

# A cross sectional study of knowledge, attitude and utilization of HIV voluntary counseling and testing among University students in Abia State, Nigeria

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**Abstract:** Introduction Voluntary Counseling and Testing (VCT) is one of the strategies implemented to stem the spread of HIV infection and reduce risk among sexually active young people. It has been in practice in response to the high burden of HIV infection in Nigeria. The study assessed the knowledge, attitude and uptake of VCT for HIV among university students in Abia State and determined reasons for not using the services. Methods A cross sectional study conducted in Abia State University from October to November 2019 using a stratified sampling method. Knowledge, attitude and uptake of VCT for HIV were the main outcome measures. Analysis was with SPSS v.21. Frequency tables and Chi-square test were used to describe the participants and determine differences between proportions. Result A total of 400 students responded with 229 (57.2%) females and a mean age of 23.5years (SD 4.5years). Majority, 358 (89.5%) and 388 (97.0) were unmarried and of Christian religion respectively. An average, 119(59.3%), 71(37.15%) and 35(18.5%) respondents were knowledgeable, had positive attitude and had used VCT for HIV in the past respectively. The course of study ( $\chi^2 = 7.34$ , P-value < 0.01), knowledge about VCT ( $\chi^2 = 9.89$ , P-value < 0.001) and attitude towards VCT ( $\chi^2 = 10.78$ , P-value < 0.001) showed a statistically significant association with the uptake of VCT. Conclusion Fear of positive result, stigma and discrimination were reported as major barriers for VCT uptake which highlights the importance of strategic intervention to mitigate these barriers.

**Keywords:** KAP, VCT, Tertiary Institution, Abia State.

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## 1. INTRODUCTION

Human immunodeficiency virus (HIV), which causes Acquired immunodeficiency syndrome (AIDS), is a global public health problem and is considered a pandemic disease [1]. Global HIV statistics revealed that 75.7 million people have become infected with HIV with 32.7 million people dead from AIDS-related illnesses since the start of the epidemic. In 2019, there were 38.0 million people living with HIV globally, out of which 81% knew their HIV status. However, there has been a decline in both rate of new infections and AIDS-related deaths in the last decade. In 2019, around 1.7 million people were newly infected with HIV and 690,000 died, compared to 2.1 million new infections and 1.1million AIDS-related deaths in 2010[2].

Sub-Saharan Africa ranks among the regions with the highest burden of HIV. It also accounted for 70% of new HIV infections and almost half of the deaths from AIDS-related illness in 2010 [3]. There were 4.9 million people living with HIV with 240,000 new infections and 140,000 deaths in Western and Central Africa in 2019. About a quarter of those infected with HIV were in the age range of 15–49. Young people aged 15–24 represented 79.2% of all new HIV infections in Western and Central Africa [2]. The epidemic is possibly fuelled by combination of such factors as lack of information, skills, and access to services for youth [4].

Nigeria had the second largest HIV epidemic in the world in 2010 and one of the highest rates of new infection in sub-Saharan Africa. Many people living with HIV in Nigeria are unaware of their status as the country continues to fall short of providing the recommended number of HIV testing and counseling sites [5]. In 2019, Nigeria ranked 4<sup>th</sup> in the global burden of HIV/AIDS with an estimated 1.9 million people living with HIV [6]. Among children aged 0–14 years, HIV prevalence is currently estimated to be 0.2% while national prevalence is 1.4% [7],[8].

The HIV prevalence among adolescents, 15–24, in Nigeria is estimated to be 3.5%, the highest among countries in West and Central Africa [9]. This age group drives the epidemic against the background of low risk perception, predominantly male factor-driven risky sexual behavior, and low condom use. Other factors that have been implicated in increased HIV vulnerability among young people include; lack of knowledge and appropriate sexual reproductive health services [10].

Young women have a higher HIV prevalence and are infected earlier in life than men of the same age group [11]. Early sexual debut and inter-generational relationships are common in Nigeria, with 15% of girls and 4% of boys having sex before they are 15 years old, and about 41.2% of females between the ages of 15 and 24 having a sexual partner ten or more years older. This increases HIV risk among this group and despite their elevated risk, few adolescents test for HIV regularly [12]. In 2017, report showed that only 2% of males between 15 and 19 and 4% of females had tested for HIV in the last 12 months even as National target is committed to a 50% testing rate among young people by 2020 [13], [14].

The 2016 Nigeria National HIV Strategy for Adolescents and Young People recognized negative provider attitudes towards young people and their sexual activities, limited access to youth-friendly services, low awareness of HIV and fear of stigma and discrimination as being key challenges preventing young people from taking up sexual health services such as VCT [14].

Abia state has HIV prevalence rate of 2.1%, making it one of the twelve states plus Federal capital territory with higher than National prevalence rate of 1.4% [15]. The state is currently experiencing a generalized epidemic, with most transmission occurring through heterosexual low-risk sex.

Human immunodeficiency virus and AIDS have, as yet, no known cure. The mainstay of management and containment is adoption of both pharmacological and non-pharmacological strategies. Many different non-pharmacological approaches in an attempt to slow the spread of HIV infection and minimize its impact on the individual, family and society include; voluntary counseling and testing (VCT), provider initiated counseling and testing (PCT), diagnosis of HIV in infants and young children, family care and partner testing and counseling based on index care, condom promotion and provision, detection and management of sexually transmitted infections, safer sex and risk reduction counseling, male circumcision, targeted interventions for sex workers and homosexuals [16]. Pharmacological strategy consists in improving availability of and scaling up access to ART by those living with HIV in order to suppress viral load below transmission level.

Voluntary counseling and testing is internationally recognized as an effective and important strategy for both prevention and care of HIV [17]. It is the process by which an individual voluntarily undergoes counseling in order to make an informed decision about being tested for HIV. This decision must be entirely that of the individual and the process has to be confidential [18].

It is an effective strategy for facilitating knowledge of the spatial burden of HIV as well as guiding provision of adequate control measures and getting early access to care and support. It also provides an opportunity for behavioral change counseling against unprotected sex to reduce the incidence of HIV and other STIs [19]. However, there is a dearth of VCT services in Nigeria, and even where they are available, uptake has been relatively low [20].

In response to the epidemic, Nigeria developed guidelines for the most basic prevention services including; condoms use, AIDS education, PMTCT prevention, ART, voluntary counseling and testing (VCT), harm reduction programs and

strategic documents for HIV care, treatment and support programs [21]. To strengthen epidemic response, Nigerian government, in 2001, published a revised policy guideline on HIV testing within the context of the National HIV/AIDS Emergency Action Plan and the National Health Sector Plan for HIV/AIDS [22].

Studies in different areas indicated that knowledge, attitude and practice of tertiary school students towards VCT is low and its uptake is minimal. Major hindrances to uptake of VCT for HIV are associated with ignorance, fear of being positive, cost of VCT, inadequate number of VCT centers and stigmatization [16], [17], [23–25].

There are few studies on the knowledge and uptake of HIV counseling and testing (HCT) services among different study population in Abia state [19], [26]. However, there are, as yet, dearth of studies conducted on the knowledge, attitude and uptake of VCT service among students in tertiary institutions in the study area. Many prevention interventions targeting general population may not be appropriate for university students. The University is an enabling environment for HIV high-risk behaviors, particularly unsafe sex [27]. As young adults, they tend to be sexually adventurous, often with multiple partners and inconsistent condom use [28], [29]. Hence, this study aimed at assessing the knowledge, attitude and uptake of VCT services among students of tertiary institution in Abia State. The study also sought to determine reasons for not practicing VCT for HIV, so as to proffer intervention that will scale up VCT acceptance and utilization by students in Tertiary institutions.

## 2. METHODS

### Study area, study design and study period

This was a cross sectional study conducted among university students of Abia State University from October to November, 2019. Abia State University is one of the state owned universities in Nigeria with student population of 20,389 and nine faculties; three medically and six non- medically related faculties.

### Sample size and sampling technique

The study site was purposively selected. A single proportion formula was used to determine the sample size as there was no similar study in target group in our study area.

$$n = \frac{pq}{(E/K)^2}$$

Where: n= the required sample size

k= A constant ;( 1.96) approx. 2.0 at 95 percent confidence level).

p= 50 %( prevalence of adherence gotten from previous adherence studies) (0.5),

q=1.0-p=0.5

E= Proportion of sampling error margin in a given situation of 5% ie.0.05, giving a sample size of 384. Ten percent adjustment was made to allow for non-response, bringing the sample size to 422.

A multistage sampling technique was used; stratified sampling followed by simple random sampling technique. The faculties were stratified into non-medically- related and medically- related giving a ratio of 6:3 or 2:1. Simple random sampling technique was used to select two faculties from non-medically and one from medically- related faculties. The lists of all students in year 3 from the selected faculties were obtained from the registrar's office. The number of study participants in year 3 from non-medically –related faculties was three times that in medically-related faculties. Based on this ratio, 315 and 107 students participated from non-medically and medically –related faculties respectively.

### Data collection

The study instrument was a self-administered questionnaire with four parts to collect data on students' socio-demographic characteristics, knowledge regarding VCT, attitude towards VCT and uptake of VCT for HIV.

Data on Knowledge and Attitude were obtained using a five item questionnaire respectively, while uptake of VCT for HIV was assessed by single question as "Have you ever used VCT service?" with "Yes" or "No" dichotomous response.

The questionnaire was pre-tested on twenty students in one of the non-participating faculties to identify problem areas and ensure proper sequencing of questions. A questionnaire reliability test with Alpha Cronbach was 0.85 for knowledge of VCT for HIV.

### Scoring

The knowledge and attitude scores were obtained by summing up all the respondents' correct answers and calculating the mean. Those who scored greater than or equal to the mean were considered knowledgeable and having positive attitude and vice versa. For uptake of VCT, those who responded "Yes" were considered having utilized VCT service in the past.

### Data management and analysis

The data were checked for completeness; double entered and analyzed using SPSS-21 statistical software. Descriptive statistics were used to describe frequency distribution of both dependent (knowledge, attitude and practice of VCT) and independent (socio-demographic) variables. Chi square test was used to measure and test association between variables. A P-value < 0.05 was considered to be statistically significant in all cases.

### Ethical consideration

The ethical and research committee of the University approved the research. Written informed consent was obtained from the study participants and the questionnaire did not bear their identities to ensure confidentiality. The interviewers were also not known to the study participants.

## 3. RESULTS

### Socio-demographic profile of respondents

Table. 1 shows the characteristics of the study participants. A total of 400(94.8%) respondents returned correctly filled questionnaire, among whom 229(57.2) were females. The mean age of the respondents was 23.5 years (SD 4.5years). The majority, 358(89.5%) and 388 (97.0) were unmarried and of Christian religion respectively.

**Table 1: Socio- Demographic Characteristics of the Study Subjects**

	<b>Variables</b>	<b>Frequency N (%)</b>
1.	<b>Age Group (Years)</b>	
	< 20	48 (12.0)
	21 – 25	149 (37.3)
	26 – 30	37 (9.2)
	31 – 35	6 (1.5)
	≥ 36	4 (1.0)
	Non-Response	156 (39.0)
	<b>Mean age = 23.5SD4.5</b>	
2.	<b>Sex</b>	
	Male	171 (42.8)
	Female	229 (57.2)
3.	<b>Marital Status</b>	
	Married	42 (10.5)
	Unmarried	358 (89.5)
4.	<b>Religion</b>	
	Christian	388 (97.0)
	Muslim	2 (0.5)
	Others	10 (2.5)

**Knowledge, attitude and uptake of VCT**

**Knowledge about VCT**

Table. 2 shows the responses of the study subjects to five knowledge questions about VCT with “Yes” or “No” answers. The mean scored value for both medical and non-medical courses was 3. From the respondents, 59(59.0%) and 178 (59.3%) for medical and non-medical courses respectively scored greater than or equal to the mean and were considered knowledgeable. For medical and non-medical respondents, 97(97.0%) and 286(95.3%) respectively knew that testing is voluntary. Also, minority, 45(45.0%) and 105(35.0%) respectively knew that testing goes with counseling services. Only 6 (6.0%) and 50(16.7%) respondents for medical and non-medical respectively had ever seen a VCT center. The course of study of the respondents in the university showed no statistically significant association with the knowledge status on VCT service ( $\chi^2 = 3.200$ , P-value < 0.074) as shown in Table 3

**Table 2: Respondents’ Responses to knowledge questions about HIV/ VCT in relation to course of study**

Questions		Non-medical- Related Courses (300) Freq. N (%)	Medical- Related Courses (100) Freq. N (%)
1. Are you aware of VCT	Yes	292 (97.3%)	99 (99.0%)
	No	8 (2.7%)	1 (1%)
2. Are you aware HIV testing is voluntarily	Yes	286 (95.3%)	97 (97.0)
	No	14 (4.7%)	3 (3.00)
3. Ever heard about Counseling before HIV testing	Yes	105 (35.0%)	45 (45.0%)
	No	915 (65.0%)	55 (55.0%)
4. Ever seen VCT Service Center?	Yes	50 (16.7%)	6 (6.0%)
	No	250 (83.3%)	94 (94.0%)
5. Can VCT prevent and control HIV?	Yes	155 (51.7%)	49 (49.0%)
	No	145 (48.3%)	51 (51.0%)

**Table 3: Association between Course of study and respondents’ knowledge about VCT.**

Variables	Knowledgeable Freq. N (%)	Not Knowledgeable Freq. N (%)	X <sup>2</sup> P – Value
<b>Course of Study</b>			
Medical -related	59 (59.0)	41 (41.0%)	3.200(0.074)
Non-Medical -related	178 (59.3)	122 (40.7)	

**Attitude towards VCT**

Table 4 shows the assessment of the respondents’ level of attitude towards VCT. A five-item attitude indicator answered as either “Yes” or “No”, towards VCT test was used. Average mean score for both medical and non-medical students was 1.9. Accordingly less than half 41(41.0%) and 100(33.3%) of the respondents from medical and non-medical courses respectively had positive attitude towards VCT service. Based on the findings, majority, 79(79.0%) and 238(79.3%) of the respondents from medical and non-medical courses respectively considered VCT necessary. Minority 39(39.0%) and

99(33.0%); 24(24.0%) and 44(25.3%) of the respondents from medical and non-medical courses respectively would like to take VCT services themselves and would recommend it to friends. While the course of study did not show any statistically significant association with attitude towards VCT ( $\chi^2=0.29, P\text{-value} < 0.88$ ), however, the knowledge of respondents about VCT showed a statistically significant association with attitude towards VCT ( $\chi^2=9.83, P\text{-value} < 0.001$ ) as shown in Table 5.

**Table 4: Respondents Responses to Attitude questions towards HIV – VCT in relation to course of study**

Questions		Non-medical-Related Courses (300) Freq. N (%)	Medical-Related Courses (100) Freq. N (%)
1. Do you consider VCT necessary for students?	Yes	238 (79.3%)	79 (79.0%)
	No	62 (20.7%)	21 (21.0%)
2. Are you willing to take VCT?	Yes	99 (33.0%)	39 (39.0)
	No	201 (67.0%)	61 (61.0)
3. Would you recommend it to friends?	Yes	44 (25.3%)	24 (24.0%)
	No	915 (65.0%)	55 (55.0%)
4. Is the VCT site conducive?	Yes	76 (25.3%)	42 (42.0%)
	No	224 (74.7%)	58 (58.0%)
5. Do you have a choice of counselor at the VCT site?	Yes	45 (15.0%)	19 (19.0%)
	No	255 (85.0%)	81 (81.0%)

**Table 5: Association between Course of study and knowledge on VCT with the attitude of respondents towards VCT services**

Variables	Positive Attitude Freq. N (%)	Negative Attitude Freq. N (%)	X <sup>2</sup> P – Value
<b>Course of Study</b>			
Medical-related	41 (41.0%)	59 (59.0)	0.29(0.88)
Non-medical-related?	100 (33.33)	200 (66.3)	
<b>Knowledge on VCT</b>			
<b>*Knowledgeable</b>			9.83(0.001)*
Medical-related	47	13	
Non-medical-related	141	37	
<b>*Not Knowledgeable</b>			
Medical-related	14	2	
Non-medical-related	43	79	

**Uptake of VCT for HIV**

Table 6 shows respondents’ responses regarding uptake of VCT. Minority, 21(21.0%) and 48(16.0%) respondents from medical and non-Medical courses respectively had had VCT in the past. Among those who had used VCT, majority 16 (76.2%) and 25(52.0%) respondents from medical and non-Medical courses accessed the services in hospitals. Two main reasons given for failure to practice VCT among those who had not used it were, fear of stigma and discrimination, 40(50.6%), 100(39.7%) and fear of positive results, 25(31.6%) and 80(31.7%) for medical and non-medical courses respectively. Course of study showed a statistically significant association with the uptake of VCT service ( $\chi^2=7.34, P\text{-value} < 0.001$ ) as shown in Table 6.

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value < 0.01). Further, knowledge about VCT ( $\chi^2 = 9.89$ , P-value < 0.001) and attitude towards VCT ( $\chi^2 = 10.78$ , P-value < 0.001) showed a statistically significant association with the uptake of VCT for HIV as shown in Table 7.

**Table 6: Practice of VCT for HIV in relation to Course of Study**

Questions	Non-medical-Related course (N = 300) Freq. N (%)		Medical- Related course (N = 100) Freq. N (%)	
	1. Have you ever used VCT services in the past?	Yes	48 (16.0%)	21 (21.0%)
	No	253 (84.0%)	79 (79.0%)	
2. If "Yes" where did you access VCT Services?				
• Hospital School		25 (52.0)	16 (76.2)	
• Medical Center		3 (6.3)	1 (4.8)	
• Private Clinic		17 (35.4)	4 (19.0)	
• Youth Center		1 (2.0)	Nil	
• Medical Outreach		2 (4.3)	Nil	
2. If "No" what are your Reasons for not accessing VCT?				
• I have no idea where to go for it		45 (17.9)	5 (6.3)	
• Fear of positive result		80 (31.7)	25 (31.6)	
• Fear of stigma/discrimination		100 (39.7)	40 (50.6)	
• Fear of people knowing my HIV status		20 (7.9)	5 (6.3)	
• It is not within my reach		7 (2.8)	4 (5.2)	

**Table 7: Association between Course of Study, Knowledge on VCT with the attitude towards VCT with Practice of VCT Services for HIV**

Variables	Practice VCT Freq. N (%)	Not Practice VCT Freq. N (%)	X <sup>2</sup> P – Value
<b>Course of Study</b>			
Medical-related courses	21 (21.0%)	79 (79.0)	<b>7.34(0.01)*</b>
Non-medical-related?	48 (160)	252 (84.0)	
<b>Knowledge on VCT</b>			
* Knowledgeable			<b>9.89(0.001)*</b>
Medical-related course	40	20	
Non-medical related	117	61	
* Not Knowledgeable			
Medical-related course	14	26	
Non-Healthrelated	42	80	
<b>Attitude towards VCT</b>			
* Positive Attitude			<b>10.78(0.001)*</b>
Medical-related courses	33	8	
Non medical-related courses	81	19	
* Negative Attitude			
Medical-related courses	4	55	
Non- medical-related courses	14	186	

#### 4. DISCUSSION

The findings from this study showed that half of the respondents had overall good knowledge about VCT for HIV. This finding agrees with a study in Ethiopia from high school students [30], Nigeria and Tanzania [16],[ 17],[ 31] which reported a good level of knowledge about VCT among tertiary school students. However, a community based research in China reported a low level of knowledge about VCT for HIV [32]. This difference in knowledge about VCT in the China report could be attributed to differential educational level between their study participants and this study. The assessment of the impact of course of study in the University on the knowledge of VCT showed no difference in the level of knowledge. The most likely explanation for this is that third year medical and non-medical students share almost the same social life, information and exposure on campus. Difference in the level of knowledge about VCT between the two groups of students will manifest when medical students get to the clinical classes with exposure to greater health information.

Based on the attitude scores, less than half of the respondents from medical and non-medical courses had positive attitude towards VCT service. From the findings, majority of the respondents from medical and non-medical courses considered VCT necessary for students for the purpose of knowing their status. However, minority of the respondents from medical and non-medical courses would like to take VCT services themselves and would recommend it to friends, which is worrisome considering the role of VCT in HIV prevention and control. This contradicts report of a study from Northern Nigeria where majority of the adults volunteered to get VCT services and would recommend VCT to their friends [33]. This difference can be explained by the fact that VCT centers and awareness about them is virtually inexistent in tertiary institutions as opposed to the civil communities where efforts are generally concentrated on different strategies to improve knowledge of, attitude towards and availability of VCT services. While the course of study did not show any statistically significant association with attitude towards VCT, the knowledge of respondents about VCT showed a statistically significant association with attitude towards VCT. This finding agrees with a study from Addis Ababa University [34]. This is trite, as good knowledge has been known to correlate with positive attitude.

The results from this study showed a relatively poor uptake of VCT among the respondents. This result is much similar to the ones from studies conducted in Tanzania and Uganda [17], [35]. The similarity may be explained on the bases of similarities of the respondents and such other factors as; one's health beliefs and health seeking behavior, cultural beliefs, social networks, perceived health status and severity of disease. This age group drives the epidemic against the background of low risk perception and condom use, and may, therefore, see no need for VCT services. Studies in different areas indicated poor knowledge and negative attitude of tertiary school students towards VCT with minimal uptake of the service. The main reasons adduced by those who had never had VCT in the past were fear of stigma, discrimination, and positive result following the test. These reasons for not utilizing VCT services are similar across different study areas including community based surveys [25], [30], [31], [36], and 37]. It also agrees with other studies which showed that major hindrances to uptake of VCT for HIV are associated with ignorance, fear of being positive, cost of VCT, inadequate number of VCT centers and stigmatization [16], [17], [23–25]. This underscores the imperative of greater awareness to allay anxiety associate with morbid fear of stigma and discrimination which leverages the competence of the counselors at the VCT centers. From this study, while course of study in the university showed negatively statistically significant association with level of VCT uptake, knowledge about VCT and attitude towards it showed statistically significant association with uptake of VCT for HIV. Therefore, improving knowledge with positive attitudinal change will enhance the uptake of VCT service.

#### Limitation of the study

This study encountered some limitations. As a questionnaire-based cross-sectional study with dependence on respondents' information, there might be bias arising from both recall and misunderstanding of questions. This limitation was addressed by pre-testing the questionnaire to ensure sequencing and clarity of understanding. There is also the limitation of generalizability of the findings to other tertiary institutions as the study was a single institutional survey. This calls for replication of the study in other institutions. The classification as knowledgeable and not knowledgeable based on a mean value should be interpreted in the context of this study, though the result offered information necessary for further study.



## 5. CONCLUSION

From the study, about half of the respondents were generally knowledgeable about VCT, with less than half knowing that VCT is voluntary and an insignificant number had never seen a VCT center. Though majority of the respondents agreed that VCT is necessary for students to know their status, however, less than half of the respondents demonstrated positive attitude towards VCT with about a quarter willing to take up VCT. The poor attitude of the respondents towards VCT appeared inextricably linked to the average knowledge about VCT.

This study identified stigma and discrimination as major determinants of uptake of VCT services among this high risk group, hence the poor uptake of VCT reported in this study. Cognizance of the strategic position of this age group in HIV transmission and the place of VCT in stemming this trend, authorities of tertiary institutions need to commence and intensify sustained information dissemination about VCT through audio and visual means. Routine health talks laced with awareness about VCT should be held at youth-friendly centers of tertiary institutions to reinforce knowledge and positive attitude towards VCT. Since VCT is an important tool for HIV prevention and control, it is strategic to create more awareness among this group in order to improve their knowledge about and attitude towards it. Improving these factors will surely enhance uptake of VCT. Additionally, establishing more VCT centers within reach of students and manned by trained counselors will go a long way in improving uptake.

Further, policy makers at high government level need to enact enabling law against stigmatization and discrimination against people living with HIV based on the findings from this study. The report from this study will also provide program officers of non-governmental organizations involved in HIV/AIDS programs with necessary and enabling data to design effective intervention with appropriate information, education and communication materials to improve knowledge, attitude and the needed uptake of VCT for HIV.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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