Original Article

Underage marriage, sexual debut, and factors associated with risky sexual behavior among high school students, Sidama Region, southern Ethiopia

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Abstract

Background: Most reproductive health problems of youths happen as a result of underage marriage, early sexual debut, and engaging in other risky sexual practices. Little is known about the magnitudes of underage marriage, age at first sexual debut, and factors affecting risky sexual behaviour among students of Sidama Region in Ethiopia. The aim of this study was to determine student's age at first sexual debut, magnitude of underage marriage and factors associated with risky sexual behaviour.

Methods: A cross-sectional study was conducted using a stratified sampling technique on 1,577 students from May to June 2016. The data were collected using self-administered questionnaires and analyzed using SPSS version 20 and Stata version 12. Descriptive statistics, binary & multivariable logistic regression models were used to determine the magnitude and predictors of risky sexual behavior.

Results: The mean age at first sexual intercourse was 15 years (SD=+3). Sexual debut or proportion of students who started sex at and below the age of 14 years was 20.9 % (95% confidence interval [CI]: 18, 9%-23%). The magnitude of underage marriage was 6.2 %(95% CI: 5.1%-7.5%). Drinking alcohol was the most important factor associated with risky sex (AOR: 13.2, 95% CI [8.1-21.5]). Other factors include chewing khat (AOR: 2.2, 95% CI: 1.4-3.3), having family growing khat (AOR: 1.6, 95% CI: 1.1-2.2), and living alone or far away from own parents are among some of the factors

Conclusion: A significant proportion of students had early exposure to sex, were engaged in risky sex and in an illegal formal and informal under age marriage. The study also identified nine modifiable factors associated with student's risky sexual practice. The observed lower mean age at student's first sex, student's early and illegitimate marital engagement and the high magnitude of student's risky sex demand an urgent, tailored, strategic and concerted effort.

Key words: risky sexual behavior, sexual debut, under age marriage, Ethiopia

Introduction

Sexual risk behavior is defined as sexual activities that may expose an individual to the risk of sexually transmitted infections (STIs) including HIV/AIDS, teenage pregnancies, unplanned pregnancies, and abortion. Many young people engage in risky sexual behaviour that can result in unintended health outcomes. Some of these behaviours include unprotected sexual intercourse, multiple sexual partners, forced or coerced sexual intercourse and sexual intercourse for reward. Globally, the prevalence of forced first sex among adolescent girls younger than 15 years ranges from 11% to 48% (2). Early and unprotected sexual initiation can cause harmful physical emotional and social outcomes, especially for girls. Furthermore, compared to adults, adolescents are less likely to have skills, cognitive maturity, and information needed to protect themselves from unwanted pregnancy, HIV and STIs (3).

Lower age at first marriage has a remarkable effect on childbearing because women who marry early have on average a longer period of exposure to the risk of pregnancy including multiparity (4). Underage marriage is one of the most common predisposing factors leading to STI, HIV, teenage pregnancy, complications of pregnancy, and other reproductive health problems (5). In most countries, including Ethiopia, underage marriage is illegal. However, most girls marry at the age of 15 years (5). In developing countries alone, including Ethiopia, about 16 million girls within the age group 15-19 give birth. The vast majority of these pregnancies are unplanned (6). Underage marriage is also associated with lower levels of schooling to girls in every region of the world and is a barrier to international development goals (5). A lost opportunity for education is not only harmful for girls, but has a wide-reaching consequence for their children and communities (5).

Age at first sex (sexual debut) is another most important indicator of youth's poor sexual and reproductive health (7). Most youngsters all over the world are sexually active. However, the age at which they start sexual intercourse may vary among regions, countries, urban and rural settings (8). Initiation of sex at an early age will lead to higher risk of unintended teenage pregnancy or contracting STIs/HIV (7). According to Ethiopia Demographic and Health Survey (EDHS) 2011 report, 29% of women aged 25-49 had practiced their first sexual intercourse before the age of 15 while 62% practiced before the age of 18 (4). Another study from Ethiopia revealed that girls start their first sexual experience on average at the age of 16. This is as compared to boys who start practicing sex around the age of 21(9). There is also a study report denoting the age at first sex for Ethiopian youths range from 16 to 17 years (10).

Practicing sex at an early age, committing sex with multiple sexual partners, having sex while under the influence of psychoactive substances, practicing casual or intended sex without condom and or contraceptive are risky sexual practices (1). The reported proportion of risky sexual practice among Ethiopian students ranges from 23.2% to 34.8% (12). There are several reported factors associated with student's risky sexual practices. These include age, gender, grade level, early exposure to sexually explicit media, use of psychoactive substances, peer pressure, poverty, and other traditional or cultural norms (3, 13-17).

Among the numerous Ethiopian youths' sexual and reproductive health problems, early sexual debut, gender inequality, sexual coercion, early marriage, female genital cutting, unplanned pregnancies, closely spaced pregnancies, abortion, STIs and AIDS are included (11). Availability of up-to-date information regarding sexual debut, magnitude of underage marriage, risky sexual practice, and factors determining risky sexual practice among the youth will have

a paramount significance to the design of preventive policies and practices (11). Nevertheless, in the developing world and Ethiopia in particular, there is scarcity of information regarding these issues. Therefore, this study is intended to determine the age at first sexual debut, magnitude of underage marriage, risky sexual behavior and factors associated with risky sexual behavior among high school students of Sidama Region, Southern Ethiopia

Methods and materials

Background of the study area, study design and period

This study was carried out in four districts of Sidama Region from which secondary schools were selected. The study employs institution-based cross-sectional study design. It was conducted from May to June 2016 to assess underage marriage, sexual debut, and factors associated with risky sexual behavior among high school students Sidama Region, Southern Ethiopia. Four districts of the Region were included: Shebedino district, Aleta Chuko district, Dara district and Wondo Genet district. Sidama Region is one of the Regions of Ethiopia located south of Addis Ababa. Hawassa City Administration is a Region's Capital and located 275 km South of Addis Ababa which is the capital city of Ethiopia. During the study period, Sidama Region (which was then called Sidama Zone) had 70,000 high school students.

Sample size determination

Sample size of this study was determined using Open EPI Software version 3.03. After calculating for all possible sample sizes, we selected the bigger sample size adequate to address all study objectives. As this study was one of the main parts of another study project, we used the maximum possible sample adequate enough to draw minimum sample sizes required to all intended studies. Thus, the bigger sample size obtained in this study was calculated using the reported proportions of students who use khat for urban (8.73%) and rural (4.52%) areas (18) at 95% confidence level and power of 90%. Thus, the calculated minimum sample size was 1557 high school students. Considering 5% non-response, the final minimum size was determined to be 1636 students.

Sampling technique and Procedure

The study participants were selected using a stratified sampling technique. Specific sections in each grade were selected by using simple random sampling technique. The stratification considers sex and grade levels of students to allocate students proportionally and on the assumption that student's grade level and sex would affect student's risky sexual behavior. The total sample size was distributed proportionally to the selected grades and sections based on the total number of students in each year of study according to sex. Finally, individual students fulfilling the inclusion criterion were randomly selected to be study participants. Excluded from the study were those who were lost from the school, dropped out, critically ill and absent from school during the study time.

Measurement tool, data collection procedure and quality assurance

The questionnaire was prepared by reviewing related literatures (19-20). It was customized to fit the context and translated to the local language Amharic and *Sidaamu Afoo* so that the students could understand the questions. We initially developed the self-administered questionnaire in English and then translated it into the local languages. Some necessary modifications were made based upon comments given by professionals from School of Medicine, Nursing and Public Health of Hawassa University. Prior to the main data collection, a pre-test was conducted on 10% of the sampled subjects at Tula High School found in Tula Sub

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City of Hawassa Town. Finally, the questionnaires were distributed by trained data collectors.

The study participants had the right to refuse or discontinue participation at any time. We ensured confidentiality by removing all personal identifiers from the questionnaires. The research assistants informed the participants carefully about the study and were available throughout the administration of the self-ratted instrument to answer potential questions from individual students who participated in the study. In addition, to avoid social desirability bias, the study participants were given adequate space to foster their privacy and their teachers were asked to leave the classroom during the data collection times. The questionnaire contained questions asking if a student had ever had sex and at what age they first had sex. Factors explored as potential determinants of risky sexual behavior included; sex of respondents, place of residence, age of respondents, grade level, alcohol use, khat chewing, smoking cigarette, academic performance, ethnicity, age, marital status, fathers educational status, mothers educational status, pocket money per month, khat growing by family, family history of cigarette use, chewing khat by friends.

Operational definitions

Student with risky sexual behavior is a student who at least qualifies one of the following criterions. This includes; practicing sex at an early age, commit sex with multiple sexual partners, had sex while under the influence of alcohol or drugs or khat or other substances, and practiced casual or intended sex without condom and or contraceptive use. If a student ever practiced sex s/he would write the specific age s/he practiced sex for the first time. This is, therefore, defined as a sexual debut. If students practiced sex at the age of 14 and below, it is further defined as 'early sexual debut'. Underage marriage is defined as any marriage happened below the age of eighteen.

Data management and analysis

Data entry was managed using SPSS software. The analysis however was carried out by using SPSS version-20 and Stata version-12 softwares. The Stata software was particularly used to check for the multicolinearity effect. Before analysis of the data, missing observations were cleaned and presence of cells of each category under each variable with zero values was checked by cross-tabulation of each independent variable against the dependent variable. Categories containing cells with zero values were merged with the other category within the variable to have better validity on its result. Analysis of the data involved descriptive statistics of the demographic profile of the participants and testing and identifying potential predictors of student's risky sexual behavior by using the simple and multivariable logistic regression techniques. Descriptive statistics, such as differences in the distribution (frequency), mean (M), standard deviation (SD), percentages were also used.

Simple binary logistic regression analysis for each independent variable was performed against the dependent variable to see the impact of each factor on the pattern of sexual risk behavior, among high school students, the dependent variable, in the sampled population, without adjusting for the effect of other variables. Independent variables taken to the multivariable logistic regression models were all variables with p-value < 0.25 at the simple binary logistic regression analysis phase (21).

Models were built by using a stepwise backward method of model building technique. This method was chosen because of shorter computation time it takes while running the models and can give chance for a variable after running (22). In the multivariable logistic

regression model the effect of each independent variable on the dependent variable, risky sexual behavior, among high school students were assessed by controlling for the possible confounders using a stepwise backward type of model development. Factors that were not statistically significant in the stepwise backward model development were removed one by one and give also chance after removing beginning with the worst predictor.

Use of model diagnostic statistics is important to assess adequacy of the model. Presence of possible confounders and interaction effects was investigated by computing relative changes on ß coefficients at a cutoff point 15% (23). During stepwise backward model development, the predictor variables that bring a change on the ß coefficient which was greater than 15% was checked for their interaction effect by generating a new variable from the product of the two variables. If the interaction term, the new variable, is found to be insignificant (P-value > 0.05) it was removed from the model. The variable is, therefore, considered as a confounder and would be kept in the model. But if the interaction term, the new variable was significant, it was kept within the model.

Presence of multicolinearity was checked for the final model with cut-off point mean of variance inflation factor (VIF) less than five (24). If a model had a mean VIF value greater than five, the variables with multicolinearity was checked. Then by removing the variables with colliniarity effect from the model one by one and rechecking their multicolinearity, the one which fits the cutoff point was taken. The model diagnostic test revealed that the area under the ROC curve was 76.46 %. This indicates that the model was good enough in differentiating student's risky sexual behavior from students not participated in risky sexual behavior correctly. The Hosmer – Lemeshow goodness 0.43 and mean of Variation Inflation Factor (VIF) value 1.30 implied that the model was fit (P-Value ≥ 0.05). This confirmed

that there was no significant colliniarity among the predictors.

The predicting ability of the model (model accuracy) has been evaluated using the area under the ROC (Receiver Operating Characteristic) curve [25]. The model with the area under the ROC curve closer to one was preferred for the final model implying the fitted model prediction ability was well. Generally the final model was chosen after comparison of correctness of its formulation, predicting ability and by computing and taking the smaller possible value of the Akakian Information Criteria (AIC). In the final model adjusted odds ratio and confidence interval was included. Numbers and percentage likely hoods of the odds ratio were used for the interpretation of the final model. Except for p-values, all values under the result section were rounded in to two decimal places.

Results

Socio-demography

Out of the total of one thousand six hundred thirty six (1636) study participants one thousand five hundred seventy seven (1577) students responded to the questionnaires. This makes the response rate 96.4%. Out of the total students surveyed, more than half (54.5%) were male, and the mean age was 17 years (SD=± 3). About one third, 582(36.9%) of the students reside in Aleta Chuko District. Majority 1291(81.9%) of students were in the age group of 15-19 years and more than half 928 (58.8%) of students were in the class of grade nine (Table 1).

Proportion of underage marriage

Out of the total (n=1577) students, 6.7% (n=106) of students were married and 5.6 % (n=88) were living with their sexual partner. This altogether makes the overall proportion of 12.3% (n=194). The proportion of students with an underage age

formal and non-formal marital engagement accounted 3.0% (n=48) and 3.2% (n=50) respectively. The overall proportion underage marriage was thus 6.2% (n=98) (95% CI: 5.1%-7.5%). The finding of a closer analysis of the marital status for students, whose age was less than 18 years (n=1070), is shown in Table 2. Of the formally married under 18 year students (n=48), females accounted for 26(54.2%) and males accounted for 22(45.8%). Twenty nine (58%) of under 18 male students were students living with sexual partner followed by female under 18 students 21 (42%). Twenty five (52.1%) of the married students were under 16 years of age (Table 2).

Table 1: Sociodemographic characteristics of high school students in Sidama Region, Southern Ethiopia, 2016

Variable	Number (n=1577)	%
Sex : Male	860	54.5
Female	717	45.5
District/Woreda		
Wondo Genet District	198	12.6
Aleta Chuko District	582	36.9
Shebedino District	463	29.4
Dara District	334	21.2
Age of respondents		
10-14 years	147	9.3
15-19 years	1291	81.9
20-24 years	118	7.5
>24 years	21	1.3
Grade level		
Grade 9	928	58.8
Grade 10	501	31.8
Grade 11	87	5.5
Grade 12	61	3.9
Ethnicity		
Sidama	1352	85.7
Non-Sidama	225	14.3
Marital status		
Married	106	6.7
Un-married	1366	86.6
Living together	88	5.6
Divorced or separated	11	0.7
Widowed	6	0.4
Fathers educational status		
No formal education	268	17
Elementary school	702	44.5
Secondary school	392	24.9
College or university	215	13.6
Mothers educational status		
No formal education	425	26.9
Elementary school	761	48.3
Secondary school	290	18.4
College or university	101	6.4

Table 1 continued

Variable	Number (n=1577)	%
Place of residence:		
Urban	733	46.5
Rural	844	53.5
Pocket money per month		
0-50 birr per month	919	58.3
51-100 birr per month	261	16.6
101-200 birr per month	134	8.5
>201 birr per month	263	16.7

Table 2: Proportion of formally and informally married under eighteen high school students in Sidama Region, Southern Ethiopia, 2016

Age	Under age (<18) but married			Under age (< 18) but living together with sexual partner		
	Male	Female	Total	Male	Female	Total
17 years	3.0 (6.3%)	3.0(6.3%)	6.0 (12.6%)	12.0(24.0%)	1.0(2.0%)	13.0(26.0%)
16 Years	11.0(22.9%)	6.0(12.5%)	17.0(35.4%)	7.0(14.0%)	8.0(16.0%)	15.0(30.0%)
15 Years	5.0(10.4%)	12.0(25.0%)	17.0(35.4%)	6.0(12.0%)	5.0(10.0%)	11.0(22.0%)
14 years	2.0(4.2%)	2.0(4.2%)	4.0(8.4%)	4.0(8.0%)	6.0(12.0%)	10.0(20.0%)
13 years	1.0(2.1%)	3.0 (6.25%	4.0(8.4%)	0.0(0.0%)	1.0(2.0%)	1.0(2.0%)
Total	22.0(45.8%)	26.0(54.2%)	48.0(100.0%)	29.0(58.0%)	21.0(42.0%)	50.0(100.0%)

Sexual debut

In the current study we assessed the students mean age at first sexual intercourse, early sexual debut, and also prevalence of student's risky sexual behavior. In general 420(26.6%) of students reported that they had ever practiced sex (Figure 1). The magnitude of early sexual debut or proportion of students who started sex at and below the age of 14 was 315(20.9%) (95% CI: 18, 9%-23%).
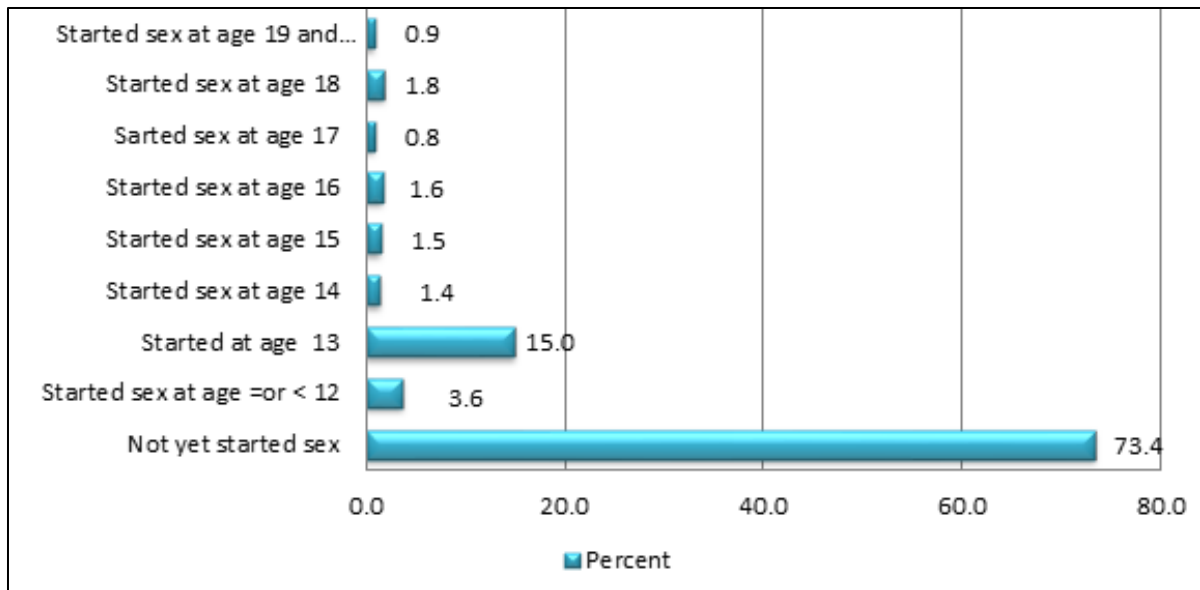
Figure 1: Diagram to show at which age high school students of Sidama Region start practicing sex, Southern Ethiopia(n=1577), 2016

Mean age at first sex and prevalence of risky sexual behavior

The mean student's age at first sexual intercourse or sexual debut was 15 years (SD = ± 3). The prevalence of risky sexual behavior among high school students attending in selected districts of Sidama Region was 13.8% (95% CI: 13%-14%). Out of the 13.8% (218) students practicing risky sex, 169(10.7%) were male students followed by 49 (3.1%) female students. Twenty three (23.0%) male and 2.3% female students claimed for practicing sex as a result of chewing khat. In addition, 99 (45.4%) male and 25(11.5%) female students participated in this study claimed that they did casual sex without using condom (Table 3).

Table 3: Status of risky sexual behavior among high school students living in Sidama Region, Southern Ethiopia, 2016

Variables	Male (%)	Female n (%)
Commit sex under the influence of khat (n=218)		
No	119(54.6%)	44(20.2%)
Yes	50 (23.0%)	5(2.3%)
Commit sex under the influence of alcohol (n=218		
No	114(52.3%)	45(20.6%)
Yes	55(25.2%)	4(1.9%)
Commit casual sex without using condom (n=218)		
No	70(32.1%)	24(11.0%)
Yes	99(45.4%)	25(11.5%)
Students demonstrated risky sexual behavior (n=1577)		
No	691(43.8%)	668(42.3%)
Yes	169(10.7%)	49(3.1%)

Predictors of risky sexual behavior

The current study finding depicted that being female student, being in the age group 18 and above, being unmarried high school student, and being in grade 11 & 12 were factors that increased student's risky sexual behavior. The odd of practicing risk sex for female students was greater by two fold than male students (AOR: 2.0, 95% CI: 1.4-3.0). Similarly, compared to students aged 18 and above, under eighteen students had two fold likelihood of practicing risky sex (AOR: 2.0, 95% CI: 1.3-2.5]. In contrast to married students, unmarried students showed three times higher odds of practicing risky sex (AOR: 3.0, 95% CI, 2.0-4.5). Regarding student's grade level, those students in grade 11 & 12 had three-fold higher odds of practicing risky (AOR: 3.0, 95% CI: 1.4-6.0) than students enrolled in grade 9 &10. Those students currently chewing khat had 2.2 times greater odds of practicing risky sex than their non khat chewing fellow (AOR: 2.2, 95% CI: 1.4-3.3). Similarly, students having family growing khat had nearly two-fold higher odds of practicing risky sex than those who didn't (AOR: 1.6, 95% CI: 1.1-2.2). Likewise, students who had khat chewing friends had about two fold greater likely hood of practicing risky sex than students who didn't (AOR: 1.7, 95% CI, 1.1-2.5). But, most importantly, students drinking alcohol had thirteen times higher chance of practicing risky sex than students who didn't (AOR: 13.2, 95% CI, 8.1-21.5).

Finally the current study finding demonstrates how student's living status affected their risky sexual behaviour. In comparison to students living with their family (AOR: 0.2, 95% CI: 0.1-0.8) or keens (AOR: 0.2, 95% CI: 0.1-0.9) or with other non-relatives (AOR: 0.2, 95% CI: 0.1-0.5), students who are living alone had higher odds of practicing risky sex. For instance, those high school students living alone had 87% greater likelihood of practicing risky sex than student living with their family. Similarly, compared to students living with their keens and non-relative others, students living alone had by 86% and 91% greater risk of practicing risky sex respectively (see Table 4).

Table 4: Bivariable and Multivariable Logistic regression analysis for factors associated with risky sexual behaviour among students, Sidama, Ethiopia, 2016

Variables	Risky Sexual Behavior		COR (95% CI)	AOR 95% (CI)
Sex	Yes	No		
Female	103	554	1.3 (0.9, 1.7)	1.9(1.4, 2.9)***
Male	115	805	1	1
Age of respondent				
Age under 18 years	105	964	1	1
Age >=18 years	113	395	2.6 (1.9, 3.5) ***	1.8 (1.3, 2.5)**
Academic performance				
Poor academic performance	24	44	3.6 (0.4, 5,2)	
Better academic performance	194	1315	1	

Table 4 continued.

Variables	Risky sexual behaviour		COR(95% CI)	AOR(95% CI)
Ethnicity				
Non-Sidama	88	137	6.0 (1.1, 8.3)	
Sidama	130	1222	1	
Marital status				
Unmarried	178	1291	4.4 (2.9, 6.7)***	3.0 (2.0, 4.5)***
Married	40	68	1	1
Grade level				
Grade 9-10	206	1222	1	1
Grade 11-12	12	137	2.0 (1.1,3.5) *	3.0 (1.4, 6.0)**
Fathers educational status				
No formal education	42	378	1	
Elementary education	77	478	1.5 (0.6, 2.8)	
Secondary education	68	361	1.7 (0.7, 2.6)	
College or university	31	142	2.0 (0.7, 3.6)	
Mothers educational status				
No formal education	38	387	1	
Elementary education	90	711	1.3 (0.6, 2.0)	
Secondary education	55	195	2.9 (0.4, 5.4)	
College or university	35	66	5.4 (0.5, 7.9)	
Involve Khat production marketing	**Yes**	**No**		
No	116	956	1	1
Yes	102	403	2.1 (1.7, 3.4)*	0.7 (0.5, 1.1)
Family history of cigarette use				
No	163	1023	1	1
Yes	55	336	2.7 (1.7, 3.4)*	0.5 (0.3, 0.8)
Family history of alcohol use				
No	177	1251	1	1
Yes	41	108	1.5 (1.2, 4.8)*	0.7 (0.5, 1.1)
Friends chewing Khat				
No	136	978	1	1
Yes	82	381	5.9 (2.7, 8.2)**	1.7 (1.1, 2.5)**
Chewed khat in the past 30 days				
No	187	1050	1	1
Yes	31	309	0.56 (0.1, 1.3)	2.2 (1.4, 3.3)***
Do you smoke cigarette				
No	192	1150	1	1
Yes	26	209	0.75 (0.48, 1.15)	0.7 (0.3, 1.5)
Do you drink alcohol				
No	171	1056	1	1
Yes	47	303	1.04 (0.74, 1.48)	13.2 (8.1, 21.5)***
Place of residence				
Urban	95	515	1	
Rural	123	844	0.7 (0.1, 1.2)	

Table 4 continued.

Variables	Risky sexual behaviour		COR(95% CI)	AOR(95% CI)
Pocket money per month				
0-50 birr per month	66	663	1	1
51-100 birr per month	53	259	2.1 (0.4, 3.8)	1.41 (1.01,1.96)
101-200 birr per month	56	278	2.0 (0.4, 3.1)	1.1 (0.7, 1.7)
>=201	43	159	2.7 (0.8, 3.1)	1.1 (0.7, 1.5)
Family grow Khat				
No	60	512	1	1
Yes	158	847	0.6 (0.1, 1.1)	1.6 (1.1, 2.2)**
With whom you are living				
Living with alone	7	26	1	1
With my keens	35	198	0.6 (0.1, 1.1)	0.2 (0.1, 0.9) *
With non-relatives	5	27	0.7 (0.1, 1.6)	0.2 (0.1, 0.5) **
With my family	166	1102	0.6 (0.1, 1.8)	0.2 (0.1, 0.9) *
With others	5	6	0.12 (0.1, 0.5)**	0.2 (0.1, 0.5) **

1= references group,   *=PV<0.05, **=PV<0.001,   ***= PV<0.0001

CI =: confidence interval,   COR=: Crude Odds Ratio, AOR: Adjusted Odds Ratio

Discussion

This institution-based cross-sectional study identified the magnitude of under-age marriage, students mean age at first sexual intercourse, prevalence of early sexual debut, and factors associated with risky sexual behaviour among students attending the high schools of Sidama Region located in south Ethiopia. These findings are discussed as follows.

Under age marriage is one of the known predisposing factors leading to teenage pregnancy, school dropout, and other reproductive health problems particularly among the female youth(5). The current Federal Democratic Republic of Ethiopian revised Family Code Proclamation declares that under age marriage or marriage conducted less than 18 years to be illegal for both male and female child(26). The former State, the SNNPRS, where the current Sidama Region was one of its zones, had a similar state proclamation. However, with special consideration it allows the marriage to be conducted at 16 years (27). The proportion of students with an underage age formal and non-

formal marital engagement, noticed in this study, is stuffiest to alarm that the illegal practice has still continued. This finding is tangible evidence for the requirements of further reinforcement towards the implementation of the countries' Revised Family Code Proclamation.

In the present study, the mean student's age at first sexual intercourse or sexual debut was 15 years. Comparable studies conducted in North East Ethiopia in 2009(28) and among Addis Ababa University undergraduate students in 2014(29) revealed that rural youths initiate sexual intercourse at lower age than their urban counterparts with mean age of 16 years (±SD=2) for rural and 17(±SD=2) for urban youths. This slight difference might come from the existing traditional practice supportive of underage marriage, the growing chance of youth's exposure to pornographic movies and other sexually explicit media, influence from sexually experienced peers, and the low socio economic status of girls.

The finding regarding the students' age at first sexual intercourse is very low. As noted in the current study, the prevalence of early sexual

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debut or practice of sex at the age of 14 and below was 20.9 %. This is therefore an indication that students are prone to wide range of reproductive health problems. This may include unwanted teenage pregnancy, abortion, and STI/HIV. For instance, one study conducted among group of Swedish girls depicted the fact that students who commence sex at an early age developed STIs, cervical atypias, and had more multiple sexual partners (30). Another study conducted at Jamaica also showed similar report stating early sexual debut as one of risk factors increasing the odds of unwanted pregnancy among teens (31). Interventions targeting delaying sexual debut are vital to decrease risky sex and its squeals (30, 31).

The current study finding depicted that female students had two times higher odds of practicing risky sex than males. This finding is in accord with some findings so far reported (12, 29). This may be explained with the possible reasons such as masculine persuasion to commit casual sex, teen girls limited negotiation skill, and their limited power and courage to challenge their male sexual partners to use condom (32). The existing traditional marital trend which exposes the teen female students to get married with sexually experienced older adult male is also one of the reasons increasing female student's odds of practicing risky sex(4). The demographic health survey of Ethiopia reported that most Ethiopian men got married 7 years later than Ethiopian women. Most of these are sexually experienced for at least two years before the date of their marriage while most women practice sex at their weeding day and being an underage girl(4).

The likelihood of practicing risky sex was three times higher among high school students (11-12) as compared to preparatory students (grade 9-10). Similarly, those eighteen years and older students had two-fold higher odds of practicing risky sex than those who were under eighteen. This finding is in line with similar research reports conducted elsewhere (33). The WHO's

and CDC's acknowledge the fact that youths between the age of 15-24 years are people with high risky sexual behavior(34). As the age increase so is the students grade level. This means the likely hood of committing risky sex at grade $\geq$ 11 and the age of eighteen may be anticipated. Thus, commencing preventive education at student's early age or in and at lower grade is fundamental to preventive and promotive works.

In Ethiopia, most high schools in the rural setting are not equally accessible to all students in the district (35). Particularly, most students attending grade 11 and 12 called "preparatory school" should leave their family to live alone in the area where the preparatory school is located. Unfortunately, there are study reports depicting students living alone during their school age demonstrated an increased odds of risky taking behaviors. These include taking psychoactive substances and also practicing early and risky sex (36, 37). The finding of the current study, therefore, is in line with these reports. Those students living alone while attending their high school had 86% - 91% likelihood of practicing risky sex than students living with their family or with their keens or with non-relative others (12). Parents, school authorities, health bureaus, and other stake holders need to identify the risk of sending teens to live alone during their school age. Special preventive intervention which targets these types of students may be vital to the preventive works.

In contrast to married students, unmarried students showed three times higher risk of practicing risky sex. Being in marital relationship is one of the known protective factors against exposure to risky sex (33). However, living alone far away from family or relatives is also one of the factors increasing the likely hood of practicing risky sex. As a result, the implications of this finding should never contradict with risks associated with this. Thus, it would be rational to think that cohabitation, as a legal husband and wife, is protective. Besides,

the prevalence of students with illegal underage marriage should not be considered a normal phenomenon.

Psychoactive substances use such as alcohol, khat, and other drugs is one of the predisposing factors leading peoples to practice risky sex. These substances can decreases students' self-control, rational thinking capability, and sexual negotiation to avoid or delay committing a casual and unprotected sex (29.38). One study reported from Ethiopia depicted that khat chewing as one of risk factors leading to risky sexual behavior (29,38). The current study also found that students khat use as one of risk factor which increased students risky sexual practice by two fold than students who didn't. As a result of khat induced euphoria, during the over excitement phase, khat chewers may not be competent of making rational judgment and they also may not be able to forecast the serious consequences of their actions. Most chewers, in addition, prefer to take alcohol to calm the effects of the khat educed euphoria. Thus, chewers could walk into the most dangerous situations feeling that there is no danger and being unaware of the possible dangers to their lives or well-being. Thus, they easily get provoked to have casual and early sexual initiation (29).

Unique to this study, we found 'having family growing khat' as one of the factors leading students to practice risky sex. In accord with our hypothesis, 'having khat growing family' increased student's chance of practicing risky sex by about two fold. In another study, conducted along with this research project, the authors confirmed that having family member growing khat is one of the risk factors that increased the student's odds of khat chewing by two fold (29, 40, and 41). This is thus an alarm indicating the need to equip student parents who are farmers to either avoid planting khat or substitute khat with other cash-crop. This research-based evidence may be considered as one of the input to help parents conduct responsible and informed decision making to save their children.

Peer pressure is one of the most common factors frequently reported as determinants of youth behaviors. To indicate some studies as an example, psychoactive substance user students including khat chewers are known for their risk-taking behaviors (29, 40). In line with this fact, having friend chewing khat was another predisposing factor that increased students odds of practicing risky sex by nearly two fold. The availability of khat in the area where this study was conducted is one important issue that leads the students to have family growing khat and also friends chewing khat both of which were factors increasing students' risky sexual behaviour.

Finally but most importantly, of all variables identified in the current study, student's alcohol use is one of the frequently reported risk factor which leads individuals to practice risky sex. Much more than other factors, students who drink alcohol had 13-times higher odds of practicing risky sex than students who didn't. This finding is in agreement with other similar study reports conducted in Ethiopia (29, 38, 40, 42). Alcohol is one of the substances affecting the brain function and altering person's rational decision making ability. People using alcohol do not only commit casual sex with commercial sex workers but also without using condom and contraceptive. When alcohol drinking is happening among high school students, where the majorities are below 18, the implementation of the law prohibiting children's exposure to alcohol requires attention.

This study has limitation in that it is cross-sectional study design and may not explain the temporal relationship between the risky sexual behavior and explanatory variables. The study topic by itself assesses personal and sensitive issues related to sexuality which might have caused underreporting of some behaviors. Thus,

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the finding of this study should be interpreted with these limitations.

Conclusion

This study determined that the students mean age at their first sexual intercourse was 15year and the prevalence of early sexual debut was considerably high. Significant proportions of students were found being engaged with formal and non-formal underage marriage. The study also determined the practice of high-risk sexual behaviour among a substantial proportion of students. Being female student, drinking alcohol, chewing khat, having family growing chat, having friend chewing chat, being a preparatory school student (grade 11& 12), being eighteen and or above, and living alone while attending high school were factors increased student's odds of practicing risky sex. Increasing the age at first sex, reinforcing the implementation of the law preventing underage marriage, and addressing those factors increasing the odds of student's risky sexual behavior is essential to preventive works. Reinforcement of the implementation low prohibiting student's access to alcohol is worthwhile. In summary, policy makers should think about the need to redefining legal ages for marriage and buying and chewing khat.

Ethical considerations

This study made use of the data collected for another prior study that already got an Ethical approval from CMHS. Ethical clearance was obtained from Institutional Review Board of College of Medicine and Health Sciences, Hawassa University. The study was conducted with informed consent and voluntary participation. Moreover, the confidentiality of the information was guaranteed by using nameless questionnaires and by maintenance of the data in a safe and protected place.

Data Availability

The datasets generated and/or analyzed during the current study are available upon reasonable request from the corresponding author.

Conflict of interest

The authors declared no conflicts of interest exist.

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