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Effect of HIV/AIDS information distribution on the status of behavioral change among students of higher education institutions in Ethiopia: experience of Wollo University

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Abstract

Introduction: Substantial distribution of information, education, and communication related to human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) are the most cost-effective means to deliver desirable behavioral changes to stop/diminish the spread of the disease.

Material and methods: In the present study, a cross-sectional study was conducted, and the sample size was determined using a single population proportion formula. Collected data was processed with SPSS version 22.0 statistical software, and descriptive method of data analysis was used. A total of 363 participants were included from March to June 2020, using stratified sampling followed by a simple random sampling technique.

Results: The findings revealed that, major source of information used by university students on HIV/AIDS was radio (52.3%), followed by television (47.1%). From the study subjects, 60.3%, 39.4%, and 31.9% of them labeled currently available information sources as group specific, fear arousing, and boring, respectively. Students from College of Medicine and Health Sciences showed a better understanding of the virus. Moreover, a small number of the study subjects, i.e., 66 (18.2%), had a negative attitude towards people living with HIV/AIDS.

Conclusions: Most participants had fair knowledge about definition, transmission, and prevention of HIV/AIDS. However, knowledge by itself could not guarantee a change in behavior, as students were involved in different risky activities. In nearly all the cases, academic years of the participants and their field of study had an influence on the magnitude of behavioral changes delivered.

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Key words: HIV/AIDS, knowledge, attitude, practice, students, Ethiopia.

Introduction

Human immunodeficiency virus (HIV) was first identified in 1979, and in 1981, it was found to be the cause of acquired immunodeficiency syndrome (AIDS). Since that time, it has become one of the major universal health burden with high mortality and morbidity rates [1]. Since the start

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of this pandemic, about 75 million people have become infected, and 32 million people have died of the disease. A recent World Health Organization (WHO) report revealed that in 2020 about 680,000 (range, 480,000-1.0 million) people have died from HIV-related causes, and 1.5 million (range, 1.0-2.0 million) people have acquired HIV. At the end of this year, nearly 37.7 million (range, 30.2-45.1 million) people were estimated to live with HIV/AIDS; disturbingly, over two thirds of these HIV cases (25.4 million) were in the Africa region [2]. Ethiopia is not an exception; in 2016, there were about 718,500 people living with HIV/AIDS, with higher incidence than in 2010 [3].

Unsafe sexual practices, sharing contaminated needles/syringes, blood transfusion, organ transplantation, mother-to-child transmission (vertical transmission), and breast feeding are the major means of transmission of HIV [2, 4]. Lack of knowledge on the ways of transmission of the virus contributes to its' rapid spread, and also to social stigmatization and discrimination of HIV/AIDS-positive people [5].

Despite extensive studies, no complete cure or vaccine are available for avoidance of the disease. Therefore, preventive methods are the best practices to halt the progression of the disease. Effective information packaging and their distribution are powerful and cost-effective methods to diminish the spread of HIV/AIDS [6, 7].

Younger adults, including higher education students, are at high-risk of acquiring HIV/AIDS, mainly due to their risk-taking behavior. Despite this, university students in Ethiopia have not been provided with the required information regarding dangers of HIV/AIDS and other sexually transmitted diseases (STDs) at the universities [8, 9].

This study attempts to identify available information materials/sources, which are accessible to university students, and establish baseline information regarding knowledge, attitude, and practices towards HIV transmission and prevention. Moreover, the study assessed the existing gap of students on knowledge, attitude, and practices towards HIV transmission and prevention, which exposes the students to AIDS. Furthermore, it assessed the need for possible interventions to combat HIV/ AIDS at the University.

Materials and methods

Study area and period

The study was conducted in Dessie Campus, Wollo University, South Wollo Zone, Amhara Region, located 401 km Northeast of Addis Ababa, capital city of Ethiopia. Wollo University is a large teaching institution among federally established universities in Ethiopia. This study was conducted from March to June 2020.

Study design

A cross-sectional study design was employed to assess the effect of HIV/AIDS information materials on the status of behavioral changes of the students.

Population

Source populations for this study were all Wollo University students, and target populations were first-, second-, and third-year regular Wollo University students.

Inclusion and exclusion criteria

All students that were selected by a lottery method were included, whereas those students who had sight problem and students who were not in the campus during the study period (due to practical attachment or any other issues) were excluded.

Sample size determination

Sample size was determined using a single-population proportion formula, with 5% marginal error and 95% confidence interval, resulting in a sample size of 384 individuals. Because the source population was below 10,000, a correction formula was applied, with a final sample size of 363.

Sampling technique

Stratified sampling was used with self-administered questionnaire to obtain the study subjects. College of Medicine and Health Sciences (CMHS) and Faculty of Business and Economics (FBE) were selected by a lottery method.

A complete list of students of the Faculty of Business and Economics and College of Medicine and Health Sciences were considered. Then, students' were stratified in more homogenous groups in order to select proportional number of representatives from each stratum. Class year, sex, and faculty/college, to which participants of this study belonged to, were used as stratifying factors. Following this, participants were selected by a lottery method.

The number of participants from the Faculty of Business and Economics was 206 (78 of them were from the first year, 64 of them were from the second year, and the rest 64 were from the third year). The number of participants from the College of Medicine and Health Sciences was 157 (36 were from the first year, 52 were from the second year, and the rest 69 were from the third year).

Data collection techniques and procedures

Data were collected using a structured, pre-tested, self-administered questionnaire. The questionnaire was adapted from an instrument used by UNICEF to analyze knowledge, attitude, and practices towards HIV/AIDS [10]. The questionnaire comprised of two sections: first part was designed to collect personal information of respondents, and second part was prepared to assess potentiality of HIV/AIDS information to change knowledge, attitude, and practices of the students.

Data quality control, management, and analysis

To assure the quality of data, pre-testing was conducted on 18 individuals who were similar to study subjects, and during the study, some corrections were made based on the results obtained from the pre-test. Finally, the questionnaire was verified for proper filling.

Collected data were reviewed, and verified for completeness and consistency by the investigators, on a daily basis and instantly at the time of data collection. Data were entered and analyzed using SPSS version 22 statistical software.

Ethical considerations

Ethical permission was obtained from research and ethical review committee of the Wollo University. Informed consent was taken, and the purpose of the study was explained to all study subjects prior to data collection. The participants were informed that they have the right to decline to participate or withdraw from the study at any time. To assure the anonymity of the respondents, any personally recognizable information was avoided in the questionnaire, and information given by the participants was kept confidential.

Knowledge, attitude, and risk behavior or practice measurement

For general knowledge on HIV/AIDS, a total of 10 questions (Q-09 to Q-18) were provided. A score of 1 was given for each right response, whereas each wrong or unsure response was scored 0. Total knowledge scores ranged between 0-10. Knowledge score from 0 to 5 was considered as having poor knowledge, while knowledge score more than 5 was considered as having good knowledge regarding HIV/AIDS.

Attitude towards people living with HIV/AIDS was assessed using one question (Q-22), where attitude score 0 was considered as negative attitude, and score 1 was considered as positive attitude.

High-risk behavior or practice was assessed using seven questions (Q-23 to Q-29), where reporting of at least one negative behavior related to HIV transmission was considered as presenting high-risk behavior.

Results

Socio-demographic characteristics

A total of 363 respondents participated in the study, giving a 100% response rate. Of them, 261 (71.9%) were males and 102 (28.09%) were females. The survey revealed that the age of the respondents were in a range of 18-25 years. The majority of the respondents (n = 347, 95.6%) fell in the age of 19-23 years and 16 (4.4%) were between 24-25 years range. The mean age of the students was 22 years. Concerning religious affiliation, 272 (74.9%) were Orthodox, 52 (14.3%) were Muslim, 32 (8.8%) were Protestants, and 7 (1.9%) were categorized as 'others'. The distribution of the respondents by ethnicity indicated that nearly 199 (54.8%) were from Amhara, 75 (20.6%) from Oromo, 60 (16.5%) were from Tigrai, and the remaining 29 (8.1%) were from other ethnic groups. Regarding educational category, 206 (56.7%) belonged to the Faculty of Business and Economics, and the rest 157 (43.3%) represented the College of Medicine and Health Sciences.

Sources of information on HIV/AIDS

The major source of information used by the University students on HIV/AIDS was radio (52.3%), followed by television (47.1%). The data showed that the use of newspapers and magazines as sources on HIV/AIDS information was located as third (31.4%). The least that were classified as 'others' (parent, friends, and/ or teachers) as source of information accounted for 13.2% (Table 1). Large number of the respondents (n = 334, 92%) stated that the currently available HIV/ AIDS information materials are acceptable. About 143 (39.4%) participants classified the sources of information as fear arousing, whereas 284 (78.2%) of the study subjects revealed the sources of information are persuasive; at the same time, about 116 (31.9%) were finding them boring (Table 2).

Table 1. Sources of information on HIV/AIDS used among Wollo University students, 2019 (N = 363)

Sources of HIV/AIDS information	Response	Faculty/College level of education						Total	%
		FBE			CMHS				
		First	Second	Third	First	Second	Third		
Television	Yes	39	32	19	20	28	33	171	47.1
Radio	Yes	47	30	32	22	24	35	190	52.3
Newspaper and magazine	Yes	24	19	11	11	12	37	114	31.4
Video film	Yes	21	11	13	11	3	19	78	21.5
Leaflets and pamphlets	Yes	19	13	6	10	2	14	64	17.6
Posters	Yes	17	13	4	12	7	14	67	18.5
Others	Yes	1	–	–	8	6	33	48	13.2

Table 2. Perception of the Wollo University students towards HIV/AIDS information sources, 2019 (*N* = 363)

Characteristics of sources of information/Response	Faculty/College		Total	%
	FBE	CMHS		
Persuasive				
Yes	151	133	284	78.2
No	39	22	61	16.8
No response	16	2	18	5.0
Group-specific				
Yes	144	75	219	60.3
No	48	75	123	33.9
No response	14	7	21	5.8
Acceptable				
Yes	183	147	334	92.0
No	20	10	30	8.3
No response	3	0	3	0.8
Comprehensive				
Yes	140	115	255	70.2
No	50	37	87	24.0
No response	16	5	21	5.8
Boring				
Yes	80	36	116	31.9
No	121	117	238	65.6
No response	5	4	9	2.5
Fear arousing				
Yes	82	61	143	39.4
No	119	96	215	59.2
No response	5	–	5	1.4

Knowledge on HIV/AIDS

The majority of the respondents (90.1%) stated transfusion of infected blood as the major mode of HIV/AIDS transmission. A significant number of the study subjects (67.8%) mentioned homosexuality as a mode of transmission, and 88.7% of the participants revealed that sharing sharp instruments as a potential means of transmission. Misconceptions, such as HIV/AIDS could be transmitted through sharing food from the same dish, insect bite, and common use of towel, were observed in 29.7%, 20.1%, and 9.1% of the study subjects, respectively. These misconceptions were higher in students from FBE rather than CHS, and in first year students rather than senior students. Regarding the overall knowledge of respondents, the majority of students from the College of Medicine and Health Science (CMHS) knew about the different modes of transmission of the virus, with an overall knowledge score of 89.3%. The overall knowledge score of the students from the Faculty of Business and Economics on the modes of transmission of HIV/AIDS was found to be 66.2%, and it can be concluded that the health science students had a better awareness about this aspect of the virus than students from FBE (Table 3). Data on prevention methods used by the students showed that significantly large number of participants (n = 315, 86.8%) choose abstinence as the best method of HIV prevention, whereas 282 (77.7%) and 285 (78.5%) of the respondents pointed out having one faithful sex partner and use of condom, respectively, as the means of HIV/AIDS prevention (Table 4).

Regarding student's perception of susceptibility to the disease, 43.3% of the respondents admitted the risk of getting HIV/AIDS. In other words, only 43.3% of the individuals considered the probability of acquiring AIDS. This result indicated that most of the third-year comparing with second-year students, and second-year comparing with first-year students as well as most of health science comparing with FBE students, consider the risk of being infected in a wider extent (Table 5).

Attitude towards people living with HIV/AIDS

As depicted from Table 6, most of the respondents (81.8%) have a positive attitude towards HIV-infected individuals.

Table 3. Knowledge on modes of transmission among the Wollo University students, Dessie campus, 2019 (*N* = 363)

Mode of transmission	Faculty/College										Total	%
	FBE					CMHS						
	1st	2nd	3rd	Total	%	1st	2nd	3rd	Total	%		
Homosexual practice												
Yes	34	34	43	111	53.9	24	49	62	135	86.0	246	67.8
No	26	17	15	58	28.2	11	3	5	19	12.1	77	21.2
No response	18	13	6	37	17.9	1	–	2	3	1.9	40	11.0
Mother-to-child transmission												
Yes	38	41	40	119	57.8	18	45	67	130	82.8	249	68.6
No	27	15	15	57	27.7	12	7	2	21	13.4	78	21.5
No response	13	8	9	30	14.5	6	–	–	6	3.8	36	9.9
Same dish meal sharing												
Yes	31	28	30	89	43.2	7	12	–	19	12.1	108	29.7
No	34	32	21	87	42.2	28	40	69	137	87.3	224	61.7
No response	13	4	13	30	14.6	1	–	–	1	0.6	31	8.6
Blood-infected through transfusion												
Yes	65	56	58	179	86.9	29	50	69	148	94.3	327	90.1
No	–	6	2	8	3.9	7	2	–	9	5.7	17	4.7
No response	13	2	4	19	9.2	–	–	–	–	–	19	5.2
Sharing sharp instruments												
Yes	60	58	57	175	85.0	28	50	69	147	93.6	322	88.7
No	12	6	3	21	10.2	8	2	–	10	6.4	31	8.5
No response	6	–	4	10	4.8	–	–	–	–	–	10	2.8
Common use of towel												
Yes	10	9	7	26	12.6	3	4	–	7	4.5	33	9.1
No	50	55	46	151	73.3	30	42	69	141	89.8	292	80.4
No response	18	–	11	29	14.1	3	6	–	9	5.7	38	10.5
Insect bit												
Yes	28	21	13	62	30.1	6	5	–	11	7.0	73	20.1
No	47	41	44	132	64.1	29	45	69	143	91.1	275	75.8
No response	3	2	7	12	5.8	1	2	–	3	1.9	15	4.1

Nevertheless, 18.2% of the participants reported that they would terminate their relationship with people living with HIV/AIDS. At this point, majority of the respondents from medical faculty (89.8%) stated that they would treat HIV-infected people in the same manner as they treat anyone.

Practice measurement

Assessment of the students practice related to HIV/AIDS revealed that 30.0% of the participants had sexual intercourse with opposite sex, out of these, 81.6% of them used condom. The majority of the respondents (69.4%) used abstinence as method, whereas only 22.9% of the participants used faithfulness as HIV prevention method (Table 7).

Regarding exchange of information, 11.3% of the participants responded that they have never exchanged information regarding HIV/ AIDS, while the rest (88.7%) of the study subjects pointed out that they had been practicing in open discussion on ideas concerning HIV/ AIDS. Among the participants, majority of them (30.5%) exchanged information about the disease with friends, and only 8% disclosed that they discussed such issues with parents (Figure 1).

Discussion

Source of information

Radio was found to be the most widely used source of information by the university students, followed by television, and newspapers and magazines. This result was consistent with a study done among preparatory students at Gonder [11] and Jimma University [12], showing that radio and TV were

Table 4. Knowledge on prevention methods among the Wollo University students, Dessie campus, 2019 (*N* = 363)

Prevention method	Faculty/College										Total	%
	FBE					CMHS						
	1st	2nd	3rd	Total	%	1st	2nd	3rd	Total	%		
Having one uninfected faithful sex partner												
Yes	49	41	58	148	71.9	25	42	67	134	85.4	282	77.7
No	21	19	6	46	22.3	11	10	2	23	14.6	69	19.0
No response	8	4	–	12	5.8	–	–	–	–	–	12	3.3
Abstaining from sexual intercourse												
Yes	56	58	55	169	82.0	30	47	69	146	93.0	315	86.8
No	13	6	9	28	13.6	6	5	–	11	7.0	39	10.7
No response	9	–	–	9	4.4	–	–	–	–	–	9	2.5
Proper use of condom												
Yes	49	51	43	143	69.4	26	47	69	142	90.4	285	78.5
No	21	13	21	55	26.7	10	5	–	15	9.6	70	19.3
No response	8	–	–	8	3.9	–	–	–	–	–	8	2.2

Table 5. Risk perception of susceptibility to HIV/AIDS among the Wollo University students, Dessie campus, 2019 (*N* = 363)

Risk perception	Faculty/College										Total	%
	FBE					CMHS						
	1st	2nd	3rd	Total	%	1st	2nd	3rd	Total	%		
Awareness of being at risk of HIV infection												
Yes	18	20	24	62	30.1	25	31	39	95	60.5	157	43.3
No	60	44	40	144	69.9	11	21	30	62	39.5	206	56.7
No response	–	–	–	–	–	–	–	–	–	–	–	–

Table 6. Attitude towards people living with HIV/AIDS among the Wollo University students, Dessie campus, 2019 (*N* = 363)

Attitude statement	Class year			Faculty/College				Total	%
	First	Second	Third	FBE	%	CMHS	%		
I will treat them positively	84	95	118	156	75.7	141	89.8	297	81.8
I will terminate my relationship with them and/or treat them negatively	30	21	15	50	24.3	16	10.2	66	18.2
No response	–	–	–	–	–	–	–	–	–

the major sources of information in teaching about HIV/AIDS. Therefore, employing these electronic media extensively can play a great role to stop the HIV pandemic.

Regarding the perception of the students towards HIV/AIDS information materials, 78.2%, 92.0%, and 70.2% of the respondents pointed out that currently available information materials/sources were persuasive, acceptable, and comprehensive, respectively. However, 60.3%, 31.9%, and 39.4% of the study subjects labeled them as group-specific, boring, and fear arousing, respectively. On the other hand, 16.8%, 33.9%, 8.3%, 24.0%, 65.6%, and 59.2% of the participants indicated that HIV/AIDS information materials that they were using were not persuasive, group-specific, acceptable, comprehensive, boring, and fear-arousing, respectively. From these, one can easily see that a significant proportion of the participants perceived the presently available HIV/AIDS information materials negatively. Of note, the accessibility of HIV/ AIDS information materials is increasing from time to time. This being true, the perception of readers'/audiences' towards the materials is worth to be considered.

Knowledge on HIV/AIDS

Similar to the findings from Jimma University [12], Mizan-Tepi University [13], Bahir Dar University [14], and Ethiopian Civil Service College students [15], the present study also ob-

Table 7. Practice related to HIV/AIDS among the Wollo University students, Dessie campus, 2019 (*N* = 363)

Practice statement/ Response	Faculty/College		Total	%
	FBE	CMHS		
Had sexual intercourse with opposite sex				
Yes	64	45	109	30.0
No	137	108	245	67.5
No response	5	4	9	2.5
Use of condom during sexual intercourse				
Yes	50	39	89	81.6
No	14	6	20	18.4
No response	–	–	–	–
Use abstinence method				
Yes	144	108	252	69.4
No	57	46	103	28.4
No response	5	3	8	2.2
Use faithfulness method				
Yes	55	28	83	22.9
No	146	129	275	75.8
No response	5	–	5	1.3
Eat a meal with an infected person				
Yes	103	80	183	50.4
No	103	77	180	49.6
No response	–	–	–	–
I have never met such a chance	66	63	129	71.7
Fear of HIV/ AIDS infection	37	14	51	28.3
Sharp needle sharing				
Yes	47	26	73	20.1
No	155	131	286	78.8
No response	4	–	4	1.1

served some misconceptions among the participants on different aspects of the disease. The overall knowledge of the students on the modes of transmission and prevention was good, and the knowledge was higher among CHS students (89.3%) comparing with FBE (66.2%), which is in line with a study done at Madda Walabu University, Southeast Ethiopia [16] and Iran [17]. A possible justification for higher knowledge of health science students is that they get such kind of information in some courses as part of their curriculum. Therefore incorporation/integration of common courses for all University students on sexually transmitted diseases could have huge impact in enhancing the knowledge of the students.

Pertaining to students' risk perception of susceptibility to HIV/AIDS, 43.3% of them bear in mind that HIV/AIDS can happen to them. On the other hand, more than half of the respondents (56.7%) did not think about the probability of getting the infection. This finding is in line with the report of Yohannes and Moges [12]. Faculty/College wise, most students from CHS expect the risk of being infected in a larger extent (60.5%) than participants from FBE (30.1%). This can be attributed to the difference observed in their knowledge concerning HIV/AIDS. As long as the respondents' year level is concerned, most of third year students expect the risk of being infected than those participants from second and first year. This can be associated with differences in experience.

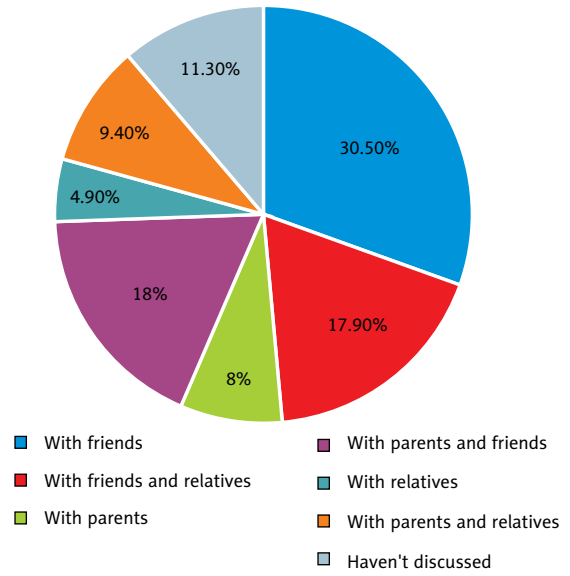

Figure 1. Exchange of information on HIV/AIDS among the Wollo University students, Dessie campus, 2019 (*N* = 363)

Information exchange

88.7% of the study subjects pointed out that they had been practicing open discussion on ideas concerning HIV/AIDS, and majority of them (30.5%) exchange information about the disease with friends. This can be attributed to similarity in age, feeling, need etc. Therefore strengthening peer education will be worth to be considered to prevent spread of the disease.

Attitude towards people living with HIV/AIDS

Regarding the attitude of the students, majority of them (81.8%) were sympathetic towards people living with the virus. This positive attitude percentage is very similar with the overall knowledge score of the students which showed that knowledge is an important factor to build positive attitudes towards HIV/AIDS. This finding is consistent with a study from Bahir Dar University [14] and University of Gonder [18].

Risk behavior

In the present study, majority of the students (86.8%) chose/preferred abstinence as a major means of HIV preven-

tion and 69.4% of them were able to bring it into practice. This has to be encouraged since abstinence is the safest method to protect themselves from acquiring HIV/AIDS and other sexually transmitted disease as well as unwanted pregnancy.

Among the sexually active students, 81.6% of them used condom which is higher than the report of Zemenu *et al.* [13] and Petros [15]. This could be due to free access to condoms in the University. As far as the College/Faculty the students belongs to is our concern; among those who had used condoms, 87% were from College of Health Sciences and 78% were from FBE. This could be attributed to the observed difference in their knowledge towards the virus.

Conclusions

Misconceptions on different aspects of HIV/ AIDS, discriminatory attitudes and risky practices were observed in some of the study participants but these are not the problem of students only in developing countries. A recent study done in Italy among health science students also showed similar results [19]. These calls for a big concern, and must be addressed readily. Even though most of the participants had fair knowledge about the definition, transmission, and prevention of HIV/AIDS, some students were found involving in different risky activities. From this, it can be deduced that knowledge by itself cannot guarantee a change in behavior. In nearly all the cases, academic years and field of study of the participants have an influence on the level of behavioral changes.

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Conflicts of interest

The authors declare no conflict of interest.

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