



Predictors of Sexual Abstinence and Attitude towards PLHIV among Undergraduate Students in a Privately Owned University in South West Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Author OA designed the study, performed statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author JS participated in the design of the study, coordinated the data collection process and critical revision of the manuscript. Authors FA and EJ contributed to the design of the study, managed the literature searches and critical revision of the manuscript. All Authors read and approved the final manuscript.

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ABSTRACT

Background: Universities in the high prevalence nations of sub-Saharan Africa have significant proportions of their students and staff being infected with HIV. The prevalence of risk behaviors for HIV/AIDS continues to rise especially among university students. The objective of this study is to identify predictors of sexual abstinence and attitude towards PLHIV among Babcock University students.

Methods: A cross-sectional study of 1225 undergraduates selected by multistage sampling technique was conducted in a privately University in Nigeria. Data were collected using structured self-administered questionnaire.

Results: All the participants were aware of HIV/AIDS. About one-quarter (24.1%) of the students

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had ever had sex. Knowledge about HIV/AIDS was very high as 87.7% of them had very good knowledge. Between 74.1% and 89.8% of the students demonstrated correct attitude towards the various attitude questions about PLHIV. Students who were less than 21 years (AOR=1.64), do not take alcohol (AOR=1.94), those with good knowledge of HIV/AIDS (AOR=2.15) were more likely to abstain from sex than their counterparts respectively. Male participants (AOR=0.64) were less likely to abstain from sex than females. The likelihood of having poor attitude towards PLHIV was less in those with good knowledge (AOR=0.16) and more in those with self-reported poor knowledge (AOR=2.97) than their respective counterparts.

Conclusions: This study has identified the factors that promote sexual abstinence and reduce HIV-related stigmatization among young people. Many factors are involved. Hence, an integrated multi-sectoral and multidirectional approach is recommended for the provision of relevant HIV/AIDS knowledge, comprehensive abstinence sexuality education to young persons.

Keywords: Attitude towards PLHIV; Nigeria; private university; sexual abstinence; students

1. INTRODUCTION

The human immunodeficiency virus (HIV) pandemic has grown to become the most important infectious disease of public health importance since the first case of Acquired Immune Deficiency Syndrome (AIDS) was identified more than three decades ago [1]. In the absence of an effective vaccine and cure, a lot of attention is being given to prevention of the disease [2]. The promotion of the "ABCs" has been at the core of HIV prevention initiatives. The "ABCs" refer to 'abstinence' (from sex), 'be faithful' (to one uninfected sexual partner), and 'correct condoms use' consistently during sexual intercourse [3]. HIV/AIDS is seen predominantly in people aged between 15 and 49 years, thereby depriving families, communities and nations of their most productive people [4]. As at 2012, about 35.3 million people had HIV/AIDS worldwide with 2.3 million new infections. Sub-Saharan Africa is the most affected region accounting for 68% of all cases and 66% of all HIV related deaths [5].

Nigeria has the second largest number of people living with HIV [6]. The HIV epidemic in Nigeria is complex and varies widely by region. The epidemic is more concentrated and driven by high risk behaviour in some areas, whereas in others, there is a more generalized epidemic that is sustained by multiple sexual partnerships in the general population [7]. Young adults in Nigeria are particularly vulnerable [8-9]. Young unmarried females carry the greatest risk of HIV infection because of both biological and cultural factors. They often have sexual relationships with men who are much older [1]. These girls often have little or no sexual negotiation skills, and are especially vulnerable in situations with older men where age, wealth, physical strength and other

power dynamics put them at a disadvantage [10,11].

Universities in the high prevalence nations of sub-Saharan Africa have significant proportions of their students and staff being infected with HIV [12]. Hence, universities constitute a major target area for the promotion and enhancement of healthy sexual behavior and good attitude towards people living with HIV/AIDS (PLHIV) among students, who are the future human capital of these nations [1,12,13]. University students are young and vulnerable. They may not have adequate or consistent income, and usually live without consistent adult supervision. Many of them are living on their own for first time in their lives [1]. The interaction between these factors and peer pressure makes them highly vulnerable to HIV/AIDS [12]. It has been shown that the knowledge and attitude of university students about prevention of sexually transmitted diseases (STDs) and condom use does not necessarily translate to good sexual practices among university students [10,14,15]. In many parts of the world including sub-Saharan Africa, the prevalence of risk behaviors for HIV/AIDS continues to rise especially among students in institutions of higher education [16-18]. National Universities Commission of Nigeria, a parastatal under the Federal Ministry of Education that facilitates the establishment of both public and private Universities has licensed more than 50 private universities between 1999 and now [19]. The proliferation of universities has led to an increase in the number of University students, a population that is at increased risk of HIV/AIDS. The students of these private institutions have not been studied, though there is some circumstantial evidence from Ethiopia suggesting the existence of widespread unsafe sexual practices [20]. Babcock University is a private

Christian co-educational Nigerian university owned and operated by the Seventh-day Adventist Church in Nigeria. The university has strong traditions that include the centrality of faith-based teaching. Since HIV was first diagnosed, feelings of fear and avoidance of PLHIV have prevailed [21]. HIV/AIDS-related stigma poses perhaps the most important obstacle to prevention efforts, and engenders an ideal environment for promoting its continued spread [22]. Fear of stigma, on the other hand, causes PLHIV to avoid disclosure [23]. Stigma is one of the factors known to delay treatment of PLHIV [21]. Preventive measures and related treatment will not be effective in tackling the epidemic if HIV stigma persists [21].

A negative attitude towards PLHIV indicates a certain degree of stigma. Attitudes are generally associated with the level of knowledge, and those who hold negative attitudes are often those with lower levels of knowledge regarding HIV [21,24]. However, knowledge itself does not necessarily translate into their attitudes or practices. It is common to find highly educated people with genuine fears of HIV/AIDS, and acting negatively towards PLHIV [21].

Considering the demographics of HIV/AIDS infection and efforts by the Nigerian government to increase access to HIV counseling and testing (HCT), it is expected that the number of PLHIV in the universities will increase. In a university setting, the students are faced with situations where they are in contact with PLHIV. Information about knowledge on HIV/AIDS and attitudes towards PLHIV among Private university students in Nigeria is lacking. There is therefore, the need to determine the attitudes of university students towards PLHIV, in order that barriers that prevent PLHIV from attaining maximum education are removed.

As programs that focus on ABCs to prevent heterosexual transmission of HIV are rolled out, questions of how well university students who come from varied cultural contexts actually understand the terms and address challenges to adopt behaviors related to HIV prevention is unanswered [1]. The objective of this study is to identify predictors of sexual abstinence and attitude towards PLHIV among Babcock university students in order to provide evidence for designing appropriate interventions.

2. METHODS

2.1 Study Setting and Sample

A cross-sectional study conducted at Babcock University, Ilishan Nigeria between September 2013 and January 2014. Babcock University is one of the 51 private universities in Nigeria. The University has total of 12000 regular undergraduate students.

2.2 Sample Size and Sampling Procedure

The national prevalence of abstinence in males and females was 27% and 47% respectively [25]. One thousand two hundred and fifty participants were recruited. The University is almost fully residential with 15 student hostels on the two campuses (12 in Ilishan and 3 in Iperu). Five hostels were selected by simple random technique via balloting (one in Iperu and four in Ilishan). Proportional allocation was used to decide the required sample size for each hostel. The students were then selected from each hostel using stratified sampling from a list of students in the hostels. Questionnaire administration was done during the monthly fellowship meetings which is compulsory for all students.

2.3 Measurement

Data were collected using self-administered structured questionnaire under the supervision of the investigators. Data were collected on the dependent variables i.e. sexual abstinence and attitude towards HIV/AIDS (PLHIV); and the independent variables including socio demographic, knowledge related to HIV/AIDS transmission and prevention, self-reported academic performance, frequency of religious worship attendances and communication with parents about sexual issues. Self-administered AIDS Knowledge and Attitude Questionnaire pretested and validated at a Public University in Nigeria were used. Questions about some risk behaviours for HIV/AIDS was also asked. The respondents' knowledge of HIV/AIDS was assessed by assigning a score of 1 to each correct answer of 10 yes/no/don't know questions. Scores 0 to 3 were regarded as very poor; 4 as poor; 5 to 6 as good and 7 to 10 as very good knowledge. The respondents' attitude towards PLHIV was assessed by assigning a score of 1 to each correct answer of 8 agree/don't agree/undecided questions. Scores 0 to 2 were regarded as very poor; 3 as poor; 4 to

5 as good and 6 to 8 as very good attitude. The means (M) and standard deviation (SD) were derived.

2.4 Statistical Analysis

The collected data were reviewed and checked for completeness and relevance by the investigators each day. The data were coded, edited and entered, cleaned and analyzed using IBM SPSS Statistics version 20. Association was tested between potential predictors of sexual abstinence and attitude towards PLHIV using Pearson’s chi-square. Crude odds ratio (COR) and 95% confidence intervals were calculated to show bivariate association. The contribution of each variable to sexual abstinence and attitude towards PLHIV was determined using multivariable logistic regression models. Adjusted odds ratio (AOR) and confidence intervals were calculated to assess the association between independent variables and the dependent variables (sexual abstinence and attitude towards PLHIV). P-values <0.05 will be considered statistically significant.

2.5 Ethical issues

Ethical clearance and permission was obtained from the Babcock University Human Research Ethical Committee. Informed consent was obtained from each respondent. Prior to the

administration of questionnaire, the purpose of the study was explained to the respondents. The students were free to decline participation in the study. Confidentiality was maintained by omitting their personally identifiable information such as names from the questionnaire.

3. RESULTS

3.1 Socio-Demographic Characteristics of Participants

The study recruited 1,250 undergraduate students out of which 1,225 properly filled questionnaires were returned giving a response rate of 98.0%. All the participants were resident on campus. There were 518 (42.3%) males and 707 (57.7%) females. The mean age (± Standard deviation) was 19.13 (±2.32) years. Table 1 shows that the students were predominantly single, Christians who dwell in urban areas. Almost ninety percent of the students attend religious worship more than two times a month when they are at home on holidays. Over ninety percent of them reported that their academic performance was at least average.

About a quarter (24.1%) of the participants had ever had sex while 29.6% of them drank alcohol. More than half of the participants reported that they had poor communication with their parents about sexual issues.

Table 1. Socio-demographic characteristics of Babcock University students, (n=1225)

Socio-demographic characteristics	Frequency	Percentage
Age in year		
15 to 20	974	79.5
21 to 25	226	18.5
More than 25	25	2.0
Sex		
Female	707	57.7
Male	518	42.3
Religion		
Christianity	1146	93.6
Islam	70	5.7
Others	9	0.7
Marital status		
Single	1219	99.5
Married	6	0.5
Frequency of church /religious worship attendance		
≤ twice a month	134	10.9
> twice a month	1091	89.1
Residence		
Rural	163	13.3
Urban	1062	86.7
Self-reported academic performance		
Below average	81	6.6
At least average	1144	93.4

3.2 Knowledge of HIV/AIDS and Attitude towards PLHIV

All the participants had heard about HIV/AIDS. The participants' knowledge about transmission and prevention of HIV/AIDS was very high with 87.7% of them scoring 7 and above (very good) out of a total of 10.

Concerning the participants' risk perception of HIV/AIDS; only 21.3% perceived that they were at risk of HIV infection. Table 2 shows the responses of the participants to various attitude questions. Between 74.1% and 89.8% of the participants demonstrated the correct attitude towards the various attitude questions about PLHIV. While, 6.7% of the respondent blamed PLHIV for their condition, 16.7% were not decided. Almost a fifth (16%) of the participants believed that people should be denied employment on the basis of their HIV status. The result of scoring attitude towards PLHIV revealed that 76.0% of participants had very good attitude while 2.9%, 3.2% and 17.9% had very poor, poor and good attitudes respectively.

3.3 Factors Associated with Sexual Abstinence and Attitude towards PLHIV

Bivariate and multivariable logistic regression analysis was used to calculate odds ratios and corresponding 95% confidence intervals for the predictors of Sexual abstinence and attitude towards PLHIV. The results are shown in Tables 3 and 4.

Table 3 shows that on bivariate analysis; ages less than 21 years, female gender, non-intake of alcohol, dwelling in urban area (home), good knowledge of HIV/AIDS, increased frequency of religious worship attendance and good communication with parents about sexual issues

were associated with sexual abstinence. Table 3 also shows multivariable logistic regression analysis with adjustment for potential confounders in the final model. Ages less than 21 years, female gender, non-intake of alcohol and good knowledge of HIV/AIDS were the potent predictors of sexual abstinence. Participants who were less than 21 years (AOR=1.64), do not take alcohol (AOR=1.94), those with good knowledge of HIV/AIDS (AOR=2.15) were more likely to have abstained from sexual intercourse than their counterparts respectively. Whereas male participants (AOR=0.64) were less likely to have abstained from sexual intercourse than females.

Table 4 shows that perception of not being at risk of HIV/AIDS, dwelling in rural area, poor knowledge of HIV/AIDS and self-reported poor knowledge of HIV/AIDS were associated with poor attitude towards PLHIV. It also shows that poor knowledge of HIV/AIDS and self-reported poor knowledge of HIV/AIDS were the potent predictors of poor attitude towards PLHIV. The likelihood of having poor attitude towards PLHIV was less in those with good knowledge (AOR=0.16) and more in those with self-reported poor knowledge (AOR=2.97) than their respective counterparts.

4. DISCUSSION

There are more female participants than males reflecting a higher preponderance of female students in Babcock University. This contradicts the known gender disparity in access and participation in University education which favors males [26]. However, analysis of gender patterns of access to degree programs, retention and completion in most African countries reveal that institutions are admitting an increasing proportion of female students [27,28].

Table 2. Attitude of Babcock University Students towards PLHIV. (n=1225)

Attitude towards PLHIV	Agree (%)	Disagree (%)	Undecided
People living with HIV should be isolated	68 (5.6)	1100 (89.8)	57 (4.7)
Patients with HIV should be detained in hospital to prevent re-infecting others	90 (7.3)	1039 (84.8)	96 (7.8)
PLHIV are to be blamed for their condition	82 (6.7)	944 (77.1)	199 (16.2)
Government should provide free drugs for PLHIV	1042 (85.1)	102 (8.3)	81 (6.6)
PLHIV should not be denied employment	931 (76.0)	196 (16.0)	98 (8.0)
Subsidizing drugs for AIDS treatment is a waste of national resources	99 (8.1)	1008 (82.3)	98 (8.0)
Students have important roles to play in reducing stigma associated with HIV	1045 (85.3)	89 (7.3)	91 (7.4)
AIDS patients should be promptly discharged from hospital to prevent spread to other patients	134 (10.9)	908 (74.1)	183 (14.9)

Table 3. Odds ratio of bivariate analysis and logistic regression showing the effects of selected characteristics on sexual abstinence among Babcock University Students

Variable	Ever had sexual intercourse		COR (95% CI)	AOR (95% CI)
	No (%)	Yes (%)		
Age				
Less than 21 years	760 (78.0)	214 (22.0)	1.692 (1.247-2.296)*	1.642 (1.199-2.249)*
21 years and above	170 (67.7)	81 (32.3)		
Sex				
Male	363 (70.1)	155 (29.9)	0.578 (0.444-0.753)*	0.635 (0.482-0.837)*
Female	567 (80.2)	140 (19.8)		
Drink alcohol				
No	691 (80.2)	171 (19.8)	2.097 (1.594-2.757)*	1.939 (1.463-2.570)*
Yes	239 (65.8)	124 (34.2)		
HIV/AIDS risk perception				
No	741 (76.9)	223 (23.1)	1.266 (0.928-1.726)	1.301 (0.944-1.794)
Yes	189 (72.4)	72 (27.6)		
Place of residence				
Rural	109 (66.9)	54 (33.1)	0.593 (0.415-0.846)*	0.702 (0.482-1.023)
Urban	821 (77.3)	241 (22.7)		
Knowledge of HIV				
Good	907 (76.5)	279 (23.5)	2.261 (1.178-4.341)*	2.151 (1.090-4.241)*
Poor	23 (59.0)	16 (41.0)		
Self-reported knowledge of HIV				
Poor	87 (77.0)	26 (23.0)	1.068 (0.675-1.690)	1.317 (0.804-2.158)
Good	843 (75.8)	269 (24.2)		
Self-reported academic performance				
Below average	60 (74.1)	21 (25.9)	0.900 (0.538-1.506)	1.145 (0.665-1.973)
At least average	870 (76.0)	274 (24.0)		
Frequency of church /religious worship attendance				
≤ twice a month	91 (67.9)	43 (32.1)	0.636 (0.431-0.938)*	0.713 (0.472-1.079)
> twice a month	839 (76.9)	252 (23.1)		
Communication with parents about sexual issues				
Poor	474 (73.6)	170 (26.4)	0.764 (0.587-0.996)*	0.803 (0.610-1.058)
Good	456 (78.5)	125 (21.5)		

*Statistically significant at $P < 0.05$

Table 4. Odds ratio of bivariate analysis logistic regression showing the effects of selected characteristics on the attitude towards PLHIV among Babcock University Students

Variable	Attitude towards PLHIV			
	Poor (%)	Good (%)	COR (95% CI)	AOR (95% CI)
Age				
Less than 21 years	64 (6.6)	910 (93.4)	1.534 (0.797-2.955)	1.658 (0.838-3.279)
21 years and above	11 (4.4)	240 (95.6)		
Sex				
Male	30 (5.8)	488 (94.2)	0.904 (0.562-1.456)	0.787 (0.473-1.308)
Female	45 (6.4)	662 (93.6)		
Drink alcohol				
No	48 (5.6)	814 (94.4)	0.734 (0.450-1.196)	0.769 (0.461-1.283)
Yes	27 (7.4)	336 (92.6)		
HIV/AIDS risk perception				
No	66 (6.8)	898 (93.2)	2.058 (1.011-4.187)*	1.873 (0.907-3.869)
Yes	9 (3.4)	252 (96.6)		
Place of residence				
Rural	16 (9.8)	147 (90.2)	1.850 (1.037-3.301)*	1.542 (0.816-2.916)
Urban	59 (3.4)	1003 (94.4)		
Knowledge of HIV				
Good	63 (5.3)	1123 (94.7)	0.126 (0.061-0.261)*	0.157 (0.073-0.341)*
Poor	12 (30.8)	27 (69.2)		
Self-reported knowledge of HIV				
Poor	18 (15.9)	95 (84.1)	3.507 (1.983-6.201)*	2.973 (1.590-5.559)*
Good	57 (5.1)	1055 (94.9)		
Self-reported academic performance				
Below average	8 (9.9)	73 (90.1)	1.762 (0.815-3.807)	1.394 (0.593-3.278)
At least average	67 (5.9)	1077 (94.1)		
Frequency of church /religious worship attendance				
≤ twice a month	9 (6.7)	125 (93.3)	1.118 (0.544-2.299)	0.699 (0.308-1.585)
> twice a month	66 (6.0)	1025 (94.0)		
Communication with parents about sexual issues				
Poor	37 (5.7)	607 (94.3)	0.871 (0.546-1.390)	0.777 (0.475-1.272)
Good	38 (6.5)	543 (93.5)		

*Statistically significant at P<0.05

A lot of improvements have been made in increasing knowledge and raising awareness about HIV/AIDS. However, gaps of HIV knowledge remain prevalent in various populations [29]. Many literature support the fact that though there may be specific areas of strength, there are gaps of HIV knowledge in general populations [30], among students [31,32], and healthcare workers [33-37]. Many of the students in this study had good knowledge of HIV/AIDS but a few misconceptions were demonstrated. This suggests the need for continued HIV/AIDS education.

Abstinence, when combined with safer sex interventions, is known to reduce HIV sexual risk behaviour. This is especially relevant in a population where more than three quarters have never had sex. Delaying sex till young people can make better and brighter decisions is pertinent to reducing the risk of HIV infection. An understanding of the predictors of sexual abstinence is important for and similar 'sexually naïve' population. The predictors of sexual abstinence have been seen comprehensively both quantitatively and qualitatively [1]. This study showed that certain socio-demographic, behavioral and psychosocial factors were associated with sexual abstinence. Significantly higher proportions of female students were sexually abstinent than males, a fact that is consistent with many other studies within Nigeria and across many continents [21,38-42]. This finding mirrors the findings from the National HIV/AIDS and Reproductive Health survey that showed a higher prevalence of sexual intercourse among the males [21]. This finding is not surprising given that sexually active males usually attribute non-adoption of abstinence to the perception of sexual intercourse being a normal practice which young people could not do without [38]. There is a generally held view that men's sexual needs are beyond their control and demand immediate satisfaction [38,43,44]. Therefore, there is a need for abstinence programs that are gender sensitive. Good knowledge of HIV/AIDS was also a potent predictor of sexual abstinence. This aligns with a study among university students in Ghana but contradict another from Philippines [1,45]. It is possible that the difference is related to the study areas. The relationship between non consumption of alcohol seen in this study has also been seen in other studies [1,38,46-48]. A thorough understanding of predictor variables will influence the development of effective interventions which target the variables that are known to promote sexual abstinence.

Our study showed that whereas, perception of not being at risk of HIV/AIDS, dwelling in rural area, poor knowledge of HIV/AIDS and self-reported poor knowledge of HIV/AIDS were associated with poor attitude towards PLHIV; poor knowledge of HIV/AIDS and self-reported poor knowledge of HIV/AIDS were the only potent predictors of poor attitude towards PLHIV. Knowledge of HIV/AIDS is a predictor of less discriminatory attitudes towards HIV among university students. It is obvious from our study and from studies conducted elsewhere that the most prevalent factor associated with HIV-related stigma is a lack of knowledge about HIV/AIDS [29,32,49-53]. This lends credence to the theory of reasoned action (TRA). TRA is a widely accepted model in social psychology to explain virtually any human behavior. TRA postulates that a person's attitude toward a behavior is determined by his salient beliefs (knowledge) about the consequences of performing the behavior multiplied by the evaluation of those consequences. Essentially, it says that attitude is determined by knowledge [54].

Age [41] and gender [52] are other potent predictors identified by other studies but not by this study. Better knowledge of HIV leads to more positive attitudes PLHIV. It is therefore important to place emphasis on improving the educational platform in order to provide sufficient HIV education for students in universities.

4.1 Implication for Policy

The major factors that determine sexual abstinence can be classified into gender norms, social lifestyle and knowledge about HIV/AIDS and related issues. Other factors include; peer influences, perceived self-efficacy to adopt abstinence, attitude towards abstinence and the media [38]. Comprehensive sexuality education programs which encourage sexual abstinence and other prevention strategies should be developed and implemented in university school settings. It is pertinent to include other preventive strategies in the light of evidences which suggest that abstinence only programs do not seem to delay sexual debut or reduce the risk of HIV transmission [38]. Other complementary interventions such as promotion of mutual fidelity, consistent and correct condom use, peer education and role modeling may be required. Advocacy should be targeted at policymakers and university authorities to facilitate policy review and allocation of funds to promote

comprehensive sexuality education in universities.

Training programs should emphasize the development and acquisition of life skills needed to adopt sexual abstinence in addition to cognitive learning about HIV/AIDS. There are many ways to reduce HIV-related stigma and discrimination. University students are an important part of young people in any society. Reduction of stigma in the general young population will lead to stigma reduction among university students [33]. Since poor knowledge of HIV/AIDS is the most potent predictor of poor attitude towards PLHIV, there is a strong need to develop effective educational intervention that will increase HIV knowledge. This can include education and communication in mass media to improve the public image of HIV and availability of services [55]. HIV-related stigma is best addressed at both individual and institutional levels [33]. Cooperation with university authorities should be engendered in order to improve HIV/AIDS knowledge by integrating issues of HIV, stigma and discrimination into the university curriculum. Specialized HIV training course have also been found to be very effective [49,52].

4.2 Limitations of the Study

Certain shortfalls of this study should be put into consideration when interpreting the findings. The study was cross-sectional in design hence, causality cannot be established. The relatively large number of participants in this study mitigated the effect of this factor. The use of self-reported data is prone to a number of biases that could affect the reliability and validity of a measure. There could be recall biases and self-presentation or confidentiality concerns resulting from stigmatization. This is further underlined by the fact that the study was conducted in a Faith based university where Christian values are an integral part of learning. This was however mitigated by assuring participants of full confidentiality, conducting survey in an ambient environment and by making data collection a simple self-administered process.

The study was conducted in only one private university. This will limit the generalizability of the findings to the entire population of private university students in Nigeria. Despite these shortcomings, this study fills a gap in research in the area of sexual abstinence and attitude of university students towards PLHIV. Probability

sampling was used and the sample size was considerable.

5. CONCLUSIONS

This study has identified the factors that promote sexual abstinence and reduce HIV-related stigmatization among young people. Many factors are involved. Hence, an integrated multisectoral and multidirectional approach is recommended for the provision of relevant HIV/AIDS knowledge, comprehensive abstinence sexuality education to young persons. Fear, misconceptions and negative attitude should be addressed. HIV/AIDS training should be integrated into the curriculum of university students.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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