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ASSESSMENT OF KNOWLEDGE AND PRACTICE ON DUAL CONDOM AND NON-BARRIER CONTRACEPTIVE METHODS ON FEMALE SOCIAL SCIENCE STUDENTS AT MEKELLE UNIVERSITY.

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ABSTRACT

Problem statement: Significant number of university students is not protected from double burden of unprotected sexual relationship. They face multiple threats to their sexual and reproductive health. Having the information on the knowledge and practice of dual condom and non-barrier contraceptive methods among female university students will help to design a preventive mechanism to decrease incidence of unwanted pregnancy & STI because these problems are major threats of this social group. **Objective**: the main objective of this study is to assess knowledge and practice of dual condom and non-barrier contraceptive method among female students at Mekelle University, Adi-haki Campus. **Method:** A cross sectional quantitative study with internal comparison using self-administered questionnaire was employed among female Mekelle University, Adi-haki Campus, students. This study was conducted between October, 2011 and April, 2012. **Result:** 83.5% of the students were knowledgeable about preventing both pregnancy and STI at the same time but among those who ever experienced sexual intercourse only 7(5%) of them used the dual protection consistently. Having relatively higher pocket money was positively associated with dual protection method knowledge. **Conclusion:** This study showed that the knowledge of the students about preventing both pregnancy and STI at the same time is adequate. But the use of dual condom and non-barrier contraceptive method by the students

was unsatisfactory. Monthly income of the students was positively associated with knowledge of preventing both pregnancy and STI. **Recommendation:** The University needs to strengthen the clinic health education method through peer group discussion, youth friendly clinics, anti AIDS club and poster and leaflet presentations to bring behavioral change and increase the practice of dual protection.

KEYWORDS: Dual Condom and Non-Barrier Contraceptive, anti AIDS club.

1. INTRODUCTION

The promotion and expansion of fertility regulatory products and services have been in progress for several decades as the world is challenged by the issue of "population explosion" and the emergence of Human Immunodeficiency Virus (HIV).Till now there have been many successes in raising the utilization of condoms and other non-barrier contraceptives worldwide, of course not forgetting there still exist a hug unmet need. For instance, in 2007 global contraceptive use, in spite of regional variation, has reached 63%.[1] Regardless of these successes, both unintended pregnancies and Sexually Transmitted Infection (STI) including HIV are still major public health problems among young girls in many countries.

In 2009, there were 42 million abortions around the world, mostly in developing countries. Almost one billion women of reproductive age want to avoid pregnancy, but 140 million of them are not using any contraception and 75 million rely on traditional methods that are not effective. While fertility has declined substantially among women above 30 years of age, it has not declined as rapidly among younger women.[2] In the same year, more than half of all people living with HIV are women and girls. In sub-Saharan Africa, where women and girls aged 15-24 years are eight times at risk than men to be infected, more women than men are living with HIV.[3]

Another related problem is the low and inconsistent use of condoms in most of the affected area. The U.S. Centers for Disease Control and Prevention announced that in the U.S. the rates of all STIs including HIV, have been increasing with an estimated 19 million new cases each year and in 2010 more than 1 million people have been found living with HIV. It seems that almost half of the new cases of STIs are among people between 15 and 24 but this doesn't mean that older adults are not at risk.[4]

Dual protection is particularly important in Africa where HIV/AIDS continues to devastate the continent which has 11% of the world's population but 60% of the people with

HIV/AIDS; the problem of both population growth and the HIV epidemic is imminent.[5] Ethiopia is one of sub-Saharan country where these problems are more prominent.

Moreover, the Ethiopian population is characteristically dominated by young people. The age group of 15 to 24 years represents for 30% of the total population. Tens of thousands of young people in these age groups are currently enrolled at different higher education institutes throughout the country. Although higher education institutes are considered as starting points for a new life, campus life usually presents with different challenges such as sexual coercion, sexually transmitted infections including HIV/AIDS, unintended pregnancy and unsafe abortion owing to their limited life experience particularly that of sexual and reproductive health. Furthermore, they also lack the parental support to identify and access sexual and reproductive health related services. As a result many young people have been engaged in risky sexual behaviors which pose the double burden of unintended pregnancy and STI including HIV/AIDS.

However, sexual and reproductive health services are limited or non-existing in many of the higher education institutes where several thousands of these vulnerable groups reside.[6] Therefore, assessing the knowledge and practice of dual, condom and non-barrier, contraceptive methods among university students will help policy makers and university officials in designing youth and student friendly intervention.

2. LETREATURE REVIEW

Definitions, concepts about the problem

Dual protection

Dual protection refers to the simultaneous protection against sexually transmitted infections (STIs) and unintended pregnancy[7, 8, 9, 10, and 11] and represents an important public health intervention[11, 12, 13, 14, 9] and may be achieved through; use of contraception in a long term mutual monogamous relationship, use of male or female condoms alone including for vaginal and anal sex and male condoms for oral sex, the use of a condom plus another non-barrier contraceptive method or, male or female condoms with the back-up of emergency contraception and/or induced abortion plus the back-up of post-exposure prophylaxis against HIV, the use of a condom alone (including during pregnancy) or abstinence and avoidance of all types of penetrative sex.[15, 16, 17]

Many of the definitions of dual protection found in the literature tend to be limited to only one type of dual protection[16], usually the use of condoms for disease prevention and birth control pills for contraception.[7,15,8, 16] Many teenagers believe that pregnancy is the more likely outcome from unprotected sexual intercourse.[18] It has been found that some young people, in the mistaken belief that anal sex was safe.[16] Consequently, they tend to rate pregnancy prevention as more important than STIs/HIV prevention.[19, 20] Dual use to be more prevalent among women with more sexual Partners.[21]

Magnitude of the problem

Approximately 70% of premature deaths among adults are due to behaviors which began during adolescence.[22] In South Australia, equating to a pregnancy termination rate of 17.2 per 1000 women aged 15–44 years.[14] Of all age-groups, adolescents have the highest risk of infection with STDs and the largest share of unintended pregnancies in the United States.[23] Approximately 12% of newly diagnosed cases of HIV occur among young adults between the ages of 15 and 24[24] and are at higher risk because they have older partners.[22]

Women across sub-Saharan Africa face multiple threats to their sexual and reproductive health[8] and are more likely to become infected during any single exposure.[13] The epidemiology of sexually transmitted diseases suggests a heightened risk for young adults, particularly college students.[25] In Ethiopia and South Africa 16.2% and 20% of births are not wanted respectively[15, 8] and the heavy burden of sexually transmitted infections (STIs), including HIV/AIDS, presents a further challenge to women's health.[8] Ethiopia is also seriously affected by HIV/AIDS, and is estimated to have the sixth highest number of infections in the world.[15] In Gondar University 7.8% reported history of STI in the past 12 months.[26] In Ethiopia, the national average of condom utilization is zero (modern contraception use stands at 5%)[27] Brazil universities students Overall prevalence of condom use in all sexual relations in this sample of undergraduate students was 60 %.[28]

Causes of the problem

Adolescents and young adults are at greater risk of contracting sexually transmitted infections (STIs) because they are more likely to have unprotected sex, early age at first intercourse, receptive anal intercourse[25], having exchanged sex for money[29] and to have multiple partners, as well as high risk partners.[29, 25, 31] Furthermore, College freshmen are a special subset of the college student population, with the traditional-aged freshmen student poised between adolescence and young adulthood.[25]

Non-barrier contraception is unpopular because of fears of side effects and unwarranted but common fears that future childbearing might be jeopardized by use of hormonal methods.[32] Adolescents are particularly susceptible to the false belief that vaginal sex is likely to have only one outcome.[19] The use of hormonal methods may influence the risk of HIV and other STD infection through behavioral factors, such as nonuse of condoms.[11]

Risk factors

High-risk sexual behavior is defined as any behavior that increases the probability of negative consequences associated with sexual contact.[33] Risk factors for STD acquisition include initiating sexual activity at a young age, changing partners frequently[11], having multiple concurrent partners[23,33,11,31] using barrier methods inconsistently[34], drug use, delinquency[23], having poor access to STD treatment services, and being a member of a core population with very high STD prevalence rates.[11] Moreover, alcohol use is prevalent among college students and may contribute to elevated rates of sexual risk taking.[24] Drinking was strongly related to the decision to have sex and to indiscriminate forms of risky sex.[33] Presumably reflects underlying personality characteristics such as unconventionality, risk-taking or sensation-seeking.[23]

Determinants

Various factors are associated with the use (or non-use) of condoms and other contraceptive methods, including: cultural beliefs, level of information, family influence, and religion/spirituality, gender role.[35, 36]

To a high degree, the knowledge of sexual issues may influence the choice of contraceptive.[35] In Ethiopia 43.3% knew that dual protection could be achieved by using a non-barrier contraceptive plus a condom.[15] In the study done among Addis Ababa youth a condom use rate of 16-48% was found.[26] 94% and 74% of young people respondents of kuwazula/south African amid the condom as a method of preventing disease and pregnancy respectively.[37, 38]

Sexually active adolescents' perceptions of parent expectations about sex and contraception have also important links to dual method use.[12] Communication about HIV with parents and other adults in the family also appeared to have a protective effect among women using the pill and among men relying on condoms alone.[23] Dual method users and condom only users were found to acknowledge the highest social support and acceptability.[7]

Studies indicate that religion/spirituality may have an important influence in matters of health and human behavior.[19, 30] Religion, particularly Christianity, has long played a major role in Uganda as a determinant of social belonging and individual moral values.[39] Sexual abstinence before marriage is strongly promoted by the Catholic Church.[30]

Concern for becoming pregnant was highest among non-barrier users while concern about contracting an STI was highest among persons using a condom.[20, 7] The belief that condom use is appropriate only in casual situations and not with a spouse or primary partner is widespread.[18]

The other determinant factor is availability of service. Wolaita sodo university students indicated that there is a problem regarding availability of condoms in the university and even in areas where condoms are available it is very difficult to access.[6]

In Ethiopia, where high number of HIV positive people live including high incidence of HIV and a very rapid population growth, female university students are one of the social group that share most of the burden. To combat those two problem one of the recommended method is dual protection. But even if this is true, study done on dual protection among university students is almost none. Conducting this study among female university students will help to assess knowledge and practice on dual condom and non-barrier contraceptive methods as well as determinant factor that affect the practice.

3. OBJECTIVE OF THE STUDY

GENERAL OBJECTIVE

- To asses knowledge and practice of dual condom and non-barrier contraceptive methods use among female students at Mekelle University, Adi-haki Campus.

SPECIFIC OBJECTIVE

- To assess the knowledge of students about preventing pregnancy and STI at the same time,
- To assess the practice of dual condom and non-barrier contraceptive methods use, and
- To assess factors that is associated with knowledge of preventing pregnancy and STI at the same time among female students at Mekelle University, Adi-haki Campus.

4. METHODLOGY

Study Desigen: A Cross- sectional study design with internal comparison method was used.

Study Area: Mekelle is the capital city of Tigray National Regional State lays 780km north of Addis Ababa, the capital city of Ethiopia. The city is located at an altitude of 2200 meter above sea level and covers an area of 644.76 km square with an estimated population of 261,177. The official language of the region is Tigrigna.

Mekelle University is one of government-funded higher institution which was found in May 2000 by merging the two former colleges, Mekelle Business College and Mekelle University College. Currently, the University has eight colleges and two institutes under it, namely: Business and Economics, Dry Land Agriculture and Natural Resources Management, Engineering, Law and Governance, Social Sciences and Languages, Veterinary Medicine, Natural and Computational Sciences and Health Sciences; and the Institute of Pedagogical Sciences, and Paleoenvironment and Heritage Conservation. Mekelle University hosts over 26,000 students in the regular, continuing education program and summer, evening, distance education and in-service programs in both undergraduate and graduate programs.[40]

Adi-haki Campus is one of the campuses that are found under Mekelle University. There are three colleges in the campus, namely: College of Business and Economics, College of Social Science and Languages and College of Law and Governance. The number of students found in the regular program estimated to be 5939.

Study Population: All female Mekelle University, Adi-haki Campus, students were the source of population for this research and the study population were all female students attending their study at a regular program from year I to V in the campus.

Table 1: profile of regular students by academic year, 2011/2012, Mekelle University, Adi-haki campus.

Year	Male	Female	Total
Year I	1209	1091	2300
Year II	698	258	956
Year III	1506	684	2190
Year IV	182	91	273
Year V	154	66	220
Total	3749	2190	5939

Inclusion criteria

- All female regular undergraduate students at Mekelle University, Adi-haki campus.

Sample Size

Sample size determination

For specific objective 1 and 2, the sample size was determined using the following procedures:

For the specific objective number 1 and 2, I used the following assumption;

1. 95% confidence interval ($Z\alpha/2 = 1.96$)
2. A 3% margin of error($d = 0.03$)
3. Since prevalence of knowledge and practice about dual condom and non-barrier contraceptive methods among Mekelle University is unknown and I couldn't find any other study done on this study group either in Ethiopia or in other sub-Saharan country. Therefore I took 50% prevalence.
4. A 10% allowance for non-response rate was considered.

$$N = \frac{(Z\alpha/2)^2\, p(1-p)}{d^2}$$

$$= \frac{(1.96)^2\, 0.5(1-0.5)}{(0.03)^2}$$

$$= 1067.11$$

Then we changed the population to the actual student number that was 2190,

$$= \frac{1067.11}{1+\frac{1067.11}{2190}}$$

$$= 717.48$$

Based on the assumption the actual sample size for the study was 718. Additional 10% allowance for non-response rate was added and finally the sample size was~798.

For the specific objective number 3, the following assumption was used;

1. 95% confidence interval
2. 80% power
3. 2.0 odds ratio
4. Taking one of the factors, relation status, with the prevalence of 25% as a factor,

Table 2: sample size calculation for population study, Mekelle University, Adi-haki campus, 2012.

Confidence interval	Power	Ratio of unexposed to exposed	Odds ratio	Sample size		Total sample size
				unexposed	exposed	
95%	80%	1:1	2	165	165	330

The sample size for internal comparison was 330. Therefore, the total sample size for this study was 798.

SAMPLING PROCEDURE

There are three colleges under Adi-haki Campus, namely College of Business and Economics (CBE), College of Social Science and Languages (CSSL) and College of Law and Governance (CLW). There are 18 departments in rolling 5939 students and from this 2190 are female. A cluster sampling method was used. First all department under Adi-haki Campus were identified. Then all sections under each department segregated by study years were listed. Finally using systematic random sampling method sample from each cluster was selected and all female students in the selected cluster were surveyed.

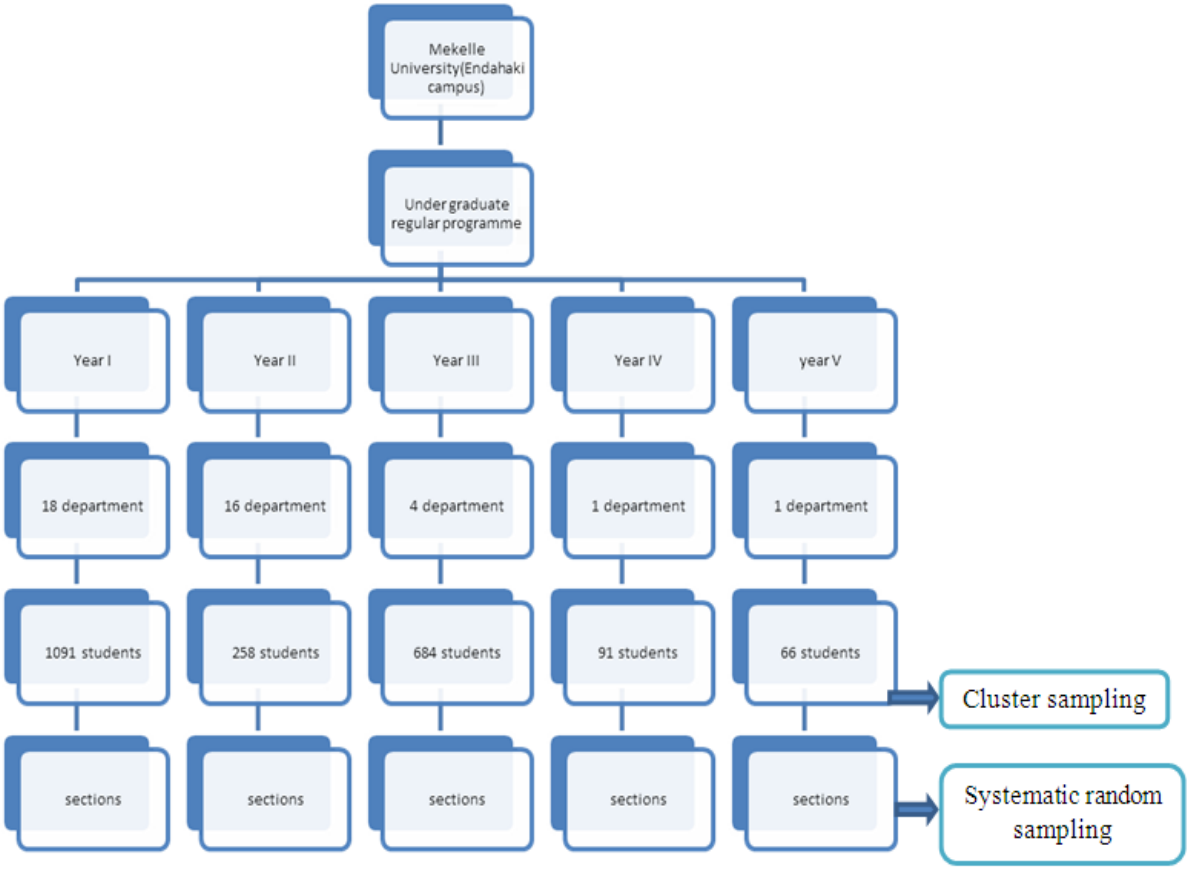

Fig. 1 sampling procedure.

VARIABLES

Dependent variables: knowledge of students about preventing pregnancy and STI at the same time.

Independent variables: Age, relationship status, academic year, pocket money, living condition, ever had sexual intercourse, knowledge of condom use, availability of service, using the available service, preference of health facility and health education.

OPERATIONAL DEFINATION

Dual protection: when students use both condom and non-barrier contraceptive methods at the same time while engaged in regular sexual relationship or when engaged in casual sexual intercourse.

Non-barrier contraceptive method: when students use contraceptive method either hormonal contraceptive or IUCD for limiting or spacing birth, for instance OCP or loop.

Condom use: regular usage of condom during penetrative sexual intercourse.

Knowledge of students about preventing pregnancy and sexually transmitted infection at the same time: we say students are knowledgeable about protecting themselves from both pregnancy and STI when they have answered for question number 301 either abstinence or and use condom or and use both condom and non-barrier contraceptive at a time.

Dual condom and non-barrier contraceptive method practice: when students use both condom and non-barrier contraceptive at the same time consistently during their sexual practice.

DATA COLLECTIONS

A structured, pre-tested and a self-administered questionnaire was used after a brief explanation on the objective of the survey was given by the investigator. The questionnaire was adopted from DHS survey questionnaire 2000 and Bss Eth. in school student's final questionnaire. The questionnaire was first be prepared in English language then translated into Amharic and finally it was back translated into English for consistency. The questionnaire had five different thematic areas, namely socio-demographic characteristics, sexual practice of students, knowledge of students about contraceptive methods, contraceptive methods practice of students and service utilization. Data collection was done

by the investigator and to insure privacy and to decrease contamination of data, students were asked to seat away from each other and no personal identifier was written on the questionnaire. Also blank envelop was provided for the study subjects to insure confidentiality. The questionnaire was approximately took 30 minutes to finish and needed five weeks of time for data collection. During data collection completeness and checking for missing data was done every day manually by the investigator. After the data collection, the data was entered in to Epi-Info 3.5.1 version and data cleaning was done and incomplete data was excluded from the analysis. Data was kept in a locked room so that third person didn't have a chance to access the data.

DATA ANALYSIS PROCEDURES

Data were analyzed using SPSS version 15 statistical software and analyzed using odds ratio and 95% confidence interval. Association between dependent and independent variable was assessed by odds ratio. The significance of statistical association was assured using 95% confidence interval and P-value. Bi-variate and multivariate analysis was employed. Multiple logistic regressions were used to adjust for possible confounding factors.

ETHICAL CONCIDERATION

Ethical approval was obtained from Addis Continental Institute of Public Health and University of Gondar Ethical Review Committee. Permission was obtained from Head officers of Mekelle University and other concerned bodies for their collaboration. The participants were involved based on their willingness and asked for their verbal consent before administering the questioner. The purpose, method and benefit were explained briefly for the study subjects. Complete confidentiality for the study participants was assured; for instance name was not recorded on the questioner and also blank envelop was provided for the study participants to seal and deliver the questioner after filling the information.

5. RESULTS

The total sample size of 853 students participated in this study. Forty-eight questionnaires are not included in the analysis because of great incompleteness and inconsistence. As the result, 805 remained for analysis.

5.1 Socio-demographic characteristics

The mean age of the respondents was 20.33(SD±1.56). Most of the students 539(67%) were in the age group 20-24. Among 805 respondents, 262(32.6%) have a boyfriend and

543(67.4%) were single. The dominant religion was Orthodox, 668(83%). The respondent's average pocket money was 468.51ETB (SD±370.85). Only 42(5.2%) of the respondents work to support themselves.

Table 3: Socio-demographic characteristic of female students of Mekelle University, Adi-haki campus; 2012.

Socio-demographic characteristics	Frequency	Percentage
Age		
<20	258	32
21-24	539	67
>24	8	1
Marital status		
Never married	532	66.1
Have a boyfriend but not living together	213	26.5
Married/living together with a boyfriend	49	6.1
Divorced/separated	11	1.3
Religion		
Orthodox	668	83
Catholic	9	1.1
Protestant	60	7.5
Muslim	59	7.3
Non-believer	5	0.6
Other	4	0.4
Academic year		
First year	280	34.8
Second year	219	27.2
Third year	250	31.1
Fourth year	32	4
Fifth year	24	3
Receive Pocket money		
Yes	752	93.4
No	53	6.6
Source of pocket money		
Family	711	94.5
Relatives	72	9.6
Relatives living abroad	45	6
Spouse	15	2
Partner	42	5.6
Average monthly pocket money		
Less than 200	206	25.6
201-400	205	25.5
401-550	155	19.3
>550	239	29.7
Living arrangement		
Inside campus dormitory	781	97
Outside campus dormitory	24	3

5.2 Sexual practice of students

Among 805 respondents 184(22.9%) of them have ever had sexual intercourse. The average age for sexual debut was 18.54(SD±1.975). About 79(42.9%) of the sexually active respondents had sexual intercourse for the first time with same age partner and 56(30.4%) of the respondents had sexual intercourse with partner about 5 years older. During first sexual intercourse majority of the respondents, 135(73.4%), did not use condom. Among those who ever had sexual intercourse nearly half of them, 96(52.2%), used hormonal contraceptive other than condom during their first sexual intercourse. The most frequently used hormonal contraceptive among users during first sexual intercourse was emergency contraceptive 45(46.9%) followed by injectable 30(31.3%) and oral contraceptive pill 20(20.8%). The main reason for not using hormonal contraceptive during first sexual intercourse was fear of side effect 72(83.7%) followed by 11(12.8%) partner rejection.

Majority of sexually experienced girls, 139(75.5%), have reported to be currently sexually active (had sex in the past 12 months). Among the currently sexually active respondents only 41(29.5%) have reported to have university student partner. The remaining 48(34.5%) had a partner with private business and 39(28.1%) had partner who is private, governmental or NGO employee. Referring to the last sexual practice, respondents have reported only 59(42.4%) of them had partner with the same age with them. But the rest of the respondents, 40(28.8%) had partner about five years older than them and 18(12.9%) of them had a partner 6-10 years older than them. Among the currently sexually active girls only 27(19.4%) have used condom consistently and 30(21.6%) have used hormonal contraceptive other than condom. Among currently sexually active respondents 26(18.7%) did not remember how many regular sexual partner they had. Majority of the currently sexually active respondents, 108(95.6%), have one regular sexual partner. And 28(20.1%) of currently sexually active respondents did not remember how many casual sexual partner they had. 69(62.2%) of currently sexually active respondents did not have casual sex partner and 39(35.1%) of them had one sexual partner. During the last sexual intercourse, 87(62.6%) of sexually engaged respondents did not use condom and the reason for not using condom was had trust in their partner, 47(55.3%). Currently sexually active respondents who used non-barrier contraceptive method was 87(62.6%). 32(36.8) of currently sexually active respondents used emergency contraceptive, 29(33.3%) used injectable and 25(28.7%) used OCP. For the one who did not use hormonal contraceptive, the reason for not using was fear of side effect 23(44.3%), infrequent sexual intercourse 19(36.5%) and lack of information 6(11.5%).

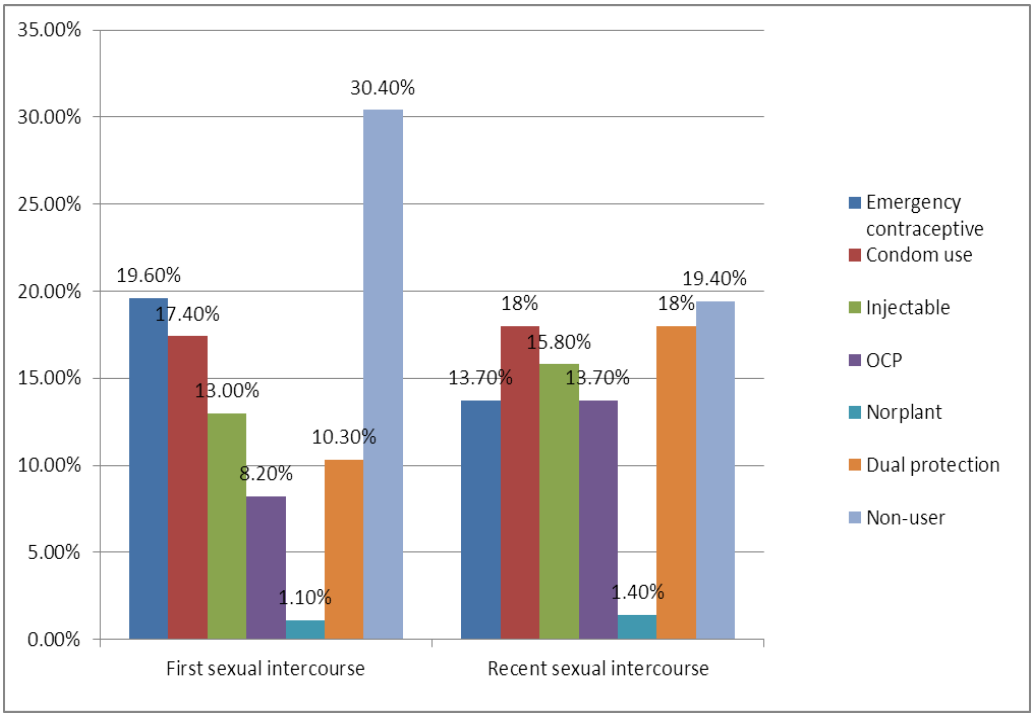

Fig. 2: Contraceptive use at first and last sexual intercourse among sexually engaged students at Mekelle University, Adi-haki campus; 2012.

5.3 Knowledge of students about preventing both pregnancy and STI at the same time

Among 805 respondents 672(83.5%) were knowledgeable about preventing both pregnancy and STI at the same time. And 352(43.7%) of the respondents said they have heard about using condom and non-barrier contraceptive method simultaneously. Among those respondents who had ever heard about using condom and non-barrier contraceptive method, 205(58.2%) got the information from TV/radio, 132(37.5) from peer education, 123(35%) from poster, leaflet, newspaper and magazine, 101(28.7%) from Anti HIV/AIDS club, 73(20.7%) from regular class and 44(12.5%) from university clinic.

Among the 805 respondents, 549(68.2%) said the use of both condom and non-barrier contraceptive method at the same time was to prevent both unwanted pregnancy and STI and 125(15.5%) of the total respondents said it does not have any benefit.

5.4 Dual condom and non-barrier contraceptive method practice of students

Among 184 sexually engaged students, 19(10.3%) were using dual protection method on their first sexual intercourse. And from the respondents who had used dual protection method more than half that is 11(64.7%) of them used emergency contraceptive combined with condom.

Among the currently sexually active respondents 29(20.9%) used dual protection in the last 12 months but only 7(5%) of the sexually engaged respondents used consistently dual protection. For the one who did not practice dual protection, the reason for not doing so was lack of information 39(32.5%), 36(30%) do not think it was beneficial.

5.5 Service utilization

132(72.8%) of the respondents, who were also sexually engaged, said that there was service which can provide them with contraceptives including condom. Asked about their preference of health institution to get family planning services 121(66.5%) said private clinics. Of those who visited any health institution for family planning only 59(32.1%) said that they did get health education about dual protection.

In bi-variate analysis being in the age group between 20-24 [COR=0.622(0.405,0.955)], in relationship or was in relationship [COR=0.68(0.465, 0.997)], having pocket money 201-400 [COR= 2.21(1.28, 3.28)], ever had sexual intercourse [COR= 0.634(0.419, 0.959)], knowledge of condom use [COR= 0.423 (0.188, 0.95)] were found to be significantly associated with knowledge. Among this having pocket money 201-400ETH BIRR was positively associated with dual condom and non-barrier contraceptive methods knowledge.

Multivariate logistic regression analysis was used to control the effect of confounders and to identify the real factors contributing to knowledge of preventing both pregnancy and STI at the same time. There for, those female students who have pocket money of 201-400ETH BIRR were 2.2 times more knowledgeable than students who had less than 201ETH BIRR [AOR=2.155(1.239, 3.748)].

Table 4: Association of selected variable with knowledge of students about preventing pregnancy ang STI at the same time among female students of Mekelle University, Adi-haki campus, 2012.

Variables	Knowledge of preventing pregnancy and STI at the same time		COR(95%CI)	AOR(95%CI)
	No (%)	Yes (%)		
Age				
<20	32(12.4)	226(87.6)	1.00	
20-24	100(18.6)	439(84.4)	**0.622 (0.405,0.955)**	0.719(0.46,1.122)
>24	1(12.5)	7(87.5)	0.991(0.118,8.322)	1.503(0.174,12.99)
Marital status				
Never married	78(14.66)	454(85.34)	1.00	

Was/is in relationship	55(20.15)	218(79.85)	**0.68(0.465,0.997)**	0.74(0.469,1.168)
Academic year				
First year	38(13.6)	242(86.4)	1.00	
Second year	37(16.9)	182(83.1)	0.77(0.472,1.263)	
≥ Third year	58(19)	248(81)	0.67(0.43,1.049)	
Average monthly pocket money				
<200	45(21.8)	161(78.2)	1.00	
201-400	23(11.2)	182(88.8)	**2.21(1.28,3.82)**	**2.155(1.239,3.748)**
401-550	27(17.4)	128(82.6)	1.33(0.78,2.25)	1.37(0.8,2.345)
>550	38(15.9)	201(84.1)	1.48(0.92,2.39)	1.616(0.991,2.637)
Living arrangement				
Inside the university dormitory	127(16.3)	654(83.7)	1.00	
Outside the university	6(25)	18(75)	0.583(0.23,1.496)	
Ever had sexual intercourse				
No	93(15)	528(85)	1.00	
Yes	40(21.7)	144(78.3)	**0.634(0.419,0.959)**	0.924(0.537.1.590)
Knowledge for condom use				
Non-knowledgeable	124(16)	652(84)	1.00	
knowledgeable	9(31)	20(69)	**0.423(0.188,0.95)**	2.024(0.824,4.972)
Availability of service				
No/I do not know	14(28)	36(72)	1.00	
Yes	26(19.4)	108(80.6)	1.62(0.76,3.42)	
Using the available service				
No	13(16.5)	66(83.5)	1.00	
Yes	13(23.2)	43(76.8)	0.652(0.276,1.54)	
Preference of health facility				
University clinics	5(14.7)	29(85.3)	1.00	
Private clinics	28(23.1)	93(76.9)	0.573(0.2,1.62)	
Government clinics	7(25.9)	20(74.1)	0.493(0.14,1.77)	
Health education				
No	30(24)	95(76)	1.00	
Yes	10(16.9)	49(83.1)	1.55(0.699,3.42)	

DISCUSSION

This study tries to assess knowledge and practice of dual condom and non-barrier contraceptive methods among female students at Mekelle University, Adi-haki campus, by taking knowledge of students about preventing both pregnancy and STI at the same time as main outcome. The finding of this study shows that quit significant number of the study participants were knowledgeable about dual protection. But on the other hand relatively low number of study participants practiced dual protection method.

To my knowledge, this is the first study about dual protection method among university students in Ethiopia. About 83.5% of the study participants were found to be knowledgeable

about dual protection method. And 22.9% of the respondents were sexually engaged. When we compared this study with a study done in Gondar Medical and Health Science College, 56.1% of the students were sexually engaged.[26] The difference could be explained by the fact that the Gondar study included male students too so there was study subject difference. The mean age at first sexual intercourse of this study was 18.54±1.975. According to the BSS Ethiopia 2006, the age sexual debut among older female OSY was 17 years which is closer to this study's finding.[41] The prevalence of consistent condom use among the sexually engaged study participants was 19.4%. This figure was much higher than the 6.4% regular condom use finding in the Gondar medical college study mentioned above. This could be explained by time factor, as we expect peoples' awareness to increase with time. When we see the prevalence of using condom in the most recent sexual intercourse in this study, 36.7% of the respondents used condom. In other study, Sexual abstinence, contraception and condom use by young African women, condom use at most recent sexual intercourse was 28.4%. When we see the practice of consistent use of dual condom and non-barrier contraceptive method protection method, it was found to be only 7(5%). In other study done in South Africa in sexually active women aged 15-49 years the use of dual protection method was found to be 6.3% which is almost similar to this study finding even if the source population is different.[9] But in other study done in Baltimore among women aged 17-35 years[11], the use of dual protection was found to be 24% in those aged 17-19 years old ones. The other interesting finding was that among the dual contraceptive method users the most commonly used method together with condom was emergency contraceptive (64.7%). The knowledge about dual protection was significantly higher in those who were not in relationship than those who were in any form of relationship and this could be explained by the fact that the more the students are knowledgeable the late they start relationship. When we compare the knowledge about dual protection among those who ever had sexual intercourse with those who had not, it was significantly higher in those who had no any sexual contact. This is true because when the students become more knowledgeable they will take time to be engaged in sexual practice.

Those study participants who had knowledge of condom use; it was found out that their knowledge about dual protection is relatively low. This might be explained by the inadequate health education given by the health provider because only 59(32.1%) respondents from the one who were sexually engaged and who goes to health facility did get health education about dual protection method.

When we compare the age difference of the sexually engaged respondents and their sexual partner, it was found that 42.4% of them were of the same age with their partner and it was only about 3% of them who had a partner with an age gap of more than 10 years.

When the respondents were specifically asked about dual condom and non-barrier contraceptive method, 43.7% of them said they had heard about it. The source of information in 58.2% was TV/radio; 37.5% from peer education; 35% was poster, leaflets, newspaper and magazine; 28.7% from Anti HIV club, and only 12.5% from university clinic. This shows that students are not being given enough information about dual protection at the university level.

When the respondents were asked about the advantage of using dual protection 31.7% of them did not respond properly and this also shows the knowledge gap that the students have.
In this study when confounding factors were controlled, having better pocket money income was positively associated with better knowledge about dual condom and non-barrier contraceptive method. The more pocket money the students have the more they become knowledgeable about dual protection and this is because as the source of income for most students is the family which is in 94.5% of the respondents, an increased income shows higher socioeconomic status with better access to information.

The main limitations of this study were, because this study was concerned about only the female students, so we couldn't get full information about both sexes. And also this study didn't have enough sample size to analyze factors associated with dual protection practice. At the last but not the least, checking for behavioral factors like alcohol use, drug abuse and so on that was associated with knowledge of students was not included in the study. So I would like to recommend further study on this area to have better information.

CONCLUSION

- This study showed that the knowledge of the students about preventing pregnancy and STI at the same time is adequate.
- The use of dual protection by the students was unsatisfactory.
- Monthly income of the students was positively associated with knowledge of students about preventing pregnancy and STI at the same time.

Recommendation

- Even if knowledge of students about preventing pregnancy and STI at same time was found to be adequate, the practice of dual protection method was very low. Furthermore, the source of knowledge about dual protection in the majority of the students was not from the college clinic. Hence I recommend to the university to strengthen the clinic health education method through peer group, anti AIDS club, and poster and leaflet presentations to increase the practice of dual protection.

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