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ORIGINAL ARTICLE

MAGNITUDE AND PREDICTORS OF SELF-REPORTED SEXUALLY TRANSMITTED INFECTIONS AMONG SCHOOL YOUTH IN BAHIR-DAR, NORTHWEST ETHIOPIA

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ABSTRACT

Background: *Sexually transmitted infections (STIs) are major health problems often affecting young people, particularly adolescents. Information about the magnitude of STIs among school students in Ethiopia is scarce. The aim of this study was to assess the prevalence and predictors of self-reported STIs among students attending school in Bahir-Dar town.*

Methods: *Cross-sectional data was collected from 520 high school students in Bahir-Dar, northwest Ethiopia. Stratified two-stage cluster sampling was used to select the study participants. The effect of risk factors on the presence of STIs was analyzed using multiple logistic regressions.*

Result: *The prevalence of self-reported STIs was 13.1% (95% CI: 11.4-14.8). The statistically significant predictors for acquiring STIs were: being students of higher grades (AOR=5.0, 95% CI:3.2-8.9), having multiple sexual partners (AOR=2.5, 95% CI:1.4-4.1), having practiced substance abuse (AOR=4.6, 95% CI:2.8-6.4), and non-participation in school sexual and reproductive health clubs/activities (AOR=10.6, 95% CI:6.8-14.7). Predictors which had a significant protective effect from acquiring STIs included not having experienced sexual violence (AOR=0.12, 95% CI: 0.03-0.58) and having good knowledge on the transmission mode as well as consequences of STIs (AOR=0.18, 95% CI: 0.05- 0.7).*

Conclusions: *The prevalence of self-reported STIs among the high school youth was high. Having multiple sexual partners, indulging in substance abuse, having poor knowledge of STIs and their transmission mode and exposure to sexual violence were among the significant predictors for acquiring STIs. In view of this, promotion of peer and school sexual education and encouraging parental guidance were some of the suggested recommendations.*

Keywords: *STIs, Northwest Ethiopia, Prevalence, Self-reported, Predictors, School youth*

INTRODUCTION

Sexually transmitted infections (STIs) are caused by micro-organisms that are fastidious in nature which need intimate contact between individuals for transmission. They are primarily spread through intimate sexual contact (1).

Sexually transmitted infections (STIs) are one of the major global acute illnesses with ensuing complications that include long term disability and death. Acquiring STIs has severe medical and psychological consequences for millions of peoples (2-4). The World Health Organization (WHO) report indicates that one in 20 adolescents suffers from an STI other than human immunodeficiency virus (HIV) (5). Adolescents and young adults (15–24 years old) make up only 25% of the sexually active population, but they acquire 50% of all STIs (6). One-third of the 340 million new STIs each year occur in people under 24 years of age (7).

The magnitude of STIs is difficult to investigate because people generally feel discomfort about openly discussing issues related to sexuality (8). However, the burden of STIs is hypothesized to be higher among adolescents than other age categories. Unprotected sexual activity and early sexual debut put young people at risk of sexual and reproductive health problems. Moreover, adolescents are prone to

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substance abuse and less likely to use condoms than adults which exposes them to STIs (9,10).

The last national census estimate from 2007 indicated that 20.1% of the Ethiopian population was composed of people aged 15-24 years (11). According to the 2011 Ethiopia Demographic and Health Survey, among never married young persons of 15–24 years, about 12.7% of males and 5.6% of females have had sexual intercourse. This implies that the school age population needs special attention with regards to sexual and reproductive health. In Ethiopia, adolescents and youth are most likely to contract STIs because of the risky, often unprotected and non-voluntary nature of their sexual activities. Their sexual relations are often unintentional, sometimes a result of pressure or force, and typically happen before they have the experience and skills to defend themselves (12). In light of these facts, the current study aimed to determine the prevalence of self-reported STIs and factors that influence the acquisition of STIs among school youth in Bahir-Dar, Northwest Ethiopia.

PATIENTS AND METHODS

Study Setting: The study was conducted in Bahir-Dar high schools, Northwest Ethiopia. There were a total of 13 high schools in the area. Seven were public schools and 6 were private high schools. High school students were defined as those attending grades 9 to 12. The total number of students attending high school for the academic year 2014/2015 was 15,615; 48.9 % and 51.1% were males and respectively.

Study design and population: A cross sectional study was conducted among high school students of Bahir-Dar to determine the magnitude of self-reported STIs and associated risk factors. We included students who were in the age range of 15-24 years. We focused on students who attended school during the day time and excluded those attending night school since the characteristics of night school students might be fundamentally different from those attending school during the day. Unlike day time students, most night school students tend to be employed, are older and do not live with their parents; collectively these factors could make these students different in terms of their risk to contract STIs.

Sample size and sampling procedure: Sample size was calculated using the predetermined parameters of 10.7% as the prevalence of self-reported STIs in a study conducted in Gondar (13), 95% confidence interval and 4% margin of error. Since we did not have required parameters to calculate the intra cluster correlation and thus design effect, we considered a design effect of two to compensate for the higher variability that might be introduced due to the sample design. STI being a sensitive issue, we anticipated that students might not readily consent to participate in such a study, hence we factored in an expected non-response rate of 10% to the calculated sample size. In total, we included 524 students in the study.

The sampled students were selected using stratified two-stage cluster sampling with school ownership as strata. In the first stage, we stratified the sample into private and public high schools considering the difference that may exist in the characteristics among private and public school students in relation to STI exposure. We sampled two schools each from private and public high schools. Students within a school were assumed to have similar characteristics. Thus, we selected 38 classes/sections from the selected schools. Finally, we selected the study participants using simple random sampling taking their identification number as a sampling frame**. (Figure 1)**

Data collection and data source: Data was collected using self-administered questionnaires. A consent form was attached to the questionnaire by which students gave their consent to participate. The students were instructed on how to fill the questionnaire which contained socio-demographic questions, attributes related to their sexual, substance abuse, peer influence, parents' data, school level activities related with sexual and reproductive health, STI signs and symptoms and more.

The questionnaire was pretested on 26 students of a different school to assure the plausibility and understandability of the questions and estimation of time for filling out the questionnaire. Similar questions within the questionnaire in different sections were used to check the validity of the responses. Questionnaires that had different responses for similar questions were excluded from analysis. In particular, there was one question for which inconsistent responses were obtained. We believe that the exclusion of this question did not have a significant effect on the overall study findings. The presence of STIs was evaluated based on self-report.

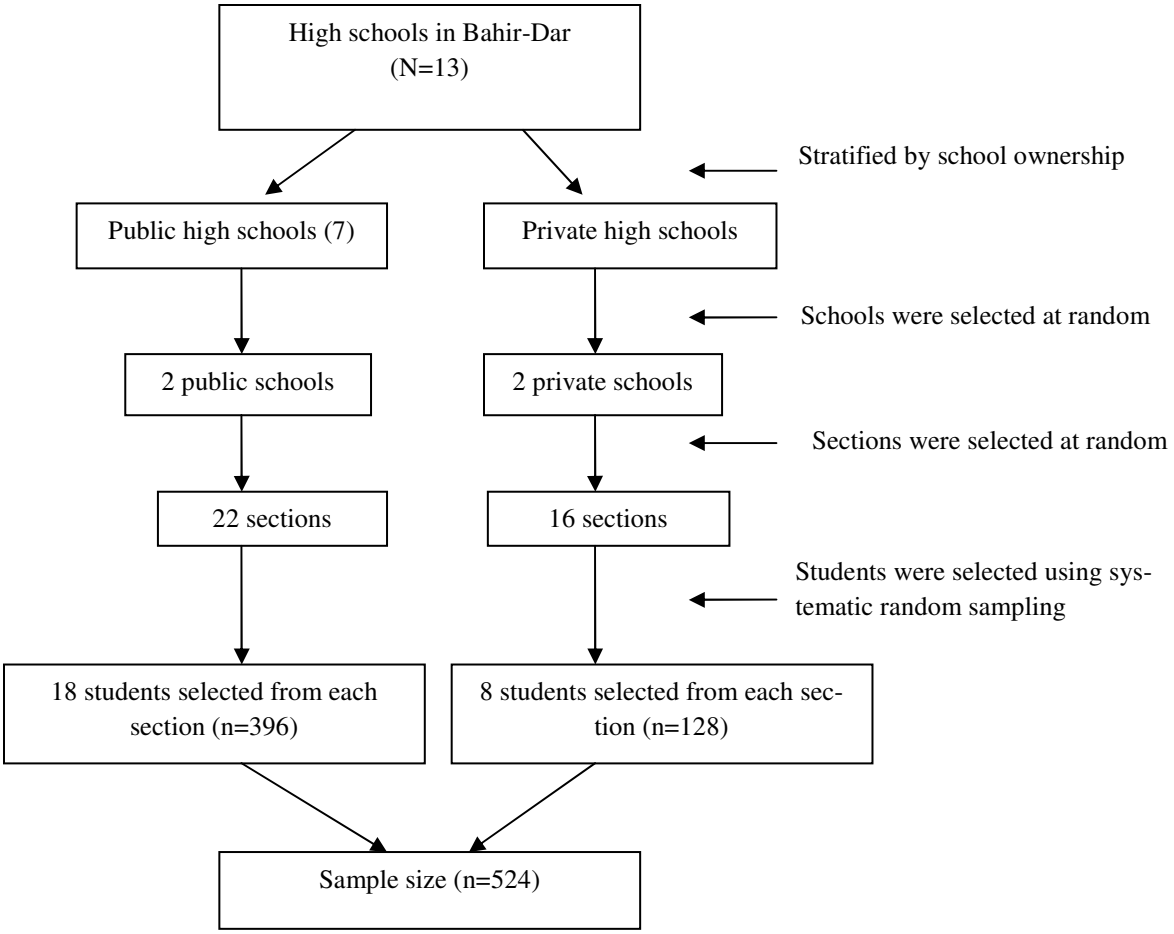

Figure 1: The schematic representation of the sampling procedure

Statistical analysis: Data were analyzed using IBM's Statistical Package for Social Sciences (SPSS) version 20. Descriptive analysis was used to estimate magnitude of self-reported STIs, and selected characteristics of the students. The effect size of the predictors for having STIs were analyzed using multivariable logistic regression. The effect size of study participants was depicted using odds ratio (OR) and effect size of the population was estimated using 95% confidence interval around the estimated OR. For all statistical tests, p-value below 0.05 was considered significant.

Ethical Consideration: Ethical clearance was obtained from the Ethical Review Board of Mekelle University, College of Health Sciences. Written consent was obtained from each study participant after explaining the purpose and objectives of the study. A one-page cover information sheet that explained the purpose, procedure and significance of the study was attached with each questionnaire. The data was kept confidential and used only for the purpose of this study.

RESULTS

***Socio- demographic characteristics of respondents, Bahir-Dar, Northwest Ethiopia*:** From 524 high school students, 520 participated in this study (four students declined to take part). The sex-ratio was 1:1. Nine in every ten students were within the age of 15-19 years. The parents of the majority (84.2%) of respondents' were married and 76.2 % of the students were living with both of their parents. Fifty percent (50%) of the respondents' fathers and 38.5% of their mothers had completed college **(Table 1).**

Table 1. Socio-demographic characteristics of respondents, Bahir-Dar, Northwest Ethiopia, October 2014

Characteristics	Number (%)
School ownership	
Public	392(75.4)
Private	128(24.6)
Sex	
Male	261(50.2)
Female	259(49.8)
Age (years)	
15-19	469(90.2)
20-24	51(9.8)
Parents marital status	
Married	438(84.2)
Divorced	38(7.3)
Widowed	44(8.5)
Father's educational status	
Illiterate/read and write	155(29.8)
Primary	39(7.5)
Secondary	57(11.0)
Above college	269(51.8)
Mother's educational status	
Illiterate/read and write	190(36.5)
Primary	45(8.7)
Secondary	85(16.3)
Above college	200(38.5)
Mother's occupation	
Housewife	211(40.6)
Government employee	167(32.1)
Private employee	36(6.9)
Merchant	75(14.4)
Farmer	21(4.0)
Others specify (Mother has died)	10(1.9)

Respondents' sexual and reproductive health behavior, Bahir-Dar, Northwest Ethiopia: A total of 481(92.5%) respondents had received information regarding youth developmental and sexual changes. The frequently cited sources of information were schools (49.0%), family (18.3%), and the media (8.7%). One in every five (20.8%) had become sexually active during the study period and half of the respondents were sexually active before the age of 17 years. The main reasons for early sexual initiation were personal desire (36.1%), falling in love (25.6%), peer influence (14.8%) and sexual violence (1.7%).

Among the study participants 10.8% reported that they had had multiple sexual partners within the one year preceding the study period. Of these, 2.5% had a history of sexual contact with commercial sex workers and 12.5% did use condoms consistently. The main reasons for not using condoms were feeling ashamed to buy condoms from shops (20.4%) and trust in their sexual partner (20.4%). However, 7.4% of the students had never thought of using condoms during sexual encounters. STIs were reported in 13.1% (95% CI: 11.4-14.8) of the youth who were sexually active. Alcohol utilization and kchat chewing were reported in 8.3% and 6.2% of the respondents during the study period **(Table 2).**

Table 2. Sexual and reproductive health behavior of respondents, Bahir-Dar, Northwest Ethiopia, October 2014

Characteristics	Response Categories	Number (%)
Receipt of information on youth developmental and sexual changes (n=520)	Yes	481(92.5)
	No	39(7.5)
Ever had sex (n=520)	Yes	108(20.8)
	No	412(79.2)
Age at first sexual intercourse (n=108)	13-17 years	77(71.3)
	18-20 years	31(28.7)
Reasons to have sexual intercourse (n=108)	Personal desire	39(36.1)
	Falling in love	28(25.9)
	Peer pressure	16(14.8)
	Raped	9(8.4)
	Other reasons	16(14.8)
Multiple sexual partners (n=108)	Yes	57(52.8)
	No	51(47.2)
Ever had sex with commercial sex workers (n=108)	Yes	13(12.0)
	No	95(88.0)
Consistent use of condoms (n=108)	Yes	33(30.6)
	No	75(69.4)
Reasons for not using condoms (n=75)	Felt shame to ask my partner	28(37.3)
	I trusted my friend/partner	24(32.0)
	I did not think of it when I had sex	8(10.7)
	Others reasons	15(20)
Used to use kchat/alcohol(n=520)	Yes	43(8.3)
	No	477(91.7)
Source of information on sex (n=520)	School	210(40.4)
	Friends	67(12.9)
	Family	61
	Media	30(5.8)
	From all the above sources	152(29.2)

Prevalence of self-reported sexually transmitted infections among school youth, Bahir-Dar, Northwest Ethiopia: The prevalence of self-reported STIs was 13.1%. Among 108 sexually active respondents, 63.0% reported having had STI symptoms within one year preceding the study time. Sores and ulcers on genital organs, abnormal genital discharge, burning sensation during urination, itching on genital areas, and swelling in the inguinal region were reported by 21(30.9%), 16(23.5 %), 13(19.1 %), 11(16.2%) and 7 (10.3 %) of the respondents respectively. Only one-fourth of these students had sought treatment for their STI syndrome.

Predictors for acquiring STIs among school youth, Bahir-Dar, Northwest Ethiopia: Students in higher grades were more likely to acquire STIs than their junior counterparts (AOR=5.00, 95% CI:3.17-8.90). The odds of having STIs was higher among those with multiple sexual partners than those who had a single partner (AOR=2.5, 95% CI:1.4-4.1). Having sexual intercourse after substance use such as alcohol and kchat was positively associated with acquiring STIs (AOR=4.6, 95% CI:2.81-6.38). Not having been exposed to sexual violence had a protective effect from acquiring STIs (AOR=0.12, 95% CI:0.03 -0.58). Having a good level of knowledge about the transmission mode and consequences of STIs was also protective (AOR=0.18, 95% CI:0.05-0.68) as compared to those who had a low level of knowledge. Participating in sexual and reproductive clubs within the schools had a protective effect; students who did not participate in such clubs at all had 10.6 times higher odds to acquire STIs (AOR=10.6, 95% CI: 6.76-14.72) **(Table 3).**

Table 3. Predictors of acquiring sexually transmitted infections among school youth, Bahir-Dar, Northwest Ethiopia, October 2014

	Self-reported STIs		
Variable	**Yes**	**No**	**AOR (95% CI)**
Educational level			
9th Grade	3(3.7%)	78(96.3%)	1.0
10th Grade	6(7.2%)	77(92.8%)	2.17(0.31-14.99)
11th Grade	25(14.1%)	152(85.9%)	5.69 (1.14-28.59)
12th Grade	34(19%)	145(81%)	**5.00(3.17-8.90)****
Multiple sexual partners			
Yes	48(84.2%)	9(15.8%)	**2.5(1.4-4.1)****
No	20(39.2%)	31(60.8%)	1.0
Having sex after kchat/alcohol use			
Yes	30(93.8%)	2(6.2%)	**4.6(2.81-6.38)****
No	1(9.1%)	10(90.8%)	1.0
History of sexual violence			
Yes	13(61.9%)	8(38.1%)	1.0
No	55(11%)	444(89%)	0.122(0.03-0.6)
Knowledge on STIs			
Poor knowledge	36(17.9%)	165(82.1%)	1.0
Moderate knowledge	22(15.8%)	117(84.2%)	1.562(.562-4.342)
Good knowledge	10(5.6%)	170(94.4%)	**0.177(.046-.680)****
Participation in SRH clubs in school			
Yes	10(20.8%)	38(79.2%)	1.0
No	58(12.3%)	414(87.7%)	**10.6(6.76-14.7)****

The factors were adjusted for age, marital status, income, parent's educational level and employment status.

DISCUSSION

The reported magnitude of STIs among school youth in the study was 13.1%. Factors associated with an increased likelihood of STI positivity were being in higher school grades, non-participation in school sexual and reproductive health clubs, having a low level of knowledge on STI transmission modes and consequences, having multiple sex partners, having sex after substance use and having a history of sexual violence.

The prevalence of self-reported STIs among high school students in this study was comparatively lower than the prevalence reported among youth in other studies from Ethiopia: Addis Ababa University students (15.74%), and students from Bahir-Dar University (75.4%) and Gondar University (38.5%) (14-16). A lower prevalence was also reported among high school students in Gondar (10.7%), Debre-Birhan (3.2%) and Northern Nigeria (9.0%) (13,17,18).

The highly variant findings in the reported prevalence of STIs between the studies may reflect differences in the knowledge, attitude, social, and economic circumstances of the participants in different areas and the manner in which they self reported STIs.

The statistically significant predictors for acquiring STIs were having multiple sexual partners, having sex after substance abuse (particularly alcohol/ kchat), non-participation in school sexual and reproductive health clubs and having experienced sexual violence. This finding is in line with findings from other studies conducted in different areas of the country (15).

The majority of high school youth in the current study had a low level of knowledge on the transmission mode and consequences of STIs. The findings from this study are different from a study reported from Addis Ababa University in which a higher proportion of students had good knowledge on the subject (16).The difference might be due to having compared the knowledge, attitude and practice of high school students directly with university level students. University students are more likely to have better access to information regarding reproductive health services and tend to lead more independent lives compared to high school youth. Other possible reasons for the discrepancy might be age and maturity differences among the two groups of students.

Having multiple sexual partners is one of the factors that increases the risk of exposure to STIs and this type of association is common among school youth (9,15,20). Since high school students come to a learning center from different villages to access education, they may be vulnerable to forces in their new environment and be unable to defend themselves from peer pressure and could also be easily deceived with monetary incentives from sex seekers. As such, among the students who had commenced sexual activity, half of them had multiple sexual partners. This figure was greater than the findings in Debre-Birhan, selected regions of Ethiopia and Gondar (14,15,18). However, this was lower than the prevalence reported in a study carried out in Ambo high school in Oromia region (20).

This variability might be accounted for by geographical differences. The location of the present study, being a tourist destination hotspot, may have contributed to getting students exposed to sexual encounters possibly for monetary gain from sex seeking tourists in addition to local people. However the present study did not investigate whom students had sex with. The study however did show that the study participants were exposed to high risk sexual behavior including having sex with commercial sex workers or engaging in sex for money. Among these students, 92% of them reported that they had STI syndromes. This finding was consistent with findings among students in Gondar region (13).

Unprotected sexual intercourse is one of the major risk factors that exposes students to STIs (9). The majority of the students in the current study did not use condoms during sexual intercourse and STI syndromes were reported in 73% of these students. Similar findings were also reported from Gondar and Debre-Birhan, in which more than half of the students did not use condoms during sexual intercourse (13,18). A high rate of not using condoms when having sex and also the practice of substance abuse that the study revealed both indicate that high school students had an increased risk for contracting STIs.

The most frequently cited reasons for not using condoms were feeling ashamed to buy condoms from shops, trust in sexual partner and having a careless attitude during sexual engagement. Similar reasons were also reported in a previous study (21). These findings imply that programmers and policy makers should design strategies to overcome the noted obstacles and encourage condom use among sexually active high school students.

The current study is not without limitations. A self-administered questionnaire was used that may have resulted in validity problems in the responses, in addition to the possibility of recall bias to some of the questions enquiring about the respondents' past sexual history. Self-reported STI syndromes were used to calculate the prevalence of STIs which could potentially underestimate the magnitude of STIs. However, the investigators did not think that these factors would have had a significant impact on the overall study findings. Careful attention was given to explaining the purpose and the significance of the respondents' data for designing strategies to improve the sexual and reproductive health of school youth. Names of respondents were not written on the questionnaire to provide a guarantee to respondents that they would not be personally identified, and thus be assured of complete confidentiality.

Conclusions: In conclusion, the reported magnitude of STIs among school youth in the study was 13.1%. Significant predictors for contracting STIs among the study participants was non-participation in school

sexual and reproductive health clubs, poor knowledge on STI transmission modes and consequences, having multiple sexual partners, having sex after substance use and also having had a history of experiencing sexual violence. It is recommended that there should be access to youth friendly reproductive health (RH) services in schools and these should be integrated with health facilities. In addition, upgrading the capacity of school clubs and teachers who are the main sources of information at present would help to disseminate accurate information and minimize misconception. Moreover, it is recommended that the Ministry of Education and other stakeholders look for a way to provide information on STIs and to have such information embedded into the school curriculum.

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