



Original Article

Knowledge, acceptance, and uptake of voluntary counseling and testing for human immunodeficiency virus/acquired immunodeficiency syndrome among undergraduates of a public university in Southwestern Nigeria

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ABSTRACT

Objectives: Human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) is a global public health problem, and Nigeria has about 1.9 million people living with the virus. HIV testing and counseling services serve as a very important entry point to HIV/AIDS care and treatment. Voluntary counseling and testing (VCT) is one of the interventions developed to tackle the HIV/AIDS epidemic in Africa. This study determined the knowledge, acceptance, and utilization of VCT for HIV/AIDS among undergraduates in a public University in Southwestern Nigeria.

Material and Methods: The study adopted a descriptive cross-sectional design, using the multistage sampling technique to select 425 respondents. A self-administered questionnaire was used for data collection. Data analysis was done using Statistical package for the social sciences (SPSS), version 25. Descriptive statistics were presented in tables and figures, and inferential statistics were analyzed at a level of significance of 0.05.

Results: Over half of the respondents, 226 (53.2%) were within the age range of 18–25 years. The majority were female, 345 (81.2%), single 403 (94.8%), and had never had sexual intercourse 300 (70.6%). Over half of the respondents' 240 (57%), had above average knowledge of VCT for HIV/AIDS, had above average levels of acceptance 254 (59%), and the majority 326 (76.2%) of the respondents had very low level of utilization of VCT for HIV/AIDS. There was a significant association between respondents' age ($\chi^2 = 55.599^a$, $P = 0.000$), gender ($\chi^2 = 19.094^a$, $P = 0.000$), religion ($\chi^2 = 8.990^a$, $P = 0.038$), marital status ($\chi^2 = 8.411^a$, $P = 0.038$), age at first sex ($\chi^2 = 61.847^a$, $P = 0.000$), knowledge of VCT ($\chi^2 = 5.297^a$, $P = 0.021$), acceptance of VCT ($\chi^2 = 80.235^a$, $P = 0.000$), and their uptake of VCT for HIV/AIDS. Furthermore, selected socio-demographic characteristics, knowledge, and acceptance of VCT significantly predicted the uptake of VCT among respondents ($F [8,416] = 20.163$, $P < 0.05$).

Conclusion: The study concluded that respondents had an above average knowledge and acceptance of VCT but a low level of utilization. To increase the utilization of VCT for HIV/AIDS among undergraduates, public health programs should focus on educating undergraduates and significant others on the importance of VCT in the context of HIV prevention, care, and treatment.

Keywords: Knowledge, Acceptance, Uptake, Voluntary counseling and testing, Human immunodeficiency virus/acquired immunodeficiency syndrome, Undergraduates

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INTRODUCTION

Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) have persisted as a disease of public health importance around the world. It is known globally as one of the most important public health crises, with about 39 million people living with HIV/AIDS globally in 2022.^[1] According to UNAIDS (the joint United Nations program on HIV and AIDS), about 630,000 people died from AIDS-related illnesses at the end of 2022, and an estimated 1.3 million people have been newly infected with HIV.^[1] Nigeria has one of the highest rates of new infection in Sub-Saharan Africa at an estimated 130,000, and about 1.9 million live with the virus in Nigeria.^[2]

Young people within the ages of 15 and 24 are at the highest risk for HIV/AIDS epidemic in Nigeria.^[2] They are vulnerable to HIV because of the strong influence of peer pressure and the development of their sexual and social identities. In West and Central Africa, this age group has an estimated HIV prevalence of 3.5% among other countries.^[3] The epidemic is driven by this age group in the matrix of low-risk perception, risky sexual behavior, low condom use, lack of knowledge, and access to appropriate reproductive health services.^[4] In Nigeria, HIV/AIDS is further aggravated by inadequate sexual health education, inadequate voluntary HIV testing and counseling, unhealthy cultural practices, and poor health care systems, especially in secondary and tertiary institutions.^[5]

Voluntary counseling and testing (VCT) is one of the preventive measures put in place to prevent the transmission of HIV/AIDS. VCT is important in HIV prevention, care, and treatment since early detection of the virus reduces transmission and mortality. It is the process by which an individual, couple, or family receives HIV testing and confidential dialogue on HIV prevention, treatment, care, and support.^[6]

University undergraduates in Nigeria are mostly adolescents and youths within the ages of 15 and 24, which is the high-risk population for HIV/AIDS. University students are at risk because they tend to be sexually adventurous, often with multiple partners, and do not consistently use condoms.^[7] Although studies show that there is increased knowledge of HIV/AIDS among young people, uptake and utilization of HIV testing and counseling services among them has been reportedly low.^[7] It is therefore important that a youth-friendly counseling service such as the VCT be provided in universities in the fight against the epidemic in this high-risk population. The previous studies show that this study population is more knowledgeable on HIV/AIDS issues compared to the general population. There is, therefore, a need to investigate their knowledge and acceptance of VCT for HIV/AIDS, as well as their level of uptake of VCT

services.^[7] This will enable appropriate and accessible VCT services to be provided on university campuses, thereby increasing the uptake of the service among the undergraduate population.

MATERIAL AND METHODS

The study adopted a descriptive cross-sectional study design. Multistage sampling technique was used to select 425 undergraduates in the Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria. Stage one involved random sampling of 8 faculties among the 13 faculties in the university.^[8] These faculties selected were basic medical sciences, agricultural science, technology, law, arts, dentistry, pharmacy, and social science. In the second stage, a proportionate sampling technique was used to identify the total number of students to be selected from each of the faculties. Stage three involved random sampling of 425 undergraduates from their various faculties.

Data collection was done with a self-administered questionnaire. The questionnaire had five stages: Stage I collected information on the socio-demographic data of respondents, stage II assessed respondents' knowledge about VCT for HIV, stage III assessed respondent's acceptance of VCT for HIV, stage IV assessed respondent's utilization of VCT for HIV, while stage V assessed the factors influencing the utilization of VCT among respondents.

The data were checked for completeness and entered, cleared, and exported in SPSS version 25 for analysis. Descriptive statistical techniques, which include percentages, frequencies, mean, and standard deviation were used to give a clear picture of background variables such as age, sex, and other variables. Inferential statistics were also used to test the relationship between variables of the study.

An ethical clearance letter was obtained from the Human Research Ethical Committee of the Institute of Public Health, Obafemi Awolowo University, Ile-Ife (IPHOAU/12/2192). Verbal consent was also obtained from the students, and confidentiality of all information provided and anonymity of the respondents were maintained.

RESULTS

Four hundred and twenty-five questionnaires were administered to the respondents. The mean age of the respondents was 19 ± 2.6 years [Table 1]. Over half, 226 (53.2%) of the respondents were within the age range of 18–25 years and were majorly female 345 (81.2%). Furthermore, the majority of the respondents were Christians 374 (88%), single 403 (94.8%), and had never had sex 300 (70.6%), and over half 240 (57%) of the respondents had good knowledge of VCT. Results showed a high level of VCT acceptance among more than half, 254 (59%) of the

respondents. The majority, 326 (76.2%) of the respondents had a low level of utilization of VCT [Figure 1].

Findings on the association between the socio-demographic characteristics of respondents and uptake of VCT showed that respondents' age ($\chi^2 = 55.599^a$, $P = 0.000$), gender ($\chi^2 = 19.094^a$, $P = 0.000$), religion ($\chi^2 = 8.990^a$, $P = 0.038$), marital status ($\chi^2 = 8.411^a$, $P = 0.038$), and their age at first sex ($\chi^2 = 61.847^a$, $P = 0.000$) were significantly associated with uptake of VCT. There was also a significant association between the uptake of VCT and respondents knowledge ($P = 0.021$) and acceptance ($P = 0.000$) of VCT for HIV/AIDS [Table 2].

The dependent variable (uptake of VCT) was regressed on predicting independent variables of selected socio-demographic characteristics, knowledge, and acceptance of VCT. The independent variable significantly predicts the uptake of VCT ($F [8,416] = 20.163$, $P < 0.05$), which indicates that the three factors under study have a significant impact on the uptake of VCT. Moreover, $R^2 = 0.279$ depicts that the model explains 27.9% of the variance in uptake of VCT.

In addition, in Table 3, the coefficient was further assessed to ascertain the influence of each factor on the criterion variable (uptake of VCT). Hypothesis 1 evaluates whether there is a significant association between selected socio-demographic characteristics and respondents' level of VCT utilization. The results revealed that respondents' age (0.002), sex (0.013), and age at first sex (0.014) had a significant association with their level of knowledge. Hypothesis 2 evaluates the association between respondents' level of knowledge of VCT and their utilization of VCT services. The results showed a significant negative association between respondents' level of knowledge and their utilization of VCT ($B = -0.117$, $t = -3.236$, $P = 0.001$). Furthermore, hypothesis 3 evaluates the association between respondents' level of acceptance of VCT and their utilization of VCT. The results showed a significant association between the level of acceptance and utilization of VCT ($B = 0.323$, $t = -8.575$, $P = 0.000$).

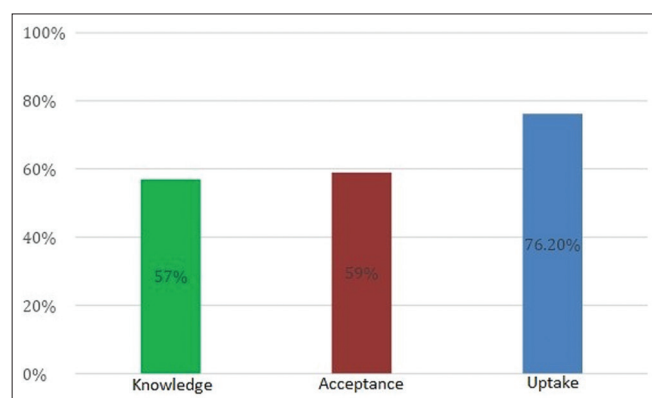


Figure 1: Knowledge, acceptance and uptake of voluntary counseling and testing for human immunodeficiency virus/acquired immunodeficiency syndrome.

Table 1: Respondents socio-demographic characteristics.

Variable	Frequency (n=425)	Percentage
Age		
Mean=19±2.6 years		
Less than 20 years	121	28.5
20–25 years	226	53.2
Above 25 years	10	2.3
Sex		
Male	80	18.8
Female	345	81.2
Faculty		
Agriculture	23	5.4
Arts	90	21.1
Administration	20	4.7
Basic medical sciences	118	27.8
EDM	30	7.1
Education	23	5.4
Pharmacy	24	5.6
Social science	50	11.8
Law	20	4.7
Science	27	6.4
Level		
100	150	35.3
200	57	13.4
300	86	20.2
400	85	20.0
500	45	10.6
600	02	0.5
Living arrangement		
On-campus	167	39.3
Off-campus	258	60.7
Religion		
Christian	374	88
Muslim	49	11.5
Others	02	0.5
Ethnicity		
Igbo	42	9.9
Yoruba	359	84.5
Hausa	03	0.7
Others	21	4.9
Marital status		
Married	08	1.9
Single	403	94.8
Cohabiting	05	1.2
Others	09	2.1
Age at first sex		
Never had sex	300	70.6
Less than 20 years	68	16
20–24 years	56	13.2
25 years and above	01	0.2
Average monthly allowance (in Naira)		
Below 30,000	276	64.9
30,000–50,000	113	26.6
51,000–100,000	24	5.7
Above 100,000	12	2.8

EDM: Environmental design and management

Table 2: Association between selected socio-demographic of respondents, knowledge of VCT, acceptance of VCT, and the uptake of VCT.

Selected socio-demographic characteristics	Level of uptake		Total	
	High level (%)	Low level (%)		
Age				
Less than 20 years	07 (5.8)	114 (94.2)	121	$\chi^2=55.599^a$ df=13 P=0.000
20–25 years	87 (38.5)	139 (61.5)	226	
Above 25 years	07 (70)	03 (30)	10	
Sex				
Male	34 (42.5)	46 (57.5)	80	$\chi^2=19.094^a$ df=1 P=0.000
Female	57 (20.5)	278 (79.5)	345	
Religion				
Christianity	92 (24.6)	282 (75.4)	374	$\chi^2=8.990^a$ df=2 P=0.011
Islam	07 (14.3)	42 (85.7)	49	
Others	02 (100)	00 (0)	02	
Ethnicity				
Yoruba	82 (36.8)	277 (63.2)	359	$\chi^2=3.621^a$ df=3 P=0.305
Igbo	11 (21.2)	31 (50)	42	
Hausa	02 (66.7)	01 (33.3)	03	
Others	06 (28.6)	15 (71.4)	21	
Marital status				
Single	91 (22.6)	312 (77.4)	403	$\chi^2=8.411^a$ df=3 P=0.038
Married	04 (50)	04 (50)	08	
Cohabiting	01 (20)	04 (80)	05	
Others	05 (55.5)	04 (44.5)	09	
Age at first sex				
Never had sex	46 (58.3)	254 (41.7)	300	$\chi^2=61.847^a$ df=13 P=0.000
Less than 20 years	30 (47.1)	38 (52.9)	68	
20–24 years	35 (66)	21 (37)	56	
25 years and above	0 (0)	01 (100)	01	
Level of knowledge				
Good	48 (19.7)	196 (80.3)	244	$\chi^2=5.297^a$ df=1 P=0.021
Poor	53 (29.3)	128 (70.7)	181	
Level of acceptance				
High	80 (45.9)	94 (54.1)	174	$\chi^2=80.235^a$ df=1 P=0.000
Low	21 (8.4)	230 (91.6)	251	

VCT: Voluntary counseling and testing, ^aP<0.05

DISCUSSION

Findings from this study revealed that over half of the respondents had good knowledge of VCT for HIV/AIDS. This is similar to the findings of studies conducted in Nigeria, where most undergraduates had adequate knowledge of VCT.^[5,6] Although the literature on the knowledge of VCT for HIV/AIDS among undergraduates in Sub-Saharan Africa is not conclusive, several studies have reported good knowledge of VCT for HIV/AIDS in the region. In a study on the knowledge of VCT among university students, the majority (93.4%) of the students were knowledgeable about VCT, which is also similar to the findings of this study.^[9] A study conducted in Uganda also showed that most participants

had adequate VCT knowledge of what, why, how, where, and when VCT services were conducted.^[10]

In this study, there was a high level of VCT acceptance for HIV/AIDS among a majority of the respondents. However, the majority of the respondents have never gone for HIV VCT and have not visited their schools' facilities for VCT service. These are similar to the findings of Kalimbo, where most of the respondents have never gone for an HIV VCT.^[11] The previous studies have highlighted that the majority of undergraduates will not willingly accept to be tested for HIV at their school VCT facility. Several factors may be attributed to this, such as not being satisfied with the facilities and manner of personnel conduct of the counseling and testing services, as also stated by over half of the respondents in this study.

Table 3: Regression analysis on association between selected socio-demographic characteristics of respondents, knowledge, acceptance of VCT, and VCT uptake.

Variables	Level of utilization f (%)		Unstandardized coefficient (B)	Standardized coefficient (β) e	95% CI	P-value
	High	Low				
Age						
Less than 20 years	07 (5.8)	114 (94.2)	1.0	-0.288	0.759-1.020	0.000
20-25 years	87 (38.5)	139 (61.5)	-0.23			
Above 25 years	07 (70)	03 (30)	-0.53			
Sex						
Male	34 (42.5)	46 (57.5)	1.0	0.212	1.326-4.303	0.000
Female	57 (20.5)	278 (79.5)	0.231			
Religion						
Christianity	92 (24.6)	282 (75.4)	1.0	0.057	0.789-3.605	0.011
Islam	07 (14.3)	42 (85.7)	0.44			
Others	02 (100)	00 (0)	0.78			
Ethnicity						
Yoruba	82 (36.8)	277 (63.2)	1.0	0.035	0.617-1.406	0.305
Igbo	11 (21.2)	31 (50)	-0.011			
Hausa	02 (66.7)	01 (33.3)	-0.015			
Others	06 (28.6)	15 (71.4)	-0.022			
Marital status						
Single	91 (22.6)	312 (77.4)	1.0	0.059	0.429-1.592	0.038
Married	04 (50)	04 (50)	-0.011			
Cohabiting	01 (20)	04 (80)	-0.025			
Others	05 (55.5)	04 (44.5)	-0.041			
Age at first sex						
Never had sex	46 (58.3)	254 (41.7)	1.0	0.002	0.933-0.986	0.000
<20 years	30 (47.1)	38 (52.9)	-0.003			
20-24 years	35 (66)	21 (37)	-0.006			
25 years and above	0 (0)	01 (100)	-0.009			
Level of knowledge						
Good	48 (19.7)	196 (80.3)	1.0	-0.142	0.254-0.716	0.001
Poor	53 (29.3)	128 (70.7)	-0.122			
Level of acceptance						
High	80 (45.9)	94 (54.1)	1.0	0.444	6.081-18.525	0.000
Low	21 (8.4)	230 (91.6)	0.385			

Model summary: (F [8,416]=20.163, $P < 0.05$, $R^2 = 0.279$); VCT: Voluntary counseling and testing, CI: Confidence interval.

These are contrary to the findings of a study conducted in Ghana, where most of the undergraduates in the study were willing to test for HIV/AIDS. However, this willingness was influenced by respondents' gender, history of sexual intercourse, good background knowledge of HIV/AIDS and its transmission, and parental influence.^[12]

The utilization of VCT in this study appears to be notably low, mirroring the findings of a similar investigation in Abia state, Nigeria, which reported a high prevalence of non-uptake of VCT among participants.^[5] This study's results indicate a significant association between respondents' age, sex, and age at first sexual activity with the uptake of VCT. These trends align with a study conducted in Sudan, where VCT uptake was similarly low among university students and associated with factors such as age and risk perception.^[13] In addition, a recent study in a southwestern state in Nigeria

concur with the current findings, highlighting a widespread low level of VCT utilization.^[14] Notably, a majority of the respondents in this study have never undergone HIV/AIDS testing using VCT, and none have engaged in VCT within the past 12 months. This echoes the results of a study by Ogbonna *et al.*, wherein the vast majority of participants had not utilized VCT in the preceding 12 months.^[15] The consistency of these findings is further emphasized by a study among undergraduates in Osun state, revealing that only a small proportion of respondents had utilized the VCT centers within the school for VCT uptake. Probable reasons for the low VCT utilization may include insufficient awareness, social stigmas associated with HIV/AIDS testing, and a lack of perceived risk among the target population.^[8,14] Further, research may delve into these factors to inform strategies aimed at improving VCT uptake in the context

of HIV prevention, care, and treatment among university undergraduates.

CONCLUSION

In this study, the adequate knowledge and high acceptance of VCT among the majority of the respondents did not translate to the uptake of VCT for HIV/AIDS. There is a need to create more awareness of the need and benefits of VCT and innovatively encourage the use of VCT for HIV/AIDS among the undergraduate population in the study area.

Ethical approval

Ethical approval for the study was obtained from the Human Research Ethical Committee of the Institute of Public Health, Obafemi Awolowo University, Ile-Ife (IPHOAU/12/2192).

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript, and no images were manipulated using AI.

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