

Knowledge, Attitude and Determinants of Safe Abortion among first year students in Mekelle University, Tigray, Ethiopia

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Abstract

Introduction: students are becoming aware of the availability and seeking of safe abortion services in their communities. However, unsafe abortion still remains globally major health problem especially in developing countries like Ethiopia. It is becoming one of the leading direct obstetric causes of maternal morbidity and mortality. In many low income countries lack of knowledge about the consequences of unsafe abortion and having negative attitude towards abortion service resulted in unsafe abortion practices. This study is important to identify area for improvement and encourage better communication with student clients who need safe abortion services.

Objective: The aim of this study is to assess knowledge, attitude and factors associated with safe abortion among first year students in Mekelle University, Tigray, Ethiopia.

Methods: Institution based-cross-sectional study design involving both quantitative and qualitative methods was employed. The sample size was 772 and the sampling technique used was multistage cluster sampling technique. To proportionally allocate the sample size to each department, population proportion to size allocation was used. Data was analyzed using SPSS version 16.0. Bivariate analysis was made to see the relations of independent variables with knowledge and attitude towards safe abortion. At bivariate logistic regression analysis, independent variables with cut off P-value \leq 0.25 was included. In the multivariable binary logistic regression, P-value \leq 0.05 was used to declare the significance of the variables. Thematic analysis was used for the Qualitative method. Finally both qualitative and quantitative data was triangulated. The analyzed data was presented using figures, tables, graphs and texts.

Result: Out of 752 students who heard about safe abortion, more than half 300 (55.9%) have inadequate knowledge. Sex, (AOR= 1.7, 95% CI: 1.160-2.725), department (AOR=0.37, 95% CI: 0.169-0.809), family education level (AOR= 0.6, 95% 0.354-0.886) and income (AOR= 0.4, 95% 0.205-0.848) were factors has an association with knowledge of students towards safe abortion. Concerning attitude, out of 536, nearly half 283 (52.8%) of the students have positive attitude towards safe abortion. Residence before joining university (AOR=0.689, 95%CI: 0.486 -0.977) has found to have an association with attitude towards safe abortion.

Conclusion: The knowledge of the students has found to be inadequate towards safe abortion. Sex, department, family education, and income sent from family are likely to have association towards knowledge on safe abortion. Nearly half of the students have positive attitudes towards safe abortion. Only residence before joining university has significant association with attitude towards safe abortion. Forums and panel discussions on safe abortion among students, professionals, and relevant organizations, need to be undertaken at various levels to facilitate decision making on safe abortion practices.

Key words: safe abortion, Knowledge, attitude Mekelle University, Mekelle, Tigray, Ethiopia

INTRODUCTION

Safe abortion is terminating an unintended pregnancy performed by qualified persons using correct techniques and in sanitary conditions. The number of female students treated for abortion complications declined as a result of awareness on the availability and seeking of safe abortion services in their communities (1). However, unsafe abortion still remains globally major health problem and one of the leading direct obstetric causes of maternal morbidity and mortality. Each year, an estimated 210 million women throughout the world become pregnant and about one in five of them resort to abortion. Out of 46 million abortions performed annually, 19 million are estimated to be unsafe. However, the burden of unsafe abortion worsens in the developing world (2, 3).

As in the rest developing world, unsafe abortion in Ethiopia, is a major public health problem, leading to high maternal morbidity, mortality, and gynecological hospital admissions (4).

Institution based studies, conducted in hospitals of also showed high prevalence of induced abortion, and as the most frequent cause of maternal morbidity and mortality, for example a study conducted on abortion at Jimma Hospital, Southwestern Ethiopia showed that the problem of induced abortion is quite significant in the area. Among the total patients admitted with a diagnosis of induced abortion, 62.5% were admitted for bleeding and infections, of which students less than 20 years accounted for 35% (5).

In response, Ethiopia has revised the penal code in 2004 has which addresses the issues of abortion with the intent of different reasons to save life of mother and fetus. To guide the implementation, the Federal Ministry of Health (FMOH) had developed abortion service guideline (6).

Though Ethiopia has achieved significant progress since the the revised liberalized law, unsafe abortion remains common. In fact, four years after the abortion law was liberalized, only a quarter of all abortions in Ethiopia occur in safe and legal settings. This could be attributable to low income, lack of knowledge about the consequences of unsafe abortion and having negative attitude towards abortion service. (7). As studies conducted in sexual practices of university students in Ethiopia indicated that significant proportions of university students in Ethiopia are sexually active and engaged in risky sexual behaviors (8). This is because lack of knowledge about safe abortion services. Even when safe, legal abortion services are available, women who lack accurate information about the relevant laws may seek unsafe abortions because they do not know they are eligible for the service or do not know the legal requirements for obtaining an abortion. Public knowledge and opinion can also directly affect access to safe abortion services. Conservative opinion may also influence women's own views. Women seeking induced abortion may feel guilty about doing so and consider themselves deserving of punishment. These feelings may lead them to seek clandestine, unsafe services rather than legal, safe ones (9). In many circumstances where women are legally entitled to have safe abortion services, are not available for a range of reasons like health system problems (lack of trained providers, concentration of facilities in urban areas, negative provider attitudes, use of inappropriate or outdated methods of inducing abortion, lack of authorization for providers or facilities and cultural and over all poor socioeconomic status. This risky practice leads to increasing maternal morbidity and mortality (10).

This study is needed because safe abortion plays a vital role in preventing mothers' life. In Ethiopia Studies on knowledge and attitude towards safe abortion in university students are not well studied; therefore there is wide gap of knowledge concerning issues of safe abortion. This results to unsafe abortion practices. For this reason this research addresses the problem by emphasizing on students knowledge and attitude towards safe abortion. This study was conducted on first year students including health and non health departments. These study subjects were chosen, because they are more vulnerable to risky sexual practices and they are also new for the environment, and have perceived ease of difficulty in performing a behavior. Thus, this study may help to give an attention for the development of guideline and resources for high level university students. It is also important to identify area for improvement and encourage better communication with student clients who need safe abortion services.

Methods and Subjects

Institution based cross-sectional study design involving both quantitative and qualitative methods were employed among first year students of Mekelle University. All First year students sampled from the randomly selected departments and who were volunteered were included in the study.

Sample size was determined using single population proportions formula, assuming a 5% level of significance, 5 % marginal error and considering 10% non-response rate. As this study involves stages to recruit the students, the sample was multiplied by a design effect of 2. The sample size became 772. Multi stage cluster sampling technique with simple random sampling procedures was used to recruit students for the study.

Data was collected using structured self-administered and pre-tested questionnaire for the quantitative data. For the qualitative, FGD was used as a method, which used guidelines/checklists for data collection. All individuals sayings were tape recorded, using cassettes and manually documented. Data collection was done by four data collectors who were University students. Supervisors were students who were doing their second degree. For the Qualitative part, participants of FGDs were grouped by sex in order to establish homogeneity within the group

that affects group interaction. The discussion was moderated by principal investigator with the assistance of tape-recorder and trained note-taker, which is responsible for observing and noticing all nonverbal responses of the participants (smiles face impressions, movements, head nodding, and Gestures). Discussions were ended after no more information was elicited. Prior to discussion, informed consent was obtained orally from each participant. For the quantitative data, SPSS windows version 16 was used to code, enter and analyze the data and for the qualitative data, open code was used to analyze the data. The socio-demographic data was analyzed using descriptive analysis. Bivariate analysis was done primarily to check which variables have association with the dependent variable individually. Variables found to have association with the dependent variables were then entered in to multivariate logistic regression for controlling the possible effect of confounders and finally the variable which has significant association were identified using p-values less than 0.05 and 95% CI.

Results

Out of the 772, students 752 of them respond to the questionnaire with a response rate of 97.4%. Out of the total, 515 (68.5%) were male, 237(31.5%) were female. The mean age was 20.2 years (SD±1.9). Participation by department, the highest participation was from department of engineering 151 (20.1%) with the least department of heritage 24(3.2%). Concerning ethnicity, participants from Tigray and Amhara have almost equal participation, which accounted 283(37.6%), 280(37.2%), respectively. Majority of the students were Orthodox religion followers which constituted 582(77.4%). Four hundred thirteen 413(54.9%) students reported that they were living in urban area before they joined the University. Nearly half of the students 404 (53.7%) were single never been in relationship. Concerning family education, 261(34.7%) of them were from illiterate family group. The median income of the respondents was 300.0 ETB (**table1**).

Out of the 752 students, 536(71.3%) of them responded that they heard about safe abortion, the remaining 216 (28.7%) did not. Of those who heard about safe abortion, more than half 299 (55.8%) of them heard from mass media (**fig1**). Of those who heard about safe abortion, 449 (83.8%) students said unsafe abortion is major health problem. Four hundred twenty six (79.5%) students responded that Ethiopia has abortion law. Concerning the law, nearly one-third 366 (68.3%) of students considered that it is legal for the pregnancy that would endanger the health or life of the woman or fetus; and only 67 (12.5%) responded that it should be for the extra marital (**Table2**). About the complication of abortion; 480 (89.6%) of respondents said uterine perforation is one of the complications of abortion followed by bleeding, infection, loss of fertility and death which accounted 508 (94.8%), 499(93.1%), 451(84.1%), and 483(90.1%), respectively (**fig2**). Regarding the overall knowledge, more than half of the students 300 (55.9%) have in adequate knowledge and the remaining 236 (44.1%) have adequate knowledge on safe abortion. Nearly half of the students 283(52.8%) have positive attitude towards safe abortion. But, 253 (47.2%) of them have negative attitude towards safe abortion.

Of those who have heard about safe abortion (536), 385 (71.8%) of them did not support that “elective abortion should be legal and accessible under any circumstance. In fact 358 (66.8%) of the students, support safe abortion is acceptable to improve mother’s life or reduce fetal anomaly. Three hundred eighteen (59.3%) of them support that husbands’ have influence on decision of abortion. Two hundred forty seven (46.1%) of students agreed that safe abortion services should be available at health facilities. Among all the students, 169 (31.5%) supported that a woman has the right to terminate pregnancy if she wishes. Three hundred eleven (58.0%) students agreed that University students use induced abortions to terminate pregnancies. (**Table3**)

In the bivariate analysis, the factors that found to have an association with knowledge towards safe abortion were sex, department, ethnicity, family education and income with a p-value \leq 0.25. These variables were considered potential predictors for knowledge towards safe abortion in the multivariate logistic regression model.

In the multivariate analysis, sex, department, family educational level and income sent from family had an association with knowledge towards safe abortion. Females were 1.7 times more likely to have adequate knowledge on safe abortion compared to males after controlling for department, family educational level and income (AOR= 1.7, 95% CI: 1.160-2.725). Students in civics department was 63% less likely to have adequate knowledge on safe abortion (AOR=0.37, 95% CI: 0.169-0.809), however veterinary medicine department were 2 times more likely to have adequate knowledge than mechanical Engineering department after controlling for Sex, family educational level and income(AOR=2.1, 95% CI: 1.004-4.779). Comparatively, families having one part literate were 40% less knowledgeable than families with both literate group after controlling for Sex, department and income (AOR= 0.6, 95% 0.354-0.886). Students who get monthly income of 601-1000 send from family were 60% have less knowledge on abortion (AOR= 0.4, 95% CI 0.205-0.848) compared to income with <600, after controlling for Sex, department and family educational level (**Table 4**).

Regarding attitude, department, marital status, residence and family education had an association with attitude towards abortion with a p-value \leq 0.25. These variables were considered potential predictors for attitude towards safe abortion in the multivariate logistic regression model. However, only residence has been found associated

with attitude towards safe abortion. Rural residents were 40% less likely to have positive attitude towards safe abortion compared to urban residents (AOR=0.6, 95% CI: 0.486-0.977) (**Table5**)

Discussions

Half of students have inadequate knowledge towards safe abortion. Of these most believed that safe abortion should be allowed under any circumstance. Sex, department, family education level and income had found to an association with knowledge of students towards safe abortion. Only residence before joining university had found to have association with attitude towards safe abortion.

Similarly to the current finding, several studies indicated that students have inadequate knowledge, which shows that there is a lack of knowledge (**13, 24**), and have positive attitude towards abortion (**2, 13, 16, 19**).

Unsafe abortion was reported as it is not a major health problem by 16.2% subjects. This is slightly lower than the finding from Lagos state University of Nigeria 18.7 %; and with Addis Ababa study that is 26% (**3, 24**). This might be due to difference in study subjects only first year students were included in this study, where as Lagos and Addis Ababa study subjects includes first year and above. It is fact that as the year of study increases the level of knowledge of students also increased (**11**).

The proportion of students who knows about complication of abortion was 55.9%, this result was similarly supported with the qualitative finding, unsafe abortion was said to cause for increased morbidity, mortality, psychosocial and economic problems, excessive bleeding, genital traumas including uterus perforation, infections, infertility, and increased risk of transmission of STI and HIV/AIDS. This finding was much lower than a KAP study conducted in public health practitioners in Tigray, Ethiopia which was 94% (**8**) though students are expected to know about complication of abortion. Dissemination of information about the reproductive health problems specially, about abortion has been weak; this results in limited knowledge about the issue. This could lead to unsafe sexual practices.

Regarding to knowledge of Ethiopia's abortion law, 20.5% responded that Ethiopia has no abortion law. Furthermore most of the FGD discussants did not know whether Ethiopia has abortion law. Few mentioned Ethiopia has abortion law; this finding was lower than a study conducted in Addis Ababa University which reported 39% (**24**). The lower response rate of knowing that Ethiopia has abortion law in this study might have been due to dissemination of information about the new penal code has been weak, and have limited knowledge about the issue. Besides, the study sample in this study were first year students but the study samples in the above two universities were exclusively health students. This is expected in the experienced health science students to have higher knowledge regarding safe abortion compared to first year students from other non-health departments.

The current abortion law in Ethiopia allows abortion only under certain circumstances. But only 6.7% of the first year students knew this, which means that almost all of the students had poor knowledge to the current law, which is much lower than a study conducted in University of Buenos Aires, Argentina that is 52.2% (**13**).

In general this study suggest that the participants had relatively better knowledge related to unsafe abortion as major health problem, complication of abortion and presence of abortion law in Ethiopia; but there is least knowledge on stating the issue of the newly revised abortion law of Ethiopia. This is because students have limited information on the revised law.

Concerning attitude towards safe abortion about 24.4 % students have positive attitude towards safe abortion to be legal and accessible under any circumstance. In addition more than half of the participants of FGD support legalization of safe abortion, as they believed that it would reduce the risks associated with unsafe abortion which is lower than that of the study conducted in University of Cape Town and University of Washington that is 48% and 70%, respectively (**2, 16**).

Out of all respondents in this study, 66.8% agreed that it is acceptable for a woman to choose abortion because of fetal anomaly or congenital disorder. This finding is lower than a study conducted at University of Nigeria which is 81.6% (**19**). This difference may be due to the difference in the national legalization of abortion, the participants' background and a difference in personal beliefs.

Of the total students participated in the study, 31.5% had supported attitude towards safe abortion that a woman should have the right to decide whether to have abortion, which was lower than a study conducted in University of Cape Town and Walter Sisulu that is 70% (**16**). Three hundred eighteen (59.3%) students reported that they agree that husbands have influence in decision of aborting which was higher than the finding in university of cape town and walter Sisulu 22% (**16**). This difference might have been due to effect of male dominance, and woman and men were not considered as having the same right in developing country.

Hundred fifty two (28.4%) students have positive attitude towards woman under 18 requesting safe abortion service at health facility should be allowed, which is lower than that of University of cape town and walter Sisulu 83% (**16**). Out of the students, 36.4% of them agreed that abortion should be allowed if it is attributable to rape/incent which is lower than that of Mexico University that is 83%, and also 19.4% of subjects support

abortion should be allowed if a mother has an economical reason as compared with Mexico University (22%) still lower (23). This is considered due to back ground factors such as cultural taboo towards abortion, their personal believe, religious affiliation and other factors. Fifty eight percent of participants agreed that students use induced abortion to terminate their pregnancy, this is also supported by FGD discussants, youngsters, unmarried youth and students were reported to be the most affected groups due to practice of unsafe abortion under unsafe conditions which is slightly higher than that of study conducted in Lagos state University of Nigeria 53.5%,(11). Most abortions are done backstreet because girls do not want the community to know what they are doing. This has an implication of unsafe practices that leads to increase mothers' mortality and morbidity.

One study conducted in DebreMarquos claims that the odds of male students were 2.5 times more likely to have adequate knowledge than females (20). But this is dissimilar with this current finding; females were 1.6 more likely to have adequate knowledge related to safe abortion than males. The reason is because females are becoming more accessed to different mass media and getting more information about the problem than males and the number of females going to schools and Universities is improving. In addition females have different information regarding health problems and their awareness is increased through establishing gender clubs at schools and Universities to have open communication regarding females' problems which are related to major obstacles for their education and other health related problems.

In this study department is one factor that has found to have association with knowledge of respondents. When we see the association, veterinary medicine was more likely to have adequate knowledge than others; this might be due to the health science students took courses on health issues, which made them relatively better than other departments.

Students with families' one part literate were less likely to have adequate knowledge. This is supported by a study conducted in University of Buenos Aires, Argentina which reveals the level of education of their parents, 27.8% of their mothers and 34.4% of their fathers had completed their university and had strong association with knowledge of students towards safe abortion (13). When we compare students who got their monthly income send from family less than one thousand are less likely to have adequate knowledge, it is similar with a study conducted in university of Buenos Aires, Argentina that is income send from family above two thousand are more knowledgeable (13).

Students who came from rural areas before they join university were less likely to have positive attitude towards safe abortion than urban residents. This finding is also supported by the study conducted in University of Kentucky which indicated that residence before joining university showed a significant association with attitude towards abortion, students who came far from was less likely to have positive attitude towards safe abortion (18).

In this finding none of the variables were significant with attitude towards safe abortion except residence, which is dissimilar with a study conducted in University of Washington, Seattle which reveals sex had a consistent association with attitude towards abortion. Women were more likely to support safe abortion than men. Age is also not associated with attitude towards safe abortion (25). A study conducted in two universities of South Africa indicated that being single in a current relationship and ever having had sexual intercourse were more positively associated and this is again dissimilar with the current finding (16).

Gender and religion have been seen to have significant influence on the attitudes of University students towards abortion; whereas, age, marital status, tribe and institutions have been seen as socio demographic factors that do not have influence on the attitudes of University students towards abortion, which is dissimilar with the current finding (19).

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Authors' contributions: SD initiated the research idea, designed the study, performed the statistical analysis and drafted the manuscript. AD and AG participated in the study design, implementation of the study, statistical analysis and contributed to the draft manuscript. AT and RA participated in manuscript edition, writing and analysis. All authors contributed to the data analysis, read and approved the final manuscript.

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Annexes

Table 1: Socio demographic and economic characteristic of first year students in Mekelle University, 2013, N=752.

Variables	frequency percent	
Sex		
Male	515	68.5
Female	237	31.5
Age		
16-19	284	37.8
20- 24	438	58.2
25-29	30	4.0
Mean± SD, 20.2±1.9		
Department		
Mechanical engineering	151	20.1
Chemistry	115	15.3
Nursing	34	4.5
Animal science	73	9.7
Management	138	18.4
Civics	78	10.4
Heritage & conservation	24	3.2
Veterinary medicine	49	6.5
Foreign language	90	12.0
Ethnicity		
Tigray	283	37.6
Amhara	280	37.2
Oromo	103	13.7
SNNP	64	8.5
Others	22	2.9
Religion		
Orthodox	582	77.4
Protestant	100	13.3
Muslim	59	7.8
Others	11	1.5
Residence		
Rural	339	45.1
Urban	413	54.9
Marital status		
Single, never in relationship	404	53.7
Single, no current relationship	177	23.5
Single, in relationship	129	17.2
Married	42	5.6
Family education		
Both illiterate	261	34.7
One literate, one illiterate	260	34.6
Both literate	231	30.7
monthly income send from family		
<600	686	91.2
601-1000	58	7.7
>1000	8	1.1
Median ± IQR 300.0		

Table 2: Knowledge toward safe abortion of first year students in Mekelle university, 2013 N=536

Variable	Yes no(%)	No No (%)
-Is unsafe abortion considered major Problem, today?	449(83.8%)	87(16.2%)
-Ethiopia has abortion law?	426(79.5%)	110(20.5%)
-For what reason is abortion legal in Ethiopia		
Not allowed for any reason in Ethiopia	114(21.3%)	422(78.7%)
-If pregnancy is due rape or incent	243(45.3%)	293(54.7%)
-If pregnancy endangers Life of woman or fetus.	366(68.3%)	170(31.7)
-For woman with physical/ mental disabilities	240(44.8%)	296(55.2%)
-For woman physically psychologically un prepared	149(27.8%)	387(72.2%)
- If she is financially unable to rise the child	74(13.8%)	462(86.2%)
-When pregnancy the pregnancy is extra marital	67(12.5%)	469(87.5%)

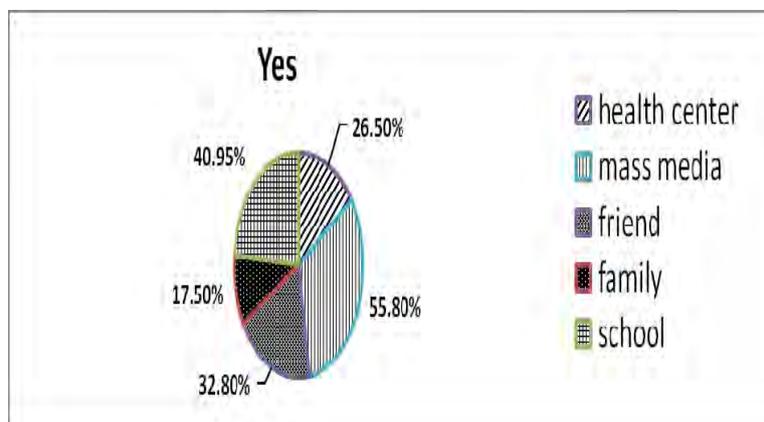


Figure 1: Main sources of information on safe abortion among respondents who have heard about safe abortion, Mekelle University 2013.

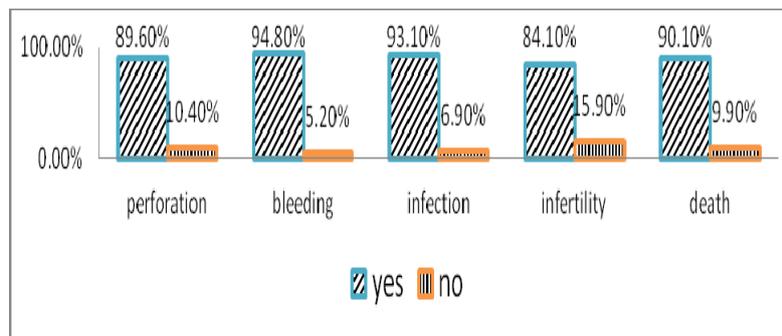


Figure 2: knowledge on complication of unsafe abortion, Mekelle University, 2013.

Table 3: Attitude of first year students towards safe abortion in Mekelle university, 2013 N=536

Variable	Disagree No (%)	no-opinion No (%)	Agree N (%)
-Elective abortion should be legal & accessible under any circumstance.	385(71.8%)	20(3.7%)	131(24.4%)
-A woman under 18 requesting safe abortion service should terminate pregnancy	351(65.5%)	33(6.2%)	152(28.4%)
-safe abortion is acceptable if she is financially unable to raise the child	390 (72.8%)	42(7.8%)	104(19.4%)
-safe abortion is acceptable to prevent mothers life or fetal anomaly	146(27.2%)	32(4.3%)	358(47.6%)
-It is acceptable for woman to choose safe abortion because of rape or incest	287(53.5%)	54(10.1%)	195(36.4)
-provision of safe abortion after Unwanted Pregnancy can prevent mothers' life?	293(54.7%)	78(14.6%)	165(30.8)
-Male/ husbands' have influences in decision of aborting	181(33.8%)	37(6.9%)	318(59.3%)
- Safe abortion services should be available at health center &hospital?	252(47.0%)	37(6.9%)	247(46.1%)
-Woman has the right to terminate her Pregnancy if she wishes?	309(57.6%)	58(10.8%)	169(31.5%)
- Adolescent students use induced abortions to terminate pregnancies.	151(28.2%)	74(13.8%)	311(58.0%)

Table 4: Binary and multiple logistic regression analysis of variables with knowledge towards safe abortion

Knowledge				
Variable	Adequate No (%)	In Adequate No (%)	Crude OR(95%CI)	Adjusted OR(95%CI)
Sex				
male	148(40.3)	219(59.7)	1.00	1.00
female	88(52.1)	81(47.9)	1.608(1.114-2.320)*	1.778(1.160-2.725)**
Age				
16-19	91(43.5)	118(56.5)	0.415(0.1591-0.83)*	0.383(0.135-1.089)
20-24	132(43.0)	175(57.0)	0.406(0.1581-0.46)*	0.465(0.170-1.274)
25-29	13(65.0)	7(35.0)	1.00	1.00
Department				
Mechanical	47(43.9)	60(56.1)	1.00*	1.00**
Chemistry	28(36.4)	49(63.6)	0.729(0.400-1.331)	0.8414(0.431-1.539)
Nursing	14(63.6)	8(36.4)	2.234(0.865-5.770)	1.536(0.565-4.176)
Animal S.	24(47.1)	27(52.9)	1.135(0.581-2.216)	1.028(0.514-2.054)
Management	43(44.3)	54(55.7)	1.017(0.585-1.768)	0.921(0.510-1.661)
Civics	13(26.0)	37(74.0)	0.449(0.214-0.938)*	0.369(0.169-0.809)**
Heritage	14(66.7)	7(33.3)	2.553(0.954-6.832)	2.294(0.820-6.420)
Veterinary	26(63.4)	15(36.6)	2.213(1.0544-6.44)	2.190(1.004-4.779)**
Foreign L.	27(38.6)	43(61.4)	0.802(0.434-1.482)	0.697(0.362-1.343)
Ethnicity				
Tigray	95(47.5)	105(52.5)	1.00	1.00
Amhara	94(48.2)	101(51.8)	1.029(0.693-1.527)	1.304(0.840-2.026)
Oromo	31(39.7)	47(60.3)	0.729(0.428-1.241)	0.999(0.531-1.880)
Others	16(25.4)	47(74.6)	0.376(0.200-0.708)*	0.480(0.229-1.006)
Religion				
Orthodox	191(46.6)	219(53.4)	1.00	1.00
Protestant	26(36.6)	45(63.4)	0.662(0.394-1.115)*	0.939(0.490-1.799)
others	19(34.5)	36(65.5)	0.605(0.336-1.090)	0.727(0.383-1.379)
Residence				
Rural	95(41.9)	132(58.1)	0.858(0.607-1.212)	
Urban	141(45.6)	168(54.4)	1.00	
Marital status				
single, never in relationship	134(45.7)	159(54.3)	0.632(0.289-1.383)	
Single, no current relationship	49(38.3)	79(61.7)	0.465(0.203-1.066)	
Single, in relationship	37(42.5)	50(57.5)	0.555(0.235-1.313)	
married	16(57.1)	12(42.9)	1.00	
Family education				
both illiterate	77(44.8)	95(55.2)	0.838(0.551-1.275)	0.779(0.482-1.259)
one literate, one illiterate	71(38.4)	114(61.6)	0.644(0.425-0.977)*	0.560(0.354-0.886)**
both literate	88(49.2)	91(50.8)	1.00	1.00
monthly income				
<600	221(45.6)	264(54.4)	1.00	1.00
601-1000	13(28.9)	32(71.1)	0.485(0.249-0.947)*	0.417(0.205-0.848)**
>1000	2(33.3)	4(66.7)	0.597(0.108-3.292)	0.543(0.087-3.371)

Table 5: Binary and multiple logistic regression analysis of variables with attitude towards safe

Table 6: Binary and multiple logistic regression analysis of variables with attitude towards safe abortion

Variable	Positive No (%)	Negative No (%)	Crude OR(95%CI)	Adjusted OR (95%CI)
Sex				
male	195(53.1)	172(46.9)	1.00	
female	88(52.1)	81(47.90)	0.958(0.665-1.380)	
Age				
16-19	113(54.1)	96(45.9)	0.963(0.3832-4.21)	
20-24	159(51.8)	148(48.2)	0.879(0.3542-1.81)	
25-29	11(55.0)	9(45.0)	1.00	
Department				
Mechanical	62(57.9)	45(42.1)	1.00	1.00
Chemistry	44(57.1)	33(42.9)	0.968(0.5351-1.750)	0.991(0.544-1.803)
Nursing	13(59.1)	9(40.9)	1.048(0.4132-6.64)	1.137(0.439-2.941)
Animal S.	20(39.2)	31(60.8)	0.468(0.2370-0.925)	0.502(0.252-1.001)
Management	52(53.6)	45(46.4)	0.839(0.482-1.459)	0.845(0.484-1.475)
Civics	19(38.0)	31(62.0)	0.445(0.224-0.885)*	0.484(0.242-0.971)
Heritage	9(42.9)	12(57.1)	0.544(0.211-1.401)	**
Veterinary	28(68.3)	13(31.7)	1.563(0.730-3.348)	0.547(0.210-1.428)
Foreign L.	36(51.4)	34(48.6)	0.769(0.419-1.408)	1.507(0.699-3.246)
Ethnicity				
Tigray	113(56.5)	87(43.5)	1.00	
Amhara	95(48.7)	100(51.3)	0.731(0.492-1.087)	
Oromo	43(55.1)	35(44.9)	0.946(0.559-1.601)	
Others	32(50.8)	31(49.2)	0.795(0.451-1.402)	
Religion				
Orthodox	211(51.5)	199(48.5)	1.00	
Protestant	41(57.7)	30(42.3)	1.289(0.775-2.145)	
others	31(56.4)	24(43.6)	1.218(0.691-2.148)	
Residence				
Rural	107(47.1)	120(52.9)	0.674(0.477-1.951)*	0.689(0.486-0.977)
Urban	176(57.0)	133(43.0)	1.00	**
Marital status				
single, never in relationship	145(49.5)	148(50.5)	1.130(2.459-2.459)	1.071(0.481-2.384)
Single, no current relationship	70(54.7)	58(45.3)	1.393(0.613-3.162)	1.258(0.542-2.918)
Single, in relationship	55(63.2)	32(36.8)	1.983(0.838-4.692)	1.767(0.735-4.252)
Single, in relationship married	13(46.4)	15(53.6)	1.00	1.00
Family education				
both illiterate	82(47.7)	90(52.3)	0.704(0.462-1.071)*	0.812(0.522-1.264)
one literate, one illiterate	100(54.1)	85(45.9)	0.909(0.601-1.374)	0.982(0.639-1.510)
both literate	101(56.4)	78(43.6)	1.00	1.00
monthly income				
<600	254(52.4)	231(47.6)	1.00	
601-1000	26(57.8)	19(42.2)	1.100(0.220-5.502)	
>1000	3(50.0)	3(50.0)	1.368(0.248-7.537)	

* Variables with P< 0.25 at binary logistic regression were included to multiple logistic regressions.