their peers. Thirty nine percent were not in favor of the youth being involved at all. Some of the reasons given for the negative perspectives included statements like the method is only for married people, that abstinence should be encouraged and the young people should discourage others from using EC.

### *Role of parents in emergency contraception use*

Of the 291 students answering the question the majority, 267(92%) thought parents had a role to play i.e. either encourage or discourage use. Every other student (47.4%) thought that parents should participate by either educating or advising the youth about EC. Sixty three (21.6%) students thought that parents should be free/ open about such matters as EC. Some students even thought that parents should buy the pills for their children (8.9%). However, some students thought that the parents should encourage abstinence (11.7%), be very strict to their children (2.1%) or even that the parents had no role (5.5%) at all.

## **Discussion**

There is evidence from this study that awareness of EC among university students in Kampala is low. Less than half of the students had ever heard about EC. Other studies among female undergraduates have indicated that 58 and 61 percent had heard about EC at university of Benin and three tertiary institutions in Eastern Nigeria respectively<sup>7,8</sup>. In a study done among tertiary students in Durban South Africa 56.5 percent had heard of EC<sup>9</sup>. In all the three studies, however, use and knowledge of correct timing was poor. This was not different in the Ugandan study.

The efficacy of EC is dependent on how soon after the unprotected intercourse treatment is administered<sup>10,11</sup>. If women are to benefit from EC they need to have prior knowledge and easy access to the method since it has a time limit(12). Likewise belief in a too narrow window period of effect may prevent women from using EC properly. It is for this reason that the name "morning after pill" had to be dropped in preference to EC. Levonorgestrel has been shown to be effective up to 120 hours after unprotected intercourse<sup>13</sup>

Because the study was carried out in the second semester of the academic year, this study indicates that almost half of the students had acquired a sexual relationship on joining the university. This shows an important period for timing education about contraceptives in general, EC in particular and other RH interventions.

Many of the students either did not know the effect or thought that the ECP interrupts an ongoing pregnancy. The mechanism of action of ECPs has been an area of considerable debate. Previous studies have shown that one of the main barriers to widespread use of EC is concern about the mechanism of action(MOA)<sup>3</sup>. The MOA of Levonorgestrel has been shown to be through inhibition of ovulation or delayed follicular development while Levonorgestrel in the relevant doses has no effect on endometrial development<sup>3,14,15</sup>. Confusing EC with induced abortion may negatively affect the acceptability of the method. This is particularly so in countries where abortion is illegal like in Uganda. Levonorgestrel has been shown not to interfere with an established pregnancy<sup>3</sup> or with the outcome of pregnancy.

One in every three students indicated that pharmacies were the sources for EC. However, the majority were not in favor of OTC distribution. This indicates that even among the potential users there is great fear that these pills can be misused. Health education and counseling are therefore very crucial in availing the pills. There were also fears that risky behaviour may increase if pills are sold OTC. However, results from a study involving 10,918 adolescents in Mexico showed that EC was associated with an increased probability of and perceived capacity to negotiate condom use<sup>16</sup>. The study showed that EC use did not reduce condom utilization. A randomized, controlled trial among 15 to 24 year old women showed that EC access does not compromise contraceptive or sexual behaviour<sup>17</sup>. In another study it was shown that EC use did not increase risk of sexually transmitted infections<sup>18</sup>

Condoms were the commonest method used in our study. This finding differs from work done in Benin

among female undergraduate students<sup>7</sup>, where the commonest method ever used was withdrawal (45.2%) followed by condoms at 25.9 percent. In other studies rupture of condoms has been found to be the most common indication for EC use<sup>19,20</sup>.

It is important to emphasize that emergency contraceptives should be used as a back up for occasional use rather than a regular form of contraception<sup>21</sup>. This is because they are not as effective and should not be confused with oral contraceptives.

Most participants were not sure when in the menstrual cycle they were likely to get pregnant. This agrees with findings among Swedish teenagers seeking induced abortion. While 83 percent knew about EC and 22 percent had previously used it, only 2.5 percent had used EC in an attempt to prevent the current unwanted pregnancy. The main reason given for not using EC was unawareness of being exposed to the risk of pregnancy<sup>22</sup>. Fertility awareness is instrumental in fighting unwanted pregnancy more so since one in every four of the contraceptive ever users depends on coitus interruptus (withdrawal). It is very important to counsel these users about the risks involved in having unprotected sex. It is recognized in the guidelines for EC provision that counseling related to sexual and reproductive health especially concerning pregnancy and sexually transmitted infections should be provided as the clients come for the EC methods.

The most common sources of information of EC were friends and media. This is similar to the data reported about EC knowledge among Swedish women<sup>22</sup> but differs from a study conducted in Ghana among university students, in which the main source was media. In that study, half of the 51 students who knew about EC had got information from radio, while the others got the information from health education materials (29.4%), television (11.8%) and newspapers (7.8%)<sup>23</sup>. In a Nigerian study, however, media was not mentioned among the sources<sup>7</sup>.

Almost half of the respondents thought that parents should educate and advise the youth about EC. This is an issue to address since parents will usually have the final stake in solving the social and economical problems of an unwanted pregnancy. About a quarter of young people who get pregnant have an induced abortion because of fear of their parents reaction<sup>6,24</sup>. From our study every one in five students said that parents need to be more open about matters related to health including EC. Young women are usually not able to economically cater for themselves and the pregnancy<sup>25</sup>. It is thus important to promote parent-child communication about sexual issues<sup>26</sup>.

## Conclusions

Knowledge about emergency contraception and fertility awareness is low among the female first year university students. Friends and the media are an important source of EC information. The majority of the students were against OTC availability of EC. The participants felt that parents need to talk to them about RH issues including EC.

## Recommendations

There is need to avail accurate information to female University Students about EC, the various contraceptive methods that can be used and the fertile period in the menstrual cycle. EC awareness and knowledge should be increased. There is need to empower parents to discuss sexual and reproductive health with their children.

## Acknowledgements

We are very grateful to the University students who accepted to participate in the study, the research assistants Annette and Shibbah, Nazarius for the statistical advice, Makerere University and Swedish Medical research Council. We thank SIDA/Sarec for supporting the research.

## References:

1. Jamieson MA, Hertweck SP, Sanfilippo JS. Emergency contraception: lack of awareness among patients presenting for pregnancy termination. *J Pediatr Adolesc Gynecol* 1999;12(1):11-5.
2. Trussell J, Ellertson C, Rodriguez G. The Yuzpe regimen of emergency contraception: how long after the morning after? *Obstet Gynecol* 1996;88(1):150-4.
3. Gemzell-Danielsson K, Marions L. Mechanisms of action of mifepristone and levonorgestrel when used for emergency contraception. *Hum Reprod Update* 2004;10(4):341-8.
4. Cheng L, Gulmezoglu AM, Oel CJ, Piaggio G, Ezcurra E, Look PF. Interventions for emergency contraception. *Cochrane Database Syst Rev* 2004(3):CD001324.
5. Uganda Bureau of Statistics and Macro International I. Uganda Demographic and Health Survey (UDHS) report (UDHS 2000/2001): Calverton, Maryland, U.S.A.
6. Mirembe FM. A situation analysis of induced abortions in Uganda. *Afr J Fertil Sexual Reprod Heal* 1996;1(1):79-80.
7. Aziken ME, Okonta PI, Ande AB. Knowledge and perception of emergency contraception among female Nigerian undergraduates. *Int Fam Plan Perspect* 2003;29(2):84-7.
8. Ikeme AC, Ezegwui HU, Uzodimma AC. Knowledge, attitude and use of emergency contraception among female undergraduates in Eastern Nigeria. *J Obstet Gynaecol* 2005;25(5):491-3.

9. Roberts C, Moodley J, Esterhuizen T. Emergency contraception: knowledge and practices of tertiary students in Durban, South Africa. *J Obstet Gynaecol* 2004;24(4):441-5.
10. von Hertzen H, Piaggio G, Van Look PF. Emergency contraception with levonorgestrel or the Yuzpe regimen. Task Force on Postovulatory Methods of Fertility Regulation. *Lancet* 1998;352(9144):1939.
11. Arowojolu AO, Okewole IA, Adekunle AO. Comparative evaluation of the effectiveness and safety of two regimens of levonorgestrel for emergency contraception in Nigerians. *Contraception* 2002;66(4):269-73.
12. Virjo I, Kirkkola AL, Isokoski M, Mattila K. Use and knowledge of hormonal emergency contraception. *Adv Contracept* 1999;15(2):85-94.
13. von Hertzen H, Piaggio G, Ding J, Chen J, Song S, Bartfai G, et al. Low dose mifepristone and two regimens of levonorgestrel for emergency contraception: a WHO multicentre randomised trial. *Lancet* 2002;360(9348):1803-10.
14. Marions L, Gemzell Danielsson K. [Emergency oral contraceptives do not interrupt pregnancy. Women are withhold the treatment which is erroneously placed on a par with abortion]. *Lakartidningen* 2005;102(10):754, 756-7.
15. Marions L, Cekan SZ, Bygdeman M, Gemzell-Danielsson K. Effect of emergency contraception with levonorgestrel or mifepristone on ovarian function. *Contraception* 2004;69(5):373-7.
16. Walker DM, Torres P, Gutierrez JP, Flemming K, Bertozzi SM. Emergency contraception use is correlated with increased condom use among adolescents: results from Mexico. *J Adolesc Health* 2004;35(4):329-34.
17. Raine TR, Harper CC, Rocca CH, Fischer R, Padian N, Klausner JD, et al. Direct access to emergency contraception through pharmacies and effect on unintended pregnancy and STIs: a randomized controlled trial. *Jama* 2005;293(1):54-62.
18. Falk G, Falk L, Hanson U, Milsom I. Young women requesting emergency contraception are, despite contraceptive counseling, a high risk group for new unintended pregnancies. *Contraception* 2001;64(1):23-7.
19. Porter JH. Use of hormonal emergency contraception at a university health centre over a 6 year period. *J Fam Plann Reprod Health Care* 2001;27(1):47-8.
20. Virjo I, Virtala A. Why do university students use hormonal emergency contraception? *Eur J Contracept Reprod Health Care* 2003;8(3):139-44.
21. Van Look PF, von Hertzen H. Emergency contraception. *Br Med Bull* 1993;49(1):158-70.
22. Aneblom G, Larsson M, Od Lind V, Tyden T. Knowledge, use and attitudes towards emergency contraceptive pills among Swedish women presenting for induced abortion. *Bjog* 2002;109(2):155-60.
23. Baiden F, Awini E, Clerk C. Perception of university students in Ghana about emergency contraception. *Contraception* 2002;66(1):23-6.
24. Bazira ER. Induced abortion at Mulago Hospital Kampala, 1983 - 1987: a case for contraception and abortion laws' reform. *Trop Heal* 1992;11(1):13-6.
25. Larsson M, Aneblom G, Od Lind V, Tyden T. Reasons for pregnancy termination, contraceptive habits and contraceptive failure among Swedish women requesting an early pregnancy termination. *Acta Obstet Gynecol Scand* 2002;81(1):64-71.
26. Babalola S, Tambashe BO, Vondrasek C. Parental factors and sexual risk-taking among young people in Cote d'Ivoire. *Afr J Reprod Health* 2005;9(1):49-65.