

Knowledge and misconception on HIV/AIDS and associated factors among primary school students within the window of opportunity in Mekelle city, North Ethiopia

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ABSTRACT

Background: Human Immunodeficiency Virus (HIV) has emerged as a major health and development concern worldwide. Today, more than half of all new infections strike people under the age of 25 years. In Ethiopia, information on knowledge about HIV/AIDS among these early adolescents is a little known. Therefore, this study aimed to assess knowledge and misconception on HIV/AIDS among school students within the window of opportunity in North Ethiopia. **Methods:** A school based cross sectional study was conducted among primary school students in Mekelle City from February 1 to 30, 2013. A total of 845 students were included in the study using a multi-stage sampling technique. Descriptive, binary and multiple logistic regression analyses were performed using SPSS version 16. **Results:** A total of 845 students were participated in the study (97.6%) of the plan. Respondents had poor knowledge on transmission (35.8%) and prevention (56.6%) methods of HIV/AIDS. School source of information [AOR=2.39, 95%CI (1.41, 4.06)] and peer discussion [AOR=1.60, 95% CI (1.17, 2.17)] were the factors that lead for students to have a good knowledge on transmission methods of HIV/AIDS. Paternal education [AOR=0.50, 95%CI (0.31, 0.81)], parental discussion [AOR=1.55, 95%CI (1.16, 2.07)] and school source of information [AOR=1.58, 95% CI (1.01, 2.46)] were also the factors that predict good knowledge on prevention methods of HIV/AIDS. **Conclusion:** There exists poor knowledge on prevention and transmission methods and also a misconception towards HIV/AIDS. So, strengthening the current HIV/AIDS education program and further revising strategies for AIDS risk reduction in adolescents should be considered.

KEYWORDS: Early Adolescent, HIV/AIDS, Knowledge, Misconception, North Ethiopia

INTRODUCTION

Human Immunodeficiency Virus (HIV) has emerged as a major health and development concern worldwide. Today, more than half of all new HIV infections strike people under the age of 25 and 14 million children are now orphans because of the disease and at the end of 2010, 34 million people were living with HIV of these 3.4 million were children less than 15 years¹.

Furthermore, Sub-Saharan Africa (SSA) has been devastated by the HIV/AIDS epidemic. An estimated 70% of all HIV infected adults and children are found there. In the year 2000, 2.4 million adults and children were estimated to have died from AIDS in sub-Saharan Africa. South Africa is now the country with the highest number of people with HIV/AIDS in the world². A survey conducted in Kenya showed that, sexual debut is mostly in the age group 15 to 19 years, with less than 25% using protection during first sex³⁻⁴.

In Ethiopia HIV/AIDS has become a major public health concern, in 2011; adult HIV/AIDS prevalence in Ethiopia was estimated at 1.5 percent. In 2010, an estimated 79,871 children under age 15 were living with HIV, and 804,184 children under 18 had lost at least one parent to AIDS⁵. In Northern Ethiopia, an estimated 9, 614 children aged less than 15 years were living with HIV and HIV prevalence of 3.6% at the end of 2010⁵.

In addition, information on knowledge and misconception towards HIV/AIDS among students with in the window of opportunity is now considered as a major problem from medical, legal, social and public health standpoints because in Ethiopia there is lack of research assessing the level of knowledge and misconception towards HIV/AIDS among 10-14 years-old children in primary schools. Although, various surveys have been done to assess knowledge and misconception towards HIV/AIDS in the country, most of these studies were

conducted in the age groups of above 15 years. Knowledge is one of the main factors that promote healthy behaviors and reduce risk-taking⁶.

Therefore, this study aimed to assess knowledge and misconception towards HIV/AIDS and associated factors among primary school students with in the window of opportunity in Mekelle city, North Ethiopia. The findings of this study might be useful for policy makers and NGOs working on HIV/AIDS among very young adolescents and also important as background or baseline information for researchers who are interested in these areas.

MATERIAL AND METHODS

The Study was conducted among public general primary school students in Mekelle city, Northern Ethiopia. According to the projected census of 2007, by the Central Statistical Agency of Ethiopia (CSA), Mekelle city had a total population of 251,104, in 2011, out of these the total number of people aged 10-14 years were 32,644⁷. According to the report of Mekelle city education office (2012), there were 18,946 public students attending from grade five up to eight and 46 primary schools. Data collection period was conducted from February 1 to 30, 2013.

School based cross-sectional study design was conducted among 845 students age 10 to 14 years who were attending 5th to 8th grade in ten general primary schools. All students aged 10-14 years old registered as 5th– 8th grade in 2012/13 were included in the study. Students who were critically ill with visual impairment and/ absent during the study period were excluded from the study.

Sample size was computed using single population proportion formula with the estimated population parameters of prevalence 50%, level of confidence 95% and margin of error 5%. Since there were no study with similar findings, prevalence of 50% was considered to get maximum sample size of 845 students, sampled for the study and design effect of two was used to narrowing of confidence interval and decreasing sampling error.

Multi-stage sampling technique was used to select the study participants. From the total of twenty eight primary schools in the city, ten- primary schools were selected using lottery method. The ten primary schools had a total of 163 classrooms, out of, these; 34-classrooms were selected using lottery method. After getting students list from each school registrar, sampling frame were developed. Accordingly, the total sample size was proportionally allocated to the size of classes and finally study subjects were selected using systematic sampling technique by calculating interval (k^{th}).

Measurement

The outcome variable for the study is knowledge on HIV/AIDS among early adolescent students who are in the window of opportunity aged 10-14 years. Structured and pre-tested self-administered questionnaire was used to collect the information. It was first prepared in English and then translated to Tigrigna and then translated back for consistency. Information collected included socio-demographic characteristics of children, parental status, discussion with their parents and peers on HIV/AIDS, source of information on HIV/AIDS, willingness to learn about HIV/AIDS in the future. The questionnaire was adapted by reviewing different literatures and considering the local situation of the study subjects^{6, 8-10}. Six diploma clinical nurses who speak local languages were employed in the data collection process. Three BSc nurses were selected as a supervisor. Training was given to the data collector and supervisor for two consecutive days on the objectives of the study, the contents of the questionnaire and particularly on issues related to the confidentiality of the responses and the rights of respondents. Five days prior to the data collection, a pre-test was conducted at mayliham school in 42 (5%) of the sample size. After data collection, data was stored in a secured place to maintain confidentiality and backup of the data was stored in different areas not to lose the data. Each questionnaire was coded separately before analysis.

Statistically analysis

The collected data was coded, entered, cleaned and analyzed using SPSS version 16.0. Descriptive statistics was used to describe knowledge on HIV/AIDS. Frequencies and percentages were used to present categorical data. Mean (\pm standard deviation) was used for normally distributed continuous data. The scores were summed up to generate an overall score for each participant's knowledge on HIV/AIDS. Then, the mean score was calculated and it was 6.64 and 4.27 from a total score of eight transmission and seven prevention questions respectively⁹. To determine the knowledge of the students for each knowledge questions, one point was given for correct response and zero point was given for incorrect response. So, levels of knowledge related questions were then re-categorized depending on their mean. Regarding on this issue, participants who scored less than the mean score were categorized as having "Poor Knowledge" and those who scored points equal to and more than the mean score were categorized as having "Good knowledge".

Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated using a logistic regression model to determine association levels of predictors to the outcome variables. Crude ORs of predictors with knowledge on

HIV/AIDS among students with in the window of opportunity were estimated using bivariate logistic regression analysis.

A multivariate logistic regression analysis was used to estimate the adjusted OR of predictors and to control confounding factors. A variable having $p < 0.05$ was considered as statistically significant variable in all model. Before inclusion of predictors to the final logistic regression model, the multicollinearity was checked using $VIF < 10$ /Tolerance tests > 0.1 . The goodness of fit of the final logistic model was tested using Hosmer and Lemeshow test at a value of > 0.05 . Finally the results of the findings were presented using text, graphs and tables.

Ethical consideration

The study protocol was approved by the institutional ethical committee of Mekelle University, College of health Sciences (MUCHS). Support letters were also received from Mekelle Regional Educational Bureau and local Office to conduct the study in the area. The schools willingness to participate in the study was discussed with officials of all the schools and permission was obtained at each level. The respondents were told that the study offers an opportunity for students to get more information about knowledge and misconception towards HIV/AIDS and associated factors among them. Informed written assent and consent were obtained from the respondents and their parents respectively before data collection. The respondents' privacy and right to anonymity and confidentiality was respected at all times.

Operational definitions

Window of opportunity: refers if early adolescent students who are in the window of opportunity aged 10-14 years. General Primary School: Refers to people (students) attending from grade five to eight. Good knowledge: refers to those who scored points equal to and more than the mean score out of eight and seven items of transmission and prevention questions respectively.

Poor knowledge: refers to those who scored points less than the mean score out of eight and seven items of transmission and prevention questions respectively. Misconception: refer if responses other than the correct response for the transmission or prevention methods of HIV/AIDS. School source of information: refers to those study participants who obtain information about HIV/AIDS from AAC (Anti AIDS Club), teacher, SMM (School Mini-Media), and text. Mass-media source of information: refers to those study participants who obtain information about HIV/AIDS from television/radio and drama. Community sources of information: refers to those study participants who obtain information about HIV/AIDS from health worker, parent, brother/sister and peer discussion.

RESULTS AND DISCUSSION

Socio-demographic and economic characteristics

A total of 845 early adolescents were enrolled in the study and making a response rate of 97.6%. Of these, 480(58.2%) were females and the mean age of the respondents was $12.68(\pm 1.108)$ ranging from 10 to 14 years. Seven hundred forty two (89.9%) of the respondents were Orthodox religion. Seventy nine point four percent of respondents' parents were alive. More than half, 497 (60.2%) of the respondents were living with both their parents. Concerning to the occupational status, 224(27.2%) and 120(14.5%) of the respondents fathers and mothers were government employee, respectively (Table-1).

Table -1: Socio-demographic and economic characteristics of students within the window of opportunity (n=825), Mekelle city, North Ethiopia, 2013

Variables	Frequency	Percent	
Sex	Male	345	48.1
	Female	480	58.2
Age	10-12	328	39.8
	13-14	497	60.2
	Mean (sd)	12.68(± 1.108)	
Grade	5-6	379	45.9
	7-8	446	54.1
Religion	Orthodox	742	89.9
	Muslim	77	9.3
	Others	6	0.7
Parental alive	Both father and mother alive	655	79.4

Only Mother alive	128	15.5
Only Father alive	17	2.1
Both died	25	3
Currently living with		
Both father and mother	497	60.2
Mother only	33	4
Father only	211	25.6
Relatives	54	6.5
Others	30	3.6
Paternal occupation		
Government employee	224	27.2
Self employed	219	26.5
Employed in private work	204	24.7
Not applicable	145	17.6
Others	33	4
Maternal occupation		
Government Employee	120	14.5
Employed in private work	156	18.9
House wife	452	54.8
Self employed	40	4.8
Not applicable	41	5.0
Others	16	1.9

Based on the educational status of parents, 237 (28.7%) and 152(18.4%) of the respondents mother and father were unable to read and write respectively (Figure-1).

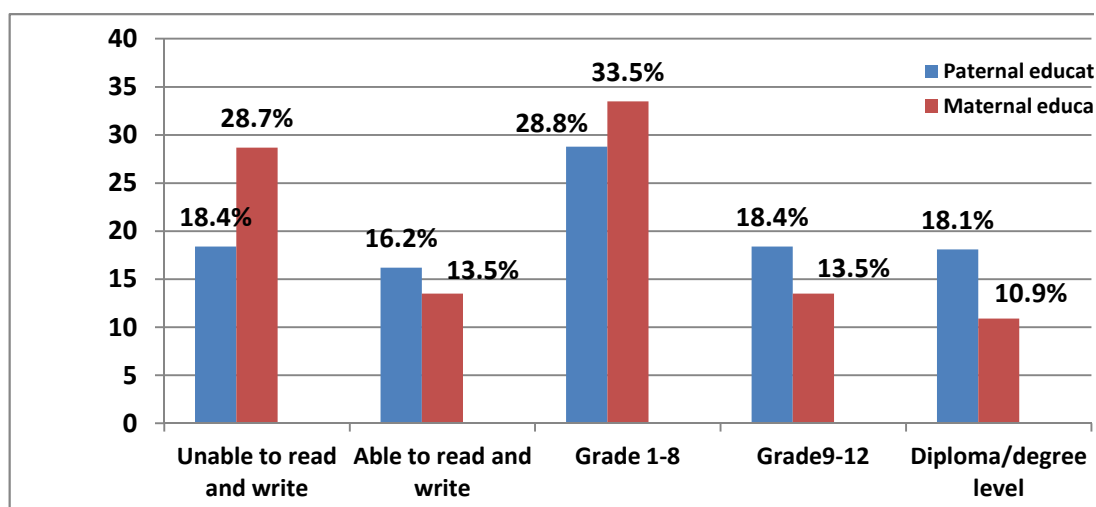


Figure-1: Educational status of students' parent within the window of opportunity (n=825), Mekelle city, North Ethiopia, 2013

Awareness of students on HIV/AIDS

Majority, (94.1%) of the respondents had heard about HIV/ AIDS. Majority of the respondents reported that HIV/AIDS is a transmittable (98.3%) and preventable (94.7%) disease. Less than half, (44.7%) of the respondents said that, HIV/AIDS has no cure or vaccine. Respondents were also asked about who could contract HIV/AIDS, 625(75.8%) replied that anybody could contract HIV/AIDS followed by 280(33.9%) could be infected from commercial sex worker, 194(23.5%) youth, 136(16.5%) children, 120(14.5%) adult and 98(11.9%) heavy truck driver.

Nearly two third (64%) of the respondents reported that, HIV/AIDS have a symptoms of weight loss followed by 302(36.6%) skin rash, 193(23.4%) diarrhea, 182(22.1%) fever and 73 (8.8%) herpes zoster. More than half 548 (66.4%) of the respondents said that, a healthy looking person could have HIV /AIDS and 253(30.7%) also reported that, they were not sure whether a healthy looking person could have HIV. Majority (92.1%) of the respondents reported that, a person with HIV could be identified by blood examination and the rest sixty one (7.4%) through physical examination and 38(4.6%) were not sure how it could be identified. Seven hundred eighty (94.5 %) of the respondents replied that HIV/AIDS is a dangerous /serious disease. The reason for its seriousness was, 588 (75.4%) had no medicine, 186 (23.8 %) those who have the virus cannot be distinguished by naked eye and 106 (13.6 %) said that because of die after infected by the virus.

Discussion on HIV/AIDS with their parents and peers

Almost half, 416(50.4%) of the respondents replied that, they discussed about HIV/AIDS with their peers followed by 324(39.3%) discussed with both parents, 148(17.9%) with mother only, 98(11.9%) with father only and 36(4.4%) with teacher and 21(2.5%) others said that, they discussed with their class mates, sister and brother, health professionals and relatives.

Sources of information on HIV/AIDS

The most frequently mentioned sources of information on HIV/AIDS were 575(12.5%) teacher followed by 520(11.3%)AAC and 3(0.1%) others like female support, news paper and HIV patient used as a source of information (Figure-2).

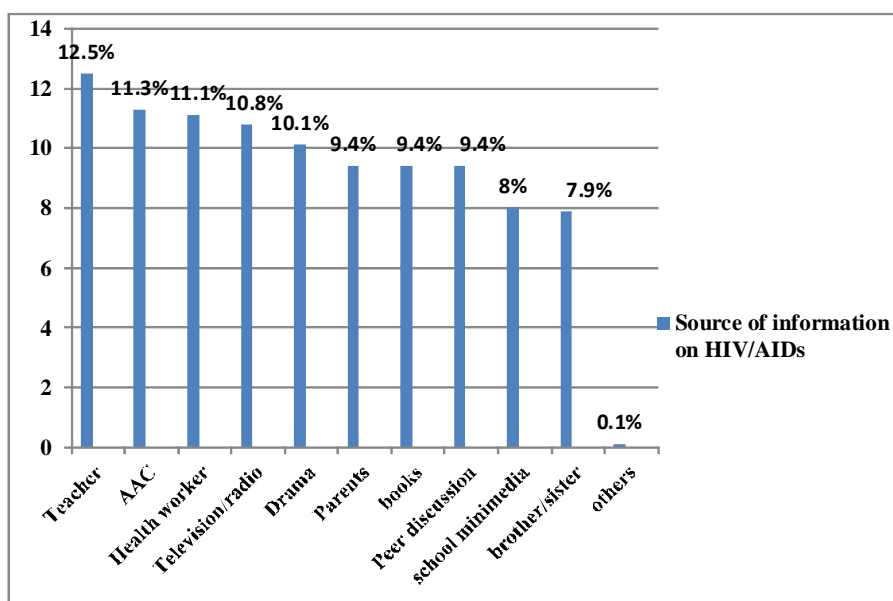


Figure-2: Source of information on HIV/AIDs among students within the window of opportunity (n=825), Mekelle city, North Ethiopia, 2013

Majority, 786 (95.3%) of the respondents replied that, they had learned about HIV/AIDS in their class room/school. Seven hundred ninety seven (96.6%) of the respondents said that, there was AAC in their school. More than half, 520(65.2%) of the respondents were not a members of AAC. The reasons for not being membership of the school AAC were stated as, 200(38.5%) did not want to be a member, 184(35.4%) did not have knowledge about the club, 64(12.3%) were not selected for the AAC, 38(7.3%) having other club, 14(2.7%) enough members of the club, 11(2.1%) had shortage of time to participate in the club, 5(1.0%) told that the school contained many students and 4(0.8%) others like had extra work and didn't talk with their parents.

Knowledge on transmission methods of HIV/AIDS

Less than half, 295(35.8%) of the respondents had poor knowledge on the correct mode of transmission of HIV/AIDS. Majority, 764 (92.6%) of the respondents replied that, HIV/AIDS is transmitted by sharing unsterile sharp instruments followed by 736(89.2%) unsafe sexual practice. Regarding misconceptions on transmission methods of HIV/AIDS, 266(32.2%) of the respondents claimed that, HIV/AIDS could be transmitted by Mosquito bites followed by 47(5.7%) shaking hands and 44(5.3%) sharing toilet (Table-2).

Table -2: Knowledge on transmission methods of HIV/AIDS among students within the window of opportunity (n=825), Mekelle city, North Ethiopia, 2013

Variables	Frequency
Percents	
Get HIV through mosquito bites	
Yes	266
No	489
I do not know	70
	8.5
Get HIV from sharing toilet	
Yes	44
No	752
I do not know	29
	3.5
Eating a meal with someone who is infected by HIV	
Yes	35
No	774
I do not know	16
	1.9
Shaking hands with HIV infected person	
Yes	47
No	750
I do not know	28
	3.4
Sharing unsterile sharp instruments	
Yes	764
No	51
I do not know	10
	1.2
Practicing unsafe sexual intercourse	
Yes	736
No	53
I do not know	36
	4.4
Pregnant woman infected with HIV /AIDS transmit the Virus to her unborn child	
Yes	653
No	106
I do not know	66
	8.0
A person looking healthy transmit HIV/AIDS to uninfected person	
Yes	562
No	157
I do not know	106
	12.8

Factors associated with knowledge on transmission methods of HIV/AIDS

Age, grade, peer discussion and source of information were the factors associated with knowledge of transmission methods of HIV/AIDS in the bivariate logistic regression analysis. The multivariate logistic regression analysis showed that, respondents who used school as a source of information were found to be 2.4 times more likely to have good knowledge on transmission methods of HIV/AIDS than who did not use school as a source of information [AOR=2.39, 95% CI (1.41, 4.06), P=0.001]. Those respondents who discussed about HIV/AIDS with their peer friends were found to be 60% more likely to have good knowledge on transmission methods of HIV/AIDS than who didn't discussed [AOR=1.60, 95% CI (1.17, 2.17), P=0.003] (Table-3).

Table- 3: Factors associated with knowledge on transmission methods of HIV/AIDS among students within the window of opportunity (n=825), Mekelle city, North Ethiopia, 2013

Variables	Knowledge on transmission of HIV		OR (95% C.I.)		
	Good Knowledge	Poor knowledge	Crude	Adjusted	P-value
Age					
10-12	193(58.8%)	135(41.2%)	0.68(0.51,0.91)	0.99(0.65,1.53)	0.994
13-14	337(67.8%)	160(32.2%)	1	1	
Grade					
5-6	217(57.3%)	162(42.7%)	0.57(0.43,0.76)	0.69(0.45,1.06)	0.091
7-8	313(70.2%)	133(29.8%)	1	1	
Peer discussion					
Yes	300 (72.1%)	116 (27.9%)	2.01(1.51,2.69)	1.60(1.17,2.17)*	0.003*
No	230 (56.2%)	179 (43.8%)	1	1	
Source-of information					
School-source					
Yes	299(76.3%)	93(23.7%)	2.81(2.08,3.79)	2.39(1.41,4.06)*	0.001*
No	231(53.3%)	202(46.7%)	1	1	
Mass media					
Yes	310(72.9%)	115(27.1%)	2.21(1.65,2.95)	0.88(0.52,1.47)	0.615
No	220(55.0%)	180(45.0%)	1	1	
Community					
Yes	270(74.4%)	93(25.6%)	2.26(1.67,3.04)	1.15(0.69,1.90)	0.599
No	260(56.3%)	202(43.7%)	1	1	

Note: * Significantly associated variables at P<0.05

Knowledge on prevention methods of HIV/AIDS

More than half, 467(56.6%) of the respondents had poor knowledge on prevention methods of HIV/AIDS. Majority, 724(87.8%) of the respondents reported that, HIV /AIDS could be prevented by using condom followed by 673(81.6%) having one uninfected faithful sexual partner and 310(37.6%) by avoiding sharing unsterile sharp instruments like blade, syringe and needle. Regarding the misconception of respondents,373(45.2%) of respondents reported that HIV/AIDS could be prevented by avoiding sharing a meal with HIV /AIDS infected person followed by 347(42.1%) avoiding sharing toilet (Table-4).

Table-4: Knowledge on prevention methods of HIV/AIDS among students within the window of opportunity (n=825), Mekelle city, North Ethiopia, 2013

Variables	Frequency	Percent
Avoiding mosquito bit		
Yes	315	38.2
No	385	46.7
I do not know	125	15.2
Avoiding sharing a meal with HIV/AIDS infected person		
Yes	373	45.2
No	418	50.7
I do not know	34	4.1
Avoiding sharing toilet		
Yes	347	42.1
No	418	50.7
I do not know	60	7.3
Abstaining from sexual intercourse		
Yes	594	72.0
No	178	21.6
I do not know	53	6.4
Having one uninfected faithful sexual partner		
Yes	673	81.6
No	108	13.1
I do not know	44	5.3
Using Condom		
Yes	724	87.8
No	70	8.5
I do not know	31	3.8
Avoiding sharing sharp unsterile instruments		
Yes	310	37.6
No	492	59.6
I do not know	23	2.8

Factors associated with knowledge on prevention methods of HIV/AIDS

Grade, paternal education, parental discussion, peer discussion and source of information were the factors associated with knowledge on prevention methods of HIV/AIDS in the bivariate logistic regression analysis. The multivariate logistic regression analysis revealed that, respondents whose educational status of their fathers being unable to read and write were found to be 50% less likely to have good knowledge on prevention methods of HIV/AIDS than respondents whose fathers were diploma/degree [AOR=0.50, 95% CI(0.31, 0.81), P=0.005]. Those respondents who discussed about HIV/AIDS with their parents were found to be 55% more likely to have good knowledge on prevention methods of HIV/AIDS than who did not discussed [AOR=1.55, 95% CI(1.16, 2.07), P=0.003]. Those respondents who used school as a source of information were found to be 60% more likely to have good knowledge on prevention methods of HIV/AIDS than who did not used school as a source of information [AOR=1.58, 95% CI (1.02, 2.46), P=0.041] (Table -5).

Table-5: Factors associated with knowledge on prevention methods of HIV/AIDS among students within the window of opportunity (n=825), Mekelle city, North Ethiopia, 2013

Variables	Knowledge on prevention of HIV		OR (95% C.I.)		
	Good Knowledge	Poor knowledge	Crude	Adjusted	P-value
Grade					
5-6	149(39.3%)	230(60.7%)	0.74(0.56,0.97)	0.79(0.59,1.06)	0.119
7-8	209(46.9%)	237(53.1%)	1	1	
Paternal education					
Unable to read and write	55(36.2%)	97(63.8%)	0.49(0.31,0.78)	0.50(0.31,0.81)*	0.005*
Diploma/degree level	80(53.7%)	69(46.3%)	1	1	
Parental discussion					
Yes	161(49.7%)	163(50.3%)	1.52(1.15,2.02)	1.55(1.16,2.07)*	0.003*
No	197(39.3%)	304(60.7%)	1	1	
Peer discussion					
Yes	196(47.1%)	220(52.9%)	1.36(1.03,1.79)	1.24(0.92,1.67)	0.152
No	162(39.6%)	247(60.4%)	1	1	
Source of information					
School source					
Yes	195(49.7%)	197(50.3%)	1.64(1.24,2.16)	1.58(1.02,2.46)*	0.041*
No	163(37.6%)	270(62.4%)	1	1	
Community					
Yes	176(48.5%)	187(51.5%)	1.45(1.09,1.91)	0.90(0.58,1.39)	0.618
No	182(39.4%)	280(60.6%)	1	1	

Note: * Significantly associated variables at P<0.05

Discussion

This study aimed that to assess the level of knowledge among students with in the windows of opportunity on HIV/AIDS.

In this study, 64.2% of the respondents had good knowledge on transmission methods of HIV/AIDS. This finding was lower than a study conducted in Bangladesh (86.1%)¹¹. This might be due to difference in disseminating of information on HIV/AIDS message through different media in Bangladesh. This result was higher than a study conducted in China (58.5%)¹². This higher result might be due to effective peer discussion on HIV/AIDS through student net work process (one to five) which creates good knowledge on HIV/AIDS.

In this study, about 56.6% of students had poor knowledge on the prevention methods of HIV/AIDS. This finding was higher than a study conducted in Bangladesh (16.8%)¹¹. This might be due to the variation of general health settings particularly the better health settings and good communication between health institution and schools in Bangladesh.

This study revealed that, 92.6% of the respondents responded that sharing unsterile sharp instruments was frequently mentioned mode of HIV transmission followed by unsafe sexual practice (89.2%). This result was almost in line with a study conducted in Kombolcha, Ethiopia, (94.5% sharing unsterile sharp instrument and (94.2%) unsafe sexual practice)⁹.

This finding was not consistent to a study conducted in Uganda (87.5% unsafe sexual practice and 72.5% sharing unsterile sharp instruments)¹³. In our study might be attributed due to many children have grown up with their families where they don't talk (fear of asking) about sexuality education on HIV/AIDS to their parents. This indicated that, cannot helped to delay first sexual intercourse for adolescents who are not yet sexually active and affect the success of school based sexuality education. This finding was not consistent a study conducted in Bangladesh (38.9% sharing unsterile sharp instruments and 36.9% unsafe sexual practice)

¹¹. This finding showed that, high knowledge on transmission methods of HIV/AIDS might be attributed to the variation of the awareness of students through close parent child relationship.

In this study, 87.8% of respondents reported that condom use was the first prevention method of HIV/AIDS. This finding was almost consistent to a study conducted in Finland (96%)¹⁴. This might be due to effective dissemination of information through media and peer discussion about the prevention methods of HIV/AIDS.

In this study, 81.6% of the respondents replied that having one uninfected faithful sexual partner was also a prevention method of HIV/AIDS. This finding was higher than a study conducted in Uganda (25%)¹³. This higher result might be due to the involvement of teachers in the activities geared to HIV/AIDS prevention like counseling, teaching in a class and in general discussion with their students.

Misconceptions on the ways of transmission and prevention methods of HIV/AIDS were common among the study population. This finding was also reported in Ethiopia (Kombolcha), Benin, Yemen, Bangladesh and United state of America^{9, 11, 15, 16}. This might be due to lack of effective dissemination of information on misconceptions of HIV/AIDS.

In this study, the most frequently mentioned sources of information about HIV/AIDS were teacher, anti AIDS club (AAC) and health worker. This finding was also consistent to a study conducted in Uganda which was school/teacher¹³. This result was not the same with a study conducted in Iran, China and Japan, that mentioned television and radio were the main source of information^{10, 17- 20}. This finding showed that, school source and health worker have played a great role in the provision of information and education on matter related to HIV/AIDS. This might shows that, even if the school source and health worker are not major source of information for HIV/AIDS to the students, television/radio presents a major opportunities for delivering messages that can be tailored to meet the needs of students at different age groups and situation, especially the proximity to the students knowledge and contact make the teacher above all as an essential part of HIV/AIDS education.

Regarding on discussion about HIV/AIDS, Peer discussion [AOR= 1.60, 95% CI (1.18, 2.17), P=0.003] were significantly associated with knowledge on transmission methods of HIV/AIDS. This finding was consistent with a study conducted in Kombolcha, Ethiopia, 2005, [AOR=1.88, 95% CI (1.11, 3.19)]⁹. This might showed that those who discussed with their peer friends have a better knowledge because of free exchange of idea among themselves even if their knowledge is the same from one another unless they had taken special training on how to communicate with each other. Preferring the Source of information, school source [AOR=2.39, 95% CI (1.41, 4.06), P=0.001] were found to be significantly associated with knowledge on transmission method of HIV/AIDS. This might be due to the availability of books, pamphlets and brochures about HIV/AIDS.

Regarding educational status of parents, paternal education [AOR=0.50, 95% CI (0.31, 0.81), P=0.005] were an independent predictor of knowledge on prevention method of HIV/AIDS. This result might be due to, increment of paternal educational level which directly results in increment of students' knowledge on prevention methods of HIV/AIDS. In fact, 22.3% of students' father being diploma/degree had good knowledge on prevention methods of HIV/AIDS as compared to students whose fathers were unable to read and write. So, education is the pathway of communication for any message. Concerning on discussion about HIV/AIDS, parental discussion [OR=1.55, 95% CI (1.16, 2.07), P=0.003] were found to be significantly associated with knowledge on prevention methods of HIV/AIDS. There was no previous study about this issue but this finding might be due to free exchange of ideas with their parent in general positive parent communication and close parent child relationship. As per the source of information, school source were found to be significantly associated with knowledge on prevention methods of HIV/AIDS [AOR=1.58, 95% CI (1.02, 2.46)], P=0.041]. This finding might be due to the high dependence to their teachers as the main source of information might be attributed to the fact that teachers are open to communicate about HIV/AIDS in class and out of class to their students. Strength of this study: this study had large sample size unrelated to other studies, focusing in children during window of opportunity and the confounders were controlled using a multivariate logistic regression model to increase the validity. The limitation of this study was conducted at institution level, overestimated of the result.

Conclusion

Some of the respondents had poor knowledge on the correct mode of transmission of HIV/AIDS and more than half of the respondents had poor knowledge on prevention methods of HIV/AIDS. There was also a misconception on the transmission and prevention methods of HIV/AIDS. The most frequently mentioned sources of information were teacher followed by AAC and health worker. Paternal education, parental discussion, peer discussion and source of information (school source) were the factors identified in this study which determine their knowledge on transmission and prevention methods of HIV/AIDS. Therefore, using school source media must be strengthened and kept up sustainable and to equip them with good knowledge on HIV/AIDS. Schools and health institutions should collaborate and develop a regular program for PLWHA who are willing to publicize their sero- status in order to educate school children. Intervention in the schools on peer's education approach is helpful to provide them a necessary skill how to communicate and exchange

correct information with each other and sensitize the parent on open communication between themselves and their children.

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Authors' contributions

All authors read and approved the final manuscript and equally involved.

Competing interests

The authors declared that they have no competing interests exist.

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