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Knowledge, Attitude, and Practice towards Voluntary Counseling and Testing Services among University Students in Kigali, Rwanda: A cross-sectional study.

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ABSTRACT:

Background:
Voluntary Counseling and Testing (VCT) is recommended as effective in reducing risks in sexually active young adults, such as college students.

Objective: This study was aimed to assess the level of knowledge, attitude and practice towards VCT service among University students in Kigali City, Rwanda.

Method:
A cross-sectional study was conducted using a stratified sampling method from March to August 2021. A total of 374 participants filled out a structured questionnaire to gather information. A chi-square test was used to determine an association between a number of independent factors and dependent variables.

Result:
A total of 374 participants were interviewed. The majority, 278(74.3%), were in the age bracket of 20-24 years. A total of 223(59.6%) students demonstrated good knowledge of VCT; 219(58.6%) had a positive attitude towards VCT for HIV. Less than half, 160(42.8%), reported that they had VCT for HIV within the past year. Respondents' age (p-value<0.001), religion (p-value<0.001), income category (p-value<0.001), level of education (p-value<0.001), and occupation (p-value <0.001) were among the sociodemographic variables that were significantly associated with practices of HIV prevention and control. The ignorance of the VCT center was reported as the main barrier to VCT uptake.

Conclusion:
The findings show positive views on VCT, but over half didn't get tested due to a lack of knowledge about VCT centers.

Keywords: *knowledge, Attitudes, practices, voluntary counseling, and testing, HIV/AIDS.*

1. Introduction

Every year, a total of 940,000 HIV/AIDS-related deaths occur globally, while 36.9 million people are infected and living with HIV/AIDS.[1] UNAID report indicates that 1.8 million new infections occur every year globally [2]. UNAIDS additionally states that on a global scale, around 5,000 new infections arise each day, with 33% of these cases impacting individuals aged 15 to 24, and among them, 19% are young women.[3] Sub-Saharan Africa is noted as the most severely affected region globally, with approximately 23.5 million people living with HIV infection.[4]

In sub-Saharan Africa, Eastern and Southern Africa are particularly impacted. These regions account for 20.6 million (54%) of the total individuals living with HIV/AIDS worldwide. They also represent 45% of the global HIV infections and 53% of the global population affected by HIV/AIDS.[3] Voluntary testing and counseling (VCT) refers to the procedure whereby an individual receives private counseling to help them make an informed decision about discovering their HIV status and receive guidance on taking suitable steps thereafter.[5] It is a widely embraced method for identifying individuals potentially

exposed to or infected with the HIV virus and serves as a crucial tool in halting the transmission of HIV.[6]976 Ethiopians are currently living with HIV and all of them require antiretroviral treatment (ART Voluntary Counseling and Testing (VCT) has proven to be an effective strategy in encouraging behavioral changes aimed at both preventing HIV transmission and ensuring early access to care and support.[7] VCT has also been shown to play a crucial role in promoting behavioral changes and contributes significantly to the reduction of HIV and other sexually transmitted infections (STIs).[6976 Ethiopians are currently living with HIV and all of them require antiretroviral treatment (ART, 8a person who had no record of contact with the health facility for at least three consecutive months was considered LTFUP. LTFUP incidence rates were computed, and the Fine-Gray's competing risk regression models were used to determine factors associated with time to first LTFUP. Generalized estimating equations (GEEs] To reach the UNAIDS goal of ensuring that 90% of all people living with HIV know their status,[990% of those who are HIV positive treated, and 90% of those treated achieve an undetectable viral load. The latter indicates viral suppression, the goal for clinicians treating people living with HIV (PLWH] targeted HIV testing and counseling (HTC) services need to be implemented across diverse community and facility-based settings. Specifically, adolescent and youth clients aged 15-24 are among the groups prioritized for HIV testing and counseling initiatives. [10respiratory infections, malnutrition, schistosomiasis, malaria, soil-transmitted helminth infections and trachoma from exposure to inadequate drinking-water, sanitation and hygiene behaviours (WASH]

A recent report from 2021 surveys conducted in 12 high-burden sub-Saharan African countries indicates that only 12% of men and 10% of women in the general population have undergone HIV testing and received their results. (11)

In Rwanda, HIV infection remains a critical public health concern, contributing significantly to mortality rates and imposing social and economic burdens that affect both individuals and the nation as a whole. Rwanda has made significant strides in advancing universal access to HIV and AIDS services by implementing comprehensive national multi-sector strategic plans. Top of Form These plans, such as the one spanning from 2005 to 2009 and the subsequent National Strategic Plan from 2013 to 2018, signify Rwanda's commitment to combatting HIV/AIDS comprehensively and effectively. [12]

More than 50% of global HIV cases occur among adolescents aged 10 to 24 years.[13] Voluntary Counseling and Testing (VCT), which remains a crucial gateway for HIV prevention, management, and treatment, VCT services are underutilized by the youths; consequently, many adolescents are unaware of their HIV status.[14]

In Rwanda, there are 256 VCT (Voluntary Counseling and Testing) sites identified by the Treatment and Research on AIDS Centre (TRAC). TRAC was introduced in Rwanda in 1997 with specific objectives focused on AIDS treatment and research. [15]

According to the 2019/2020 Rwanda Demographic and Health Survey, 59% of men and 45% of women aged 15-24 have never undergone HIV testing.[16] Although VCT is a widely embraced method for identifying individuals potentially exposed to or infected with the HIV virus and serves as a key tool in reducing the transmission of the virus,[6]976 Ethiopians are currently living with HIV and all of them require antiretroviral treatment (ART context-based studies on the KAP regarding VCT services in Rwanda are scarce. This study evaluated the knowledge, attitude, and practice of University students towards VCT service in Kigali, Rwanda.

2. Method

Ethical consideration

The study was reviewed by Mount Kenya University's Ethical Review Board. Additional permissions to conduct the research were obtained from the three selected universities involved in the study. Participants were informed that their involvement was voluntary, with the option to withdraw at any point without repercussions. Confidentiality of the provided information was underscored. Before joining the study, participants received comprehensive explanations about its objectives. They were then invited to sign a consent form willingly, without pressure. Measures were implemented to safeguard participants' dignity, respect, and independence throughout the study.

Study area and study setting.

This was a cross sectional study that interviewed students registered in three(3) out of seventeen(17) universities located in Kigali City, Rwanda. Kigali, the capital of Rwanda, is positioned approximately at the country's geographical center, covering an area of 730 square kilometers with a population of 1,745,555.

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[17] The three Universities were Mount Kenya University (MKU), Independent University of Kigali (UK), and University of Rwanda (UR); College of Science and Technology and College of Medicine and Health Sciences. Those higher learning institutions were purposively selected for three main reasons. First, the three are the largest universities in Kigali City in terms of student population. Two, at the time of data collection, all three universities were in session, so the students could be reached for interviews. Third, there is a diversity of students, female and male, as well as national and international students, and there is respect for student culture and policy to abrogate discrimination.

The research undertaken followed a quantitative cross-sectional design and was carried out between March and August 2021 among university students in Kigali, Rwanda. The term "university" in this context encompasses all institutions of higher learning. The study was conducted across three out of the seventeen universities situated in Kigali, Rwanda.

Population, sample size, and sampling techniques

The study population was undergraduate students in the three selected Universities who, at the time of data collection, from March and August 2021, were in session. A sample size of 374 students was determined using the Fischer formula.[18]

$$N = \frac{Z^2\ p\ (1-p)}{d^2}$$

Where,

"d," the preferred margin of error of 5%;

"p," the prevalence (58%) of VCT uptake based on a study conducted in Ethiopia among university students; [19]

"z" is the standard normal deviation (1.96) that matches the 95% confidence level.

Substituting,

$$\frac{(1.96)^2\ 0.58\ (1-0.58)}{(0.05)^2} = 374$$

The study employed a stratified sampling technique to select participants. Strata were defined based on schools, departments, and intake levels. A target population list, including registration numbers, was obtained from each institution's registrar's office. Within each stratum, participants were selected using simple random sampling, achieved through random number generation. Questionnaires were distributed until all selected numbers within each stratum were covered.

Table 1: Distribution of target population

Universities	Target population	Sample size	Sampling technique
Mount Kenya University	2418	Ni/N*n= 2418/8968* 374 = 101	Stratified
Independent University of Kigali	2750	Ni/N*n= 2750/8968*374= 115	Stratified
UR- college of medicine and health sciences	1800	Ni/N*n= 1800/8960*374= 75	Stratified
UR- College of Science and Technology	2000	Ni/N*n= 2000/8968*374= 83	Stratified
Total	8968		
N.B: Ni/N*n; Ni= Total population in the university; N= Grand Total Population; n= Sample size			

The data collection instrument used was a self-administered structured questionnaire. This questionnaire was adapted from previous studies [20,21] and comprised four parts.

Part I focused on sociodemographic characteristics of the students. Part II assessed students' knowledge about Voluntary Counseling and Testing (VCT) for HIV. Part III evaluated students' attitudes towards VCT. Part IV examined their VCT practices.

Knowledge about VCT was assessed using an eleven-item questionnaire that covered aspects such as awareness of VCT centers in Kigali, understanding the voluntary nature of testing, knowledge of locations offering VCT services, and awareness of the importance of VCT in HIV prevention and control.

Attitudes towards VCT were evaluated through an eleven-item questionnaire that explored perceptions related to confidentiality of testing, cost considerations, support from friends during testing, feelings of embarrassment, fairness towards HIV-positive individuals, and perceptions of eligibility for VCT.

The practice of VCT was assessed with a single question: "Have you ever had VCT in the past?" with responses recorded as "Yes" or "No."

The structured questionnaire used in this study was adapted from similar studies conducted in Ethiopia. [20,21]. The questionnaire underwent modifications to align with the context of Rwanda. To guarantee clarity and reliability, a pre-test was conducted with twenty students from another campus of the university, not included in the selection, to test the validity of the tool. The feedback from this pre-test was utilized to refine the phrasing of questions in the questionnaire, ensuring its comprehensibility and effectiveness.

Scoring

For the knowledge about VCT, each question was scored with "Yes" for correct answers and "No" for incorrect answers. The scores of all respondents were summed up, and participants who scored six or more correct answers out of eleven were categorized as good knowledge, while others were categorized as poor knowledge.

Students' attitudes toward VCT service were assessed based on their negative perceptions of HIV-positive individuals in society and among friends, confidentiality during counseling and testing for HIV, among other factors. A positive attitude was indicated by respondents who disagreed with most statements, except for four questions. Participants who scored six or above were classified as having a positive attitude, while those scoring lower were deemed to have a negative attitude.

Practice was evaluated with a single question requiring a "Yes" or "No" response, with those answering "Yes" considered to have undergone VCT services in the past.

Data management and analysis

The collected data were first entered into Excel, where they underwent coding and cleaning procedures. Following this, the data were exported and analyzed using IBM SPSS Statistics for Windows version 25.0. The results were presented in tables, and descriptive statistics were employed to provide a comprehensive overview of background variables such as age, sex, and other parameters outlined in the structured questionnaire.

Frequency distributions of both dependent variables (knowledge, attitude, and practice of VCT) and independent variables (sociodemographic factors) were calculated to understand their distribution within the sample. The association between variables was assessed using the chi-square test, with a significance level set at $p < 0.05$ for all analyses.

This analytical approach aimed to explore relationships and identify significant associations between sociodemographic factors and participants' knowledge, attitudes, and practices regarding VCT.

3. Results

Socio-demographic information

A total number of 374 university students participated in this study. Of these, 193 (51.6%) were male, and 181(48.4%) were. About three-quarters were in the age bracket of 20 to 24; more than half, 202 (54%); Slightly less than half, 177 (47.3%), belonged to category (ubudehe) II; while 161 (44.1%) were in category three. An overwhelming majority, 369 (98.7%), reported that they were not married. The majority, 328 (87.7%) of the respondents were students as occupation and around one-third, 120 (32.1%) of them, were from year one, and 87 (23.3%), 85(22.7%) and 82 (21.9%) were at level two, three and four respectively.

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Table 2: Knowledge of VCT services among university students in Kigali city.

Variables	Frequency (n= 374)	Percent (%)
Ever heard of VCT services		
Yes	319	85.3
No	55	14.7
Where did you hear it from (n = 319)		
Radio	142	38
TV	39	10.4
Friends and family	34	9.1
School	104	27.8
Do you know the place where VCT is provided? (**)		
Government hospital	198	52.9
Private hospital	34	9.1
HIV awareness program	142	38
Do you know that? (**)		
HIV tests are voluntary	188	50.3
HIV test is given with counseling	135	36.1
HIV medication is given at the VCT center	51	13.6
Is VCT important for the prevention and control of HIV/AIDS		
Yes	368	98.4
No	6	1.6
Do you know any VCT centers in Kigali?		
Yes	256	68.4
No	118	31.6
Are prostitutes the only ones visiting VCT?		
Yes	42	11.2
No	332	88.8
Is VCT visit for married only		
Yes	0	0
No	374	100
Is VCT visit for people with multiple partners		
Yes	18	4.8
No	356	95.2
Is VCT visit for people with STD		
Yes	20	5.3
No	354	94.7
To undergo VCT for healthy looking person		
Yes	321	85.8
No	53	14.2
VCT services are for everyone		
Yes	347	92.8
No	27	7.2

(**) means multiple answers

Knowledge on VCT

The majority, 319 (85.3%) of the respondents, had heard about VCT service from some sources. The major sources cited were radio, 142 (38.0%) and, and 104 (27.8%) from schools (see Table 1). A total of 55(14.7%) reported that they had never heard about VCT service in their lifetime. The majority, 368 (98.4%) of respondents, agreed that VCT is important for HIV prevention; 256 (68.4%) knew at least one VCT Centre in Kigali. All the participants, 374 (100%), did not agree that only married had to visit VCT; 332 (88.8%), 356 (95.2%), and 354 (94.7%) don't agree that only prostitutes, people with multiple partners and people with sexually transmitted disease respectively have to visit VCT service. The majority, 347 (92.8%) and 321 (85.8%) of respondents agreed that VCT service is for everyone and healthy-looking persons, respectively. Half, 187(50%) of the respondents, knew that VCT is provided at government hospitals. About 188 (50.3%) of them knew that HIV test is voluntary, 135 (36.1%) knew HIV test is given with counseling, and only 51 (13.6%) of them knew that HIV medication is given at VCT centers.

VCT attitudes of university students in Kigali

Of the study participant, 190 (50.8%) agreed to be embarrassed to go for VCT, and 296 (79.1% agreed their friends should support them if they decided to go for VCT. The majority, 234 (91.1%) of respondents, agreed that VCT is confidential, 319 (85.3%) and 298 (79.7%) agreed to take care of a sick relative with HIV in his house and buy a fresh vegetable from an HIV-positive vendor respectively. About 314 (84%) of respondents disagreed that VCT is expensive for students, 229 (61.2%) and 215 (57.5%) of them disagreed that people could abandon an HIV-positive person and be disclosed to other persons, respectively. The majority, 345 (92.2%) of respondents, disagreed with the fact of not attending VCT service because of no cure for HIV/AIDS, 325 (86.9%) and 198 (52.9%) disagreed that people with HIV should be ashamed of themselves and ashamed of bringing the virus to the community.

Practices towards VCT service among university students.

About 160 (42.8%) of the respondents have had VCT in the past, and 214 (57.2%) of them have never had VCT. Among those who have taken VCT service in the past, 62 (16.6%) of them took their VCT service in the hospital, 54 (14.4%) of them were taken during the HIV campaign, and 130 (34.8%) were taken on campus. The majority, 335 (89.6%) of the respondents, were ready to take the VCT test if available, and 109 (29.1%) of them didn't know the VCT center. The reason for not taking the VCT service, for many, 109 (29.1%), was for not knowing the VCT center, and 51 (13.6%) of them use condoms during sex. The majority, 352 (94.1%) of respondents, agreed to get an HIV test if available and free; only 22 (5.9%) of them were not ready.

The majority, 94.1% (325) of the respondent, decided to take HIV VCT uptake by their own choice, 90.4% (325) of them found it comfortable using HIV VCT service, and 79.9% (299) of them agreed to take HIV VCT services in the campus. Almost half 46% (172) of the respondents admitted that HIV VCT is available on campus, 73.3% (274) of them agreed HIV VCT is affordable, and 78.9% (295) admitted that VCT/HIV service is convenient to them.

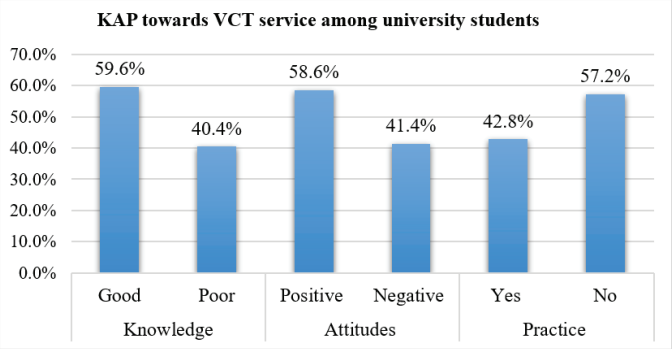

Figure 1: Knowledge, attitude, and practice towards VCT service among University students in Kigali

The finding revealed that 59.6% of the respondent are knowledgeable towards VCT and more than of half 58.6% of students had positive attitudes for VCT. However only 42.8% of the respondent are practiced VCT (Figure 1).

Table 3: Association between sociodemographic variables with the knowledge of respondents about VCT service

Variables	Knowledgeable	Not knowledgeable	χ^2 (P-value)
Gender Male Female	 107 55.4 116 64.1%	 86 44.6% 65 35.9%	 2.902 (0.088)
Age >20 20-24 25-29 30-34	 31 66.0% 152 54.7% 34 79.1% 6 100%	 16 34.0% 126 45.3% 9 20.9% 0 0.0%	 14.428 **(0.02)***

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Marital status Single Married	218 59.1% 5 100%	151 40.9% 0 0.0%	3.432 (0.064)
Year of Study Year 1 Year 2 Year 3 Year 4	69 (57.5%) 53 (60.9%) 53 (62.4%) 48 (58.5%)	51 (42.5%) 34 (39.1%) 32 (37.6%) 34 (41.5%)	0.589 (0.899)
Religion Protestant Catholic Muslim Atheist	33 (35.9%) 142 (70.3%) 36 (81.8%) 12 (33.3%)	59 (64.1%) 60 (29.7%) 8 (18.2%) 24 (40.4%)	50.462 **(<0.001)***
Category (ubudehe) Class1 Class2 Class3	2 (6.3%) 95 (53.7%) 126 (76.4%)	30 (93.8%) 82 (46.3%) 39 (23.6%)	59.678 **(<0.001)***
Parent education No education Primary Secondary University	3 (5.4%) 35 (41.2% 84 (81.8% 104 (77.6%	53 94.6% 50 58.8% 18 18.2% 30 22.4%	118.788 **(<0.001)***
Occupation Student Government employee Businessman/ woman	180 (54.9%) 24 (100%) 19 (86.4%)	148 (45.1%) 0 (0.0%) 3 (13.6%)	25.856 **(<0.001)***
Year of Study Year 1 Year 2 Year 3 Year 4	113 (94.2%) 87 (100%) 84 (98.8%) 76 (92.7%)	7 (5.8%) 0 (0.0%) 1 (1.2%) 6 (7.3%)	9.299 **(0.026)***
Religion Protestant Catholic Muslim Atheist	85 (92.4%) 199 (98.5%) 43 (97.7%) 33 (91.7%)	7 (7.6%) 3 (1.5%) 1 (2.3%) 3 (8.3%)	9.043 **(0.029)***
Category (ubudehe) Class1 Class2 Class3	32 (100%) 169 (95.5%) 159 (96.4%)	0 (0.0%) 8 (4.5%) 6 (3.6%)	1.546 (0.462)
Parent education No education Primary Secondary University	53 (94.6%) 79 (92.9%) 98 (99.0%) 130 (97.0)	3 (5.4%) 6 (7.1%) 1 (1.0%) 4 (3.0%)	5.264 (0.153)
Occupation Student Government employee Businessman/ woman	314 (95.7%) 24 (100%) 22 (100%)	14 (4.3%) 0 (0.0%) 0 (0.0%)	2.040 (0.361)
Knowledge Knowledgeable Not knowledgeable	216 (96.9%) 144 (95.4%)	7 (3.1%) 7 (4.6%)	0.560 (0.454)

Table 3 presents the factors that were associated with knowledge. Age of the respondents, religion of the respondents, category class (ubudehe) of the respondents, occupation of the respondents and parents education of the respondents (χ^2 = 14.428, P-value < 0.02; χ^2 = 50.462, P-value < 0.001; χ^2 = 59.678, P-value < 0.001, χ^2 = 25.856, P-value < 0.001 and χ^2 = 118.788, P-value < 0.001) respectively were significant associated with the knowledge status on VCT service (table 3)

Table 4: Association between sociodemographic variables and knowledge of VCT with the attitude of respondents towards VCT service

Variables	Positive attitude	Negative attitude	χ^2 (P-value)
Gender Male Female	186 (96.4%) 174 (96.1%)	7 (3.6%) 7 (3.9%)	0.015 (0.903)
Age >20 20-24 25-29 30-34	45 (95.7%) 266 (95.7%) 43 (100%) 6 (100%)	2 (4.3%) 12 (4.3%) 0 (0.0%) 0 (0.0%)	2.193 (0.533)
Marital status Single Married	355 (96.2%) 5 (100%)	14 (3.8%) 0 (0.0%)	0.197 (0.657)

During the survey, it was found that the year of study and the religion of respondents showed a statistically significant association with their attitudes towards VCT services at χ2 (P-value) of 9.299 (<0.026 and 9.043 (<0.029) respectively, as shown in Table 4.

Table 5: Association between sociodemographic variables and knowledge about VCT with practice of VCT service

Variables	Use VCT	Not use VCT	χ^2 (P-value)
Gender Male Female	82 (42.5%) 78 (43.1%)	111 (57.5%) 103 (56.9%)	0.014 (0.906)
Age >20 20-24 25-29 30-34	35 (74.5%) 101 (36.3%) 23 (53.5%) 1 (16.7%)	12 (4.3%) 177 (63.7%) 20 (46.5%) 5 (83.3%)	27.689 **(<0.001)***
Marital status Single Married	159 (43.1%) 1 (20%)	210 (56.9%) 4 (80%)	1.074 (0.3)
Year of Study Year 1 Year 2 Year 3 Year 4	63 (52.5%) 40 (46%) 33 (38.8%) 24 (29.3%)	57 (47.5%) 47 (54%) 52 (61.2%) 58 (70.7%)	11.654 **(0.009)***

Religion Protestant Catholic Muslim Atheist	29 (31.5%) 88 (43.6%) 33 (75%) 10 (27.8%)	63 (68.5%) 114 (56.4%) 11 (25%) 26 (72.2%)	26.784 **(<0.001)***
Category (ubudehe) Class1 Class2 Class3	17 (53.1%) 74 (41.8%) 69 (41.8%)	15 (46.9%) 103 (58.2%) 96 (58.2%)	1.530 (0.465)
Parent education No education Primary Secondary University	29 (51.8%) 32 (37.6%) 38 (38.4%) 61 (45.5%)	27 (48.2%) 53 (62.4%) 61 (61.6%) 73 (54.5%)	3.964 (0.265)
Occupation Student Government employee Business-man/woman	150 (45.7%) 6 (25%) 4 (18.2%)	178 (54.3%) 18 (75%) 18 (81.8%)	9.705 **(0.008)***
Knowledge Knowledge-able Not knowledgeable	108 (48.4%) 52 (34.4%)	115 (51.6%) 99 (65.6%)	7.202 **(0.007)***

Age of the respondent, year of study of respondents, the religion of the respondent, occupation of the respondent, and knowledge of the respondent had a statistically significant association with the attitude towards VCT service at $\chi 2$ (P-value) of 27.689 (<0.001), 11.654 (0.009), 26.784 (<0.001), 9.705 (<0.008) and 7.202 (0.007) respectively (table 5).

4. Discussion

The study aimed to assess the level of knowledge, attitude, and practice toward VCT service among University students in Kigali City, Rwanda. Our findings indicate that the majority, 319 (85.3%), reported that they had never heard about VCT. The finding is lower than the results reported in a similar study conducted among university students in Ethiopia [20], which reported that 93.4% of the participants were knowledgeable about VCT of HIV. This study reports that 59.6% of the students had good knowledge of VCT, which is slightly lower than the findings of a study conducted among university students in Ethiopia, which reported that 66% of the students were knowledgeable about VCT. [22] Other studies in Ethiopia and Nigeria reported much higher knowledge levels, 93.4% and 82.9%, respectively, which is higher compared to the results from this study.[20,23] The majority of the students in Ethiopia with high knowledge are comparatively older than the majority age bracket in Kigali, 20-24 versus 24 and above age groups for Kigali and Ethiopia, respectively. Consequently, they may not be fully informed about available services such as counseling and partner advice, seeing VCT primarily as blood testing. Closing this knowledge gap requires effective communication. Information about VCT services was mainly received from radio (38%) and schools (27.8%). In contrast, a study in Malawi revealed that 42% of students had acquired information about VCT from church or funeral gatherings, while 25% cited friends as their primary source of information [24]. In another study conducted in Nigeria, it was found that mass media and churches were the primary sources of information on VCT. This trend could be attributed to the wide reach of mass media, making it a potent tool for reaching young people, while churches also play a significant role in disseminating information. Schools, on the other hand, are considered a vital avenue for accessing young individuals.[25]

An evaluation of the influence of sociodemographic factors on VCT knowledge revealed significant associations with age, religion, category, parents' education, and occupation of the surveyed respondents. This finding contrasts with a study conducted in Ethiopia, where only the residency status of respondents showed a statistically significant association with VCT knowledge. [22]

As the overall attitude score showed 58.6% of participants have a positive attitude towards VCT, lower results were reported compared with a study from students in North West Ethiopia, in which 73.3% of respondents had favorable attitudes towards VCT services.[21] This is in contrast to the study, which reported 40 % positive attitudes toward VCT. [23] The variation in awareness levels between the study regions and ongoing enhancements in health interventions could account for these differences. Marital status and religious affiliation emerged as significant sociodemographic variables influencing students' attitudes toward VCT. Christian students are often inclined towards abstinence or condom use (if they know their HIV status); if married, they exhibit distinct attitudes. This association with religious beliefs may stem from heightened knowledge among students, thereby influencing their attitudes positively. Conversely, a study in Addis Ababa suggested that students from rural areas, potentially lacking comprehensive information about VCT, might exhibit lower levels of favorable attitudes, albeit not statistically significant. [25which is essential for the management of the disease. This study sought to determine the prevalence

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and factors that influence the utilization of VHCT services among young people. In this study, young people in the Tema Metropolis were cross-sectionally surveyed. The simple random sampling method was used to select the participants. The majority (60%]

The results of this study revealed that 42.8% of respondents demonstrated a positive attitude towards VCT services. In comparison, a study among high school students [26] reported a relatively higher attendance rate of VCT at 65.1%. This finding contrasts with a study conducted at Addis Ababa University [27which is essential for the management of the disease. This study sought to determine the prevalence and factors that influence the utilization of VHCT services among young people. In this study, young people in the Tema Metropolis were cross-sectionally surveyed. The simple random sampling method was used to select the participants. The majority (60%], where only 23% of participants had undergone VCT, with a mere 15.3% of them testing for HIV. [29] In line with a study conducted in Nigeria, the primary reasons cited by individuals who had never undergone VCT in the past were attributed to concerns regarding trust in partners and oneself (18.5%), fear of stigma (21.2%), and apprehension about receiving the test results (18.3%). Despite variations in VCT attendance rates, the primary reasons for not visiting VCT centers appear to be consistent across different study areas, including community-based surveys.[28, 30] Individuals with good knowledge and positive attitudes are more likely to be aware of prevention methods related to HIV/AIDS, suggesting that interventions focusing on improving knowledge could lead to attitude changes and subsequently facilitate the uptake of VCT services. The current study found statistically significant associations between VCT uptake and factors such as age, year of study, religion, occupation, and knowledge level, consistent with findings from previous research. Furthermore, there was a notable association between knowledge about HIV, knowledge about VCT, attitude towards VCT, and VCT practice, indicating their interconnectedness. Therefore, efforts aimed at enhancing knowledge and fostering attitude changes are crucial for increasing the uptake of VCT services.

5. Conclusion

Generally, students' knowledge and attitudes towards VCT services are relatively satisfactory, but their actual practice of utilizing VCT services is relatively unsatisfactory. Information education communication and peer-to-peer discussions are highly valuable in addressing this gap. Factors such as age, religion, socio-economic category (ubudehe), occupation, and parents' education are associated with knowledge about VCT. This allows for targeted interventions toward specific groups when universal approaches are not feasible. Additionally, the year of study and religion are significantly associated with having a positive attitude towards VCT services. Regarding the utilization of VCT services, factors such as age, year of study, religion, occupation of the respondent, and having knowledge about VCT are significantly associated with actually using these services. These findings highlight the importance of targeted interventions and tailored educational efforts to improve VCT uptake among students. As a recommendation, first, it is important to raise awareness within families and higher education institutions to prevent stigma and discrimination among students. Secondly, enhancing knowledge about VCT/HIV among university students can be achieved by expanding VCT facilities that offer services, along with training counselors, which will play a key role in increasing the use of these services.

6. Limitations of the study

The findings reported in this study should be considered within the context of certain limitations. One, as a cross-sectional study, we relied solely on the information provided by respondents, introducing the potential for information bias. Therefore, the results may not be broadly applicable to the wider population of tertiary-level students. Additionally, we did not assess the perceived risk of HIV, which could have strengthened the findings. Despite these limitations, our study offers valuable insights for future research, suggesting the need for multicenter studies involving larger study populations to further validate and expand upon our findings.

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