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Original Article

Voluntary counseling and testing for HIV/AIDS service utilization and associated factors among Hawassa University students, Ethiopia

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Abstract

Introduction: In Ethiopia, voluntary counseling and testing (VCT) has been instrumental in addressing the HIV/AIDS epidemic, although the country's efforts have been somewhat limited. VCT plays a critical role in ensuring individuals receive care, treatment, and support, while promoting HIV status awareness. However, VCT services in Ethiopia have been inconsistent, resulting in underutilization and variable community engagement. Notably, there is a dearth of research on VCT experiences among university students. Thus this study was aimed to assess VCT service utilization and associated factors among students of Hawassa University, Ethiopia.

Methods: Institution-based cross sectional study was conducted from March 18-20, 2022 among 801 under graduate students drawn from selected departments of Hawassa University using multistage sampling technique. The sample size was estimated based on single population proportion with assumption : 95% confidence interval (two sided), 5% margin of error, and 38.6% expected proportion of VCT uptake among youth, 10% non-response rate and other contingencies. It was multiplied by two for the design effect. Finally the sample size was 801. Data were entered and analyzed using SPSS version 26. Adjusted odds ratios (AORs) with 95% confidence interval (CI) were used to assess the association of different factors with VCT utilization.

Results: From 801 participants, majority (94%) were in the age range of 20–24 years. More than half (59%) of respondents haven't had any type of HIV test. Those who have a drug injection practice were 93 % less likely to utilize VCT (AOR= 0.07, 95% CI: 0.01-0.42). Those who have boy or girl friend were about 4 times more likely to utilize VCT (AOR= 3.9, 95% CI: 1.5- 10.3). Further, those with favorable confidentiality and support were 6 times more likely to utilize VCT (AOR= 6.1, 95% CI: 1.9-19), those with perception of no risk were 5 times more likely to utilize VCT (AOR= 5.1, 95% CI: 2.1- 12) as compared with those who have perception of risk.

Conclusion: the study found low VCT utilization among university students comparable to other studies. The

use of VCT was associated with religion, drug injection practice, having boy or girl friend, fear of confidentiality of result and perceived susceptibility. Thus, we recommend special intervention programs targeting injection drug users, their family members, and service providers may increase HIV test. In addition, making HIV testing/VCT clinics more convenient and private would also increase utilization.

Keywords: voluntary counseling and testing, service utilization, university students, Ethiopia

Introduction

Human immune virus (HIV) continues to pose a considerable threat to public health, with Sub-Saharan Africa, including Ethiopia, being severely affected (1). Latest estimates suggest that globally, 38.4 million people are living with HIV, with young adults aged 15-25 contributing to over 30% of new infections (2). The region of Sub-Saharan Africa accounts for an alarmingly high proportion of new HIV infections, at around 66%, according to data from the United Nations Program on HIV/AIDS (UNAIDS) in 2016 (3,4). Ethiopia, along with other countries in this region, carries a disproportionately heavy burden of HIV/ acquired immune deficiency syndrome (AIDS).

To tackle the challenge of HIV/AIDS, the (UNAIDS) launched the 95-95-95 strategy in 2020 calling for 95% of all people living with HIV to know their HIV status, 95% of all people with diagnosed HIV infection to receive sustained antiretroviral therapy, and 95% of all people receiving antiretroviral therapy to have viral suppression by 2025 (5). Different countries have implemented various strategies to prevent the spread of HIV and mitigate its impact on individuals, families, and communities. These strategies include voluntary counseling and testing (VCT), provider-initiated counseling and testing (PICT), and the diagnosis of HIV in infants and young children. VCT, which includes pre- and post-test counseling, plays a vital role in HIV interventions (6, 7).

In Ethiopia, VCT has been instrumental in addressing the HIV/AIDS epidemic, although the country's efforts have been somewhat limited. Following the introduction of the national HIV/AIDS policy, Ethiopia expanded VCT services to the broader community, making significant strides in alignment with UNAIDS' strategies (8-10). Young people aged 15-24 are disproportionately affected by HIV/AIDS, due to factors like peer pressure, risky sexual behavior, and exposure to contaminated blood or unsterilized piercing tools (11). High school and university students, in particular, are at heightened risk of contracting HIV and developing AIDS (12).

Despite the high number of people living with HIV/AIDS, awareness of one's infection remains low, with fewer than 10% of individuals knowing their status, largely due to limited access to VCT services (13). Studies in African countries have shown varied levels of VCT usage among students, ranging from 10% to 34.5% (14, 15). In Ethiopia specifically, VCT uptake among youth is similarly low, at 35-38% (16). VCT plays a critical role in ensuring individuals receive care, treatment, and support, while also promoting HIV status awareness. However, VCT services in Ethiopia have been inconsistent, resulting in underutilization and variable community engagement (1, 17).

Several factors contribute to the low adoption rate of VCT in Ethiopia, including lack of knowledge, fear of receiving a positive diagnosis, expensive VCT services, limited availability of VCT facilities, and social stigma surrounding HIV. These obstacles hinder individuals from accepting VCT for HIV (18, 19). Notably, there is a dearth of research on

VCT acceptance or experiences among university students in Ethiopia, particularly regarding these specific issues. Furthermore, the COVID-19 pandemic has significantly impacted HIV services, resulting in a 75% decrease in service provision. This decline is further exacerbated in Ethiopia, where most HIV program funding has been redirected towards supporting COVID-19 centers. As a result, media coverage and public awareness of HIV have diminished, with attention primarily focused on COVID-19 (20).

Moreover, the healthcare workers in VCT clinics have been redeployed to COVID-19 and trauma centers, leaving HIV largely neglected. Hence, this study was designed to evaluate the use of VCT services and identify associated factors among students at Hawassa University in Ethiopia.

Methods and materials

Study design, period, and setting

An institution-based cross-sectional study was conducted from March 18-20, 2022 among students of Hawassa University. Hawassa University (HU) is a residential national university in Hawassa, Sidama, Ethiopia. Hawassa is located in Sidama National Regional State, 278 kilometers south of Addis Ababa. HU offers 81 undergraduate programs, 108 master's programs, and 16 PhD programs. In October 1, 2021, the student population was 43, 638. The university comprises of seven campuses: the Main Campus, College of Agriculture, College of Medicine and Health Sciences, Institute of Technology, College of Forestry and Natural Resources, College of Business and Economics, and Daye Campus (https://hu.edu.et/index.php/hu/overview/background).

Study population and sampling

The source population for the study included all regular undergraduate Hawassa University students on study in 2022 and those selected regular undergraduate students from Hawassa University were the study population. We employed multistage sampling technique to select the study participants. Study participants were selected from three campuses selected by lottery method; from each of those three campuses, two departments were selected by lottery method. Then from each of the selected departments, we selected year of study by stratified random sampling technique. Finally, individual participants were recruited using cluster sampling technique, classes selected by simple lottery sampling method.

The sample size was estimated based on single population proportion and considered the following assumption : 95% confidence interval (two sided), 5% margin of error, and 38.6% expected proportion VCT uptake among youth, 10% non-response rate and other contingencies. It was multiplied by two for the design effect. Finally the sample size was 801.

First year students, students who were not attending class during the time of data collection for different reasons, and interns were not included in the study.

Data collection tools and procedures

Selected students received Self-administered questionnaire to complete. The data was collected using structured, self-administrated questionnaire. The questionnaire were prepared in English and extracted from different previous studies (21-30).

Dependent and independent variables

The dependent variable was voluntary counseling and testing service utilization (yes/ no).The independent variables included were socio demographic variables such as age, sex, marital status, place origin (urban or rural), year of study, college of study, religion; knowledge related factors such as knowledge about HIV; and source of information and behavioral factors like having sexual partner.

Data processing and analysis

The data entry, cleaning and analysis was done using IBM SPSS version 26 software. Descriptive statistics like frequency, proportion, mean, and standard deviation were computed to describe the study variables. Bivariable and multivariable logistic regression models were used to identify factors associated with VCT utilization. Variables with p-values < 0.25 in bivariable analyses were entered into multivariable logistic regression to identify the predictor variables. Hosmer and Lemeshow's goodness-of-fit test was used to assess whether the model fits the data. Crude odds ratio (COR) and adjusted odds ratio (AOR) were used to measure the strength of association. Finally, AORs with 95% confidence interval (CI) at p-value < 0.05 were considered as statistically significant.

Results

Sociodemographic characteristics of the study participants

A total of 753 participants have responded for the study, resulting in a response rate of 94%. More than half (66%) of the respondents were males and majority (94%) were in the age range of 20-24 years. Regarding their marital status, majority (97%) were single and more than half (58%) were second year students (Table 1).

Table 1: Sociodemographic characteristics of study participants, Hawassa University, April 2022)

Variable	Category	Frequency	Percent
Age	15-19	5	0.70
	20-24	709	94.2
	25-29	32	4.2
	30-34	7	0.90
Sex	Male	498	66.1
	Female	255	33.9
Religion	Orthodox	360	47.8
	Muslim	105	13.9
	Protestant	192	25.5
	Others	96	12.7
Place of origin	Urban	458	60.8
	Rural	295	39.2
Marital status	Married	25	3.3
	Not married	728	96.7
Having boyfriend/ girlfriend	Yes	121	16.7
	No	608	83.3
College of study	Technology	310	41.2
	Medicine and Health Science	222	29.5
	Agriculture	221	29.3
Year of study	Second year	439	58.3
	Third year	169	22.4
	Fourth year	125	16.6
	Fifth year	20	2.7

Knowledge and VCT utilization practice of study participants (HU, April 2022)

Fifty three percent (399) have heard about VCT. The most common sources of information were health mass media 180(45.1%). More than half (59%) of respondents haven't had any type of HIV test. Majority (92%) had comprehensive knowledge about HIV/AIDS (Table 2).

Table 2: Knowledge and VCT utilization practice of study participants, Hawassa University, April 2022

Variable	Category	Frequency	Percent (%)
Tested for HIV	Yes	310	41.2
	No	443	58.8
Heard about VCT	Yes	399	53.0
	No	354	47.0
If yes, source of information	Mass media	180	45.1
	Health institution	97	24.3
	School	66	16.5
	Family	22	5.5
	Friends	34	8.5
Previous VCT service utilization	Yes	235	31.2
	No	518	68.8
If yes, reason for VCT utilization	For marriage	16	6.8
	To know one self	119	50.6
	With boy/girlfriend	65	27.7
	During mass campaign	30	12.8
	Other	5	2.1
VCT importance for prevention and control of HIV	Yes	614	81.5
	No	139	18.5
Want to have VCT in the future	Yes	338	44.9
	No	106	14.1
	Didn't decided yet	309	41.0
If no, reason for not wanting to have VCT	No appropriate service time	6	5.7
	Long waiting service time	3	2.8
	Self-confidence as if negative	61	57.5
	Fear of being stigmatized and discriminated if positive	14	13.2
	Fear of confidentiality	22	20.8
Having comprehensive knowledge about HIV/AIDS	Yes	692	91.9
	No	61	8.1
Discussion about HIV/AIDS	Yes	647	85.9
	No	106	14.1
Knowing someone who is infected with HIV or died of AIDS	Yes	654	86.9
	No	99	13.1
Drug injection practice	Yes	32	4.2
	No	721	95.8

AIDS, acquired immune deficiency syndrome, HIV, human immune virus; VCT, voluntary counseling and testing

Reasons for not wanting to utilize VCT service

More than half (58%) did not want to have VCT due to their self-confidence as if negative (Figure 1).

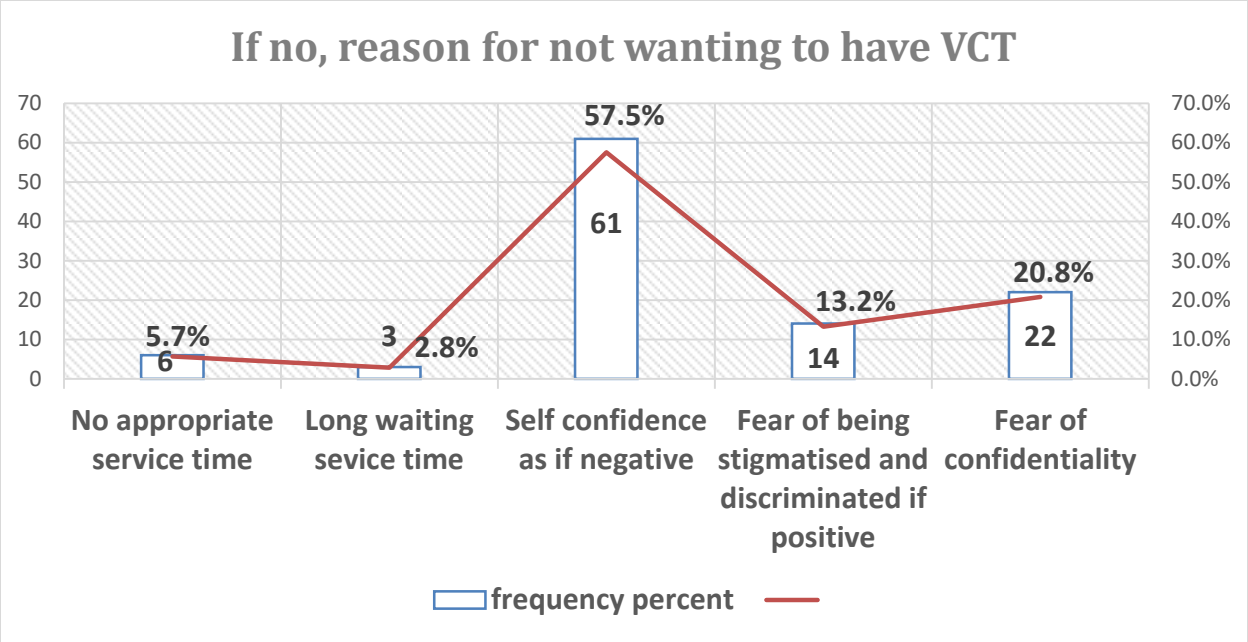

Figure 1: Reasons for not wanting to utilize VCT service, Hawassa University, 2022

Social, behavioral, and service related factors with VCT service utilization

Among the ten questions asked to assess personal concerns, 415 (55.1%) of the respondents were found to be favorable for VCT service utilization. In line with this, social concern, 51.7% (389) respondents found to be favorable for VCT service utilization related with social concern (Table 3).

Factors associated with utilization of VCT service among Hawassa University students

In the binary logistic regression analysis variables such as personal concern, religion, drug injection practice, having boyfriend or girlfriend, social concern, knowledge of VCT, confidentiality and perceived susceptibility were found to have p value < 0.25.

Then in the multivariate logistic regression analysis, religion, drug injection practice, having boy or girl friend, social concern, confidentiality and perceived susceptibility were found to be significantly associated with utilization of VCT. Participants who have a drug injection practice were 93 % less likely to utilize VCT as compared to their counterparts (AOR= 0.07, 95% CI: 0.01-0.42). Those who have boy or girl friend were about 4 times more likely to utilize VCT (AOR= 3.9, 95% CI: 1.5- 10.3) compared to those who had not. In addition, participants with favorable social concern were also 2 times more likely to utilize voluntary counseling and testing as compared to their counterpart. Further, those with favorable confidentiality and support were six times more likely to utilize VCT (AOR= 6.1, 95% CI: 1.9-19) as compared with those who fear confidentiality and social support. Furthermore, those with perception of no risk were 5 times more likely to utilize VCT (AOR= 5.1, 95% CI: 2.1- 12) as compared with those who have perception of risk (Table 4).

Table 3: Social, behavioral, and service related factors with VCT service utilization, Hawassa University, April 2022

Factors	Category	Frequency	Percent
Personal concern	Favorable	415	55.1
	Not favorable	338	44.9
Social concern	Favorable	389	51.7
	Not favorable	364	48.3
Value of HIV testing	Favorable	414	55.0
	Not favorable	339	45.0
Confidentiality and support	Favorable	413	54.8
	Not favorable	340	45.2
Perceived susceptibility	Favorable	362	48.1
	Not favorable	391	51.9

Table 4: Factors associated with utilization of voluntary counseling and testing among Hawassa University students, April 2022

Variables	VCT utilization		COR (95% CI)	AOR (95% CI)
	Yes	No		
Religion				
Orthodox	87	273	0.5(0.3-0.8)	2.6(0.9-8)
Muslim	19	86	0.36(0.19-0.7)	1.2(0.25-5.6)
Protestant	93	99	(0.9-2.5)	3.3(1.04-10.5)
Other	36	60	1	1
Drug injection practice				
Yes	4	28	0.3(0.1-0.87)	0.07(0.01-0.42)
No	231	490	1	1
Having boy or girl friend				
Yes	67	54	3.6(2.4-5.5)	3.9(1.5-10.3)
No	153	455	1	1
Social concern				
Favorable	218	172	24.2(14.5-40.5)	2.9(1.04-8.7)
Unfavorable	18	346	1	1
Confidentiality and support				
Favorable	222	191	29.2(16.2-52.5)	6.1(1.9-19)
Unfavorable	13	327	1	1
Perceived susceptibility				
Favorable	200	162	12.5(8.3-18.8)	5.1(2.1- 12)
Unfavorable	35	356	1	1

AOR, adjusted odds ratio; COR, crude odds ratio

Discussion

Overall, the study found low VCT utilization among university students, and demographic and other factors and perceptions were associated with greater or lesser likelihood of getting tested. VCT utilization was associated with religion, with Protestants more likely to get tested than 'other' religion followers.. Students who injected drugs were far less likely to get tested, with only 12.5% expressing willingness. Those with boyfriends/girlfriends, and students who perceived themselves as susceptible to HIV were more likely to get tested. Students who felt confidentiality would be maintained and had social support were 6 times more likely to get tested.

The study revealed that about 31% of the study participants had used voluntary counseling and testing. This rate is similar to a study of health professional students in Tanzania (34.5% VCT use) (6) . However, it is lower than a study conducted in Bahirdar , Addis Ababa and Debre Markos (1, 11, 31). The difference might be due to these studies had included all undergraduate students without excluding first and final year students. From sociodemographic factors associated with higher VCT use was Protestant religious affiliation. This is similar with a study conducted among men and women in Ethiopia (6, 32). Muslim women in urban showed a low rate for VCT utilization than those from other religious and cultural background. A possible justification could be, the social stigma associated with HIV/AIDS, which occurs in all communities but is particularly evident in Muslim cultures where sexuality is seen as a private matter and forbidden, discourages individuals at risk from seeking out the right counseling, testing, and treatment (33).

In this study, students those who had drug injection practice were 93 % less likely to utilize voluntary counseling and testing as compared to their counterpart, where only 12.5 % of students expressed willingness to be tested for HIV. This is in line with a mixed study conducted among injection drug users in Shanghai, China where one fourth (24.4%) of patients expressed willingness to be tested for HIV (34). This might be due to lack of information about these services, fear of positive results, and the stigma or discrimination that may be experienced by the patient or their family (35). Similar low testing rates among injection drug users have been reported in studies in India (36). Although high-risk populations, such as individuals who inject drugs, are mandated to undergo HIV testing every six months through targeted programs, recent data indicates that testing frequencies remain suboptimal (37). It implies efforts must be made to persuade all injection drug users to understand the importance of getting tested for HIV.

Those who had boyfriend or girlfriend were 3 times more likely to utilize voluntary counseling and testing compared to those who had not. This is similar with a study done among youth in Gonder City Ethiopia and Harar (26, 38) where the use of VCT among students who had fiancé was higher than their counterparts. This could be justified by the fact that those who had a boyfriend or girlfriend may have a higher likelihood of obtaining a VCT before engaging in sex. On the other side, those who have never had a boyfriend or girlfriend could think that since they have not yet engaged in sexual activity, they are not at risk. Additionally, by discussing their health results, more people might seek out medical care, including HIV testing and counseling. In contrast to this, a study done in Guraghe zone (39) reports contradicting result of this finding and this might be due to study population difference (school youth) and the sampling method used (volunteer sampling).

Further, those with favorable confidentiality and support were six times more likely to utilize

VCT as compared with those who fear confidentiality and social support. This is similar with a study conducted among youth in Gondar City (26) where VCT utilization rates among students who feared confidentiality were 77% lower than those of students who did not. Studies among Debre Markos University Students and among women of reproductive age group in an Abuja Suburb community, Nigeria had also found same result, doubt about clients confidentiality was identified as a major factor affecting VCT service utilization (31, 40). A possible justification is because, people may feel more comfortable using the VCT service if they are confident that the issue will be kept private. Furthermore, those who perceived susceptibility shows 5 times higher rate of VCT utilization as compared with their counterparts. This is in contrast with a study conducted in Hawassa and Butajira (41, 42) among high school youths where HIV risk perception (perceived susceptibility and perceived severity) did not show a statistically significant association with VCT service utilization. The discrepancy might be due to difference in the study design such as applying a health belief model in previous studies.

The present study has strengths and limitations. Strengths of this study include its institution-based cross-sectional design, which allowed for data collection among a specific population of regular undergraduate students at Hawassa University. The study utilized a multi-stage sampling technique to ensure a representative sample size, enhancing the reliability and generalizability of the findings within the university setting. This study has some limitations that should be taken into consideration when interpreting the findings. The limitation of this study includes the use of a cross-sectional design, which prevents the exploration of causal relationships between variables. Moreover, the study relied on self-administered questionnaires, which may be subject to response bias or inaccurate reporting. The study was conducted among undergraduate students of Hawassa University, limiting the generalizability of the findings to other populations or settings. Furthermore, the study excluded first-year students, students who were absent during data collection, and interns, which may introduce selection bias.

Conclusion

The utilization rate of VCT services among students was relatively low, with only 31% reporting having undergone the test. The study identified religion and having a boyfriend or girlfriend as significant factors associated with increased VCT service utilization. On the other hand, concerns about confidentiality of test results and injection drug use were associated with lower utilization rates. To enhance the uptake of voluntary counseling and testing services among students, it is vital to tackle the factors that shape their behavior. A suggested approach is to create a tailored health education program that aims to foster positive changes in behavior. This program should highlight the significance of VCT for early detection, prevention, and treatment of HIV/AIDS, while also dispelling myths about confidentiality and ensuring the privacy of test results. By doing so, students will be better informed and motivated to utilize VCT services, ultimately contributing to a healthier and more aware community. Moreover, enlisting the support of religious leaders and organizations can be instrumental in promoting VCT services. This can be achieved through partnering with religious institutions to raise awareness and encourage students to take advantage of VCT services. Furthermore, targeted interventions should be designed for high-risk populations, such as individuals who inject drugs, by offering customized education and support services that cater to their unique needs and obstacles to VCT utilization.

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Ethical considerations

The Institutional Review Board at Hawassa University, College of Medicine and Health Sciences (Ref. No: IRB/429/02, Date: 18/02/2022) approved this study. Informed written consent was received from the respondents before providing the questionnaire and that they did not get any benefit that unduly influence their participation in the study. They were also ensured that the information provided was used only to for research purposes and was therefore completely anonymous, and is treated confidentially.

Data availability statement

Data is not available for online access. However, readers who wish to gain access to the data can write to the corresponding author.

Conflicts of interest

The authors declare that they have no competing interests.

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