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Research article ***Medical research***

Knowledge, attitude and practice towards emergency contraceptives among female students at college of art and social science of Adi keyh

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ABSTRACT

Background

Emergency contraception refers to specific contraceptive methods that are used as emergency measures to prevent pregnancy after unprotected intercourse. Sexually active young women are at greater risk for unintended pregnancy which can lead to unsafe abortions and increase their risk of morbidity and mortality.

Objective

To assess the knowledge, attitude and practice of female college students towards emergency contraceptives in CASS (Adi keyh College of Arts and Social Sciences).

Methodology

A descriptive cross-sectional quantitative study design was employed among female college students of CASS from October to January, 2018 on a total of 289 students selected through systematic random sampling. A structured questionnaire was used to generate a quantitative data. Mann-Whitney U, Kruskal-Wallis, t-test, ANOVA, and chi-square tests were used using SPSS (Version 22) for data analysis in this study.

Result

The median level of knowledge on EC (Emergency Contraceptives) was 5/10 (IQR=1). The mean attitude score was 13.96/20 (SD=3.67). More than sixty percent (78.2%) were aware of emergency contraception. Correct timing of emergency contraception was addressed by 95.1% of the respondents. The majority (73.9%) of the respondents agreed with advising their friends to use EC (Emergency Contraceptives) whenever they face a problem. Only 7.3% of them used EC when needed. The most common method of EC used by students were EC pills (95.2%) and only 14.3% used Intrauterine device. Friends and peers were the main source of information (80.0%). The score of knowledge on EC was found to vary across the categories of age group (p=0.002), marital status (p=0.020), history of sexual intercourse (p=0.001), and age at first sexual intercourse (p=0.002). Attitude on EC scores also varied across the categories of religion (p=0.001), ethnicity (p=0.035), and history of sexul intercourse (p=0.007). Practice on EC was significantly associated with age group (p=0,048), marital status (p=0.007), mothers educational level (p=0.014), and history of sexual intercourse (p<0.001).

Conclusion
The level of knowledge, attitude and practice on EC of the students was not satisfactory. There is a need of raising the knowledge, attitude, and practice regarding EC to the young females and the community in general through collaborative effort of the ministries and mass media.
Keywords: Emergency Contraception, Knowledge, Attitude and Practice

INTRODUCTION

Emergency contraception (EC) refers to any device or drug that is used as an emergency procedure to prevent pregnancy after unprotected sexual intercourse (1). Emergency contraception (EC) has been in use for over 50 years, available across many countries and contexts in multiple formulations and offered through various access points (2, 3). Formerly, emergency contraceptive pills (ECPs) were thought to be effective only within 72 hours, but recent studies have shown that they would be effective for up to 120 hours (4). Situations of unprotected intercourse that demand the use of EC include failure of barrier methods such as slippage, breakage or misuse of condom, sexual assaults, failed coitus interrupts, two or more consecutive missed oral contraceptive pills, and simply because intercourse was unexpected and therefore contraception had not been used (4-6). The majority of women in their childbearing years (aged 15–44 years) use some form of contraception, but more than one-half of all unintended pregnancies occur when these women experience contraceptive failure. The remaining pregnancies occur in women not using any contraceptive method (4). Sadly, the remedy for such unintended pregnancies have been abortion and about 20 million, or nearly half, of the induced abortions annually are estimated to be unsafe. For many decades unsafe abortion has been a major public health concern for many developing countries. This could have been immensely reduced by using Emergency Contraceptive (EC) in the defined time period.

Even though, the wide range of effective contraceptive options are available, women's awareness and use of these options especially in developing countries is still lagging. Moreover, barriers to access and low patient and provider awareness limit the use of Emergency contraceptives in preventing unintended pregnancies.

Usually the most affected groups are students, single and nulliparous young girls. Young people, as they establish their sexual identity and contraceptive practice, they are likely to use them ineffectively and subsequently experience contraceptive failure. Specifically college students are free to go outside campus and without parents' supervision, hence; the chance of their vulnerability to unintended sex and unwanted pregnancy is high (7). Even students may be aware that use of emergency contraception can prevent occurrence of unintended pregnancy, but still they may practice it inadequately due to many factors. The consequences of unplanned pregnancies are multiple including discontinuation of school, unsafe induced abortions and their risk of very serious morbidity and mortality. This also enables young girls to end up in unplanned and forced marriage which disrupts their education and destroys the future of the adolescent girl, putting her in a vicious cycle of poverty. Widespread use of EC could be a potential strategy to reduce the incidence of all this unfortunate events (2).

Knowing about family planning and accessing it are the crux of safe, responsible sexual behavior. According to the Eritrean Population Health Survey conducted in 2010, Only 17% knew the days of ovulation, 65% have never been exposed to any family planning information, 66% lack knowledge on STIs (8). This shows that there is lack of knowledge on reproductive health, mainly about family planning and human reproduction.

Therefore, this study examined the level of knowledge, attitude and practice of Adi keyh college students towards Emergency contraceptives and identified important factors that influence students' knowledge, practice and attitude towards it.

METHOD

Study Design

A descriptive cross-sectional quantitative study was conducted to assess the knowledge, attitude and practices of emergency contraceptives among female college students of CASS from October to January, 2018.

Study Area

The study was conducted at Adi Keyh College of Art and Social Sciences in Adi Keyh town, located 115 km away south east of the capital of Eritrea, Asmara. Students in this college came from different regions of the country.

Study Population

According to the registrar's office of the college, the total number of students enrolled in the academic years of 2017/18 was 1861. The study population was all female undergraduate students in college of Adi Keyh

who were enrolled for the academic years of 2018/19. Therefore; the population size to be considered was 809 females only out of the 1861 total students.

Sample Size Determination

A single population proportion formula was used to calculate the required sample size. There was no previous study conducted to assess the KAP of emergency contraceptives among the students in the college. Since the presumed population is less than 10,000 correction formula is used with population size of 809. Other assumptions included a 5% margin of error, a 95% confidence level and nonresponse rate of 10%. Accordingly, the sample size was calculated in the following steps: Based on the above calculations, the sample size calculated is 224. Adding non response rate of 10% and multiplying by a design effect of 1.2 due to the systematic sampling used rather than simple random sampling, the final sample size became 289.

Sampling Method

The sampling technique used was systematic random sampling which was done based on a sample frame obtained from the roster of students name list of the college. The total sample size was allocated based on student's level of study (Degree and Diploma students). Study participants from each level of study across all departments were listed to form the sampling frame. Then the samples were selected systematically where a random student was selected to participate in the study and every 3rd student then be selected until the sample saturation was reached.

Selection Criteria

Inclusion Criteria

All undergraduate students attending class, who were presented and consented during study period were included.

Exclusion Criteria

A student not willing to participate was excluded.

Data Collection Techniques and tools

Data was collected anonymously using structured self-administered questionnaire containing close ended questions which was developed by reviewing relevant literatures from comparable settings that are in favor of the context in the study area. The questionnaire had five sections addressing socio-demographic characteristics, sexual and reproductive behavior, knowledge, attitude & utilization of EC. The measurement for knowledge, attitude and practice was adopted from previous researches done on the same topic. Scores were found to assess the level of knowledge of the students from the ten items of the 4 questions. Four attitude questions were constructed in a 5-point Likert scale. Besides, from the four questions that assess the attitude of the students, scores which range from 4 to 20 were formed. The student's practice was measured by asking whether they ever used Emergency contraceptives or not (2).

Validity and Reliability

The face and content validity was assured by experts from Orotta College of Medicine and Health Sciences and Ministry of Health. To assure the inter-rater reliability, the data was collected by the main researchers.

Pre-test study

To assess the feasibility, sensitivity and understandability of the data collection instrument, the structured questionnaire was enquired for 20 students in OCMHS before the actual data collection. Necessary corrections were incorporated in to the instrument accordingly.

Data Analysis

After data collection each questionnaire was checked for completeness and consistency. The cleaned data was coded and entered in to SPSS version 22 for analysis. Descriptive statistics such as frequency (proportion) for categorical variables including cross-tabulations were used. For continuous variables mean (SD), median (IQR) were used as appropriate. In order to make comparisons of the scores of knowledge across the categories of demographic and sexual characteristics, Mann-Whitney U and Kruskal Wallis tests were used. However, comparisons of scores of attitude among the categories of demographic and sexual characteristics was performed using independent samples t-test and Analysis of Variance (ANOVA). Pearson's chi-square and Fisher's exact tests were also used to find the associates of usage of emergency contraceptives. Tables and graphs were used to summarize the data. *P*-values less than or equal to 0.05 were considered as significant.

RESULT

Demographic Characteristics

The mean age of the students was 19.57 (SD=1.49) years, in which three fourth (75.1%) were in the age group of 17 to 20. The majority (88.2%) of the students were Christians and Muslim accounted for 11.8%. Two hundred and seventy seven (95.8%) of the respondents were single.

Concerning ethnicity, two hundred and sixty were Tigrigna. The majority of the students' parent father

(42.6%) were post-secondary and mother status (34.9%) were primary or below. Most of the students (93.8%) were living in campus while 6.2% were living out of campus. From the total respondents, the majority (39.8%) were in their first year, and the rest were in their second to fifth year. More than half (59.9%) of the students were in degree program and 40.1% were in diploma level. (Table 1)

Table 1: Demographic characteristics of the participants

Variable	Number	Percent
Age (Mean=19.57, SD=1.49)		
17 to 20	217	75.1
21 to 25	72	24.9
Religion		
Christian	255	88.2
Muslim	34	11.8
Marital Status		
Single	277	95.8
Married	12	4.2
Ethnicity		
Tigrigna	260	90
Other	29	10
Father's Educational Level		
Primary or below	101	34.9
Junior	49	17
Secondary	64	22.1
Post-secondary	75	26
Current Residence		
In campus	271	93.8
Off-campus	18	6.2
Year of Study		
First	115	39.8
Second	85	29.4
Third	33	11.4
Fourth	39	13.5
Fifth	17	5.9
Program of Study		
Diploma	116	40.1
Degree	173	59.9

Awareness regarding Contraceptives

Of the 289 students in the study, 90.3% of them responded that they have heard about contraceptives before. Two predominant contraceptives known by the students were condom (79.3%) and pills (77.0%) followed by injectable (36.0%), IUCD (7.7%), Norplant (8.8%) and calendar method (15.3%). Of those who had ever heard of contraception, 90.3% of them mentioned friends/peers as their first source of information. (Table 2)

Table 2: Awareness of the students regarding the contraceptives (n=289)

Variable	Number	Percent
Ever Heard of Contraceptives		
Yes	261	90.3
No	28	9.7
Type of contraceptive		
Pills	201	77.0
Injectable	94	36.0
IUCD	20	7.7
Norplant	23	8.8

Condom	207	79.3
Calendar method	40	15.3
Other	2	0.8
Source of Information		
Health worker	115	44.1
Friend/peer	136	52.1
Clubs in school	76	29.1
Mass media	125	47.9
Parents	38	14.6
Religious leader	3	1.1

Knowledge about Emergency Contraceptives

From a total of 289 respondents, 78.2% had ever heard of emergency contraception while 21.8% have never heard of it. Of those who have heard about EC, 72.1% identified place to get EC as health institution, 52.2% pharmacy and 20.8% private clinic. The majority (68.6%) of them were aware that EC is to be taken after unprotected sexual intercourse and 14.9% before sex, 8% when unwanted pregnancy occurred, 1.3% as regular contraceptive, only 2% did not know when actually to take Emergency contraceptives. Oral contraceptive pills as ECs were the most common known method accounting for 88.9% and 15% knew about IUCD, the rest (6.2%) did not know. Most (95.1%) of the respondents believed that ECPs should be taken as soon as possible within 72hrs after unprotected sexual intercourse and 11% said between 3-5 days. (Table 3)

Table 3: Knowledge of the students regarding the Emergency contraceptives (n=289)

Variable	Number	Percent
Ever Heard of Emergency Contraceptives		
Yes	226	78.2
No	63	21.8
Know to obtain		
Health institution	163	72
Pharmacy	118	52.2
Private clinic	47	20.8
Use of Emergency contraception		
After unprotected sexual intercourse	155	68.6
When unwanted pregnancy occurred	18	8
As regular contraceptive	3	1.3
Before sex	43	14.9
I don't know	6	2.1
Other	1	0.3
Know method as Emergency contraception		
Pills	201	88.9
IUCD	34	15
I don't know	14	6.2
Right time to take Emergency contraception		
As soon as possible	215	95.1
3-5days	11	3.8

Attitude towards Emergency Contraceptives

The majority (60.6 %) of the respondents agreed that using EC after unprotected sexual intercourse is important while 32.3% didn't agree and 7.1% were neutral. The majority (50.9%) of the respondents supported the idea that EC should be made available for all female students, 31.0% didn't support it and 18.1% were neutral. One hundred and sixty seven (73.9%) of the respondents have advised their friends to use EC whenever they faced a problem and thirty six (15.9%) had no willingness to advice their friend to use EC. More than half (60.2%) of the respondent thought that they would recommend EC to other females and 23% would not recommend to other females. (Table 4)

Table 4: Attitude of the students regarding the Emergency contraceptives (n=226)

Attitude	Positive Attitude n (%)	Neutral n (%)	Negative Attitude n (%)
I would use ECP if I have unprotected sexual intercourse	137 (60.6%)	16 (7.1%)	73 (32.3%)
Availability of ECP for all female students	115 (50.9)	41 (18.1)	70 (31.0)
Usage of ECP in difficult situations	167 (73.9)	23 (10.2)	36 (15.9)
Recommended of ECP to other females	136 (60.2)	38(16.8)	52 (23.0)

Seventy three (32%) respondents did not support usage of EC if they had unprotected intercourse. Reasons mentioned for not supporting usage of EC if they had unprotected sex were religious prohibition (57.5%), fear of HIV/AIDS (23.3%), fear of health providers (19.2%), belief that EC cause abortion (13.7%), unavailability of methods (6.8%).

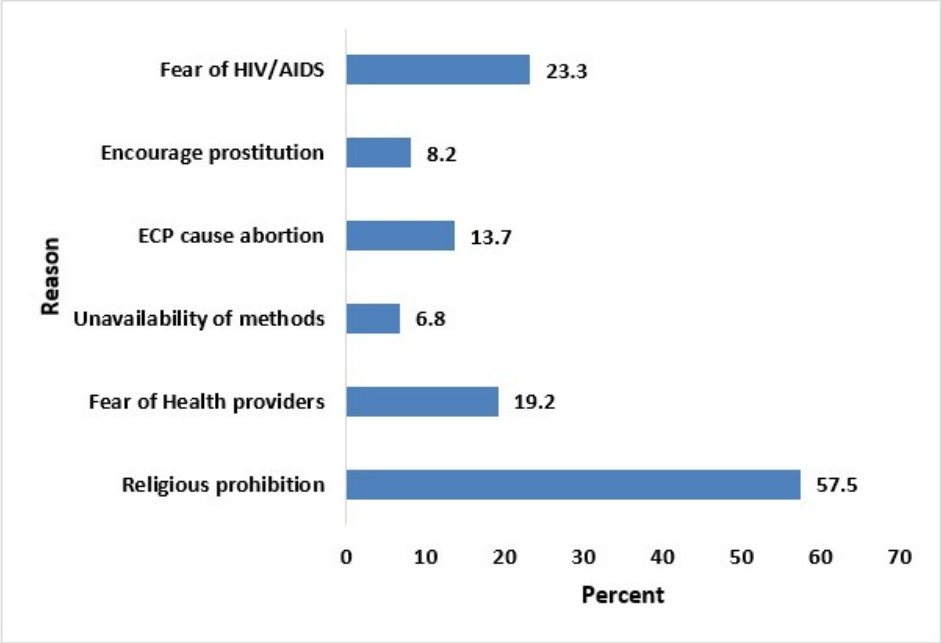


Fig 1: Reasons for not using ECP if the students have unprotected sexual intercourse

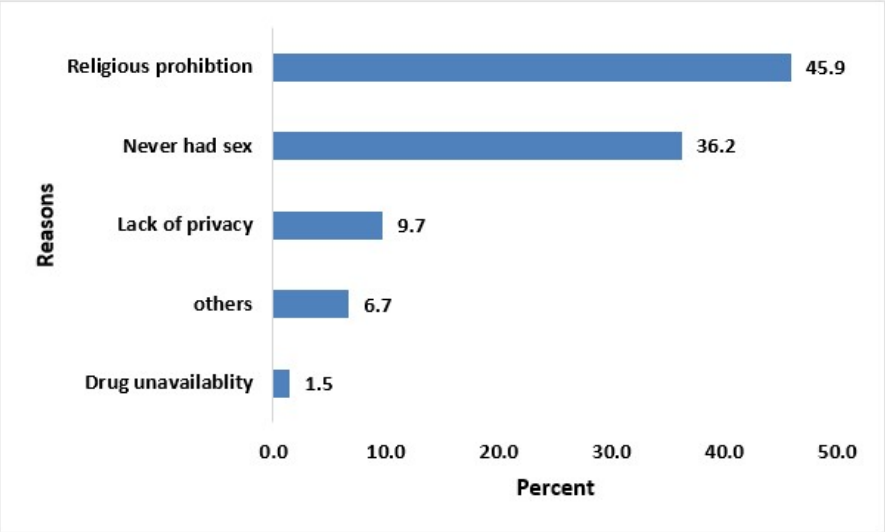
Practice on Emergency contraception

Out of the 289 study participants, only 7.3% of them used EC when needed. The most common method used were EC pills (95.2%) and only 14.3% used IUCD. Regarding reasons for using EC, 80.0% had unprotected sex, 15.0% forgot to take contraceptive and 5.0% were forced to use so after unprotected intercourse due to rape. Of those respondents who have used EC, 85.7% identified place to get EC as pharmacy and 19% from health institution. (Table 5)

Table 5: Practice of the students regarding the Emergency contraceptives.

Practice	Number	Percent
Type of EC used		
Pills	20	95.2
IUCDs	1	4.8
Reason for using EC		
Had unprotected sex	16	80.0
Forget to take contraceptive	3	15.0
Rape	1	5.0
Place whereby EC taken		
Health Institution	4	18.2
Pharmacy	18	81.8

Reasons mentioned for not using EC were religious prohibition (45.9%), Lack of privacy (9.7%) and Drug unavailability (1.5%). Reasons mentioned for opposing (unwillingness) to use EC were religious, never had sex (36.2%), Lack of privacy (9.7%).



(Others include: Never had unprotected sex, lack of information, no need of it, I don't have a boyfriend, its accident sex)

Fig 2: Showing Reasons for not using Emergency Contraceptives

Reproductive history of respondents

The majority (84.4%) of the respondents had never experienced sexual intercourse in their life time while 15.6% had sexual intercourse and the mean age at coitarche was 19.13 (SD=1.58). Of those who ever had sex, (88.9%) were by their consent, 11.1% were forced. Out of those who had forced sexual contact, 60% were by strangers, 20% by peers/friends and 20% by relative. Majority (80%) of the students who had forced sexual intercourse suffered mental stress and anxiety. Of all who had history of sexual contact majority (97.8%) did not get pregnant. Only one female (2.2%) got pregnant which led to successful child delivery. (Table 6)

Table 6: Sexual and reproductive characteristics of the Respondents

Variable	Number	Percent
Ever had sexual intercourse		
Yes	45	15.6
No	244	84.4
Was the sex by consent		
Yes	40	88.9
No	5	11.1
Who forced to have sex		
Friends	1	20
Relative	1	20
Other	3	60
Problems after forced sex		
Stress	4	80
Other	1	20
Ever been pregnant		
Yes	1	2.2
No	44	97.8
Outcome of pregnancy		
Child birth	1	100

	Mean (SD)	Min, Max
Age at first sex	19.13 (1.58)	16, 23
Age at first pregnancy*	23 (*)	23, 23

*Only one student was ever pregnant and hence SD can't be calculated.

Association of Emergency contraceptives knowledge with demographic and sexual characteristics

Four questions that make up 10 scores were prepared to assess the level of knowledge among the students. The median level of knowledge was 5 out of 10 (IQR=1). The minimum and maximum knowledge scores obtained were 1 and 7 respectively. In order to make comparison of the knowledge regarding emergency contraceptive across categories of demographic variables, Mann-Whitney U test (variables with two categories), and Kruskal Wallis (variables with three or more categories) were used. The level of knowledge was found to be significantly different between the 17 to 20 and 21 to 25 age group (p=0.002). Moreover, married students had significantly higher knowledge about emergency contraceptive as compared to single (p=0.020). Significantly higher level of knowledge regarding emergency contraceptive was obtained among those females who ever had sexual intercourse than their counterparts (p=0.001). Moreover, with increase in age at which the first intercourse was done, a significant increase in knowledge regarding emergency contraceptive was observed (r=0.465, p=0.002). However, categories of religion (p=0.461), ethnicity (p=0.269), father's educational level (p=0.607), mother's educational level (p=0.846), current residence (p=0.397), year of study (p=0.054), and program of study (p=0.154) had no significantly different scores regarding emergency contraceptive. (Table 7)

Table 7: Association of Emergency Knowledge

Variable	Median (IQR)	Z/Chi-square value	p-value
Age			
17 to 20	5.0(1.0)	-3.028	0.002
21 to 25	5.0(1.50)		
Religion			
Christian	5.0(1.0)	-736	0.461
Muslim	5.0(2.0)		
Marital Status			
Single	5.0 (1.0)	-2.33	0.020
Married	6.0 (2.0)		
Ethnicity			
Tigrigna	5.0 (1.0)	-1.105	0.269
Other	4.0 (1.0)		
Father's Educational Level			
Primary or below	5.0 (1.0)	1.84	0.607
Junior	5.0 (1.0)		
Secondary	5.0 (2.0)		
Post-secondary	5.0 (1.0)		
Mother's Educational Level			
Primary or below	5.0 (2.0)	0.81	0.846
Junior	5.0 (1.0)		
Secondary	5.0 (1.0)		
Post-secondary	5.0 (1.0)		
Current Residence			
In campus	5.0 (1.0)	-0.85	0.397
Off-campus	5.0 (2.0)		
Year of Study			
First	5.0 (1.0)	9.32	0.054
Second	5.0 (1.0)		
Third	5.0 (1.0)		

Fourth	5.0 (0)		
Fifth	5.5 (1.75)		
Program of Study			
Diploma	5.0 (1.0)	-1.43	0.154
Degree	5.0 (1.0)		
Ever had sexual intercourse			
Yes	5.0 (1.5)	-3.31	0.001
No	5.0 (1.0)		
	N	**R**	**p-value**
Age at first intercourse	41	0.465	0.002

r=Spearman rank correlation coefficient was used.

Comparison of Attitude Scores

In order to assess the overall attitude of the students, scores were computed from four questions. Each question was designed in a Likert form in which the values ranged from 1 (Strongly disagree) to 5 (Strongly agree). As the score increases the degree of positive attitude also increases. Responses of students who had ever heard of emergency contraceptive was used throughout the analysis. The mean score of attitude obtained was 13.96 out of 20 (SD=3.67). The minimum and maximum attitude scores were 4 and 20 respectively. After assessing the normality of the attitude scores using critical values, t-test and one way ANOVA were used to make comparison of the scores across demographic variables. Students who were Christians (M=14.22, SD=3.39) were found to have significantly higher positive attitude than Muslim (M=11.70, SD=4.30) (p=0.001). Female students following Tigrigna ethnic group were found to be less likely to have positive attitude than others. Female students who had sexual intercourse were found more likely to have positive attitude than students who never had sexual intercourse before. Higher score in attitude was observed among those students who had experienced sex before (M=15.32, SD=2.36) as compared to those who didn't experience sex (M=13.66, SD=3.72) (p=0.007).

However, categories of age (p=0.863), marital status (p=0.641), father's educational level (p=0.954), mother's educational level (p=0.915), current residence (p=0.86), year of study (p=0.922), program of study (p=0.104), and age at first sexual intercourse (p=0.521) were not significantly different in the attitude score. (Table 8)

Table 8: Comparison of Attitude of Emergency contraception with the socio-demographic variables

Variable	Mean (SD)	t/F Value	p-value
Age			
17 to 20	13.94 (3.41)	-0.17	0.863
21 to 25	14.04 (4.03)		
Religion			
Christian	14.22 (3.39)	3.29	0.001
Muslim	11.70 (4.30)		
Marital Status			
Single	13.93 (3.62)	-45	0.641
Married	14.45 (2.25)		
Ethnicity			
Tigrigna	14.11 (3.51)	2.12	0.035
Other	12.31 (3.75)		
Father's Educational Level			
Primary or below	14.18 (3.25)	0.11	0.954
Junior	13.73 (4.08)		
Secondary	13.86 (3.62)		
Post-secondary	13.97 (3.57)		
Mother's Educational Level			
Primary or below	14.05 (3.47)	0.17	0.915
Junior	13.80 (3.66)		
Secondary	14.19 (3.63)		
Post-secondary	13.77 (3.61)		
Current Residence			

In campus	13.98 (3.56)	0.17	0.86
Off-campus	13.81 (3.65)		
Year of Study			
First	13.86 (3.42)	0.23	0.922
Second	13.91 (3.06)		
Third	14.28 (4.01)		
Fourth	14.35 (3.99)		
Fifth	13.50 (4.92)		
Program of Study			
Diploma	13.45 (3.26)	-1.63	0.104
Degree	14.25 (3.71)		
Ever had sexual intercourse			
Yes	15.32 (2.36)	3.6	0.007
No	13.66 (3.72)		
	N	**R**	**p-value**
Age at first intercourse	41	0.521	0.521

r= Pearson Correlation coefficient was used.

Association of Emergency Contraceptive usage with demographic and sexual characteristics

In order to assess the association of emergency contraceptive usage and the demographic characteristics, chi-square test was used (Table 9). The proportion of students who had used emergency contraceptives in the age group 21 to 25 (12.5%) was (significantly greater than those in the age group 17 to 20 (5.5%) (p=0.048). Moreover, there is statistical significance that married respondents (33%) practiced EC more than single respondents (6.1%). There is statistical significance on mother's Educational Level in which junior level (12.2%) were highly practicing than Post-secondary (10.7%) and primary or below (6.9%) (Table 9)

Table 9: Association of Emergency contraception usage

Variable	Ever used EC		
	Yes n (%)	**No n (%)**	**p-value**
Age			
17 to 20	12 (5.5)	205 (94.5)	0.048
21 to 25	9 (12.5)	63 (87.5)	
Religion			
Christian	21 (8.2)	234 (91.8)	0.149
Muslim	0 (0)	34 (100)	
Marital Status			
Single	17 (6.1)	269(93.9)	0.007
Married	4 (33.3)	8(66.7)	
Ethnicity			
Tigrigna	21 (8.1)	239 (91.9)	0.146
Other	0 (0)	29 (100)	
Father's Educational Level			
Primary or below	3 (5.1)	56(94.9)	0.874
Junior	4 (9.1)	40(90.9)	
Secondary	5 (7.9)	58(92.1)	
Post-secondary	9 (7.3)	114(92.7)	
Mother's Educational Level			
Primary or below	7(6.9)	94(93.1)	0.014
Junior	6(12.2)	43(87.8)	
Secondary	0(0.0)	64(100.0)	
Post-secondary	8(10.7)	67(89.3)	
Current Residence			
In campus	19(7.0)	252(93.0)	0.629
Off-campus	2(11.1)	16(88.9)	

Year of Study			
First	10 (8.7)	105(91.3)	0.83
Second	5 (5.9)	80 (94.1)	
Third	2(6.1)	31(93.9)	
Fourth	2 (5.1)	37(94.9)	
Fifth	2 (11.8)	15(88.2)	
Program of Study			
Diploma	8 (6.9)	108(93.1)	0.843
Degree	13 (7.5)	160(92.5)	
Ever had sexual intercourse			
Yes	21 (100)	0 (0)	<0.0001
No	24 (9.0)	244 (91.0)	
	N	**R**	**p-value**
Age at first intercourse	45	-0.065	0.626

r=Kendal Tau coefficient was used, Ŧ-Fisher's Exact Test was used.

The proportion of students who had history of sexual intercourse (100%) in their life time were found to have significantly higher emergency contraceptive usage than those who had no history of sexual intercourse (9.0%) ($p<0.001$).

However, religion ($p=0.149$) and ethnicity ($p=0.146$), Father's Educational Level ($p=0.874$), Current Residence ($p=0.629$), Year of Study ($p=0.83$), program of Study ($p=0.843$), and age at first intercourse ($p=0.626$) were not significantly associated with the usage of emergency contraceptive.

DISCUSSION

This study focused on assessing the knowledge, attitude and practice of emergency contraceptive and their comparison across the socio-demographic and reproductive behaviors of undergraduate students in Adi-Keiyh College. The KAP was not found to be satisfactory and have been found to be influenced by some of the socio-demographic and reproductive behaviors.

Knowledge of EC and its associates

In general, adolescents awareness of regular contraception are low, and awareness of emergency contraceptive pills are even lower (1). Even when adolescents are aware of their contraceptive choices, they face many obstacles in obtaining accurate information and access to contraceptives. This study was no exception.

The awareness of ECPs among female college students was found to be 78.2%. This result on level of awareness was higher than the level of awareness found among college students in India (57.5%), Baghdad (35%) and Ethiopia (72.5%). However, the finding of the current study was lower than the findings of a study among female college students in Ethiopia which reported 84.2% of the respondents to be knowledgeable about emergency contraceptives. The difference in findings among the universities could be the difference in the provision of reproductive health information and services in different universities.

Results of chi square also showed that awareness of emergency contraceptive was influenced by socio-demographic characteristics such as age and marital status. Students of age 21 and above years were more likely to have knowledge of Emergency contraceptives than those age less than 20 years. This result is consistent with a study done in Dessie University (2) which stated that there is positive relationship between age of the respondents and knowledge of Emergency contraceptives. This may hold true since there is a possibility for female students engaging in more sexual relationship to be of a higher age and consequently to be interested in knowing more about Emergency contraceptives. Knowledge of EC was also significantly high among students who are single than those of married, this result is similar as in Ethiopia. In this study, majority (60.6%) of respondents agreed that using Emergency contraceptives after unintended intercourse is important while 32.3% didn't agree. This result was higher than similar finding among female college students in Dessie University which reported that only 48.8% of respondents agreed with the importance of using Emergency contraceptives while 42.7% didn't agree. This could be due to an increased awareness of Emergency contraceptives. Almost 60% of respondents support the idea of availability of EC for all females, so that any female facing problem of unprotected sexual intercourse can obtain EC easily and use it without delay & waiting for prescription and special dispensers; and about 73.9% of them were willing to use EC whenever they faced problem of unprotected sex which is higher in comparison to a similar study done in Arba Minch (7) where only 40.0% said that they would use emergency contraception in the future if they have unprotected intercourse during the unsafe period.

In this study the main source of information were friends/peers (52.1%), mass media (47.9%) and health workers (44.1%). This finding was different from that of a study in India in which the main source of information about contraception was from the media (73%), newspaper (33%) and friends (32%) (9).This could be because most (93.8%) of the respondents in this study were living in the educational institution where they spend most of their time with their peers.

Oral Emergency contraceptive pills were the most widely known type accounting for 88.9%. This finding was higher than the finding of a study conducted in Dessie (51.2%) (2). The reason may be due to easy accessibility of pills and its easy administration. Less than ten percent (6.2%) of those who have heard of EC reported incorrect methods of EC, this could be due to inadequacy of information they have got.

Of those who have had heard of ECs, 95.1% knew the correct timing for the first dose of oral emergency contraceptive pills administration, that is within 72hours after unprotected sex. This result was higher than the finding of female undergraduate students in Nairobi (74.9%) (6), similarly in Ethiopia around 74.2% said that Emergency oral contraceptive pills should be taken within 72 hours after unprotected sex (2). In the same study, the majority of respondents, (61.7%) did not knew the appropriate time to take IUCD type of Emergency contraceptives, 23.0% said within 72 hours and 14.5% said it should be taken within 24 hours.

Attitude of EC and their associates

The attitude aspect of emergency contraceptive is important as it identifies the potential users of it in the future. Majority (60.6%) had positive attitude in this study. This was higher than 32.3% of Addis Ababa University of Ethiopia (5) however consistent with Mekele University, Ethiopia (64.9%) (10), and Lahore's teaching hospital (77.8%) (11). Religious prohibition, fear of HIV/AIDS, fear of health providers and the assumption that they may cause abortion have decreased minimized the attitude score in this study. In this study students with history of sexual intercourse had high score in attitude than those who didn't for obvious reasons. Moreover Christian students were highly optimistic about emergency contraceptives than their Muslim counterparts. This might be attributed to more conservative notion regarding contraceptives in the latter religion.

Practice of EC and their associates

Usage of EC among the students was found out to be 7.3%. This low figure was due to the low incidence of sexual practice (15.6%) among the students population. In this study the most commonly used contraceptive was the pills. This was consistent with findings of Lahore's teaching hospital, Pakistan (11)and Arba minch (7) town of Ethiopia. However, Study in Makerere University (12), other Ethiopian province, identified condom as the most preferred method of contraception. Bold associates of emergency contraceptive usage was older age. Those who were in the ages 21-25 had significant relationship with usage of EC. This can be due to the responsibility of oneself, enlightenment and capacity to decide and intervene on ones own that comes with aging. Younger students may be shy and feel ashamed of seeking for it.

CONCLUSION

Findings of this study confirmed awareness of EC among the respondents was 78.2%. The most familiar method of EC to the respondents were oral contraceptive pills. Majority (60.6 %) of the respondents agreed that using EC after unprotected sexual intercourse is important and similar proportion (50.9%) of the respondents supported the idea of making EC available for all female students. Only 7.3% have ever used ECs. The respondents' age, previous history of sexual intercourse, age at first intercourse and marital status was significantly associated with the knowledge level. Other socio-demographics ethnicity, religion and previous history of sexual intercourse were significantly associated with the attitude of the participants. Marital status, age, mother's Educational Level, previous history of sexual intercourse were also significantly associated with the practice level.

Abbreviations

ANOVA: Analysis of Variance, CASS: College of Arts and Social Sciences of Adi-keih, EC: Emergency contraceptive, KAP: Knowledge, attitude and practice, SPSS: Statistical package for social sciences, WHO: World health organization

Ethical approval and consent to participate

Asmara college of Health Sciences and Research ethical committee approved the study through formal channels. The researchers visited Ministry of Education, branch of higher educations and explained the general purpose and nature of the study. Before recruitment of the college students the researchers informed them about the purpose and practical benefits of the study and the written consent of participants was obtained. All data was collected with respect of participants' privacy and anonymity.

Consent for publication

All authors read and approved the final manuscript

Availability of data

The complete dataset used and/or analyzed during

the current study are available from the corresponding author and can be accessed upon reasonable request.

Authors' contribution

LG: Assured quality of data collection, writing all drafts and the final manuscript. SA: Designed the study, coordinated recruitment of participants and in writing of all drafts and final manuscript. HG: Designed the study, coordinated recruitment of participants and participated in writing manuscript. RG and EA: Coordinated recruitment of participants, writing of all drafts and the final manuscript. RT and AW: Coordinated recruitment of participants, designed the study, modification of the questionnaire, writing of all drafts and the final manuscript. EHT: Assured quality of data collection, led data analysis, writing manuscript, and in writing of all drafts and the final manuscript. All authors read and approved the final manuscript.

Competing interest

The authors declare that there is no conflict interest regarding the publication of this paper.

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