Prevalence and Associated Factors of Self-Reported Sexually Transmitted Diseases among College Students in Motta Town, Northwest Ethiopia

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ARTICLE INFO	ABSTRACT
Article type: Original article *Article History:* Received: 30-Oct-2020 Accepted: 30-Apr-2021 *Key words:* Prevalence Sexually Transmitted Diseases (STD) Students	***Background & aim:*** Throughout the world, majority of individuals who are affected by sexually transmitted disease (STIs) are youths and about one in every twenty adolescents will develop STIs other than Human Immune Deficiency Virus (HIV) each year. Thus, the aim of the study was to assess the prevalence and associated factors of self-reported STIs among college students. ***Methods:*** This cross sectional study was conducted in Motta town, Northwest Ethiopia in January 2020. Using multistage stratified sampling technique 616 samples were randomly selected from randomly selected 45 sections. Data was collected using semi-open ended and researcher-made self-administered questionnaire from randomly selected students. In multivariable logistic regression, P-value less than 0.05 and Odds ratios at 95% confidence intervals was used to determine presence of association between dependent and independent variables by using STATA version 14.1 windows program. ***Results:*** Overall, a total of 571 students participated in the study and made the response rate 93%. Of respondents, 405(71%) initiated sexual intercourse and 82(14.4%) students reported at least one syndrome. Age >24 years [AOR=8.05;95%CI:2.80-23.12] and 20-24years [AOR=2.7;95%CI:1.18-6.17], being 3rd [AOR=5.23;95%CI:2.23-12.28] and 2nd year student [AOR=2.45;95%CI:1.20-5.01], having multiple sexual partners [AOR=9.38;95%CI:4.46-19.73], having poor knowledge [AOR=2.93;95%CI:1.49-5.77] and inconsistent condom use [AOR=3.10;95%CI:1.40-6.90] were factors associated with sexually transmitted diseases. ***Conclusion:*** The prevalence of self-reported sexually transmitted infections among college students in Motta town was high. Thus, building up students' knowledge and encourage them to abstain from having multiple sexual partners and using condom consistently are important issues.

Introduction

Sexually Sexually transmitted infections (STIs) are group of infections that are usually transmitted through sexual intercourse. Despite the availability of different diagnostic and treatment modalities, a systemic review done in the World Health Organization (WHO) member countries in 2016 found curable STIs were responsible for more than 376 million new annual cases among reproductive age group individuals (1).

Another global estimate for herpes simplex virus type-2 (HSV-2) in 2012, about 417 million people in this age group were living with (HSV-2) and around 267 million females had suffered from genital ulcer (2). It is also known that STI facilitate sexual transmission of HIV and activate some cancers that are common across the World (3). STI can result in short-term and long-term sequelae to those who had infected and compromises quality of life, sexual and reproductive health, and neonatal and child

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health. Moreover, young people are still suffering from financial impact of STIs and studies revealed that early STI screening, diagnosis, treatment and prevention, especially for adolescents and young adults, are necessary to reduce the incidence and the burden of STDs among young people(4,5).

Though, studies on this issue are scarce, researches conducted to assess self-reported STIs in Ethiopia revealed that there is still higher prevalence of STIs among youths (6–8). And the aim is to assess the prevalence and associated factors of STDs among college students using syndromic approaches.

Materials and Methods

A cross-sectional study design was employed from January 5-25, 2020 to study the prevalence and factors associated with self-reported sexually transmitted diseases among college students found in Motta town, which is founded in Amhara regional state, Northwest Ethiopia.

The sample size was determined using single population proportion formula with the assumption of 95% confidence level, 5% margin of error and 23.3% life time prevalence of self-reported STDs among university students from previous study conducted in Wolaita Sodo University (7). For the second objective, I have used epi info version 7.2 windows software and previous studies conducted in Wolaita Sodo University and Bahir-Dar high schools and preparatory students (6,7). Since the sample size for the second objectives was smaller than the first, I considered the sample size of the first objective and a design effect of two. Thus, by adding 10% none response rate, the final determined sample size was 616.

The study area was stratified by college ownership and year of education. Thus, samples were proportionally allocated by college ownership (governmental and private) and to each year of education. Finally, list of students registered in randomly selected sections were obtained from student attendance sheet and proportionally allocated samples were drawn randomly. But, students with visual difficulties and unable to fill or complete the questionnaire were excluded.

After verbal informed consent, data was collected face-to-face by using semi-opened, structured and researcher-made self-administered questionnaire. For data collection, teams were established and trained for two days, and the questionnaire was seen by senior experts who had experiences on STIs and research from University of Gondar for readability, clarity of wording, layout and style and feasibility. Two weeks before actual data collection, pre-test of data collection tools was done on 10% of the sample at Bahir-Dar TVET College and appropriate modification was made.

The questionnaire had 28 question items and five parts, which were socio-demographic factors (six items), social and religious factors (two items), knowledge of STI symptoms (four items), sexual and reproductive health behavior of respondents (ten items) and assessment of self-reported sexually transmitted infections (six items).

Knowledge of respondents was assessed by WHO validated questionnaire and scoring half and more were considered "good knowledge"(9). About 7% of respondents were not filled the questionnaire completely and not included in the analysis which made the response rate about 93%. About 10 minutes were an average time taken to complete the questionnaire.

Each completed questionnaires were entered to Epi-data version 3.1 windows program. The data was coded and cleaned accordingly and then exported to STATA version 14.1 windows programs for further analysis.

The descriptive analysis such as proportions, frequency distribution and cross tabulation was performed. Then, bi-variable analysis was performed between the dependent variables and each of the independent variables. Their odds ratios (OR) at 95% confidence intervals (CI) and p-values were obtained. Then all variables with p-value<0.2 were fitted in to multivariable logistic regression model. Violations of regression model assumption were checked by inspection of plots of residuals versus predicted values, outliers and multi-collinearity. Adjusted odds ratio (AOR) with P-value of less than 0.05 and 95% confidence level in multivariable model were used to select variables which had a significant association with self-reported STDs. Finally, the result was compiled and presented using tables, graphs and texts.

Results

Socio-Demographic Characteristics of the study participants

Complete data were obtained from 571 students which make the response rate to be 93%. The mean age of study participants was 21(mean SD of 2.6.) years and the majority 311(54.7%) of respondents found between the age group of 20-24years.From the study, the majority 320(56%) of respondents was males and majority 49(12.1%) of respondents who initiated sexual intercourse reported at least one or more syndromes were also males.

Table 1. Socio-Demographic Characteristics of private and government college students in Motta town, Northwest Ethiopia, 2019 (N=571)

Variables	Frequency (%)	SRSTD n=405	
		Yes (%)	No (%)
Sex			
Male	320 (56.0)	49(12.1)	198(48.9)
Female	251 (44.0)	33(8.1)	125(30.9)
Age group			
15-19	192 (33.6)	**11**(2.7)	**110**(27.2)
20-24	311 (54.5)	**48**(11.9)	**173**(42.7)
>24	68 (11.9)	**23**(5.7)	**40**(9.9)
Marital status of the respondents			
Single	418 (73.2)	54(13.3)	240(59.2)
Married	121 (21.2)	23(5.7)	60(14.8)
Divorced	32 (5.6)	5(1.2)	23(5.7)
Currently attending college			
Private	265 (46.4)	37(9.1)	129(31.9)
Government	306 (53.6)	45(11.1)	194(47.9)
Education level			
1st year	260 (45.5)	19(4.7)	145(35.8)
2nd year	218 (38.2)	37(9.1)	119(29.4)
3rd year	93 (16.3)	26(6.4)	59(14.6)
Living condition			
rented home	529 (92.6)	77(19.0)	298(73.6)
with family	42 (7.4)	5(1.2)	25(6.2)

Note: SRSTD. = self-reported sexually transmitted diseases, n. = number of students who initiated sexual *intercourse*

Social and religious activities of respondents

Majority 328(57.4%) of respondents were participating more than two hours per week in their perspective religious education and 274(48%) study subjects were participating in health-related clubs (Table 2).

Assessing knowledge of respondents about STI, STI symptoms and site of treatment

The overall knowledge of respondents about STIs was poor. Among respondents, 343(60.1%) of study subjects scored below half of WHO validated questions used to assess knowledge of youths about STI, male and female STI symptoms and site of treatment when STI is contracted (Table 2).

Sexual and reproductive health behavior of respondents

Majority 405 (70.9%) of respondents initiated sexual intercourse with mean age of 17.8(mean SD of 1.8.) years. Among respondents 202(49.9%) had started sexual intercourse while they were 18 years or above and 180(44.4%) respondents started sexual intercourse while they were between 16 and 17. Among those who experienced sexual intercourse, majority 225(55.6%) of respondents reported that peer pressure was their main reason to experience sexual intercourse. But only 104(25.7%) of respondents use condom consistently during sexual contact (Table 3).

Table 2. Assessment of knowledge, Social and Religious activities of respondents about STI among private and government college students in Motta town, Northwest Ethiopia, 2019 (N=571)

Variables	Frequency (%)	SRSTD n=405	
		Yes (%)	No (%)
Participation in school health clubs			
Yes	274 (48.0)	47(11.6)	152(37.5)
No	297 (52.0)	35(8.6)	171(42.2)
Participation in religious education			
Yes	328 (57.4)	41(10.1)	178(44.0)
No	243 (42.6)	41(10.1)	145(35.8)
Heard about STIs other than HIV			
Yes	366 (64.1)	56(13.8)	204(50.4)
No	205 (35.9)	26(6.4)	119(29.4)
Knowledge of male STI symptoms			
<average	334 (58.5)	61(15.1)	173(42.7)
>=average	237 (41.5)	21(5.2)	150(37.0)
Knowledge of female STI symptoms			
<average	343 (60.1)	64(15.8)	178(44.0)
>=average	228 (39.9)	18(4.4)	145(35.8)
Knowledge on site of STI treatment			
<average	362 (63.4)	64(15.8)	194(47.9)
>=average	209 (36.6)	18(4.4)	129(31.9)
knowledge of respondents about any of STIs			
good knowledge	228 (39.9)	18(4.4)	143(35.3)
poor knowledge	343 (60.1)	64(15.8)	180(44.4)

STI Symptoms experienced and reported by study participants

Among sex-initiated respondents, 49 males and 33 females reported at least one STI symptom. Of these, 27(33%) of respondents with symptoms reported that they had one or more STI symptoms before 12 months and the remaining 55(67%) reported these symptoms had encountered within the last 12 months. Among those with symptoms, majority 46(56.1%) of respondents was not treated for their symptoms and the remaining 36(43.9%) of respondents received treatment when they encountered symptoms.

The genital ulcer (sore/ itching) syndrome was the most reported syndrome both in male and female respondents with 26(53.1%) and 16(48.5%) of them reported it respectively. The second most reported syndrome in males and females were urethral discharge 23(46.9%) and

vaginal discharge 14(42.4%) respectively (Figure 1).

Factors associated with sexually transmitted diseases

As shown on the following table (Table 4), the odds of having STDs among college students aged above 24 years and 20-24 years were about 8 and 2.7 times higher than the odds of college students aged between 15-19 years' students with [AOR=8.05;95%CI: 2.80-23.12 and AOR=2.7;95%CI: 1.18 - 6.17] respectively. The odds of having STDs among the 3rd year and 2nd year college students were about 5 and 2.5 times higher compared to the odds of first year college students with [AOR=5.23;95%CI: 2.23-12.28 and AOR=2.45;95%CI: 1.20 -5.01] respectively.

Having poor knowledge about STIs was about 3 times more likely to have STDs compared to those students who had good knowledge about it [AOR=2.93; 95%CI: 1.49-5.77].
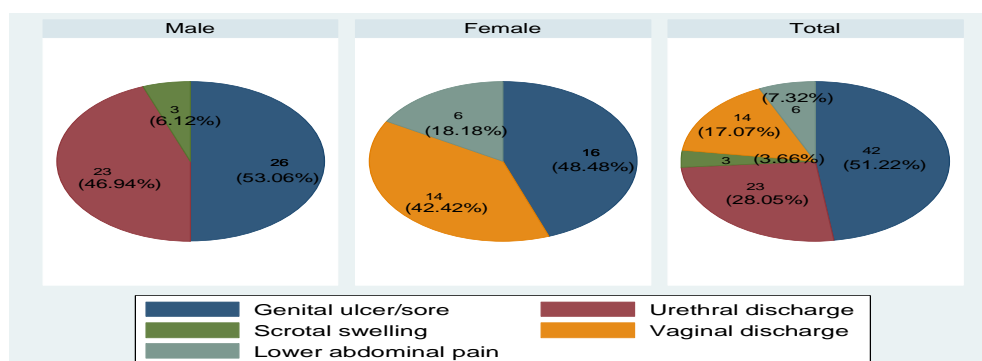
Figure 1. Syndromes of STI reported by private and government college students in Motta town, Northwest Ethiopia, 2019 (N=82)

Note: The sum of the percentage exceeds 100% because of some respondents reported more than one syndrome by a single individual

Table 3. Percentage distribution of Sexual and reproductive health behavior of respondents among private and government college students in Motta town, Northwest Ethiopia, 2019 (N=405)

Variables	Frequency (%)	SRSTD n=405	
		Yes (%)	No (%)
Ever had sexual intercourse			
Yes	405 (70.9)	82(20.2)	323(79.8)
No	166 (29.1)	0(0.0)	166(29.1)
Age group of respondents at first sex			
<16 years	23 (5.7)	8(2.0)	15(3.7)
16-17 years	180 (44.4)	37(9.1)	143(35.3)
>=18 years	202 (49.9)	37(9.1)	165(40.7)
Condom use			
Consistently used	104 (25.7)	12(3.0)	92(22.7)
Inconsistently used	301 (74.3)	70(17.3)	231(57.0)
Substance abuse leads to sexual intercourse			
Yes	85 (21.0)	18(4.4)	67(16.5)
No	320 (79.0)	64(15.8)	256(63.2)
Sexual coercion leads to sexual intercourse			
Yes	22 (5.4)	5(1.2)	17(4.2)
No	383 (94.6)	77(19.0)	306(75.6)
Peer pressure leads to sexual intercourse			
Yes	225 (55.6)	55(13.6)	170(42.0)
No	180 (44.4)	27(6.7)	153(37.8)
Looking pornography leads to Sexual intercourse			
Yes	80 (19.8)	20(4.9)	60(14.8)
No	325 (80.3)	62(15.3)	263(64.9)
Having more than one sexual partner at the same time			
Yes	52 (12.8)	33(8.1)	19(4.7)
No	353 (87.2)	49(12.1)	304(75.1)
Ever have Sex with sex workers			
Yes	16 (3.9)	6(1.5)	10(2.5)
No	389 (96.1)	76(18.8)	313(77.3)

College students who didn't use a condom consistently during sexual intercourse were about 3 times more likely to have STDs compared to those college students who used a condom consistently [AOR=3.10;95%CI: 1.40-6.90].

Moreover, the odds of having more than one sexual partner at the same time had STDs about

9 times higher than college students who had less than two sexual partners at a time

[AOR=9.38;95%CI: 4.46-19.73].

Table 4. Bivariate and Multivariable logistic regression analysis for factors associated with STDs among private and government college students in Motta town, Northwest Ethiopia, 2019.

Variables	SRSTDs		Unadjusted logistic regression			Adjusted logistic regression		
	Yes	No	OR	p-value	[95% CI]	OR	p-value	[95% CI]
Age group								
15-19	11	110	1.00			1.00		
20-24	48	173	2.77	0.004	**1.38 - 5.57**	2.70	0.019	**1.18 - 6.17***
>24	23	40	5.75	0.000	**2.57 - 12.85**	8.05	0.001	**2.80 -23.12**
Marital status of the respondents								
Single	54	240	1.00			1.00		
Married	23	60	1.70	0.064	0.97-2.99	1.32	0.445	0.65-2.67
Divorced	5	23	0.57	0.947	0.35-2.66	0.29	0.062	0.08-1.06
Education level								
1st year	19	145	1.00			1.00		
2nd year	37	119	2.37	0.005	**1.30-4.34**	2.45	0.014	**1.20 -5.01***
3rd year	26	59	3.36	0.000	**1.73-6.54**	5.23	0.001	**2.23-12.28**
Participation in school health clubs								
No	35	171	1.00			1.00		
Yes	47	152	1.51	0.098	0.93-2.46	1.37	0.313	0.74 -2.52
knowledge of respondents about any of STIs								
good knowledge	18	143	1.00			1.00		
poor knowledge	64	180	2.82	0.000	**1.60 - 4.98**	2.93	0.002	**1.49-5.77***
Age group of respondents at first sex								
<16 years	8	15	1.00			1.00		
16-17 years	37	143	0.49	0.128	0.19-1.23	0.83	0.767	0.25 -2.78
>=18 years	37	165	0.42	0.068	0.17-1.06	0.70	0.568	0.21-2.38
Condom use								
Cons. used	12	92	1.000.			1.00		
Incons. used	70	231	*2.32*	0.012	**4.49 1.20 -**	3.10	0.005	**1.40-6.90***
Peer pressure leads to sexual intercourse								
No	27	153	1.00			1.00		
Yes	55	170	1.83	0.020	**1.10-3.05**	1.44	0.250	0.78-2.66
Having more than one sexual partner at the same time								
No	49	304	1.00			1.00		
Yes	33	19	10.78	0.000	**5.68-20.44**	9.38	0.001	**4.46 - 19.73**
Ever have Sex with sex workers								
No	76	313	1.00			1.00		
Yes	6	10	2.47	0.089	0.87-7.01	1.17	0.807	0.33 - 4.23

Note: cons. = consistently, incons. = inconsistently, OR=Odd Ratio, * (p-value <0.05), ** (p-value<0.001) and 1.00=reference category, Hosmer-Lemeshow test = 0.4005

Discussion

Despite the availability of different preventive and treatment modalities, this study revealed that the prevalence of self-reported sexually transmitted diseases among college students in Motta town was high, which is comparable to studies conducted in Bonga town college students (13.9%) and Bahir-Dar high school and preparatory students (13%) (6,10).

But this finding is below studies conducted in some African countries, like Tanzania and South African youths (20%) (11,12). Some studies conducted among university students in Ethiopia also revealed higher prevalence. Studies conducted among university students in Wolaita Sodo and Ambo university students revealed about 23% prevalence of STDs (7,8). Another study done among Gondar and Debre-Tabor university students also revealed 18.2% and 28% STIs prevalence respectively (13,14).

The above studies revealed higher STDs prevalence compared to the prevalence revealed by this study which is 14.4%.

This difference might be due to the fact that university students came from different part of the country and almost all living separated from their family in a new environment with new friends. This might make them feel free and experience risky sexual behaviors like substance abuse and having multiple sexual partners under the influence of their peers. But majority of college students came from the local community with the same cultures, norms and values in which students may be influenced and feel distrusted if found in risky sexual behaviors by the community.

This study also revealed higher STDs prevalence compared to some studies done among African and Ethiopian youths. The STDs prevalence revealed by this study was also higher than household survey conducted among 15-24 years old youths in Rwanda which was even below one (0.6%) (15). Even though, it is difficult to compare household survey with institutional study, the finding might be due to closed family guidance and control among household youths than those college students. Moreover, youths might not feel free to engage in risky sexual behavior for STIs, and this might result to low STI risk exposure and low STI prevalence in a household survey. Some studies also revealed, those youths living with their family were less likely to acquire STIs compared to those living separated (16). Another study among Bahir-Dar and Gondar university students also found 6.4% self-reported STDs prevalence which was below the prevalence revealed by this study (17).

Studies found that youths are prone to acquire STIs. A study conducted at Ayder hospital revealed that 15-34 years old individuals are about 11 times more likely to acquire STIs than older age individuals (18). As the age of youths being advanced, the risk of getting STIs also increased. Studies done on youths found that increased level of education and age category among students are risk factors to acquire STIs. As this study revealed, those students aged above 24 and 20-24 years were about 8 and 2.7 times more likely to report STDs compared to 15-19 years respectively.

This study finding was comparable to a finding revealed by a study conducted in Kwazulu-natal of South Africa at which 2.6 times more likely to report STDs compared to 15-19 years (19).

And also, 3rd and 2nd year students were about 5 and 2.5 times more likely to report STDs compared to first year students respectively. This finding was similar to studies conducted among Bahir-Dar high school and preparatory students that revealed grade 12 Students were about 5 times more likely to acquire STIs compared to those grade nine students (6).

Having good knowledge about STIs, symptoms complained by peoples who got infected and treatment options empower students to abstain themselves from risky sexual behaviors and to report symptoms when encountered. A study conducted among Bahir-Dar high school and preparatory students revealed having good knowledge about STIs was about 82% less likely to report STIs compared to those with poor knowledge (6).

This study revealed that students who had poor knowledge about STIs were about 3 times more likely to report STDs compared to those students who had good knowledge. The result was similar to a finding among Gondar university students (13).

Having multiple sexual partnerss and inconsistent use of condom is known risk factors for STI acquisition. This study revealed those students who had more than one sexual partner at the same time were about 9 times more likely to report STDs compared to those who had less than two sexual partners at a time. But studies conducted among Bahir-Dar high school and preparatory students revealed those who had two or more sexual partners at the same time were about 2.5 times more likely to have STDs compared to those who had less than two sexual partners (6). This might be the age structure of respondents in a study conducted at Bahir-Dar included grade nine and ten students. These students might initiate sexual intercourse recently and might not have more than two sexual partners.

And those students who didn't use a condom consistently during sexual activity were about 3 times more likely to have STDs compared to those who use condom consistently. A comparable finding was obtained from a study

among Bahir-Dar high school and preparatory and Gondar university students, which revealed those students who didn't use a condom were about 2.4 times more likely to acquire STIs compared to those students who use condom (6,13). As a limitation, this study was not supported by physical findings and laboratory investigations to confirm cases. Therefore, asymptomatic respondents may be missed, and others may be miss reported as STDs based on syndromes thus, syndromes used to calculate STDs prevalence may over or under estimate the STI prevalence. Thus, it is better to use syndromic approaches with physical examination and laboratory investigation in the future studies.

The study result can be used by colleges, health sectors and other stake holders to promote and launch different school-based services for STI prevention, early diagnosis and treatment if occurred. The result of this study also can be used by other researchers as a benchmark.

Conclusion

In conclusion, prevalence of self-reported STDs (14.4%) among college students in Motta town was higher compared to EDHS 2016 report which was 4%. This finding implies that there is a lot to work in order to keep safe learning environment for college students regarding sexually transmitted infections. This study also revealed that increment in college students age, advancement in their education level, having multiple sexual partners, having poor knowledge about STIs and inconsistent condom use during sexual activity were factors associated with STDs.

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Conflicts of interest

Authors declared no conflicts of interest.

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