



Addis Ababa University
College of Health Sciences
School of public health

**ASSOCIATION BETWEEN EMERGENCY ORAL CONTRACEPTIVES
USE AND RISKY SEXUAL BEHAVIORS AMONG FEMALE STUDENTS
OF WOLKITE UNIVERSITY, SNNPR, ETHIOPIA**

By: Mina Edo

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SCHOOL OF PUBLIC HEALTH

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Declaration

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in other university, and that all sources of materials used for the thesis have been duly acknowledged.

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Acronyms

AIDS- acquired immune deficiency syndrome

AOR-adjusted odd ratio

COR-crude odd ratio

EC - Emergency Contraception

ECPs -Emergency Contraceptive Pills

EOCs –emergency oral contraceptives

EDHS- Ethiopian demographic and health survey

HIV -Human Immune deficiency Virus

IUCD-intrauterine contraceptive device

OR -Odds Ratio

SNNPR -Southern Nations, Nationalities, and Peoples

SPSS- Statistical Package for Social Sciences

STIs -Sexually transmitted infections

WHO - World Health Organization

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Abstract

Background: University students are among the most at-risk population and are more likely to be engaged in risky sexual behaviors. They are also the common users of emergency oral contraceptives. However, studies on whether or not use of emergency oral contraceptives affects youth sexual behaviors are rare in a University set up.

Objectives: The aim of the study was to assess association of emergency oral contraceptives use and risky sexual behaviors among female students of Wolkite University.

Methods: An institution based quantitative cross-sectional survey was carried out using a self-administered structured questionnaire to gather data from 521 randomly selected female students of Wolkite University. The Data were entered into Epi-Data release 3.1 and exported to STATA version 14 for analysis. Descriptive statistics were used to describe the study population using major variables of the study. Also, Bivariate and multivariable regression analyses were run to determine association between predictors and dependent variables. Odds ratio was used to measure the strength of association. P-value of less than 0.05 together with 95% confidence interval was used to measure statistical significance.

Results: The result revealed that about 25% (95% CI: 20.7-28.6) of students enrolled into the study are engaged in risky sexual behaviors. It was found that out of 128 students who were sexually active 46% (95% CI: 37.2-55.1) had ever used Emergency contraceptive pills. Emergency contraceptive pill use (AOR=24, 95%CI, 10.5-57), alcohol consumption (AOR=3.1; 95% CI: 1.02-9.4), and being religious (AOR=0.29; 95%CI: 0.16-0.54) were found to be statistically significantly associated with risky sexual behaviors.

Conclusion and recommendation: Considerable amount of students had engaged in risky sexual behaviors that might predispose them to different sexual and reproductive health problems. Reassurance by the use of pill with sense of less vulnerability for HIV/STIs may make teenagers less prepared to practice STI protective behaviors in specific situations. Therefore appropriate interventions are needed to curb the high proportion of higher risky sexual behavior among the students; and young people in universities need to be educated about reproductive health and family planning and skills on preventing both unwanted pregnancy and STIs.

Key words: Risky Sexual Behavior, EOC use, university student

1. INTRODUCTION

1.1 Background

The period of adolescent and young adults is recognized both as an important determinants of future health and as of especially vulnerable period of life [1].The fact that Adolescents and young adults have an increased interest in the opposite sex, highly concerned with physical and sexual attractiveness, and are frequently changing relationships initiates them to experience risky sexual behaviors, which, puts young people at a greatest risk of unintended pregnancies as well as STIs including HIV/AIDS [2-4].

As part of young age bracket, undergraduate university students are an important group exposed to a range of risky sexual behaviors. Studies indicate that University/College students are often viewed as being at higher risks to acquire STIs/HIV infection and they are categorized under the Most at Risk Population Segments (MARPS) due to their inclination to be engaged in risky sexual behavior and their sense of non-vulnerability, they practice risky behaviors without precaution and perceive themselves as less vulnerable towards STIs including HIV [5]. Factors such as peer pressure, lack of maturity, and alcohol or drug use put pre-college and college students at risk for STI including HIV infection. Moreover, advances in contraceptives have freed sexual expression from its reproductive consequences [6- 8].

Protecting young people from both sexually transmitted diseases (STDs) and unwanted pregnancy are important public health goals. Effective contraception has a profound benefit for women and societies, including reduced maternal mortality and infant mortality and morbidity, empowerment of women to make choices about fertility and associated economic improvement [9]. Teens and young adults who choose to be sexually active can lower their risk of unintended pregnancy by using highly effective contraceptive methods and reduce their risk of STIs by using condoms consistently and correctly [10]. Despite the potentially devastating outcomes that can result from unprotected sexual intercourse, young people do not consistently take the necessary precautions to protect themselves from contracting an STI and instead see pregnancy prevention as the primary issue and they are less likely to perceive themselves to contracting STIs including HIV/AIDS [11].

Emergency oral contraceptives are one method of contraception administered after un-protected sexual intercourse to prevent pregnancy. It is also known as "post-coital contraception" or emergency contraceptive pills. Emergency oral contraceptives (EOC) are intended for occasional or emergency use only and are not recommended to be used as a regular contraception. It is associated with a failure rate of 0.2% to 3% [9,12].

1.2 Statement of the problem

Despite its usefulness as the only backup method for offering a second chance to prevent unwanted pregnancy after unprotected sexual intercourse, emergency contraceptives are accompanied by concerns that increasing access to EC would lead to increased sexual risk-taking particularly among young people. Since its introduction into new context [13-16].

Females who use the EOC to prevent pregnancy should also use a condom to protect against STI; however, research findings indicate that females who use EOC do not necessarily consider using a condom for STI prevention [17]. A study also found that women who use ECPs also differ from their peers at the time they seek ECPs with respect to established risk factors for adverse reproductive outcomes. They are of younger ages, are unmarried, have had a higher number of sexual partners, and had initiated sex at younger ages [18].

Since the fact that EOCs can be taken after sexual intercourse has taken place, fits with young people's sex lives, which is involving in frequent and often unplanned encounters. As in elsewhere in sub-Saharan Africa, use of EOCs is becoming common among unmarried young people and the study findings suggest that, the debates on morality and health that often surround ECs also exist in Ethiopia. One qualitative study finding mentioned worries related to negative effects on women's health, promiscuity, and a fear that young people will forget about condoms by key stake holders and service providers [19].

However, except for these qualitative findings, and a few studies that have been conducted in specific areas on effect of EOCs use on condom utilization in our country systematically collected information to see its effect by including other indicators of risky sexual behaviors were lacking. Furthermore, no study were done on an issue in newly established higher learning institutions including the study area, where the risk of sexual behaviors even worsened by lack of youth friendly sexual and reproductive health services including youth friendly recreational services [20]. Such evidences have an important implications for sexual and reproductive health,

particularly in areas such as our country where the incidence of both HIV infection and unintended pregnancy remain high. So this study aims to contribute to that end.

1.3 Significance of study

Young people were engaged in risky sexual activities, which could result in sexually transmitted diseases including HIV infection, and it was suggested that many young people have got information about HIV/AIDS from different sources; however, the problem is to bring about a behavioral change [21]. As mentioned in EDHS 2016, information on sexual behavior is important in designing and monitoring intervention programs to control the spread of HIV [22]. So, providing up-to-date information on risky sexual behavior and one of its correlates is an important contribution to bring about behavioral change among youth and in guiding informed reproductive health interventions to youth in the university as well as similar facilities and possibly to shaping national and international policy and strategy to address health problems of adolescents and youths.

The purpose of this study was, therefore, to understand the association between EOC use and risky sexual behavior among female university students. A better understanding of whether or not ECP use affects and increases sexual risk behaviors would be useful to inform the development of customized preventive counseling guidelines and interventions.

2. LITERATURE REVIEW

2.1. Overview of study population

A huge proportion of the world's population - more than 1.75 billion - is young, aged between 10-24 years, 1.5 billion of who live in developing countries, and many face challenges that hinder their wellbeing, including poverty, a lack of access to health information and services, and unsafe environments [23].

Sexual activities among youth have been reported to be on the increase worldwide. Most youth throughout the world engage in sexual intercourse by age 20, whether married or not. Young people need information on STI/HIV prevention (including abstinence and condom use); information about risky sexual behavior and the consequences of such behavior on their reproductive health, negotiation skills-building training and also interventions that address their needs can save lives and foster a new generation of productive adults who can help their community's progress [24, 25].

Young age is a critical developmental period when many youths begin to define and clarify their sexual values and start to experiment with sexual behavior. Most of these youths are students and they are also at a high risk for unsafe sexual behaviors and problems like HIV/AIDS or STI, unwanted pregnancy, abortion, psycho-social, and economic problems [26]. Sexually active girls ages 15-19 are three times more likely to report STI than sexually active boys in the same age group. Thus young girls are at increased risk of encountering STI, as probably engaged in unprotected sex due to the limited control they may have over their sexual lives [27, 28].

Ethiopia is a nation of young people over 65% of its population is under 25 year of age and a nation whose youth have profound reproductive health needs. As the number of higher learning institutions increase in number and size in Ethiopia, their HIV risk perception and behaviors have become an indispensable part of the national HIV prevention and control program [24].

2.2. Risky sexual behaviors

Risky sexual behaviors, are defined by the increased risk of a negative outcome, which can take two pathways: 1) risky sexual behaviors are those which increase the chance of contracting or transmitting disease, or 2) increase the chance of the occurrence of unwanted pregnancy. Risky Sexual Behaviors to having more than one sexual partner, changing sexual partners frequently, having sexual contact without a condom, using unreliable methods of birth control, or using birth control inconsistently and Risky sexual behaviors encompass a variety of behaviors which May likely result in contracting HIV/AIDS, unwanted pregnancies and unsafe abortions. These includes but not limited to premarital sex, multiple sexual partners, unprotected sex, sexual intercourse under the influence of substances such as alcohol or cocaine [31, 32] and others, For the scope of this study, risky sexual behaviors are defined as those behaviors which increases the likelihood of contracting or transmitting STIs including HIV/AIDS such as inconsistent or non-use of condom, early sexual debut and multiple sexual partners are included.

The bio-social gap between the early onset of puberty and the increasing age of marriage has widened in most low-to middle-income countries. This increases window for pre-marital sexual activity. There is a wide range of empirical evidence that has highlighted the prevalence of risky sexual behaviors among this population, such as early sexual debut, having multiple sex partners, and non-use of condoms and contraception. These risky sexual behaviors have been the prime driver of the HIV epidemic in sub-Saharan Africa [24, 31].

Most people initiate sexual activity during their adolescence. As the study done in many countries across the globe, the highest prevalence in premarital sexual initiation was found in sub-Saharan Africa. More than half of all adolescents aged 15-19 years are sexually active. The age of beginning sexual intercourse is heavily dependent on local cultural sanctions and is often very different for males and females. Much of this activity is risky and contraceptive use is often erratic or inconsistent. Studies have revealed that in spite of high level of knowledge about the transmission of HIV among young people they are highly involved in risky activity. Various studies indicated that, large percentages of sexually active youth have engaged in sexual intercourse with more than one partner [32, 33].

Recent national survey in our country also indicates that both women and men engage in sex before marriage. The median age at first sexual intercourse is 0.5 years earlier than the median

age at first marriage for women and 2.5 years earlier for men. In Ethiopia, the median age at first sexual intercourse among women age 25-49 was found to be 16.6 years. One in four (24%) women has first sexual intercourse before age 15 and 62% before age 18. By age 20, 76% of women have had sexual intercourse [22].the same survey also revealed that, the mean number of lifetime partners among all women who have ever had sexual intercourse is 1.6.

Different behavioral studies conducted among urban youth indicated that about 33-49% of male 6-10% of female adolescents were sexually active with mean age at first sexual debut of 11-17 years for both sex. A study conducted among students of Gondar College of Medical Sciences documented condom use rate in the last sexual encounter was 37.1%, and consistent condom use rate was only 6.4% [34].Another study under taken among high school students, from two large towns in Amhara region showed, the mean age of sexual initiation was 15.5 (SD=2.3) years were boys having their debut slightly earlier than girls. By age 17years, more than 80% of students had at least one penetrative sexual encounter. Although most sexual initiation took place among peers, about 20% of first sexual encounters were with older, casual or commercial sex partners and only 40% of first sexual encounter were protected against STIs [35].

Early initiation of sexual activity, often mentioned as age less than 16 years, may be a risk factor of poor sexual health. Some studies have shown that increasing numbers of teenagers are involved in sexual activity by that age. Early sexual debut increases young peoples' risk for infection with HIV and other STIs. Youth who begin sexual activity early are more likely to have high-risk sex or multiple partners and are less likely to use condoms [36].

Condom use is an important tool in the fighting against the spread of HIV/AIDS; a truly effective protection usefully requires condom use at every sexual encounter. Studies revealed that though youths were engaged in a risky sexual behavior, they were not using condoms consistently [36, 37, and 38].

Recent studies in our country have shown that, a large proportion of youths in university engaged in the risky sexual behavior. Study done in Bahirdar university showed that, Unprotected sex, having multiple sex partners, sex with commercial sex workers and sex for the exchange of money was practiced by 184 (62%), 126 (42.7%), 22 (7.4%) and 12 (4%) of sexually active students, respectively[39].

Another study done on Jigjiga University revealed that 70.53% of respondents were sexually experienced. Majority (54.8%) of the sexually experienced respondents were sexually active within 3 months of the study. Up to 30.14% of sexually experienced respondents have had sex with a person other than their current partner in the past 12 months. Only 59.6% of the sexually experienced respondents used condom in their most recent sexual engagement [40].

Out of total 604 students participated in the study done in Madawalabu University, 330 (54.6%) students reported to have ever had sexual activity of which 173 (70.9%) and 116 (35.2%) reported having inconsistent condom use and multiple sexual partners, respectively [41].

2.3. Emergency oral contraceptive

Emergency contraception is a backup method for failed or unused contraception prior to or during sexual intercourse to prevent unwanted pregnancy. It is also called morning after or post-coital contraception. A woman may require emergency contraception because the contraceptive method she was using failed (e.g., a condom broke or a diaphragm slipped), she neglected to use a method or she was sexually assaulted [42, 43].

Timing is crucial when using an emergency contraceptive method. Success is highest if used within the first 72 hours post-coitus for ECPs and IUCD may be effective up to 5 days after intercourse [44].

Additionally, recent studies also described the duration of taking ECPs can be up to 120 hours [45, 46].

There are two types of emergency contraceptive methods; Namely ECPs and Copper releasing IUDs. But in this study only addresses emergency contraceptive pills/EOCs often called the morning-after pill.

2.4 Studies on effect of EOC use on sexual risk taking and STI

Effective contraception has a key role to play in reducing maternal and infant mortality (by spacing pregnancies and by lowering incidence of unwanted pregnancy). At the same time, the HIV/AIDS epidemic has reached crisis proportions in a number of sub-Saharan countries [10]. Teens and young adults who choose to be sexually active can lower their risk of unintended

pregnancy by using highly effective contraceptive methods and reduce their risk of STDs by using condoms consistently and correctly[10].But despite the potentially devastating outcomes that can result from unprotected sexual intercourse, young people do not consistently take the necessary precautions to protect themselves from contracting an STI and instead see pregnancy prevention as the primary issue. For example, in a survey of 797 college students, 28% cited pregnancy prevention only as the reason for using contraception [11]. Studies also shown that, even those young people who used contraception (pills or condom) do so for protection against unintended pregnancy and not for protection against STIs [17].

Since ECs are introduced into a new context, it is often accompanied by debates on morality and health. ECs are considered as having the potential to reduce the number of unwanted pregnancies and contribute to women's empowerment, but are also often confused with abortion and associated with sexually irresponsible (promiscuous) women [47-49]. ECs have sparked such debates in most African countries where they have been introduced since the late 1990s or early 2000s. In Kenya, health providers and policy makers have expressed concerns about repeat EC use, claiming that the 'e-pill' is now the buzzword among sexually active women in Nairobi [50].

One study of US ECP users reported that 16% had multiple unprotected sex acts since their last period. Women who use ECPs also differ from their peers at the time they seek ECPs with respect to established risk factors for adverse reproductive outcomes. Studies in different settings find ECP users are of younger ages, are unmarried, have had a higher number of sexual partners, live in urban areas and had initiated sex at younger ages [18].

The American College of Pediatricians in a paper 'Emergency Contraception – Not the Best for Adolescents (2014)' opposes the plan by some medical organizations to promote the prescription of EC to all adolescent patients for use in case they have unprotected sexual activity. They cited health risks associated with this plan including the risk of increased rates of sexually transmitted infections as a result of increased harmful sexual behavior prompted by provision of ECPs [51].

However, According to American Academy of Pediatrics, Policy Statement Better access to EC does not lead to increased sexual risk-taking and offers a back-up method for preventing unintended pregnancy for people who are already using a contraceptive method. Better access to EC also does not increase acquisition of sexually transmitted infections [52].

There were some studies showing that, Easy Access Has Led to an Increase in Sexually Transmitted Diseases; In United Kingdom– Making the morning-after pill available through pharmacists (without a prescription) coincides with surges in STD rates. In areas where a limited program began in 1999 (which was then expanded nationwide in January 2001), chlamydia cases rose from 7,000 in 1999 to 10,000 cases in 2002. Gonorrhea cases climbed nearly 50 percent, to nearly 3,000 cases in 2002, up from 2,000 in 1999. The highest increases were among 16-to 19-year-olds [53].

In another study among users of the pill, four out of the 12 women interviewed said their choice to have unprotected sexual intercourse was influenced by the knowledge that they could obtain the pill from a pharmacy [54].

Jamaica - Pharmacists reported falling condom sales, which they attributed to easier access to the morning-after pill [55].

Studies have also explored whether easier access to EC may affect rates of STIs. In these studies, women were randomly assigned to advanced provision of EC or to a control group, who obtained EC from a clinic when needed. In one trial adolescents who received EC in advance were more likely to use EC pills when needed but did not report more frequent unprotected sex, did not reduce their use of condoms or hormonal contraception, and did not have higher rates of STI [14]. But in another study providing education and information to teenagers about EC did not increase sexual activity or use of EC, but did increase knowledge about how and when to use EC [14].

In a cohort of commercial sex workers in Mombasa, Kenya with extremely high HIV-1 incidence, it was observed that women using EOC had an increased risk of HIV-1 acquisition compared with non-EOC users (OR=4.5, 95% CI =1.4–13.8) after adjustment for genital ulcer disease, Chlamydia infection and condom use [15].

Another study in Kenya reported that oral contraceptive pills (hazard ratio [HR], 1.5; 95% CI, 1.0–2.1) were associated with greater risk of HIV-1, compared with non-user of contraception [16].

Studies have also shown that clinicians-as well as pharmacists-and users are concerned about the impact of increased access to EOC on sexual risk-taking behaviors and STIs [54, 56].

In early 2011, a qualitative study was conducted in the cities of Addis Ababa and Awassa and the peri-urban areas of Sheshamane and DebreZeit to assess provider and user attitudes and behaviors towards Post pill. Some of the key findings were:

Pharmacists reported that the most common users were between the ages of 15 and 25, including both university students and commercial sex workers. Many respondents noted that they used Post-pill repeatedly, irrespective of other contraceptive use. Many women who use Post-pill as their main form of birth control have unplanned and infrequent sex. Pharmacists are concerned that use of Post pill will lead to “irresponsible behavior” and result in reduce condom use.

All pharmacists reported that “youth”were the most common Postpill users, commonly defined as someone between the ages of 15-25, specifically they named students, especially university students and several pharmacists, mainly in Addis Ababa, also mentioned CSWs [52].

Study done on effect of EOC use on condom utilization and sexual risk taking among university students in northwest Ethiopia revealed that; Believing that EOC is effective in preventing pregnancy (adjusted Odds ratio, AOR=0.22 95%CI 0.06, 0.87), was negatively statistically significantly associated with condom use [57]. However, another study in Jimma technical and vocational training on effect of emergency contraceptive use on condom utilization revealed that, Condom was used as a preferred method by 77.4% of respondents to prevent unwanted pregnancy due to its double purpose that is preventing both pregnancy and sexually transmitted diseases [58].

However another finding from study done in Mexico showed correct knowledge of EC among high school girls was positively correlated with knowledge about how to use a condom, adjusting for age and community characteristics (OR 1.33, 95% CI 0.98 –1.80)[59].

2.4. Factors associated with risky sexual behavior

Risky behaviors are common among undergraduate students by the fact that they mostly live in campuses with peer pressure; economic problems and lack of youth friendly recreational facilities. Behaviors such as the consumption of alcohol, cigarette smoking, or the use of illicit

drugs by adolescents have been shown to be associated with increased risks of sexual intercourse, multiple sexual partners and lower rates of condom use [60].

A national based study in Nigeria revealed factors such as residence, educational level, knowledge regarding contraceptives, access and use contraceptives, and alcohol use was significantly associated with early sexual initiation among female adolescents [61].

Study done among preparatory students in Gurage zone was found age, condom use and substance use have shown that there is statistically significant association between students' risky sexual behavior [62].

Another study finding among Bahir-dar university students revealed that Watching porn videos, attending night clubs, khat chewing and taking alcohol frequently were significantly associated for ever had sex and having multiple sexual partners. Khat chewing practice (AOR = 8.5, CI = 1.31 - 55.5) and attending night clubs (AOR = 4.6, CI = 1.8 - 11.77) had statistical significant association with the purpose of sexual intercourse for the sake of money and for having sex with commercial sex workers, respectively [63].

To summarize, demographic, socio-cultural, sexual and reproductive factors, with the availability& use of educational services which potentially influence individual's attitudes& practices towards sexual risk behaviors as shown by the following conceptual frame work.

Conceptual framework; which shows factors influencing sexual behaviors including contraceptive use;

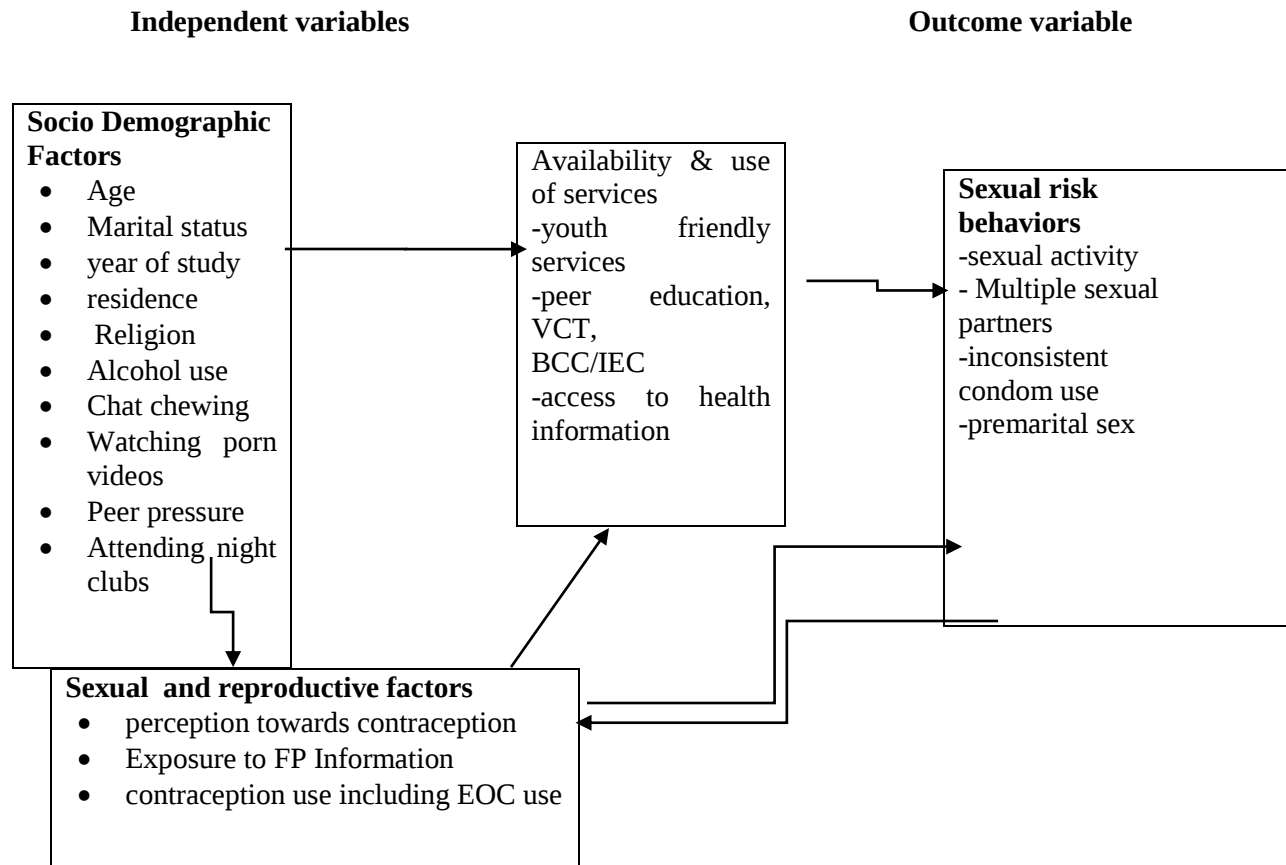


Figure 1: conceptual framework showing relationship between factors that may contribute increase in risky sexual behaviors, adapted at 2pm, October 10, from a study on risk of HIV infection and sexual behavior in Kenya, 2014.

The framework shows: a bilateral association is considered within demographic, socio-cultural, sexual and reproductive factors, with the availability & use of educational services which potentially influence individual's attitudes & practices towards sexual risk behaviors

3. OBJECTIVES

3.1. General objective

To assess, the magnitude and association of emergency oral contraceptives use and risky sexual behaviors among female regular students in Wolkite University.

3.2 Specific objectives

1. To determine the magnitude of risky sexual behaviors among female students of Wolkite university.
2. To determine the magnitude of emergency oral contraceptives uses among female students of Wolkite university.
3. To identify the association between emergency oral contraceptive uses and risky sexual behaviors among female students of Wolkite university.

4. METHODS

4.1. Study area and period

The study was conducted at Wolkite University, which is among the 10 newly founded universities in the year 2012, in Ethiopia. It is located in the south-western Ethiopia, Guraghe zone of SNNPR, around 170 km from Addis Ababa, the capital city of Ethiopia. Currently university has a total of 8871 students in seven colleges under regular programs; from which forty percent are female students.

The study was undertaken between; September, 2016 to June 30, 2017.

4.2. Study design

The study employed a quantitative cross-sectional design.

4.3. Source and study population

4.3.1. Source population

All female students of regular program of Wolkite University

4.3.2. Study population

All Regular female students in all departments who were randomly selected

Inclusion criteria

Female students of Wolkite University who were attending regular class at the time of study

Exclusion criteria

Students who were seriously sick and physically unable to fill the questionnaire at the time of the survey.

4.4. Sample size

The sample size was estimated using single population proportion formula by assuming the prevalence level of 34.43% for risky sexual behaviors in Jigjiga University [40]; and desired precision level of 5%, 95% confidence level.

$$[n_o = (Z\alpha/2)^2 p (1-p)/d^2]$$

Where,

n_o =sample size

p =prevalence of risky sexual behaviors among Jigjiga university students which was 34.43 %

d =margin of error (0.05)

Hence, the sample size was calculated as $[n_o = (Z\alpha/2)^2 p (1-p) / d^2] = (1.96)^2 \times (0.3443 \times 0.6557) / (0.05)^2$
 $=347$.

Since the source population was less than 10,000, the correction formula to estimate final sample size (N_f) from finite source population ($N=3565$) employed.

$$N_f = n_o / (1 + n_o/N) = 347 / (1 + 347/3565) = 316$$

Considering a design effect of 1.5, the sample size was estimated at $316 \times 1.5 = 474$. With 10% non-response rate, the total sample size calculated reached 521 regular female students.

4.5. Sampling procedure

Stratified simple random sampling technique was used to select eligible students from the university. In the first step, the study area was stratified into health and non-health studies strata. Based on the number of female students in the university, 7% of the students were from health departments and the other 93% of the sample came from non-health stratum. Further stratification was done based on the academic year of study. Then total sample size was proportionately allocated by considering the number of female students in the respective year of study. Finally, simple random sampling technique; using lottery method by using their ID number was applied to select the study participants from each stratum independently (Figure-2).

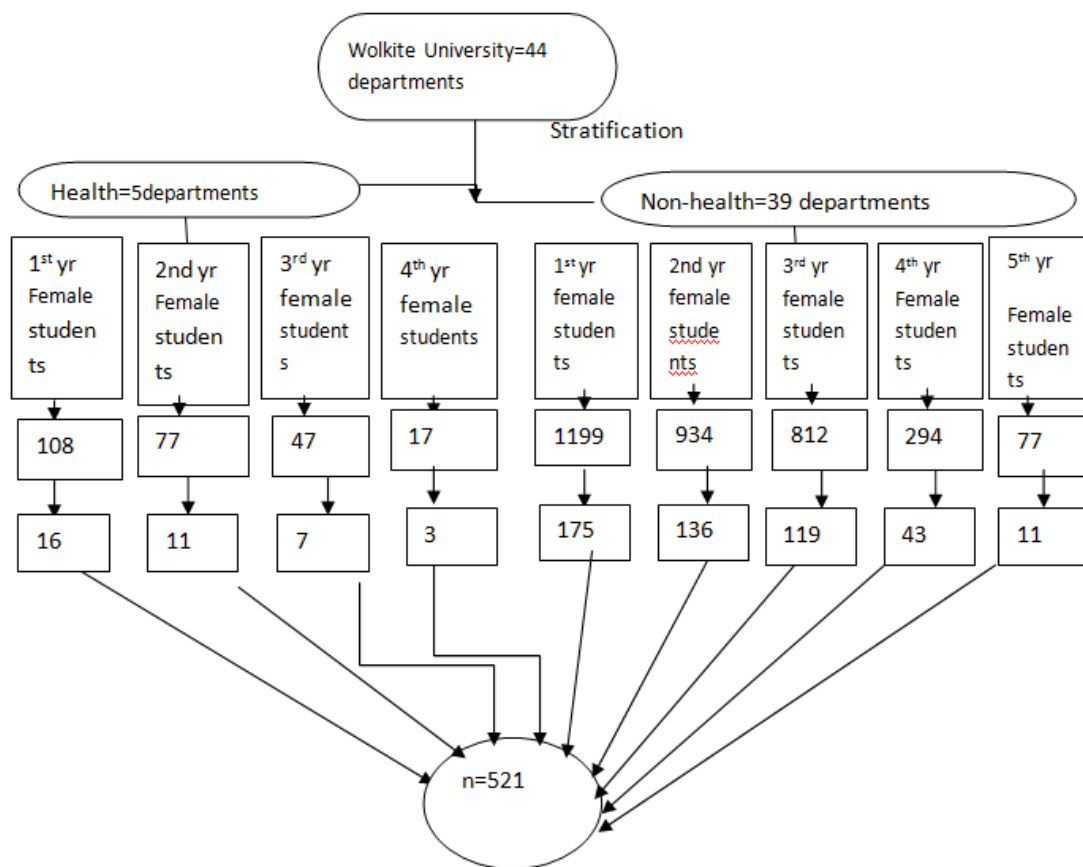


Figure 2: Schematic presentation of sampling procedure of female students of Wolkite University, South-west Ethiopia, 2017

4.6. Variables

4.6 .1 Independent variables,

Socio- demographic characteristics: age, year of study, marital status and residence

Social factors -religiosity: Alcohol use, Chat chewing, watching porn videos

-sexual and reproductive characteristics

-knowledge of contraceptive methods

-attitude towards contraception

-utilization of EOCs

4.6.1. Dependent variable

Risky sexual behavior

One or more of the following: unprotected sex (non-use or inconsistent use of condoms), having multiple sexual partners (having more than one partner), or sexual debut before age 18

4.7. Data Collection Procedure and Quality Control methods

Structured questionnaire was first prepared in English after reviewing literatures of similar surveys that have been carried out previously. The final version of English questionnaire translated to local language (Amharic language).

Two BSc and four diploma holders participated respectively as supervisors and data collectors, both of whom were trained for two days on components of data collection such as data collection procedure. Pre-test was carried out on 5% of the sample in similar population in Arsi university to make sure the questions are clearly spelled out for the participants and that the orders and contents of the questions were made correctly.

To avoid contamination of information, the data collection was completed in two days period for each stratum. Students told to occupy their regular sections and seat apart from each other. The participants told that discussion was not allowed between them to maintain privacy and to prevent similar or shared answers. The students asked to put their completed questionnaire on the table by turning back after which data collectors lumped together the completed questionnaire from student's table. Each questionnaire was checked out for its completeness immediately after it is filled in.

4.8. Operational definitions

Being religious- attending religious institutions frequently (once or more a week).

Consistent Condom Use: using condom during or at every sexual encounter.

Sexual Risk Behavior/sexual risk-taking behavior: according to this study it is defined as having any one of the following: unprotected sex (nonuse or inconsistent use of condoms), having multiple sexual partners, or sexual debut before age of 18.

Multiple Partners: having two or more life time sexual partners

Pornographic movies- refers to motion pictures on VHS (Video Home System) VCDs (Video Compact Disk) ,DVDs (Digital Versatile Disk), clips on mobile phones or internet that are intended to sexually arouse the viewer

4.9. Data analysis

Collected data entered into EpiData version 3.1 and got exported to STATA version 14 for analysis. Descriptive statics such as frequency distribution, mean, and standard deviation were done to characterize the major independent and dependent variables. Odds ratio was run to see whether association between predictors and dependent variables exist. Multivariate regression was done to control the effect of extraneous variables. P-value less than 0.05 were considered as statistically significance.

4.10. Ethical Consideration

Ethical clearance was obtained from Research Ethics Committee (REC) of School of Public Health of Addis Ababa University. Permission was received from Wolkite University ahead of the conduct of the study. Verbal informed consent was obtained from each individual participant after being detailed the objective and purpose of the study. Participants' confidentiality of the information obtained from them remained secret.

4.11. Dissemination of Results

The result of the study will be presented to AAU, SPH. The results will also be communicated to Wolkite University, and other bodies working for the improvement of students' sexual health and other reproductive health issues. Finally, the manuscript will be submitted to editors to get it published in reputable scientific journals.

5. Result

5.1. Socio demographic characteristics

The study population consisted of female University students from various departments and year of study where 486 students provided their answers out of the 521 estimated sample sizes, giving a response rate of 93%. About three forth (76%) of the respondents were between 20 to 24 ages with the mean age of 20.5 ± 1.5 years. About two-thirds of the participants (67%) were followers of Orthodox Christianity, followed by protestant (16%). About two-fifths of the respondents 207 (43%) were Amharas followed by Oromo ethnic groups 128 (26%). About a quarter of the participants 117 (24%) were students from the college of Engineering. about 9 out of ten students in the study were single who had not yet started relationship, with only less than 2% of them reported to have been in relationship. Two-thirds of participants represented in the survey 320 (66%) were first and second year students. Majority of the respondents (95%) were residing in the campus dormitory whilst less than 5% of them responded to live outside of the University. About a third of the surveyed students reported to come from zonal or district town whereas students from the countryside represented the smallest percentage (15%) of the study population. Nearly two third of the students in the survey reported they exhibited religiosity while they stayed in the campus. One in every 17 students claimed they consumed alcohol while only less than 2% reported to had chewed khat. Seeing porn films, and visiting night clubs together represented 5% of participants of students who (Table-1).

Table 1 socio-demographic and social activities of respondent female students of Wolkite University, South-west Ethiopia, march 2017

Variables	Frequency	Percentage
1.age of respondent(n=486)		
15-19	110	22.63
20-24	370	76.13
>25	6	1.23
2. religion(n=486)		
orthodox	327	67.3
muslim	70	14.4
protestant	80	16.5
catholic	8	1.65
3.feild of study(n=486)		
College of medicine and HSs	45	9.3
College of engineering and technology	117	24
CNCS and CANR	122	25.1
College of computing and informatics	68	14
FBE and social sciences, law	134	27.6
4.marital status(n=486)		
Single	444	91.4
Married	31	6.4
Divorced	3	0.62
In a relationship	8	1.65
5. year of study(n=486)		
Year 1	184	38
Year 2	136	28
Year 3	120	25
Year 4 and above	46	9
6. current living arrangement (n=486)		
In the campus	462	95
Outside the campus	24	5
7. residence of origin(n=486)		
Addis ababa	118	24.3
Regional capitals	140	29
Zonal and woreda towns	154	31.7
Rural area	74	25
8.exhibiting religiosity(n=486)		
Yes	322	66.3
No	164	33.7
9. ever taken alcohol		

Yes	31	6.4
No	455	93.6
10. ever chewed chat(n=486)		
Yes	8	1.7
No	478	98.3
11. ever watched porn videos(n=486)		
Yes	12	2.5
No	474	97.5
12. attend night clubs(n=486)		
Yes	14	2.9
No	472	97.1
13. had peer pressure to have sexual intercourse(n=486)		
Yes	18	3.7
No	468	96.3

5.2. Sexual and reproductive characteristics of the study population

The overall magnitude of risky sexual behaviors which is defined by having one or more the variables such as having multiple sexual partners, sexual initiation before age 18, and inconsistency or non-use of condom, among study participants was found to be one hundred nineteen (24.5%; 95% CI 20.7-28.6). Just over a quarter of studied students reported that they had initiated sexual intercourse at a *mean* age of 18 ± 2 years and the minimum age at first sex was 12 years. Out of students who ever had sex, only 25 (19%) of them initiated within wedlock while 17% and 34% of them respectively started sex within casual and serious relationship with no intention of marriage. Sixty-six (51%) of respondents had initiated sex for reasons having to do with personal desire, with peer pressure being accounted for 17% of the reasons for them to have sex initiated. Substance abuse (khat chewing and alcohol consumption) was reported by about nine percent of them as a reason for them to have sex started. And 15(11.8%) reported they initiated sex to keep their relationship with the person they had sex. Thirty five percent of students who were engaged in sexual contact told that they had 2 or more sexual partners. Of students who had begun sex, nearly one in four of them disclosed that they ever had history of unwanted pregnancy, of which a staggering 67% end up in induced abortion. About 6% of respondents with history of sex had reported that they experienced unspecified Sexually Transmitted Diseases (STDs) (Table-2).

Table 2- Sexual and reproductive characteristics of female students in Wolkite University, South-west Ethiopia, March 2017

Reproductive characteristics	Frequency	Percentage
1. ever had sexual intercourse		
Yes	128	26.3
No	358	73.7
Total	486	100
2. age at first sex		
<18	50	39.06
18 and above	78	60.94
Total	128	100
3. relationship with a person there was first sexual intercourse		
-Marital	25	19.5
-Casual	22	17.1
-Serious r/ship with no intention of marriage	43	33.6
-important r/ship that might lead to marriage	38	29.7
Total	128	100
4. reason for initiation of sex		
Personal desire	66	51.6
Peer pressure	22	16.7
Influence of alcohol	10	7.94
Influence of Khat or drug	1	0.79
Economic problem	5	4
Don't know	9	7.94
To keep the relationship	15	11.11
Total	128	100
5. number of life time sexual partner		
One	83	65
Two or more	45	35
Total	128	100
6. history of unwanted pregnancy		
Yes	31	24.2
No	97	75.7
Total	128	100
7. history of abortion		
Yes	21	33.33
No	10	66.67
Total	31	100
8. history of STIs		
Yes	8	6.35
No	120	93.65
Total	128	100

5.3. Knowledge about contraception

Only 1% of the study participants had reportedly not heard of contraceptives. Four hundred sixty-three (95%) students said that they had knowledge on contraceptive methods. About 55% of the respondents had knowledge on three or more different kind of contraceptive methods. Among ever contraceptive users, 43% of them progressed to current use at the time of the survey. Media was mentioned most frequently (49%) as the commonest source of information for participants' knowledge on the type of contraceptive method. Sixty five percent of sexually active participants reported they ever had used contraceptive method. Pharmacy was repeatedly cited as the major source of place (43%) for obtaining contraceptive methods. Majority of the respondents (88%) reported that they know how to prevent unwanted pregnancy.

5.4. Knowledge, attitude and practice towards emergency contraceptive pills and condom utilization

Table-3 depicted that; about 84% of the studied students reported that they ever had heard about emergency oral contraceptives. About half of the participants who ever heard of emergency contraceptive pills said that they can obtain the pills from pharmacy. The largest percentage of participants (70%) reported that emergency contraceptive pill is better used after unsafe sexual intercourse, and 5% of them believed that emergency pills should be used as regular contraception. Nearly three forth of the participants who ever heard of emergency contraceptive pills said taking the pills within the first 72 hours after unsafe sex is effective in prevention of unwanted pregnancy whilst about one out of 7 of the students had reported that they had no idea on when the emergency contraceptive pills after unprotected sex is effective. About 63% of the respondents believed that emergency contraceptive method is either somewhat effective or highly effective in preventing unwanted pregnancy, and nearly a quarter of them claim that the Emergency Oral Contraceptive (EOC) can prevent Sexually Transmitted Infections (STIs). Fifty

eight percent of the students in the study insist that EOC should be available for all females and two third of them were willing to recommend the EOC to their friends or other females. More than seventy percent (288) of them were willing to use EOC whenever they face unprotected sex. Of the sexually active participants who were not willing to use EOC, reasons related with fear of HIV/AIDS (31%) and religious prohibition (29%) accounted for the major hindrance for not using the method .Three hundred twelve (64%) and 360(76%)of students believed that unprotected or unplanned sexual contact and unplanned pregnancy is merely the problem of young females. Out of the reportedly sexually active students, **54% reported, they or their partner, to had ever used condom,** and of which only **21 (30%) has used it always. this results in prevalence of unprotected sex to be 70%.**

Out of 128 sexually active students, the magnitude of emergency pills use was **fifty nine (46%, 95%CI 37.2-55.1).**

Table 3- Knowledge, attitude and use of emergency contraceptive pills and condom utilization among female students in Wolkite University south-west Ethiopia, March 2017

Characteristics	Number	Percentage
1.heard about EOC		
Yes	407	83.7
no	79	16.3
2.time when EOC used		
After unprotected sexual intercourse	284	70.5
When unwanted pregnancy occurred	46	11.4
As a regular method of contraception	20	5
Don't know	53	13.5
3.proper time to take EOC		
Within the 72 hours	308	75.7
Within the first 5 days	44	10.8
Don't know	55	13.5
4.effectiveness of EOC to prevent pregnancy		
Highly effective	128	31.4
Somewhat effective	129	31.7
Not effective	30	7.4
Don't know	120	29.4
5.suggest EOC avail for all females		
Yes	235	52.9
No	114	28
Don't know	58	14.3
6.willingness to use EOC		
Yes	288	70.6
No	73	17.9
Don't know	46	11.3
7. recommend EOC for others		
Yes	272	66.7
No	87	21.3
Don't know	48	12
8. ever use of EOC		
Yes	59	46
No	69	54
9.ever use of condom		
Yes	70	54.6
No	58	45.3
10.frequency of condom use		
Sometimes	36	51.4
Most of the time	13	18.6
Always	21	30

5.5. Bivariate analysis of participants' characteristics

Many characteristics of the students entered in to logistic regression to check whether they are significantly associated with *outcome variable or not, and were analyzed independently.*

Being religious was found to be protective against risky sexual behavior (COR=0.29; 95%CI=0.19-0.45).The odds of having risky sexual behavior was higher among students who takes alcohol as compared to their counterparts who were not COR=6.5; 95%CI=3-14).

students in the age group of 20 and older are two times to be engaged in risky sexual behaviors as compared to their counterparts under 20 year old (COR=1.88; 95% CI: 1.08-3.3) and living in regional town before joining university (COR=1.8; 95%CI=1-3.2), were significantly associated with risky sexual behavior as compared to their counter parts who were lived in Addis Ababa.

Students who didn't Heard about EOC was less likely to had risky sexual behaviors as compared to their counterparts who heard of it (COR=0.35, 95%CI= 0.17, 0.72). Likewise the odds of having RSB among EOC users was 25.8 (COR=25.8, 95%CI= 12, 55) as compared to non users. (Table-4)

Table 4: Bivariate analysis for factors associated with risky sexual behaviors among female students of Wolkite University, south-west Ethiopia, March 2017

Variables	Risky sexual behaviors		COR(95%CI)	P-value
	Yes n(%)	No n(%)		
1.age (n=486) Below 20 20 and above	18(16.4) 101(26.8)	92(83.6) 275(73.1)	1 1.88(1.08-3.3)	0.026
2.alcohol intake Yes No	20(64.5) 99(21)	11(35.5) 356(78)	6.5(3-14) 1	0.00
3.exhibit religiosity Yes No	53(16.5) 66(40)	269(83.5) 98(59.7)	0.29(0.19-0.45) 1	0.000
4.feild of study Health Non-health	9(29) 110(24)	22(71) 345(75.8)	1 0.78(0.35-1.7)	0.54
4.year of study 1 st year 2 nd year 3 rd year 4 th year and above	41(22.3) 24(17.6) 29(24.2) 25(54.4)	143(77.7) 112(82.4) 91(75.8) 21(46.6)	1 0.7(0.42-1.3) 1.11(0.64-1.9) 4.1(2.11-8.16)	0.3 0.7 0.89
5. Current living In the campus Outside the campus	112(24) 7(29)	350(76) 17(71)	1 1.3(0.5-3.2)	0.58
6. Residence of origin Addis Ababa Regional town Zonal or woreda town Rural area	24(20.3) 44(31.4) 33(21.4) 18(24.3)	94(79.7) 96(68.6) 121(78.6) 56(75.7)	1 1.8(1-3.2) 1.07(0.6-1.9) 1.26(0.63-2.5)	0.045 0.8 0.51
7.heard about contraceptive methods Yes No	117(24.4) 2(33.3)	363(75.6) 4(66.7)	1 0.45(0.13-1.54)	0.6
8.Know contraceptives Yes No	116(25) 3(13)	347(75) 20(87)	1 0.45(0.13-1.54)	0.2
9. Ever use of contraceptives Yes No	82(94) 36(90)	5(6) 4(10)	1 0.55(0.14-2.16)	0.4
10. Heard of EOC Yes No	110(27) 9(11.4)	297(73) 70(88.6)	1 0.35(0.17-0.72)	0.004
11. Timing of EOC use				

Within 72 hours	81(29.2)	196(70.8)	1	
Within 5 days	5(22.7)	17(77.3)	0.7(0.25-2)	0.5
Don't know	9(34.6)	17(65.4)	1.28(0.5-3)	0.57
12. Willingness to use EOC				
Yes	83(28.8)	205(71.2)	1	
No	27(25.5)	93(77.5)	0.72(0.43-1.18)	0.19
13. EOC use				
Yes	49(84.5)	9(15.5)	25.8(12-55)	0.000
No	61(17)	289(83)	1	
14. Believe unwanted pregnancy is problem of young females				
Yes	79(25.4)	232(74.6)	1	
No	29(23.2)	96(76.8)	0.89(0.54-1.44)	0.63

5.6. Factors associated with the risky sexual behavior

To examine the effect of some of the explanatory variables by controlling the effect of confounders on risky sexual behavior exposing them to HIV/STI, regression analysis was carried out. EOC use AOR=24.56(95% CI: 10.54-57.24) and alcohol consumption AOR= 3.11(95%CI: 1.02-9.45) were independently and positively associated with risky sexual behavior. And also It was found that students who are exhibiting religiosity were three times more likely to be prevented from risky sexual behavior (AOR=0.29;95%CI:(0.16-0.54); as compared to students who are not exhibiting religiosity. Other variables did not show any statistical significance (Table-5).

Table 5: Multivariate analysis for factors associated with risky sexual behaviors among female students of Wolkite University, south-west Ethiopia, March 2017

Variables	Risky sexual behaviors		COR(95%CI)	AOR (95%CI)
	Yes	No		
1.age (n=486) Below 20 20 and above	18(16.4) 101(26.8)	92(83.6) 275(73.1)	1 1.88(1.08-3.3)	1 1.85(0.75-4.54)
2.alcohol intake Yes No	20(64.5) 99(21)	11(35.5) 356(78)	6.5(3-14) 1	3.11(1.02-9.45) 1
3.exhibit religiosity Yes No	53(16.5) 66(40)	269(83.5) 98(59.7)	0.29(0.19-0.45) 1	0.29(0.16-0.54) 1
4. Residence of origin Addis Ababa Regional town Zonal or woreda town Rural area	24(20.3) 44(31.4) 33(21.4) 18(24.3)	94(79.7) 96(68.6) 121(78.6) 56(75.7)	1 1.8(1-3.2) 1.07(0.6-1.9) 1.26(0.63-2.5)	1 2(0.7-5) 1.11(0.4-3) 1.1(0.3-3.7)
5. EOC use Yes No	49(84.5) 61(17)	9(15.5) 289(83)	25(12-55) 1	24.56(10.54-57.24) 1

6. Discussion

The study attempted to estimate the prevalence of risky sexual behaviors of female university students and whether it's associated with EOC use or not. The overall magnitude of Risky sexual behavior was twenty five percent in this study. It was found that more than a quarter of students had ever undergone sexual intercourse. School based Cross-Sectional Study in Guraghe zone reported that similar percentage of students had had sexual practice[62].This figure is however much lower than that of a cross sectional survey in urban Kenya [34] and in Ethiopia [63] where a half and 36% of the studied females had ever had sex, respectively. The mean age at first sex of students who had ever had sexual practice ranges between 16 to 20 years in the current study, which is similar to that of a study in Kenya [64] and Ethiopia [63].

The *prevalence of multiple sexual* partners in this study was 35%, which is consistent with findings of a study done among AAU students [65] and Madawalabu university students [41]. also compares well with the finding of studies in Cambodia where the figure was 37%[66], and in Ethiopia [67].A cross sectional surveys in Guraghe zone [62]had revealed that about 54% of studied preparatory students had multiple sexual partners, the percentage much higher than that of this current finding. Similarly, the present study's finding on prevalence of multiple sexual partner was lower than that of a survey in Ethiopia [63].This figure is however much higher than that of 2016 Ethiopia demographic and health survey [22] and than that of two years long survey in Jamaica [68].This might be due to the difference in population: I studied university students away from family and are exposed to partners who are entirely different from the general population. In addition, university students are at a stage in their lives characterized by searching, discovery, and experimentation, including sexual experimentation. They live and socialize with large numbers of other young adults, which encourages sexual activities that are not mutually monogamous. For this reason, university students are reportedly engaging in unsafe sex, which places them at higher risk than the general public to contract STIs, including HIV and AIDS, as well as unwanted pregnancies.

According to this finding the prevalence of early sexual initiation were 39% (50) which is almost comparable with other study from university which was 43.5% among Arbaminch university students [69] and its much lower than that of 2016 Ethiopia demographic and health survey which shows 62% of women had had sexual intercourse before age 18 [22]. The difference may

be explained by the decrease in early marriage among campus students as compared with the general population, which was the main reason for early sexual initiation in rural youth. Since continuing education above secondary education shown to be raised the age of marriage to 24 when compared with those with no education which was 16.3 in the general population [22].

The result from this study revealed that eighty four percent (84%) of respondents had heard of emergency contraceptive pills, which is in line with the findings of study among technical and vocational college students in Jimma(80.1%)[58].But this is higher than the previous reports from different university students of Ethiopia; 43.5% in Addis Ababa [65], 67%Bahir dar and Gonder[57]and 47.6% in Haramaya [70].The result from this study has also revealed that knowledge of correct timing was better than all above studies. This could be due to the high health promotion and availability of EOC in pharmacies.

On this study 40% of the respondents didn't willing to use ECPs, 31% and 29% of them mentioned fear of HIV infection and ECPs would promotes promiscuity respectively as a reason for that. When this result was compared with one study conducted in Addis Ababa University, Ethiopia, only 17% of respondents had reported problems with emergency contraceptives and some of their reasons were; it causes health problems and unpleasant side effects, it might cause more STI and HIV/AIDS infections due to non use of condoms, it would increase promiscuity and it could fail and will be completely useless after having sexual contact [65].

Out of 128 who were sexually active, 59(46%) of them had ever used ECPs, this figure is almost comparable with the findings of Bahir-dar and Gondar university students and Jimma technical and vocational college, which were 48.1%) and 40.8% respectively[57,58]. and greater than a findings among Addis Ababa university students, which was 30.7% [65] and the variation might be attributed to differences in timing of studies with currently better awareness was created on the use of EOC and the better provision of sexual and reproductive health services as it was before.

In this study only 55% of students had *ever used condom*, of which about 70% used it inconsistently, which is greater than reported from previous studies in Ethiopia, Nekemte [71].Also, this is higher than none condom use prevalence among preparatory students where about 60% had not ever used it [62].but this finding is in consistence with finding of study done among Madawalabu university students[41].University students are more likely to take risks and

exposed to newer circumstances and environments which in turn affects their behaviors including condom utilization. Living away from parents, students in campus have their decisions seriously affected by their peers which contributed to the dissimilarity between the results of these studies on the condom use. Similarly, the current finding is much higher than that of study done in Jamaica [68] and Ethiopia [63, 64] where about 46% to 49%, 60% and 63% of participants did not use condom or use it rarely. However, the proportion of students who had not used condom at all or used it inconsistently in this study is smaller than a survey in South West Ethiopia [72] where 9 out of ten students were not using condom.

According to this study, about 76% of students responded that unintended pregnancy is the problem of youth while only 64% responded that unintended sex is problem. There is some concern that Ethiopian students may be putting themselves at unnecessary risk of STI by choosing the oral contraceptive pill for prevention of pregnancy while remaining at risk of acquiring STIs [19]. The problem appears to be with the interplay between the need to prevent pregnancy and the need to protect against STIs. If this trend continues together with the increase in early sex initiation associated with more non-regular and more multiple partnerships, the vulnerable subpopulation of students engaging in unsafe sexual practices will expand, potentially leading to an increased incidence of induced abortion and probably increased future STIs and HIV infection.

EOC use was found to be associated with increased risk of RSB (AOR=24.56, 95%CI (10.54-57.24)), by students and is supported by findings of a cross section study in from north west Ethiopia which shows Believing that EOC is effective in preventing pregnancy (adjusted Odds ratio, AOR = 0.22 95%CI 0.06, 0.87) was significantly negatively associated with use of condom [65]. But inconsistent with study done in Mexico which found EC use was associated with higher levels of safer sexual behavior rather [59]. This difference may be attributed to differences in the setting. This suggests, Students who used EOC after unprotected sex might falsely reassured by the existence of a post-coital method of pregnancy prevention. This is also supported by previous findings, despite the potentially devastating outcomes that can result from unprotected sexual intercourse, university students do not consistently take the necessary precautions to protect themselves from contracting an STI and instead see pregnancy prevention as the primary issue.

For example, in a survey of 797 college students, 28% cited pregnancy prevention only as the reason for using contraception [11].

The current study also found out; alcohol use and emergency contraceptive pills use to be associated with increased risk of engagement in risky sexual behaviors. While, exhibiting religiosity were negatively associated with risky sexual behaviors.

In this study Students who are taking alcohol were three times more likely to be engaged in risky sexual behaviors when compared with their counterpart who are had never taken alcohol (AOR=3.11(1.02-9.45); the study done among preparatory students of Gurage zone also showed that the odds of having risky sexual behavior were nine times higher for those who drank alcohol at least once than who never drunk with (AOR= 9.1 (95% CI: 2.517, 32.9) [62].students may have unprotected sex while under the influence of alcohol or other drugs, which they ordinarily might not do. Abandoning safer sex techniques, failing to use condoms correctly and consistently, and having sex while under the influence can lead to possible infection with HIV or other sexually transmitted diseases.

Exhibiting religiosity (attending religious institutions frequently) was found to be protective against risky sexual behavior. The odds of RSB was about 3 times lower among students who exhibited religiosity (AOR=0.29; 95%CI :(0.16-0.54).Study among adolescents in Jamaica, also found that frequent attendance at religious services was associated with decreased likelihood of having risky sexual behaviors among adolescents [68].

Limitation of the study

Being a cross sectional survey, the current study could not able to establish a cause- effect kind of relationship between the independent and outcome variables. The study topic by itself assesses personal and sensitive issues related to sexuality which might have caused underreporting of some behaviors (possibility of social desirability bias).

7. Conclusion and Recommendation

In a nutshell, the present study estimated the status of and identified certain factors affecting risky sexual behaviors of university female students. The significant number of students was engaged in risky sexual behaviors. Regarding Knowledge and use of EOC, was found to be relatively higher among study participants. Even though, one must be cautious about implying causality from cross sectional study, exhibiting religiosity, alcohol use and emergency contraceptive pills use were found to be negatively and later two positively associated with RSB respectively.

So Future prospective studies are necessary to demonstrate the causal effect relationship between EOC use and risky sexual behaviors and also using larger sample size was highly recommended.

The government of Ethiopia, FMOH, should design strategies to communicate the students about danger of involvement in risky sexual behaviors and with emphasis on preventing both unwanted pregnancy and sexually transmitted infections.

To fruitfully compliment the public health goal of reducing unintended pregnancy through greater access to emergency contraception, Public service messages should include education of women about the multiple risks from unprotected sex; even if emergency contraception can mitigate one risk, it is ineffective against STIs. It is vital that we educate young people about a means to protect themselves both from unwanted pregnancy and STIs.

Medias should educate young people about danger of early sexual initiation, taking alcohol, and importance of consistent condom use.

Finally I recommend religious institutions should work on programs involving young people there. Since attending religious institution was found to be protective against risky sexual behaviors.

8. ANNEXES

8.1. Annex: English version questionnaire

Information sheet and Consent

Purpose of the study: The study is aimed at investigating the risky sexual behavior prevalence of university students, and potential factors that may influencing their risky sexual behavior. Your honest and genuine responses to each of the questionnaires play a major role in the attainment of the objective of the study.

Procedure: All of the questions are filled in and completed by students. The English version of the questionnaire first translated to Amharic language and provided to the student to answer the questions. The finished questionnaire then collected by the data collectors.

Risk and or danger: You put on no risk if you participate in the study. It only costs your 20 to 25 minutes to completely finish the whole questions.

Benefits: The finding that comes out of the study could be used to inform decisions to affect the risky sexual behavior of university students.

Confidentiality: Your responses are seriously kept confidential. The researchers do not require your name to be revealed on any of the findings of the study; we instead employ alias.

Incentives: You could not be financially reimbursed for your participation. Participation in to the study is entirely based on your willingness.

Refusal to participation: You have the right to quit from the study any time you want to do so.

Person to contact: Any time you want to request detail information about the study, you can give a call the principal investigator via her number: +251921359724.

Are you willing to participate in the study?

Yes_____ No_____

If No, please stop and return the questionnaire paper.

QUESTIONNAIRE-ENGLISH VERSION

The questions are going to be asked under various headings. Part one asks about Socio demographic characteristics. Part two and three then follow that ask questions having to do with sexual characteristics and KAP about the contraceptives of participants.

Part I- Socio demographic characteristics - Please check one

No	Questions	Response	Skip
1	How old are you?	In a completed years	
1.1	What is your birth date?	Date ^{Month} ^{Year}	
2	What is your religion	Orthodox.....1 Muslim.....2 Protestant.....3 Catholic.....4 Other(Specify).....5 _____	
3	To which Ethnic group do you belong?	Oromo.....1 Amhara.....2 Tigre.....3 Gurage.....4 Others(specify).....5 _____	
4	What department /stream are you attending?	_____ _____	
5	Your current marital status?	Single.....1 Married.....2 Divorced.....3 In a relationship.....4 _____	

6	Year(level) of education	Year 1.....1 Year 2.....2 Year 3.....3 Year 4.....4 Year 5.....5	
7	Where do you live now?	In the campus.....1 Outside the campus.....2	
8	Where was your residence of origin - (the residence from where you initially came to this university)	Addis Ababa.....1 Regional capitals.....2 Zonal or woreda town.....3 Rural area.....4	

Part II now I have some questions about your social activities.

No	Questions	Responses	Skip
9	How often do you usually attend religious services?	Daily.....1 At least once a week.....2 At least once a month.....3 At least once in a year.....4 Never.....5	
10	Do you drink alcohol?	Yes.....1 No.....2	
11	Have you ever chewed chat	Yes.....1 No.....2	
12	Have you ever watched porn videos?	Yes.....1 No.....2	
13	Do you ever go to night clubs or parties where people dance?	Yes.....1 No.....2	
14	Do you feel any pressure from friends to have sexual intercourse?	Yes.....1 No.....2	

Part III: - Sexual and reproductive characteristics (select one of your best Answer)

NO	Questions	Response	Skip
15	Have you ever had sexual intercourse	1. Yes ☐ 2. No ☐ If No- skip to question number	24
	How old were you at the time you		

16	first had sexual intercourse?	AGE-----	
17	How would you describe your relationship with the person you have your first sex with?	Marital.....1 A causal relationship.....2 A serious relationship but with no intention of marriage.....3 An important relationship that might lead to marriage?.....4	
18	What was your reason for the initiation of sex (why was the reason for you to start sex then?)	Personal desire.....1 Peer pressure.....2 Influence of alcohol.....3 Influence of Khat or drug.....4 Economic problem.....5 Don't know.....6 Other (specify).....7 -----	
19	Thinking back over your lifetime until now, with how many partners have you had sex?	Partners	
20	Have you ever experienced unwanted pregnancy	Yes.....1 No.....;.....2	→Q22
21	If “yes” question number 20, how did you managed it	Deliver.....1 Abortion.....2	
22	Have you ever had a sexually transmitted disease?	Yes.....1 No.....2	if no →Q30
23	If yes, how many times did you have?	Once.....1 More than once.....2	

Part- IV. Questions addressing Respondents' knowledge, attitude and practice of contraceptives including emergency contraception

S.No	Questions	Responses	Skip to
24a	Have you heard about any contraceptives method?	Yes.....1 No.....2	
24b	Do you know any contraceptive method?	Yes.....1 No.....2	Q30
25	What contraceptives method do you know? (multiple answers possible)	Pills.....1 Injectable.....2 IUCDs.....3 Norplant.....4 Condom.....5 Sterilization.....6 Rhythm method.....7 Withdrawal.....8 Lactational amenorrhea method.....9	
26	From where you got the information about Contraceptives? (multiple answers possible)	From health Workers1 from friends/Peers discussion.....2 from clubs in Schools.....3 from religious Leader.....4 from parents.....5 from mass media(TV, Radio)6 others(specify) -----	
27a	Have you ever used Contraceptives?	Yes.....1 No.....2	→Q30
27.b	Are you currently doing something or using any method to delay or avoid getting pregnant?	YES1 NO2	
28	If yes to Q 27 What Contraceptives you used? (Multiple responses possible)	Pills1 Injectable2 IUCDs3 Norplant4 Condoms5 Others(specify) -----	
29	From where you get the contraceptives? Multiple	from health institution1 from pharmacy2	

	responses possible	from private clinic3	
		other(specify) -----	
30	Do you know how to prevent unwanted pregnancy?	Yes1	→Q 32
		No.....2	
31	If yes to Q 30 what methods you know? Multiple responses possible	pills1	
		Injectables.....2	
		IUCDs.....3	
		Norplant4	
		condoms5	
		abstinence6	
		Withdrawal7	
		Calendar method8	
		others(specify)-----	
32	Have you ever heard about emergency oral contraceptives?	Yes1	
		No2	
33	Do you know where to obtain emergency oral contraception? [Multiple responses Possible]	Hospitals.....1 Health Centers2 Health posts.....3 Pharmacy4 Private clinics.....5 Drug shops.....6 Rural drug vendors.....7 Other.....8 (specify) _____	
34	When do you think is Emergency contraceptive pills be used?	After unprotected sexual intercourse.....1 When unwanted pregnancy occurred.....2 As a regular method of contraception.....3 Don't know4 Other(specify).....5 _____	
35	When do you think is emergency contraceptive pills be effective	Within the first 72 hours after unprotected sex.....1 Within the first 5 days after unprotected sex.....2 Don't know.....3	
36	How effective do you think emergency contraceptive pill is in preventing pregnancy	Highly effective.....1 Somewhat effective.....2 Not effective.....3 Don't know.....4	
37	Do you think EOCs can prevent STIs	Yes.....1	
		No.....2	

38	Do you suggest emergency contraception avail for all females?(positive attitude)	Yes.....1	
		No2	
		do not know.....3	
39	Are you willing to use emergency contraceptive pills if you face a problem?	Yes.....1	
		No.....2	
		Don know.....3	
40	If No to Q 39 why? (Multiple answers)	religious prohibition1	
		fear of providers2	
		Unavailability of Methods.....3	
		encourage prostitution4	
		fear of HIV/AIDS5	
		others(specify) -----	
41	Have you ever used emergency Contraceptive pills?	Yes.....1	
		No.....2	
42	Do you recommend EC for other females or friends?		
		I do not know.....3	
43	Do you think Unprotected/unplanned sexual intercourse is a problem of young females?	Yes1	
		No.....2	
		Do not know.....3	
44	Do you think unwanted pregnancy is a problem for young females?	Yes1	
		No2	
		Do not know.....3	
45	Have you/your partner ever used condom during sexual Activities	Yes.....1	
		No.....2	
		If No- skip to question Number	
46	If “yes” for question number 45, how often do you use a condom with your partner	Sometimes.....1	
		Most of the time.....2	
		Always.....3	

8.2. Amharic version questionnaire

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