

Emergency Contraceptive Pill Use and its Impact on Condom Utilization Among University Students: A Cross-Sectional Study

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Purpose: Emergency contraceptive pills (ECPs) prevent unplanned pregnancy but not sexually transmitted infections (STIs), and the practice of ECP may affect condom use. This study, therefore, aimed to assess ECP use and its impact on condom utilization among female students of private universities in Nekemte town, western Ethiopia.

Methods: An institution-based cross-sectional study was conducted on 400 female students in three different private universities from February 1 to 28, 2019. Study samples were selected through simple random sampling technique. Data collected from a structured self-administered questionnaire were analyzed using SPSS version 23.0. Bivariate and multivariate logistic regression were performed to determine factors associated with condom utilization, and statistical significance was set at 95% confidence interval (CI) using a p-value of <0.05 as a cutoff point.

Results: The response rate was 95.3% (381/400). Overall, 51.4% (196/381; 95% CI = 45.1%, 57.7%) had awareness of ECP. Besides, 186 (48.8%) students reported history of sexual intercourse, of which 115 (61.8%) have ever practiced ECP and 96 (51.6%) have ever used condom. However, only 11 (5.9%) have ever utilized ECP and condom concurrently. Use of ECPs (adjusted odds ratio (AOR) = 0.32; 95% CI = 0.164, 0.632; p = 0.001), belief that condom prevents STI (AOR = 3.17; 95% CI = 1.045, 8.646; p = 0.041) and thought that ECP does not prevent STI (AOR = 2.217; 95% CI = 1.172, 4.59; p = 0.032) had statistically significant association with condom utilization.

Conclusion: The practice of ECP was average, while dual method contraception use was low in the study area. History of ECP use and beliefs that ECP is not effective to prevent STI or condom protects against STI were factors associated with condom use.

Keywords: condom, emergency contraception, female students, Nekemte

Introduction

The emergency contraceptive pill (ECP) is a hormone contraceptive used to prevent unintended pregnancy that may occur after unprotected sexual intercourse.¹ The ECPs include combined estrogen and progestin pills, progestin-only pills and ulipristal acetate (UPA).^{1,2} All ECP types can decrease the risk of unintended pregnancy and unsafe abortion by 75% to 85% when used correctly within 72 hours of sexual intercourse.^{3,4}

Unintended pregnancy and abortions have become global public health issues.⁵ Global estimates show that 121 million unintended pregnancies on average occurred each year between 2015 and 2019 of which around 73 million (61%) ended in induced abortions among women aged 15–49 years worldwide.^{5,6} Sub-Saharan Africa had the highest incidence of unintended pregnancy (91/1000 women) and abortion rate was 37%.⁵ In Ethiopia, the overall prevalence of unintended pregnancy was estimated at 28%; 2,060,000 pregnancies were unintended and 632,000 (31%) ended in abortions.^{7,8} According to World Health Organization (WHO), at least 10 million unintended pregnancies and an estimated 5.6 million abortions occur each year among adolescent girls aged 15–19 years in the developing world.^{4,3} Similarly, about one third (31.8%) of unmarried female university students experienced unintended pregnancies in many

China universities.⁴⁴ In sub-Saharan Africa, the prevalence of unintended pregnancy among young women (15–24 years of age) ranged from 9.4% to 59.6% with a rate of 34.9% in Ethiopia.⁴⁵

Effective contraception has a lion's share in reducing incidence of unintended pregnancies and induced abortions.^{2,7,14} ECPs are used with a wide range of prevalence among sexually active women, worldwide.^{2–4,9} For instance, certain multinational analysis of ECP use indicated that the proportions of ECP use varies from below 0.1% in Chad to 12% in Colombia.¹⁰ Other studies also reported that the magnitude of ECP practice among female university students varies across countries in Africa: 21.2% in South Africa,¹¹ 20% in Kenya¹² and 15.2% in Nigeria.¹³ The Ethiopian Demographic Health Survey of 2016 (EDHS 2016) reports showed that practice and knowledge of emergency contraception was 4% and 19%, respectively among Ethiopian women aged 15–49.¹⁴ Also, the rate of ECP use among female university students ranges from 4.9–78.1% with a pooled prevalence of 34.5%, according to a recent systematic review conducted in the country.¹⁵

Hormonal contraceptives including ECP are very effective in preventing unintended pregnancy but not human immunodeficiency virus (HIV) and other sexually transmitted infections (STIs).^{9,16} Apart from abstinence, condom is the only method which gives protection against HIV and other STIs.¹ If used consistently, condom can provide dual protection against unplanned pregnancy and STIs.^{16–18} However, studies have shown that females who practice ECP do not necessarily utilize condoms for STI prevention.^{17–20} To illustrate, according to the Canadian contraception study of 2002, concurrent use of condoms was indicated only by 13% of oral contraceptive users²⁰ and only 11% of women with or at high risk of HIV had used both contraception methods in another study.¹⁸ On the other hand, only small proportions (7% to 10%) reportedly used condoms primarily to prevent STIs^{17,20} and prevalence of STI among female university students was 26.3% in Sweden,⁴⁶ 27.7% in Southern Nigeria⁴⁷ and ranged 6.4% to 18.2% in Ethiopia.^{24,26}

Although the direct relationship between ECP use and acquisition of STI is not established, studies suggested that unrestricted access to ECP leads to increase sexual risk behaviors and STIs.^{16–21} Moreover, there is a rising concern to understand whether the increasing access to ECP impose negative impact on condom use and escalate STI rates.^{16,19,22,23} For instance, condom use decreased from 49% to 41% between 2009 and 2014 among female university students in Sweden,⁴⁸ the prevalence of unprotected sex (non-use of condom), despite knowing its consequences, was very high (60.7%) among female undergraduate students in Nigeria⁴⁹ and the majority (52.2%) of female students in Ghana preferred ECP to condoms to prevent pregnancy and STIs.³⁴ Likewise, among female university students in Ethiopia, non-use of condom was highly prevalent (57.2%) and significantly associated with acquisition of STIs;²⁴ inconsistent condom use was 66.2%, the odds of inconsistent condom use was more than two-fold in female students than in males and private university students were more susceptible to risky sexual behaviors than public university students.²⁵

Although both condom and ECPs are available over-the-counter (OTC) and ECPs are more expensive than condom, ECPs are more often and repeatedly used by young women (those aged between 15–25 years), according to other studies conducted in Ethiopia.^{50,51} It was also stated that young females only care about preventing pregnancy and have forgotten about STIs/HIV, thus neglecting condom use.⁵⁰ Besides, the key stakeholders were uncomfortable with high sales of ECPs⁵⁰ and pharmacists expressed concerns that the use of ECPs will lead to irresponsible behavior among young people and reduced condom use.⁵¹

It is evident that investigating the effects of ECP use on condom utilization is important to realize sexual risk behaviors in youths.^{19,23,25,29} Pertaining to this issue, our comprehensive literature search indicated only two studies previously conducted in the country.^{26,27} Nonetheless, as far as our knowledge is concerned, no research has been done in our study area. Nekemte, one of the biggest towns in western Ethiopia, is home for one federal university and several private universities and colleges. Most students come from surrounding areas and neighboring regional states to study while they live away from their families. Thus, they could highly engage in risky sexual behaviors due to a sense of independence from restrictions and parental impact.²⁵ Therefore, this study was aimed to assess the knowledge, attitude and practice of ECP and the impact of ECP use on condom utilization among female students of different private universities in Nekemte town, western Ethiopia. The findings of this study would help to devise strategies to promote dual method contraception for protections against unintended pregnancy and STIs.

Methods

Study Settings and Period

This study was conducted from February 1 to 28, 2019 among female students who were studying in different private universities found in Nekemte town, which is located 331 km to west of Addis Ababa, the capital city of Ethiopia. Generally, there were three private universities in the town when the study was conducted. These universities are Rift Valley University (RVU), New Generation University (NGU) and Dandi Boru University (DBU). They enroll students in regular, evening and weekend modalities, and majority of their students come from surrounding areas.

Study Design

An institution-based cross-sectional study was conducted to assess ECP use and its impact on condom utilization among female students pursuing undergraduate studies in the mentioned settings.

Study Population

A total of 2153 undergraduate female students who were regularly enrolled in the respective universities during the study period were considered as the study population.

Sample Size Determination and Sampling

A single population proportion formula was used to calculate the minimum sample size with the following assumptions: ECP utilization of 47% ($P = 0.47$) from a previous study of female university students in Ethiopia,²⁶ 95% confidence interval (CI), 5% margin of error ($d = 0.05$) which yielded a sample size of 382 students. After adding 5% compensation for non-response rate, the final target sample size of approximately 400 students was determined.

Out of the total 2153 female students mentioned earlier, 1114 (51.7%) were from RVU, 646 (30%) were from NGU, and 393 (18.3%) were from DBU. Accordingly, study participants were allocated to each university proportional to the size of female students they had. Thus, 207 students from RVU, 120 students from NGU and 73 students from DBU were randomly selected and included to the study. A simple random sampling technique was employed to select samples by using the list of female students in each university as a sampling frame.

Data Collection Process

A pre-tested and structured self-administered questionnaire was used to collect data for this study. We thoroughly reviewed similar surveys conducted in the country,^{26–28} to prepare the instrument. The questionnaire was categorized into different sections including socio-demographic characteristics, sexual and reproductive health profiles, knowledge, attitude and practice of ECP use and condom utilization. It was initially developed in English language and then translated to Afaan Oromo (a commonly spoken language in the study area). The translated questionnaire was cross-checked by an independent language professional for consistency ahead of using. Subsequently, it was pretested among 20 female students (5% of the sample size) who did not participate in the study. Data were collected by three BSc Nursing holders who were employees of public health institutions in the town. Data quality was assured through pre-testing, training of data collectors prior to their deployment, checking filled data for completeness and accuracy and daily on-site supervision by the research investigators.

Data Management and Analysis

Data were coded and entered into Epi Data version 3.1 and then, exported for analysis to statistical package for social sciences (SPSS) for windows version 23.0. Descriptive statistics was used to describe socio-demographics, sexual and reproductive health profiles, knowledge and level of ECP use as well as condom use. On the other hand, both bivariate and multivariate logistic regression analyses were computed to determine factors associated with condom utilization. Variables with a p -value of ≤ 0.05 in the bivariate analysis were put into the multivariate logistic regression model to adjust for confounding. Preceding to the multivariate analysis, multicollinearity diagnostic was executed and there was

no major interaction between the explanatory variables. In the multivariate analysis, AOR with 95% CI was calculated and statistical significance was determined using a p-value of <0.05 as a cut-off point.

Operational Definitions

Ever use of ECP: proportion of sexually active female students who used ECP for contraception whenever they had sexual intercourse before the survey.

Ever use of condom: proportion of sexually active female students who utilized condom whenever they had sexual intercourse before the survey.

Ever use of condom and ECP: proportion of sexually active female students who used both condom and ECP whenever they had sexual intercourse before the survey.

Non-use of ECP: proportion of sexually active female students who never used ECP whenever they had sexual intercourse before the survey.

Results

Socio-Demographic Characteristics of the Respondents

A total of 381 students completed the questionnaires making a response rate of 95.25%. The mean ($\pm$ SD) age of the respondents was 20.5 ($\pm$ 2.51) years. Approximately half (48.5%) of the total respondents were within the age group of 20–24 years. Nearly ninety percent (87.9%) of the students were ethnically Oromo and 217 (57%) were followers of protestant religion. Majority (90.6%) of the students were unmarried and more than half (55.9%) were originally from urban areas (Table 1).

Sexual and Reproductive Health Characteristics of the Respondents

The results revealed that 186 (48.8%) students out of the total participants have ever had sexual intercourse. Accordingly, more than four-fifth (81.7%) had their first sex at the age of ≤ 20 years, 82 (44.1%) reported first sex with a casual friend and 83 (44.6%) indicated sexual desire as the main reason to have first sex. The mean ($\pm$ SD) age at first sex was 17.02 ($\pm$ 1.53) years. Also, the majority (61.3%) had sex with two or more sex partners and 36 (19.4%) reported history of STIs (Table 2).

Knowledge, Attitudes and Practice of Contraception

Out of the total respondents, 196 (51.4%; 95% CI, 45.1–57.7%) and 210 (55.1%; 95% CI, 47.7–62.5%) have ever heard about ECP and condom, respectively. Among the students who had awareness of ECP, 111 (56.6%) correctly answered the right time to take ECP (within 72 hours of having unprotected sex), whereas 94 (47.9%) of them thought that ECP can prevent STIs. On the other hand, 98 (46.7%) female students, among those who knew about condom, believed that it protects against STIs (Table 3).

Amongst the respondents who had history of sexual intercourse, 115 (61.8%) and 96 (51.6%) have ever used ECP and condom, respectively; only 11 (5.9%) have ever utilized both methods concurrently (Table 3).

About two-third (61.7%) of the respondents showed willingness to use ECP whenever they need to; also, 228 (59.8%) of the students agreed to recommend ECP to other persons (Table 3).

Factors Associated with Condom Utilization

The findings of bivariate analysis revealed that awareness of ECP, practice of ECP, beliefs that ECP can prevent STI, that condom can protect against STI and STI is a problem of young people had statistically significant association with condom utilization. However, in multivariate analysis, only three factors including ever practice of ECP, beliefs about ECP can prevent STI and condom protects against STI were remained statistically significant. Accordingly, sexually active female students who have ever practiced ECP were 0.32 times less likely to utilize condom than the ones who did not use ECP (AOR = 0.32; 95% CI, 0.164–0.632). Conversely, female undergraduates who believed that ECP does not prevent STI were just above 2 times more likely to use condom when compared to those who thought it does (AOR= 2.217; 95% CI, 1.172–4.59). Further, female

Table 1 Socio-Demographic Characteristics of Female Private University Students in Nekemte Town, February, 2019 (n = 381)

Variables		Frequency	Percentage
Age (in years)	15–19	153	40.2
	20–24	185	48.5
	≥25	43	11.3
Field of study	Business and Economics	225	59.1
	Health Sciences	98	25.7
	Other*	58	15.2
Year of study	Year- 1	138	36.2
	Year-2	149	39.1
	Year-3 and above	94	24.7
Ethnicity	Oromo	335	87.9
	Amhara	41	10.8
	Gurage	5	1.3
Religion	Protestant	217	57.0
	Orthodox	91	23.9
	Muslim	58	15.2
	Other	15	3.9
Marital status	Married	28	7.3
	Unmarried	345	90.6
	Divorced	5	1.3
	Widowed	3	0.8
Current living condition	With family	218	57.2
	Separate from family	163	42.8
Residence of origin	From urban	213	55.9
	From rural	168	44.1

Note: *Animal sciences and information technology faculty.

students who said that condom effectively prevents STI had 3 times more chance to practice condom than their counterparts who believed oppositely (AOR= 3.17; 95% CI, 1.045–8.646) (Table 4).

Discussion

There is a growing concern regarding the increasing access to and use of ECP and its potential impact on sexual risk taking behaviors and STIs.^{18–23,26,29} In lieu of this, the present study examined the practice of ECP and its influence on condom use among female students of private universities in Nekemte town, western Ethiopia.

In this study, more than half (51.4%; 95% CI, 45.1–57.7%) of the respondents had awareness of ECP. This is lower than the reports of previous studies conducted in different universities of Ethiopia (67% to 95.9%)^{26–28,30,31} and Kenya (86.4%)¹² but much higher than that of a Nigerian university (14.6%).¹³ It is consistent with results from a South African

Table 2 Sexual and Reproductive Health Characteristics of Female Private University Students in Nekemte Town, February, 2019 (n = 186)

Variables		Frequency	Percentage
Ever had sexual intercourse (n = 381)	Yes	186	48.8
	No	195	51.2
Age at first sexual intercourse (in years)	≤17	108	58
	18–20	44	23.7
	≥21	34	18.3
Number of sexual partners ever had	One	72	38.7
	Two	66	35.5
	Three	37	19.9
	≥4	11	5.9
With whom ever had intercourse	With boy friend	59	31.7
	Casual friend	82	44.1
	Husband	36	19.4
	Other	9	4.8
Reason for sexual intercourse	Fall in love	53	28.5
	Desire to have sex	83	44.6
	Married	36	19.4
	Raped	9	4.8
	Peer pressure	5	2.7
History of sexually transmitted infection/s	Yes	36	19.4
	No	150	80.6

university (49.8%).¹¹ Rate of sexually active women, accessibility of information on contraception, sexual and reproductive health education, socio-cultural differences and level of urbanizations of the study areas might be accountable for the discrepancy.^{10,15,22}

According to this study, ECP was utilized by the majority (61.8%) of female undergraduates who had history of sexual intercourse. This figure is higher than previous reports from different universities of African countries such as South Africa (21.2%), Kenya (20%), Nigeria (15.2%) and Rwanda (5%).^{11–13,32} Similarly, lower results were reported among female university students in Ethiopia that ranged from 4.7% in Adama to 47.1% in Northwest Ethiopia.^{26,27,30,33} Awareness of ECP, availability and accessibility of ECP in community, perceived risk of pregnancy as well as denominators used for calculations of ECP use might explain the disagreement.

We also found that a substantial proportion of the respondents would use ECP when needed and would recommend it to other persons. This is similar with earlier studies conducted elsewhere.^{11,26,27,30–33} In this context, it might be suggested that there is a readiness among female undergraduates to practice ECP which is also supported by an evidence from EDHS 2016.¹⁴

In the present study, knowledge of correct timing of ECP (56.5%) was better than prior findings in Jimma (48.6%) and Mizan-Tepi (28.3%) universities of Ethiopia.^{27,30} However, more than half of the study participants replied that ECP is effective to prevent STIs and I did not know responses combined. Alternatively, the respondents who believed that

Table 3 Knowledge, Attitudes and Practice of Contraception Among Female Private University Students in Nekemte Town, February, 2019

Variables		Frequency	Percentage
Ever heard about emergency contraceptive pill (ECP)	Yes	196	51.4
	No	185	48.6
Appropriate time to take ECP	Within 72hrs	111	56.6
	Within five days	16	8.2
	Do not know	69	35.2
Believe ECP can prevent sexually transmitted infection (STI)	Yes	94	47.9
	No	97	49.5
	Do not know	5	2.6
Ever heard about condoms	Yes	210	55.1
	No	171	44.9
Believe condom can prevent STI	Yes	98	46.7
	No	77	36.7
	Do not know	35	16.7
Have ever used ECP	Yes	115	61.8
	No	71	38.2
Have ever utilized condom	Yes	96	51.6
	No	90	48.4
Have ever used both ECP and condom	Yes	11	5.9
	No	175	94.1
Willingness to use ECP	Yes	235	61.7
	No	146	38.3
Reason for unwillingness to use ECP	Fear of rumors	23	28
	Religious prohibition	29	35.4
	Prefer to give birth	12	14.6
	Other	18	21.9
Recommend ECP to others	Yes	228	59.8
	No	153	40.2
STI is youths' problem today	Yes	231	60.6
	No	150	39.4

Table 4 Factors Associated with Condom Utilization Among Female Private University Students in Nekemte Town, February, 2019 (n = 186)

Variables		Condom Use		COR (95% CI)	AOR (95% CI)	P-value
		Yes	No			
Age	<20	60	51	1.205(0.769–1.888)	0.965(0.554–1.681)	0.900
	≥20	36	39	I	I	
Current residency	With family	50	30	1.185(0.764–1.840)	1.027(0.567–1.863)	0.929
	Separate from family	46	60	I	I	
Residency of origin	From urban	53	29	1.213(0.782–1.880)	1.378(0.762–2.493)	0.388
	From rural	43	61	I	I	
Ever used ECP	Yes	55	60	0.182(0.113–0.294)	0.32(0.164–0.632)	0.001*
	No	41	30	I	I	
Know ECP	Yes	40	41	0.335(0.212–0.53)	1.29(0.696–2.389)	0.418
	No	56	49	I	I	
ECP prevents STI	Yes	37	53	I	I	
	No	59	37	1.346(1.037–2.459)	2.217(1.172–4.59)	0.032*
Condom prevents STI	Yes	56	31	3.115(1.034–7.389)	3.17(1.045–8.646)	0.041*
	No	40	59	I	I	
STI is youths' problem	Yes	51	62	0.143(0.079–0.259)	0.249(0.127–3.488)	0.060
	No	45	28	I	I	

Note: *Significant at $p < 0.05$ on multiple logistic regression.

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval; COR, crude odds ratio; ECP, emergency contraceptive pill; STI, sexually transmitted infection.

ECP is not effective to prevent STIs were about two times more likely to use condom than their counterparts (AOR= 2.217; 95% CI, 1.172–4.59). This indicates that female students who knew ECP cannot give protection against STIs would use condom which provides effective protection against disease as well as pregnancy. In line with this, according to a study conducted in Ghana, knowledge of STI prevention determined method of contraception used among high school girls so that those who want to avoid STIs would use condom rather than ECP.³⁴ It is imperative to provide health education on hormonal contraception and risks of STIs/HIV while condom use should be promoted for dual protection against infection and unintended pregnancy. Besides, contraceptive counseling should emphasize the need for condom use among sexually active women not in mutually monogamous relationships with uninfected partners.¹⁶

Our findings also showed that slightly more than half (51.6%) of the sexually active students utilized condom while only 46.7% of them believed that condom protects against STI. Furthermore, the students who thought that condom prevents STI were three times more likely to use condom than those who did not believe effectiveness of condom (AOR = 3.17; 95% CI, 1.045–8.646). This is consistent with the results of preceding studies conducted in Ethiopia.^{26,27} The result suggests that perceived efficacy of condom to prevent STIs is a predictor of condom utilization among female university students. According to a recent study conducted in Ethiopia, intention to use condom was significantly associated with perceived benefit of using condom to prevent STIs and the respondents with high perceived benefit of using condom were about 1.6 times more likely to use condom than their counterparts.⁵² Likewise, the 2002 Canadian contraception survey revealed that majority of respondents believed condoms were more effective for STI prevention than for pregnancy prevention while 46% of them have ever used condoms primarily for STI prevention.²⁰ Preferences to

use condom may be attributed to various factors such as marital status, age, number of sexual partners, knowledge and positive attitudes of condom use, and knowledge and perceived risk of STIs/HIV.^{29,32,37,38}

Moreover, in the current study, female university students who have ever used ECP were 0.32 times less likely to use condom than non-users of ECP (AOR = 0.32; 95% CI, 0.164–0.632). Hence, it could be inferred from this finding that ever practice of ECP adversely affects condom use. In line with this, a number of studies revealed that increased access to and practice of ECP significantly reduced condom utilizations.^{18–20,26,27,29} Despite the OTC availability of both contraception methods and ECPs are more costly than condom, ECPs are predominantly and repetitively used by young females in Ethiopia.^{50,51} As the primary goal of most consistent ECP users is to prevent pregnancy rather than STI, they do not necessarily consider condoms.^{19–21} According to Galavotti et al,¹⁸ consistent pills-only users appeared more confident to have low chances of pregnancy than condom-only users. In addition, misbeliefs that ECP can prevent STIs^{18,20,26,27,29,34} and perceptions that one is not susceptible to STIs/HIV while taking pills-only regimen might contribute to non-use of condoms.^{18,21} The Canadian contraception survey²⁰ and a national-level study from USA³⁵ indicated also that providing individuals with OTC access to ECP leads to increase STI rates. This can be due to the reason that increased access to ECP may influence a person's sexual behaviors such as more predisposition to have sex, higher number of sexual encounters and less tendency to use condoms.³⁵ On the contrary, others argued that OTC access to and use of ECP does not increase STI rates and has no effect on condom use^{22,23} while history of ECP use was strongly correlated with high condom usage, according to another study conducted in Mexico.³⁶

Unintended pregnancy and STIs/HIV remain highly prevalent amongst adolescent girls and women living in sub-Saharan Africa.^{5,39} Although dual method contraception is highly effective to tackle such problems, few proportion (5.9%) of sexually active students reportedly used dual contraception, in our study. This is lower than figures reported from Canada (13%), Northern California (7%) and Nigeria (20.6%).^{20,41,42} Reasons of opting to use dual contraception may include having multiple sexual partners, prior STI encounters, fear of contracting infections, history of unintended pregnancy and intentions to avoid pregnancy.^{20,42} Thus, adolescent girls and young women should be guaranteed the rights to full and unbiased information on STI and HIV risk factors as well as pros and cons of different contraceptive methods.³⁹ This should also include the message that methods other than condoms do not prevent STIs/HIV whereas dual method contraception is an effective option.^{39,40} More importantly, implementation of comprehensive sexual and reproductive health education on contraception and risks of HIV and other STIs should be ensured in higher education institutions.

Limitations of the study were described as follows:

Firstly, our study population comprised only three private universities in the town so that the results could not be generalized to all ECP users in the study area. Secondly, the study might not be free of information bias as it involved sensitive issues such as sexual activity and sexual risk behavior. Thirdly, cause-effect relationship could not be determined due to the nature of the study design. Nonetheless, this study vividly presented the adverse effect of ECP use on condom utilization and it is the first of its kind to investigate such issue among female university students in western Ethiopia.

Conclusion

In conclusion, the rate of ECP use among female university students was found to be average. History of ECP use, assuming that ECP does not prevent STI and believing that condom protects against STI were factors associated with condom utilization. More specifically, female students who have ever practiced ECP tend to use condom significantly lower than those who had no history of ECP use. As a result, this may lead to increase risky sexual behaviors and STI rates.

In recommendations, sexually active women who use ECPs should also consider condoms for prevention of STIs/HIV and dual method contraception use should be promoted as well. Sexual and reproductive health lessons have to be executed in private universities/colleges as similar as in public universities/colleges in the country. Finally, we would like to endorse prospective researchers to investigate cause-effect relationships between the practice of ECP and condom use.

Abbreviations

AOR, Adjusted Odds Ratio; COR, Crude Odds Ratio; CI, Confidence Interval; DBU, Dandi Boru University; ECP, Emergency Contraceptive Pill; EDHS, Ethiopian Demographic Health Survey; HIV, Human Immunodeficiency Virus; NGU, New Generation University; RVU, Rift Valley University; STI, Sexually Transmitted Infection.

Data Sharing Statement

Additional materials will be available from the corresponding author on any reasonable request.

Ethics Approval and Informed Consent

Ethical clearance was pursued from the institutional review board (IRB) of Institute of Health Sciences of Wollega University to conduct this study. Besides, a letter of permission was written from the research and technology transfer vice president office of Wollega University to the three private Universities. Subsequently, authorization was obtained from deans (executive directors) of the respective Universities to conduct this study in their campuses. This study was conducted in comply with the Declaration of Helsinki. The purpose of the study was explained to the study participants prior to the study commencement and they were assured of the right to refuse participating in or withdraw from the study at any time as well. Consequently, written informed consents were sought from the study participants who aged 18 years and above whereas, parental written consents were obtained for the respondents under 18 years of age, in advance. Also, personal identifiers were avoided from the questionnaire and data collected from the respondents were kept confidential.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave approval to all versions of the article submitted for publication; agreed on the journal to which the article has been submitted; and agreed to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interests.

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