

*Full Length Research Paper*

# On Emergency Contraception among Female Students of Haramaya University, Ethiopia: Surveying the Level of Knowledge and Attitude

Berhanu Desta<sup>1+</sup> and Nigatu Regassa<sup>\*1</sup>

<sup>1</sup>Hawassa University, Institute of Environment, Gender and Development. E-mail: negyon@yahoo.com;  
Phone: 251-046-2203801.

<sup>1</sup>Addis Ababa University, Institute of Population Studies, Addis Ababa.

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Unwanted pregnancy (UP), which may lead to unsafe abortion, is common among young women. Unwanted pregnancy can occur due to missed pills, forced sex, method failures, and condom breakage. To prevent such problem, Emergency Contraceptives (EC) are the only method that can be used after unprotected sex. This cross-sectional study has thus aimed at investigating the level of awareness, knowledge and attitudes of young female students of Haramaya University (HU) on EC. The study generated the required data from a representative sample of 572 female students drawn from the study population through multistage sampling. Data were collected using survey questionnaire, and subsequent analysis was done using simple descriptive statistics and multivariate analysis (logistic regression model). The findings of the study revealed that 47.6% of the respondents had ever heard about EC; 25.7 % had good knowledge of EC, and 76.5% had favorable attitude toward EC. In the multivariate analysis, certain variables have become significant predictors of awareness of EC including: age, previous place of residence, religion, grade level, knowing other methods preventing unwanted pregnancy, sex education, chewing 'Khat', and consuming alcohol. Similarly, religion, grade level, father's educational level, knowing other methods of preventing unwanted pregnancy, and currently chewing Khat were found to significantly predict attitude toward EC. Finally, the study has forwarded some recommendations based on the key findings.

**Keywords:** Emergency Contraception, Unwanted Pregnancy, Haramaya University, Awareness, Knowledge, Attitude, 'Khat' Chewing

## BACKGROUND

The World Health Organization (WHO) estimated that in the developing countries one woman dies every eight minutes due to unsafe abortions (WHO, 2003). These clandestine abortions are among the five leading causes of maternal mortality (WHO, 2003). A number of studies of clandestine abortion in developing countries have reported that abortion and abortion morbidity are most common among young and unmarried women (Ahman et'al, 2000; Parker, 2005). Compared to women in their twenties, adolescents aged 15-19 are two times more likely to die during child birth, and those aged below 14 years are five times more likely to die (Parker, 2005)

Adolescents disproportionately resort to unsafe abortion due to limited availability and high cost of quality medical abortion procedures and because they have more unwanted pregnancies than older women (UNFPA, 2003). Overall risk of death from unsafe abortion is by far the highest in Africa, where the case fatality rate reaches 7 deaths per 1000 unsafe abortions (UN, 2004).

Pregnancies occurring among unmarried women are often unintended (UNFPA, 1998). Unintended pregnancies result from contraceptive non-use, misuse, and method failure. Adolescent women are more likely not to use and to misuse contraceptive than older women. A study in Houston, Texas revealed that 40% of the

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<sup>+</sup>generated the data for partial fulfillment of Masters Degree in Population Studies

unplanned pregnancies were due to contraceptive non-use, 20% contraceptive misuse, and 18% method failure (Williams, 1997). GI and WHO (2007) suggested that improving contraceptive use is crucial steps towards reducing the incidence of unintended pregnancy.

Among the various forms of contraception, Emergency Contraceptive Pills (ECPs) are the only one that can be used after sexual intercourse, offering a second chance to prevent unwanted pregnancy (Aziken, *et. al* 2003; Trussel *et al*, 2005; Grimes *et al*, 2006). There are various methods of emergency contraception including hormonal contraceptive pills (also called morning-after pills), intrauterine contraceptive devices and mifepristone. If emergency contraceptives were widely used, unintended pregnancy and the need for induced abortion could substantially be reduced (CPA, 2000; ICEC, 2004). Depending on the method used, EC can reduce women's risk of becoming pregnant from a single act of intercourse by 75-99 % (Consortium for Emergency Contraception, 2000; Ramesh, 2009). Emergency contraception may be used when a condom breaks; when oral contraceptive pills are missed or when a woman is raped or coerced into having sex (Bell *et al*, 1999; Trussel *et al*, 2005; Sanjib *et al*, 2009)

Unwanted pregnancy is one of the most commonly observed reproductive health problems in Ethiopia. The Ethiopian Demographic and Health Survey of 2005 reported that 35% pregnancies among women in reproductive age were unintended (CSA and ORC Macro, 2006). As a result, significant proportion of married women turned to induced abortion to avoid unintended pregnancy. According to Ministry of Health 2006 report, approximately half a million pregnancies annually end in induced abortion among 3.7 million pregnancies, which is a reflection of the high rate of unintended pregnancy. Many women, especially younger females in their teen ages, who are exposed to unintended pregnancy, may have inadequate knowledge of EC due to different reasons. Since unwanted pregnancy is more common among young women, this study has primarily aimed at examining the level of awareness, knowledge and attitude of EC among female students of one of the biggest and fast growing public higher education institutions in Ethiopia, Haramaya University.

## CONCEPTUAL FRAMEWORK

The study used the following individual and household level variables to explain the knowledge and attitudes of Haramaya university female students towards EC (Figure 1).

### Dependent Variables

The dependent variables of this study were “*awareness*

and attitude of EC”. The information on “*attitude*” was obtained by asking two positive and two negative worded statements that reflect inclination towards EC (See Table 4 and 5).

### Independent Variables

Independent variables used to explain the dependent variables in multivariate analysis were classified as socio-demographic, family background and other variables. These are: age, previous place of residence, religion, religiosity, marital status, grade level, exposure to media, sexual experience, and exposure to sex education, parents educational level, parents-daughters' communication about RH matters, peer communication on RH issues, chewing khat, consuming alcohol, boyfriend/husband communication on RH matters, knowing other method to prevent UP and others.

## DATA SOURCES AND METHODOLOGY

### The setting

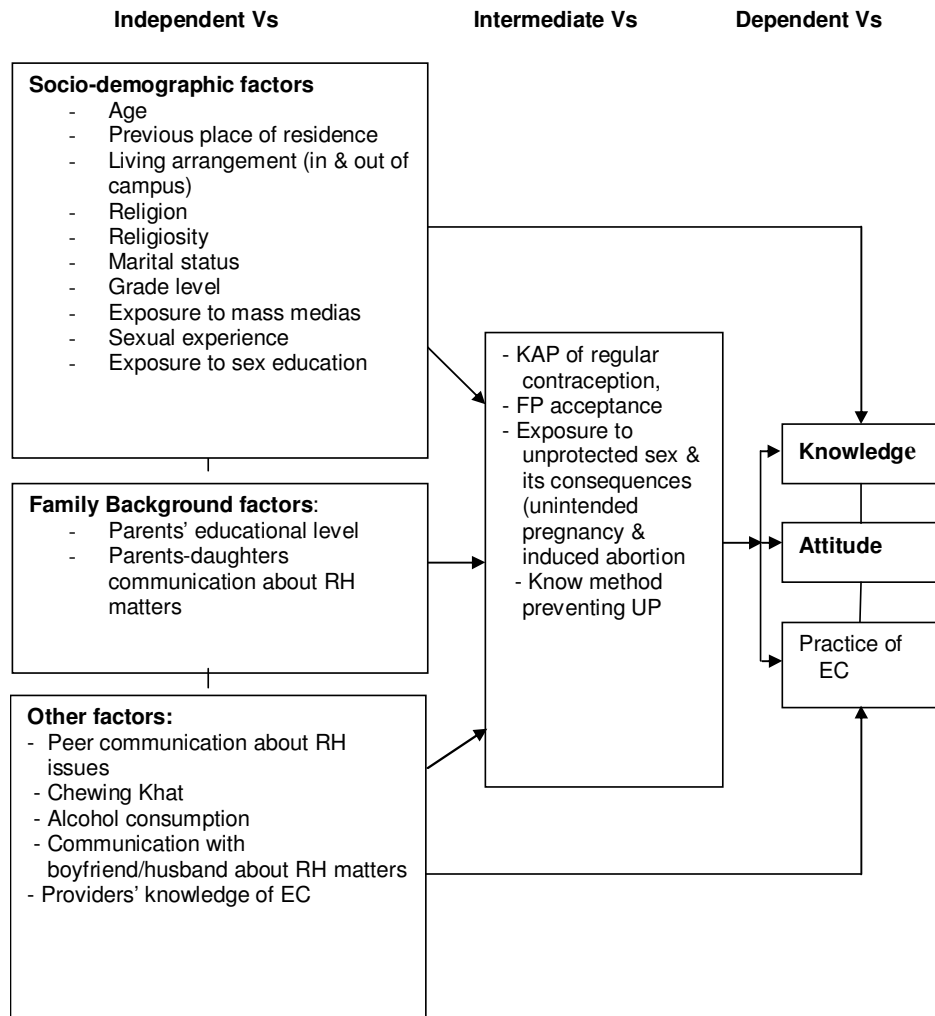
Haramaya University is one of the oldest universities in Ethiopia, upgraded to a university level by the Council of Minister's regulation No. 198/1994, and was named as Haramaya Agricultural University. Up on addition of new faculties over time, it was renamed as Haramaya University by the Council of Ministers Regulation No. 123/2006 as of Feb. 2006. The university is located in the Eastern Hararghe Zone, about 510 kms Southeast of the capital city, Addis Ababa. The university with its fast developing physical infrastructure/facilities and ever increasing student and staff population has grown into a self-contained university village over a campus of 440 hectares of land. The university is entirely residential with dormitory facilities for regular students and a number of modern houses for academic staff and their families (<http://www.haramaya.edu.et>).

### Sample Size and Techniques

A study conducted by Wondimu (2008) on EC among post-secondary school female students in Hawassa town documented that only 35.6% of the students were aware of EC. Taking this information as input, the sample size of this study was determined assuming that: **P** = proportion of knowledge of EC from previous study is 35.6%;  $Z_{\alpha/2}$  = 95% confidence level corresponds to the value of 1.96; and **e** = proportion of sampling error tolerated at 0.04 (to increase the accuracy). Cochhran(1977) has presented the following formula to determine sample size:

$$N = (Z/e)^2 (P) (1- P)$$

After calculating the sample size of 606, all faculties and colleges included in the study (total female population of 2273) and grade levels were considered. In order to draw



**Figure 1:** Conceptual framework of the study

**Source:** Adopted from Wondimu (2008) and modified by the authors

the study participants, the calculated sample size (606) were distributed to each college and faculty included in the survey using probability proportional to size (PPS). Secondly, as each faculty and college has different departments under it, some departments were drawn using simple random sampling (SRS) and the sample size allocated to each college and faculty was distributed to each randomly selected department proportional to their size. Finally, respondents were selected from each grade level again proportional to their size from the randomly selected departments (see figure 2).

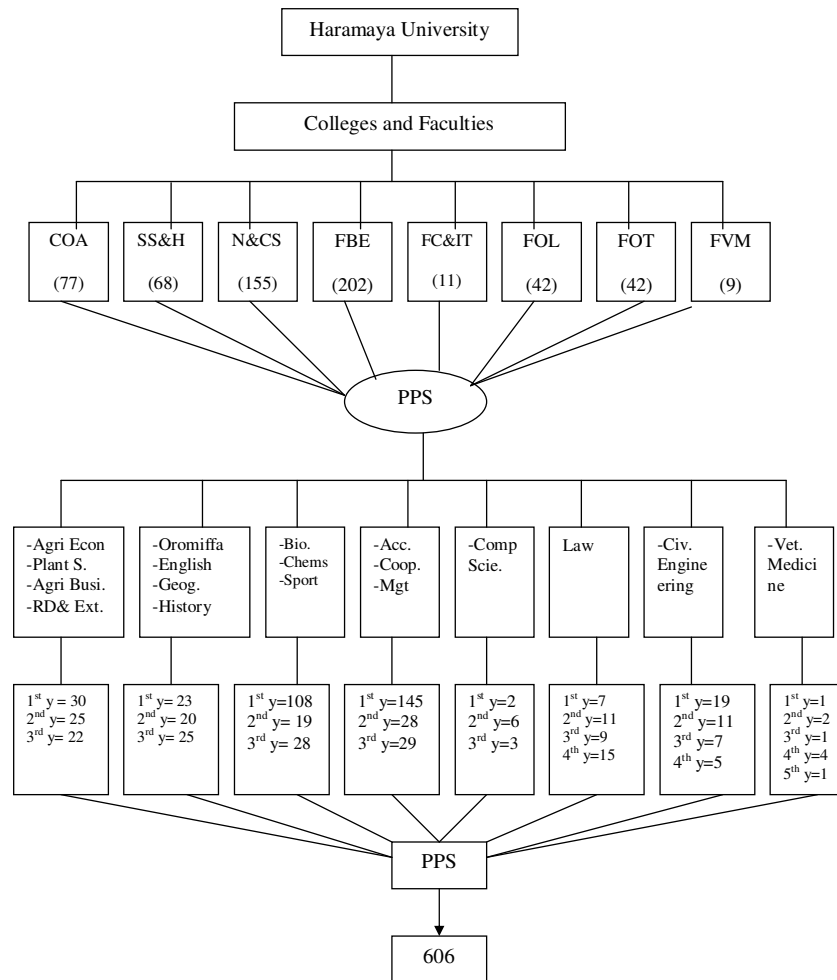
### Data Collection

The bulk of the data for this study have come from the primary source. Survey questionnaire was initially designed and developed in English version taking the

experiences of similar surveys previously carried out, and some questions were modified to suit the context of the study. The survey questionnaire was organized into six components, and was pre-tested on 30 female students to check its clarity, ordering, and consistency. Based on pre-test feedbacks and suggestions, some questions were rephrased, amended, and the final questionnaire was prepared. Among the total questionnaires distributed to the respondents, 12 were incomplete, 8 were returned blank, 9 were wrongly responded, and 5 were unreturned resulting in a response rate of 94.4%.

### Data Processing and Analysis

The collected data were entered, edited, coded, and cleaned by using Statistical Packages for Social Science (SPSS) software/ version 15. Data were analyzed using



**Figure 1.** Schematic Presentation of the Sampling Technique

both univariate (percentage) and multivariate analysis/binary logistic regression/.

## RESULTS

Table 1 presents the background characteristics of respondents. It is seen that all the respondents are youth in the age of 15-24, where the majority (71.9%) was in the age group 20-24. The mean and median ages of the respondents were 20.35 and 20 respectively.

About 70% of the respondents had urban background and the remaining smaller proportion have come from rural areas of the country. With regard to respondents' religion, 64.9% were Orthodox Christian followed by Protestant (17.7%), Muslim (15.7%), and Catholic Christians (1.2%). Of the respondents, 34.0 % were regularly attending religious institutions, 24.3% and 22.4% attend more than once in a week and occasionally respectively (See Table 1)

Substantial numbers of respondents (84.3 %) were never married while 12.2% were reported that they were living with their boyfriends during the survey date. Married respondents accounted for 3%. Regarding current living arrangement, almost all respondents (99.7%) were living in campus and only 0.3% resides out of the campus. The distribution of respondents by grade level indicated that more than half (57%) of them were first year, 19.2% second year, 19.9% third year, 3.7% fourth year, and 0.2% fifth year students.

Table 2 shows the percentage distribution of respondents by selected family background. It is noted that 32.7% of the respondents' fathers were above secondary school, 26.7% reached primary level of education, 21.3% secondary education and 19.3% had not formal education. Similarly, respondents' mothers' educational level shows that 36.5% had not formal education, 32.4% primary education, 15.8% secondary education, and 15.3% were above secondary education level. About 62% of respondents reported that they discuss about reproductive health issues with their

**Table 1:** Background characteristics of the respondents (n = 572)

Background Characteristics	Percent
<b>Age (year)</b>	
15 – 19	28.1
20 – 24	71.9
<b>Previous place of residence</b>	
Urban	69.8
Rural	30.2
<b>Religion</b>	
Orthodox Christian	64.9
Protestant	17.7
Muslim	15.7
Catholic	1.2
Others	0.5
<b>Religiosity (n = 571)</b>	
Daily	34.2
Once in a week	17.5
More than once in a week	24.3
Occasionally	22.4
Accidentally	1.6
<b>Faculty</b>	
Business & Economics	33.2
Natural & Computation Science	27.1
College of Agriculture	13.5
Social Science & Humanities	10.1
Technology	6.8
Law	6.3
Computing & Information Technology	1.6
Veterinary Medicine	1.4
<b>Grad level</b>	
First year	57.0
Second year	19.2
Third year	19.9
Forth year	3.7
Fifth year	0.2
<b>Current marital status</b>	
Never married	84.3
Living with boyfriend	12.2
Married	3.0
Divorced	0.3
Widowed	0.2
<b>Current living arrangement</b>	
On campus	99.7
Off campus	0.3

mothers and 37.8% have never done that. Similarly, 26.2% reported that they discuss RH issues with their fathers and the majority (73.8%) never had such discussion. Respondents who used to discuss about RH issues with their boyfriends/partner constitute 30.6 %. In similar manner, the majority (64%) of the respondents

reported discussing RH issues with their friends.

Table 3 presents respondents' sexual experience, family planning knowledge and practices. Respondents were asked whether they ever had sexual intercourse, and if so, at what age did they start. Among the total respondents who were asked about sexual intercourse,

**Table 2.** Respondents' Family Backgrounds, Partner, and Peer Related Characteristics

Characteristics	Percent
<b>Father educational level (n = 465)</b>	
Illiterate	19.3
Primary education	26.7
Secondary education	21.3
Above secondary	32.7
<b>Mother educational level (n = 524)</b>	
Illiterate	36.5
Primary education	32.4
Secondary education	15.8
Above secondary	15.3
<b>Father discusses about RH issues with daughters (n=465 )</b>	
Yes	26.2
No	73.8
<b>Mother discusses about RH issues with daughters (n=524)</b>	
Yes	62.2
No	37.8
<b>Discuss about RH issues with boyfriend/husband (n= 572)</b>	
Yes	30.6
No	69.4
<b>Peer discusses about RH issues with friends (n= 572)</b>	
Yes	64.0
No	36.0

**Table 3.** Respondents reported Sexual Experience, Pregnancy and Abortion

Characteristics	Percent
<b>Have you ever done sexual intercourse?(n = 572)</b>	
Yes	18.0
No	82.0
<b>Age at sexual debut (n = 103)</b>	
15 – 19	66.02
20 – 24	10.68
I don't remember	18.45
I don't know	4.85
<b>Number of sexual partners (n = 103)</b>	
One	49.52
Two & above	45.63
I don't remember	2.91
I don't know	1.94
<b>Sexual intercourse for the last six months (n = 103)</b>	
Yes	73.8
No	26.2
<b>Have you ever been pregnant? (n = 103)</b>	
Yes	22.3
No	77.7
<b>Number of pregnancies (n = 23)</b>	
One time	73.9
Two times	17.4
Three times	8.3
<b>Was the pregnancy planned? (n = 23)</b>	
Yes	21.7
No	78.3
<b>Have you ever had induced abortion?(n = 22)</b>	
Yes	73.9
No	21.7
No response	4.3

**Table 4.** Percentage Distribution of Respondents by Knowledge and Sources of EC

Characteristics	Percent
<b>Level of awareness of EC</b>	
Ever heard	46.6
Never heard	53.4
<b>knowledge of EC</b>	
Adequate Knowledge of EC	25.7
Poor knowledge of EC	74.3
<b>First source of EC information:</b>	
TV/Radio	44.1
Relatives	1.8
Boyfriends/partner	5.1
Female friends	16.9
Parents	2.9
Internet webpage	1.8
Magazines/ Newspapers	7.4
Healthcare providers	9.6
RH club	3.7
From course/formal lecture	4.0
At campus/ university clinic	1.1
Others	1.5

103 (18%) of them had sexual intercourse at least once. The mean and median ages of starting sexual intercourse were 18.18 and 18 respectively.

Regarding the number of their sexual partners, 49.5% of them had one life time partner, 45.6% had two and above partners, 2.91% could not remember, and 1.94 percent did not know the exact number of partners they had since they started sexual intercourse. Out of the total sexually experienced, 73.8% have had sexual intercourse during the six months prior to the survey date, who can be considered as sexually active.

As indicated in table 3, out of the total sexually experienced respondents, 22.3% reported ever experiencing pregnancy. The number of reported pregnancies was ranging from one to three times. Some female respondents have reported experiencing induced abortion due to unwanted pregnancy. From the total number of ever had pregnancy, 17(73.9%) of them experienced induced abortion.

Table 4 shows that about 47% of the respondents mentioned that they have ever heard of EC as a means of preventing unwanted pregnancy if used soon after unprotected sexual intercourse. To assess the level of actual knowledge of EC, a series of eight knowledge questions (on method identification, drug composition, timeframe for effective use, time interval between doses, mechanism of action, effectiveness of the drug, appropriate situations for use, and whether EC can prevent STIs or not) were asked for those who have ever heard of EC. Some of the questions were adopted from previous studies conducted on EC knowledge

(Population Council, 2005; Atsede, 2007; Wondimu, 2008) and some questions were developed and supplemented by the authors from literature reviews.

To generate the summarized level of knowledge, response on each question was first scored, tallied and then the total of each respondent score ranged from 0 - 8 (0% -100%). Cumulated/total score was calculated and then respondents were classified as; poor, fair, and good with respect to their level of EC knowledge. Hence, respondents who scored zero were considered as "not having the knowledge", who score 12.5% - 50% as "Fair knowledge", and who score more than 50% as "Good knowledge". Similar procedures were followed by Atsede (2007) and Wondimu (2008).

Based on the summary index, only 25.7% had good knowledge of EC. The most frequently mentioned source of information about EC was TV/Radio (44.1%), followed by female friends (16.9%) and healthcare providers (9.6%).

Four attitude indicators/items of EC were asked to determine the overall attitudes of the respondents toward EC. Two positive and two negative items were included to maintain the balance of responses. The four items were answered as either "yes" or "no". For positively worded statements, those who selected "yes" were regarded as having positive attitude and those who chose "no" were considered as having negative attitude. Conversely, for negatively worded statements, those who selected 'no' were clustered as having positive outlook whereas those who said 'yes' were categorized as having negative attitude. The responses on each

**Table 5.** Percentage Distribution of Respondents by Attitudes toward EC (n = 272)

Attitude Indicators	Yes	No	Total
Taking EC after unprotected sex is much better than the regular use of contraceptive method	192(70.6)	80 (29.4)	272 (100)
I will use EC in case need arise	142(52.2)	130(47.8)	272 (100)
EC pills can hurt the baby in case if it doesn't work	164(60.3)	108(39.7)	272 (100)
Recommending EC use to a friend is dangerous	78(28.7)	194(71.3)	272 (100)
<b>Attitude towards EC (Summary Index)</b>			
Favorable attitude	208(76.5)		272 (100)
Unfavorable attitude	64(23.5)		

attitudinal items was scored, tallied, and then the total of each respondent score was made to range between 0-4 (0-100%). A score of 50% and above was considered as “*favorable attitude*” whereas those scored below 50% of the total were thought of as having “*unfavorable attitude*”. Similar procedure was followed by previous researchers (Atsede, 2007; Wondimu, 2008). The summarized attitudinal index indicates that 76.5 % of the respondents who had ever heard of EC had favorable attitude toward EC (See Table 5).

Table 6 presents the results of multivariate analysis on knowledge and attitudes towards EC among the study population. Selected independent variables were fitted into two separate binary logistic regression models (model 1 and 2) to examine the association between each of the predictor and the outcome variables (EC awareness and attitude).

In model 1, the dependent variable was dichotomized and coded as 1 (aware of EC) and as 0 (never heard about EC). In a similar fashion, the dependent variable (attitude) in model 2 was dichotomized and coded as 1 (favorable attitude) and 0 (unfavorable attitude). Categorical independent variables were meaningfully categorized and grouped. The multicollinearity effect among the predictors was tested and the variance inflation factor (VIF) was less than the cut off value ( $\geq 4$ ). The Hosmer and Lemshow goodness of fit test of significance confirms a value of  $P > 0.05$  adequately fits the data. An odds ratio value less than one imply that individuals in that category have a lower probability of knowing EC or having favorable attitudes towards EC than individuals in the reference category. Likewise, a value greater than 1 indicates increased likelihood of awareness/ favorable attitude (See Table 6).

Age was found to be statistically significant predictor of awareness of EC. The result indicated that respondents in age group 20 – 24 were 2.38 times more likely to know EC compared to the reference category. Respondents having rural background before joining the university were 53.6% less likely to be aware of EC compared to those respondents having urban background. (OR = 0.464,  $P < 0.05$ ).

Followers of other religions (Protestant, Catholic, and Muslim) were 54.2% less likely to be aware of EC than Orthodox Christian religion followers (OR = 0.458,  $p < 0.01$ ). Similarly, respondents in other categories (Protestant, Catholic and Muslim) were 64.1% less likely to have more favorable attitude toward EC than the reference category (model 2). Grade level of the respondents has become significant predictor of knowledge of EC. Those who were in second year and above classes were 2.53 times more likely to be aware of EC than respondents at first year level. In model 2, those in second years and above classes were 2.89 times more likely to have favorable attitude towards EC compared to respondents at first year level. In relation to this, respondents whose fathers' level of education were secondary and above are 2.74 times more likely to have favorable attitude toward EC than those with primary and below.

Respondents who did not know other methods that can prevent unwanted pregnancy were 92.6% less likely to be aware of EC compared to respondents who knew other methods. In model 2, it is seen that respondents who didn't know other methods that can prevent unwanted pregnancy were 75.6% less likely to have favorable attitude towards EC than those who knew other prevention methods (OR = 0.244,  $P < 0.01$ ).

The result revealed that sex education has a significant positive effect on the respondents' knowledge of EC. Respondents who had exposure to sex education before the survey date were found to be 2.04 times more likely to be aware of EC than those who never had the exposure to sex education.

There is significant association between Khat chewing and awareness of EC among the study population. Respondents who chew Khat were 4.42 times more likely to be aware of EC than their counterpart non chewers. Likewise, consuming alcohol was found to have significant positive relationship with awareness of EC. Female respondents who reported taking alcohol were found to be 2.74 times more likely to be aware of EC than those who were not taking alcohol. The result in model 2 reveals that respondents who used to chew Khat are 4.18



**Table 6.** Results of Binary Logistic Regression Analysis for Selected Predictors and the Dependent Variables (EC awareness and attitudes), n =572.

Predictors	Model 1 (awareness of EC)		Model 2 (EC Attitudes)	
	B	Exp(B)	B	Exp(B)
<b>Age (in year)</b>				
15 – 19 (RC)		1.000		1.000
20 - 24	0.867	2.379**	0.779	2.179
<b>Previous place of residence</b>				
Urban (RC)		1.000		1.000
Rural	-0.769	0.464*	-0.278	0.757
<b>Religion</b>				
Orthodox (RC)		1.000		1.000
Others ☉	-0.780	0.458**	-1.025	0.359*
<b>Religiosity</b>				
Regular ê	0.192	1.211	0.181	1.198
Occasional (RC) £		1.000		1.000
<b>Grade level</b>				
First year (RC)		1.000		1.000
Second year and above	0.930	2.534**	1.062	2.893*
<b>Marital status</b>				
Never married (RC)		1.000		1.000
Others @	0.558	1.746	-0.323	0.724
<b>Father educational level</b>				
Primary & below (RC)		1.000		1.000
Secondary & above	-0.214	0.807	1.008	2.741*
<b>Mother educational level</b>				
Illiterate	-0.417	0.659	-0.493	0.611
Literate (RC) #		1.000		1.000
<b>Discussion of RH issues with boyfriend/husband</b>				
Yes	-0.186	0.831	0.481	1.617
No (RC)		1.000		1.000
<b>Peer discussion on RH issues</b>				
Yes	0.238	1.268	0.703	2.019
No (RC)		1.000		1.000
<b>Sexual experience</b>				
Ever had sex	0.180	1.198	0.223	1.250
Never had sex (RC)		1.000		1.000
<b>Exposure to media</b>				
Yes (RC)		1.000		1.000
No	-0.425	0.654	-0.340	0.712
<b>Know method prevent unwanted pregnancy</b>				
Yes (RC)		1.000		1.000
No	-2.608	0.074***	-1.411	0.244*
<b>Sex education</b>				
Yes	0.712	2.038*	0.698	2.010
No (RC)		1.000		1.000
<b>Currently chewing Khat</b>				
Yes	1.487	4.424**	1.430	4.177*
No (RC)		1.000		1.000
<b>Currently consuming alcohol</b>				
Yes	1.007	2.737*	-0.745	0.475
No (RC)		1.000		1.000

☉ - Protestant, Catholic & Muslim; ê- daily, once in a week, more than one in a week \* Sig at P < 0.05  
£ - Occasionally, accidentally; @ -married, divorced, widowed, living with boyfriend \*\*Sig at P < 0.01  
# - Primary, secondary, and above secondary education; RC- Reference Category; \*\*\*Sig at P < 0.001

times more likely to have favorable attitude toward EC compared to those not chewing.

## DISCUSSION

The study has aimed at examining the level of knowledge and attitudes towards EC among young female students of Haramaya University. The finding has revealed that 47.6% of the respondents have mentioned EC spontaneously by name when asked if there was anything a woman could do soon after unprotected sexual intercourse to try to prevent pregnancy. However, their actual level of knowledge of EC is generally low (25.7%) : Though the level of knowledge is comparable to a study conducted in Jimma University (22.8%), it is lower than those conducted in Bahir Dar University (34.8%) and Addis Ababa university (43.5%) (Athede 2007; Tamire et'al, 2007). It is even much lower compared to the studies conducted among universities in other African countries such as Kingston/Jamaica (84%), Nigeria (58%), Cameroon (63%) and Niger Delta of Nigeria (50.7%), all documented a rate greater than 50% (Sorhaindo, 2002; Aziken et'al, 2003; Eugene et al, 2007; Akani et'al, 2008).

The summarized figure for attitude towards EC indicated that 76.5% of the respondents who have ever heard of EC had favorable attitude toward EC. This figure is better than studies conducted in Addis Ababa University (53%), Bahir Dar University (56.7%), and Hawassa post secondary female students (65.6%) (Tamire et'al, 2007; Atsede, 2007; Wondimu, 2008). The findings of the study have shown that about 18% of the respondents had sexual intercourse with mean and median age of 18.18 and 18 respectively. The median age of this study is greater by two years than the national survey result of EDHS, (2005) which was 16.1 years (CSA and ORC Macro, 2006).

It can be seen from the two logistic regression models (model 1 and 2) that certain predictors have significant association with awareness and attitudes of EC among the study population. Some of the variables explaining knowledge of EC are age, previous place of residence, religion, grade level, knowing other methods of preventing unwanted pregnancy, sex education, chat and alcohol taking. Similarly, the variables significantly predicting respondents' attitudes towards EC were: religion, grade level, fathers' educational level, knowing other methods preventing unwanted pregnancy, and chewing Khat.

There is positive relationship between age of the respondents and knowledge of EC. Another related predictor, grade level, has also influenced knowledge of EC in similar manner. This may hold true since there is a possibility for female students engaging in more sexual relationship as they stay more in the campus and get

older. They also become more aware of their environment and develop risk perceptions through more engagement in extra-curricular activities and relationship within and outside of the campus. The result is consistent with similar studies conducted in other universities (Atsede, 2007; Wondimu, 2008; Landon et'al, 2007).

Knowledge of EC is also affected by previous place of residence before joining the university. As expected, respondents with rural background are less likely to know EC compared to those having urban background. In a situation where use of any modern family planning is less than 10% in most areas of the rural Ethiopia (CSA and Macr., 2006), it is likely that female students with rural background know little about such rarely available contraception. A study conducted by Falah and colleagues (2007) on Finnish adolescents also documented that girls from rural villages or sparsely populated areas were less often aware of EC than those from city areas. Similarly, the result is consistent with the study conducted at Bahir Dar University (Atsede, 2007).

Religion was found to be statistically significant factor that affect respondents' knowledge and attitude toward EC. Higher knowledge and favorable attitudes towards EC were observed among Orthodox Christians than respondents in other categories. This may be either due to occasional teachings at different programs at the religious institution or may be confounded by other variables.

Knowledge of EC is also affected by the level of knowledge of other methods of preventing unwanted pregnancy. Those respondents who already had some knowledge of method of preventing unwanted pregnancies are more likely to know the importance of EC. Because information delivered to clients/audiences on contraception is usually given in a package, where EC is a part, it is likely that knowing some method of prevention may help access knowledge on others. The result of multivariate analysis has also indicated that sex education has significant positive association with knowledge of EC. Even though it is difficult to know when and how much sex education was offered to some of the respondents, it is likely that exposure to such education is especially beneficial to those who came from the rural areas with little or no information of RH and sexuality.

One of the most interesting findings of this study is that Chewing Khat and alcohols taking have become good predictors of knowledge of EC. Users reported that Khat and alcohol taking are usually done in a ceremonial way, and believed by many that (particularly khat chewing) help increase imaginative ability and improves the ability to communicate with people; opens up the gate for more open discussions on sexual and related matters which normally are not discussed in most formal friendship forums. On the other hand, while Khat chewing and alcohol are in no way recommended to students, the finding gives lights to our understanding that these

groups are the one more likely facing unwanted pregnancy and related consequences of sexual activity during their stay in the campus. A study done by Falah and colleagues (2007) among Finnish adolescents indicated that alcohol consumption increased the likelihood of EC awareness and use.

Finally, it is worth mentioning one of the weaknesses of this study: Due to the very sensitive nature of the subject, some respondents did not want to respond to some of the questions, and hence, have returned incomplete and blank questionnaire while few refused to return the questionnaire at all. Due to this, expected responses for some key variables such as sex experience, age at first sex, contraceptive use, pregnancy history, and existence of unwanted pregnancy might have been affected. On the plus side, because the study was based on large sample size drawn from one of the biggest universities in Ethiopia, the findings may give better insights into the problems and have practical relevance for other higher institutions in the country.

## CONCLUSION

The study has revealed that while overall awareness of EC is fair, actual knowledge of EC is very low (25.7%) among female students of Haramaya University. Among those who have ever heard of EC, 76.5 percent of them have favorable attitude toward EC. The present study has also documented that knowledge and attitudes of female university students are affected by a range of personal characteristics and family background including; age, grade level, religion, sex education, exposure to Khat and alcohol and the like. Finally, given the high rate of sexual activity and unwanted pregnancies reported, the authors call for concerned bodies to take some important measures such as; provision of continuous sex education, guidance and counseling services especially during the first year and increasing easy accessibility of the EC and other preventive methods to the users. It is worth noting that the campus health workers can play important roles by percolating the knowledge of EC deep down in the student community through individual counseling when female students visit the clinic.

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