HIV/AIDS knowledge among undergraduate university students: implications for health education programs in Ghana

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Abstract

Background: Globally, the spread of HIV/AIDS remains on the rise especially among adolescents who are at increased risk of infection. Sexual behavioural change remains one of the most effective ways of preventing further transmission among this vulnerable group.

Objective: To evaluate HIV/AIDS knowledge among undergraduate students' and how it can be used in HIV prevention strategies in Ghana.

Methods: A cross-sectional study was conducted using structured questionnaires among 324 conveniently selected students enrolled at a tertiary institution in Accra, Ghana.

Results: The mean age of the respondents was 23 years. Although the mean score of the participants' responses to 12 HIV/AIDS knowledge questions was 7.7 of 12 points, there was an inconsistent level of AIDS knowledge with significant gender difference. While students could identify the transmission modes and preventive measure, they were less knowledgeable about the causative agent of AIDS. Majority of the students reported having received AIDS information from both print and electronic media, but few of them received such information from parents. Although over 90% of the students knew where to access VCT services, 45% of them have not had HIV test.

Conclusion: The data underscore the urgent need for HIV/AIDS-related health education and prevention efforts targeting university students as well as younger age groups in Ghana

Keywords: HIV/AIDS, knowledge, education, students, Ghana,

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Introduction

HIV/AIDS has become one of the most devastating diseases humanity has ever faced. It has become a major public health concern with about half of new infections occurring in young people[1]. Sub-Saharan Africa, which has just over 10% of the world's population, remains the most seriously affected region [1].The impact of HIV/AIDS has caused much consternation among policy-makers as it threatens to erode socio-economic through its associated increase in morbidity and mortality of people in the productive age group [2].

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A more serious challenge today, is the growing infection rates among the adolescents in sub-Saharan Africa. Research has shown that the highest group found to be infected with the virus is the age-group 15 to 24 [3]. This adolescent high-risk group accounts for 60 percent of all new infections in many countries[4]. Transactional sex, very common among young adults in Africa has been identified as one of the critical pathways for the transfer of the virus in Africa[5]. It is not surprising that sexual intercourse has become the most predominant mode of transmission of HIV in sub-Saharan Africa, accounting for approximately 90% of all infections[6].

Young people are particularly vulnerable to HIV infection because of the physical, psychological, social and economic attributes of adolescence[7]. Young adults are also at risk as a result of high risky sexual behaviours, attitudes, and constraints of the societies in which they grow up[8]. Qualitative and quantitative studies conducted in Ghana suggest that the lifestyles of university students are placing them

at risk of contracting the HIV [9, 10]. Moreover peer pressure to obtain luxury items, such as expensive clothing, jewellery, fashionable hairstyles, accessories, and makeup, motivates young women to engage in transactional sex [11-13].

It has also been demonstrated that increased knowledge about AIDS is not a predictor for behavioural change [14-17], although knowledge about the disease is a prerequisite for change [18]. Knowledge of HIV and other STIs have been lacking among adolescents in Ghana, with sparse and limited literature in this area as previous studies conducted have focused on public universities [10, 19] with little or no data on private university students. According to the 2008 Ghana Demographic Health Survey (GDHS) 98% of women and 99% of men were aware of HIV in Ghana[20]. However, this has not translated into comprehensive knowledge and safe sexual behaviour as only 25% of females and 33% of males aged 15 - 24 years had comprehensive knowledge of HIV[1]. This has health implications for propagation of the HIV/AJDS disease prevention and policy formulation.

In essence, there is a need to gather information on the basic knowledge of private university college students about HIV/AIDS, etiology, transmission, methods of prevention as well as their sexual practices since almost 45% of Ghana's population of about 24 million is aged 15 years or less [21].

The main objective of this study is to evaluate HIV/AIDS knowledge among undergraduate students' and how it can be used in HIV prevention strategies in Ghana.

Methods

Survey site and participants

A cross-sectional design was adopted for the study. The participants comprised 324 university students (43.8% females and 56.2% males) from a private tertiary institution in Accra, Ghana, with an age range of 17 to 37. The students were enrolled in 10 different undergraduate academic programs in the participating university. Convenience sampling was used as the first author investigator is a staff in the university and easy access to students. The sample size represents 94% of response rate from eligible prospective individuals approached to take part in the study.

Measures

A well validated measure and self-administered AIDS Knowledge and Attitude Inventory [22, 23] were used to gather data. The instrument had questions on demographic characteristics to measure age, level, gender sex, religion, and marital status. The AIDS Knowledge and Attitude Inventory have been validated with a Ghanaian sample [10, 24] indicating that the instrument could be used in a Ghanaian context. Students were asked if they know their HIV status and where to get HIV testing and counseling. The following measures were used in the current study.

Source of AIDS information

Two types of information sources were assessed: media/public and personal. For media/public sources, students were asked whether they had received AIDS information in the past 6 months from any of 5 sources (e.g. internet, radio, television, magazines/newspapers and parents). Students were also asked to check sources that could provide the most reliable information on AIDS.

HIV/AIDS knowledge

Questions were asked to assess respondents' knowledge about the HIV and AIDS. There were three sets of questions assessing AIDS knowledge in different formats. The first set consisted items assessing knowledge of definition and causation of HIV/AIDS. The second set contained questions assessing modes of AIDS virus transmission, and the third set of questions regarding AIDS symptoms and preventive measures. The summation of these scores formed the basis for data analysis. The possible score ranges from 0 to 12. Higher scores indicate more accurate knowledge on HIV/AIDS. The respondents' knowledge of HIV/AIDS was assessed by assigning a score of 1 to each correct answer of 12 yes/no HIV/AIDS related questions

Survey procedure

A list of registered students for the semester was collected from the university academic officer, who also granted the permission to conduct the survey in the university. The investigator contacted fellow faculty members from different departments in the university and asked them if they would explain the research to students and hand out the questionnaires. Most of the lecturers contacted agreed with just some few ones who declined because they were not prepared to offer the last 20 minutes of their lecture period for the purpose of this research. Having explained the nature of the research, the faculty member distributed a self-administered questionnaire to the students. The students were informed that the survey was anonymous and were assured of the confidentiality of their responses. The students were

informed not to indicate their names on the form. Majority (83%) of the students were in their first and second years because most of the senior faculty members who were handling the third and final year students could not administer the questionnaires.

The survey was filled out during the last 20 minutes of a 3-hour course. Participation was voluntary and students had the opportunity to refuse participation. Five (5) questionnaires were left on the desk without being filled whilst 14 students did not answer any item at all on the questionnaire. Thus, non respondents were 19(6%). The study was approved by Human Research Committee of Regent University College of Science & Technology.

Data analysis

The Statistical Package for the Social Sciences (SPSS) version 18.0 was used for data analysis where standard descriptive statistics were used to describe some of the findings. For the test of significance, an independent sample *t*-test and Analysis of variance (ANOVA) was used to compare the differences in mean of the knowledge on HIV/AIDS according to the various demographic characteristics In addition, Chi-square was used to explore the associations between the various variables on the sources of HIV/AIDS information.

Results

Sample characteristics

Table 1 shows the characteristics of the sample in the study. The sample consisted of [168 (52%)] first year students, [102 (31%)] second year students and [54(17%)] third year students. The mean age was 22.94 years (SD = 3.93) with 81.2% of the participants between 17 and 25 years of age. The sample consisted of 43.8% females and 56.2% males. Majority of the participants [196(60.5%)] were single, [96 (29.6%)] in a relationship, and the remaining [32 (9.9%)] were married.

Table 1: Socio-demographics and differences in HIV/AIDS knowledge (n = 324)

Variables	N	%	Mean (SD	Test used	*p*-value
Gender				2.40[b]	0.017
Male	182	56.2	7.52 (2.21)		
Female	142	43.8	8.11 (2.17)		
Ages					
16 – 20	93	28.7	7.02 (2.04)	6.26[a]	0.0001
21 – 25	170	52.5	8.06 (2.25)		
26 – 30	47	14.5	8.38 (2.26)		
31+	14	4.3	7.29 (0.99)		
Marital status				4.86[a]	0.008
Single	196	60.5	7.47 (2.25)		
Married	32	9.9	8.22 (1.43)		
In relationship	96	29.6	8.25 (2.43)		
Religious affiliation				2.27[b]	0.203
Christian	311	96.0	7.74 (2.23)		
Muslims	13	4.0	8.54 (1.45)		
Years in school				1.37[a]	0.257
First year	168	52.0	7.80 (2.22)		
Second year	102	31.0	7.96 (2.16)		
Third year	54	17.0	7.36 (2.27)		

a F-values from one-way ANOVA b Independent t-test Respondents' knowledge about HIV/AIDS

Meaning and causative agent of AIDS

Virtually all the respondents [323 (99.7%)] had heard about HIV/AIDS. The respondents' answers to the HIV/AIDS knowledge questions are shown in [table 2].The overall mean knowledge score was 7.7 out of a possible score of 12. Majority of the respondents [304 (97.4%)] and [320 (98.8%)] knew the right meaning of the acronyms HIV and AIDS respectively. Surprisingly, only [177 (54.6%)] knew that the Human Immunodeficiency Virus (HIV) causes Acquired Immunodeficiency Syndrome (AIDS).

Table 2: Respondents' knowledge about HIV/AIDS (n = 324)

Variables	N	% answering correctly
Definitions and Symptoms		
The meaning of HIV	304	97.4
The meaning of AIDS	320	98.8
HIV is the causal agent of AIDS	177	54.6
Modes of transmission		
Unprotected sexual intercourse	156	50.0
Sharing of infected needles	78	25.0
Mother-to-child	78	25.0
Preventions strategies		
Condom usage	271	77.5
Abstinence from casual sex	227	70.1
Avoid using infected needles	202	62.5
Being faithful to one sexual partner	184	56.8

Modes of transmission

Majority of the respondents [312 (96.3%)] were able to correctly identify one or more mode of HIV of transmission with the remaining [12 (3.7%)] not able to provide any correct answer. Out of those who correctly identified the modes of transmission, half [156 (50%)] knew that HIV could be transmitted through unprotected sexual intercourse with infected persons; [78 (25.0%)] by sharing needles/syringes with infected persons and the remaining [78 (25.0%)] through mother- to child medium.

Preventive measures

Most of the respondents [306 (94.4%)] were knowledgeable about the various ways of preventing HIV infection. The four commonly identified means of preventing HIV infection were: condom usage [271(77.5%)], abstinence from casual sex, [227(70.1%)], avoiding sharing of sharp objects [202(62.5%)] and being faithful to a partner [184(56.8%)]. Additionally, majority of the participants [288 (88.9%)] know that there is no cure for AIDS, and that one cannot always say if someone is infected with the virus [265 (81.8%)].

For the test of significance, an independent sample *t*-test and Analysis of variance (ANOVA) was used to compare the differences in mean of the knowledge on HIV/AIDS according to the various demographic characteristics are also presented in table I. The results of an independent sample *t*-test which compared the differences in the mean knowledge on HIV/AIDS according to gender and religious affiliation indicated that female students (M = 8.11, SD = 2.17) had more knowledge about HIV/AIDS than their males (M = 7.5, SD = 2.21) counterpart [t (322) = 2.40, p = 0.017]. Although Muslim students scored higher on HIV/AIDS knowledge (M = 8.54, SD = 1.45), than Christian students (M = 7.74, SD = 2.23), this difference was not strong enough to yield statistical significance [t (322) = 2.27, p = 0. 0.203]. The One-Way Analysis of variance (ANOVA) indicated that there was a statistically significant difference in the HIV/AIDS Knowledge scores for the four age groups [F (3, 321) = 6.26, p = 0. 0001]. Post-hoc test comparisons using the Turkey HSD test indicated that the mean scores the 16 – 20 years group (M = 7.02, SD = 2.04) was significantly different from both the 21 – 25 years group (M = 8.06, SD = 2.25) and the 26 – 30 years group (M = 8.38, SD = 2.26). The 31+ years group did not differ significantly with any of the age groups.

The ANOVA results also indicated a statistically significant difference in the HIV/AIDS knowledge scores for the marital status of the participants [F (3, 321) = 4.86, p = 0. 008]. Post-hoc test comparisons using the Turkey HSD test indicated that the mean scores for student who were single (M = 7.47, SD = 2.25) was significantly different from those who were "in relationships" (M = 8.25, SD = 2.43). Students who were married (M = 8.22, SD = 1.43) did not differ significantly from either single or students in relationship.

Sources of HIV/AIDS information

As shown in table 3, approximately 82.7% of the sample reported having received information about HIV/AIDS from the television, 63% from the internet, 53.4% from radio, whiles newspapers/

magazines and parents accounted for 43.5% and 26.9%, respectively. The chi-square (χ^2) analysis was used to examine the relationship between marital status, age-groups and year in school and the five sources of information. Only two, out of the 5 sources of HIV/AIDS information differed significantly between the number of years in school and their marital status. Compared with third year students, more first and second year students had received information about AIDS through the internet (49.2%, 39.2, and 11.7%) for first, second and third year students respectively [χ^2 (2, N=324) = 6.70, p = .03]. With regard to seeking information from television, more single students identified television as their preferred choice of information about AIDS (63.4%, 26.0%) and 9.7%) for single, "in relationship", and married students respectively [χ^2 (2, N=324) = 6.23, p = .04].

Table 3: Sources from which students (%) received HIV/AIDS information in the previous 6 months

Sources	Overall number	Sex		Year in School			Marital Status		
		Male	Female	First	Second	Third	Single	In relationship	Married
Television	83	84	82	85	79	85	81	87*	75
Internet	63	36	39	35*	46	26	39	38	25
Radio	53	53	54	53	59	44	55	50	53
Newspapers	44	41	47	43	47	39	43	44	44
Parents	27	27	26	27	29	20	29	23	25

* p < .05

Counseling and testing

Over 90% of the students reported to know where to have an HIV test, while 45% have had an HIV test. More male students (67%) indicated they would offer themselves for a test in the future as compared to only 38.8% of their female counterparts.

Discussion

The data in the present study indicated an inconsistent level of HIV knowledge among undergraduate students in Ghana. Over 90% of the students have heard about HIV/AIDS. While students could identify the various modes of HIV transmission and preventive measures, they were less knowledgeable about the causative agent of AIDS.

The result also revealed a significant gender differences in HIV knowledge among university students in Ghana, with females more knowledgeable than males. This finding is consistent with studies conducted in Nigeria [25, 26] which found that AIDS knowledge differs on the basis of gender among university students. However, [27] had indicated no gender differences on HIV knowledge and attitudes among university students in Nigeria.

The data suggest that majority of students receive HIV/AIDS information from both print and electronic media (e.g. television, internet, radio, newspaper/magazines) but few had received same from their parents. Consistent with findings in Ghana [28], Nigeria [29, 30] and other countries [31, 32], university students in Ghana appear to rely on both print and electronic media as the major source of HIV/AIDS information. Mass-media campaigns utilizing television radio, posters and billboards have been shown to be more effective for addressing specific issues[33]. They have also been proven to be effective in increasing knowledge, improving self-efficacy to use condoms, influencing social norms, increasing the amount of interpersonal communication and raising awareness of health services[33]. These media therefore have an important role to play in raising AIDS awareness among young adults including university students.

Discussion of sexual issues between parents and their children are rare in Ghana due to the fact that the Ghanaian culture has a more conservative, religious and traditional beliefs on issues of sexuality, condom usage and marriage [34]. It is also possible that the older generation had not received any information on sex education, making it difficult for them to approach the issue as parents themselves. Furthermore, residential pattern and family structure might reduce the opportunity to discuss sensitive topics like sex. Parents should discuss reproductive sexual issues with their children and young adults, because a strong adult protective shield for young

people has been shown to decrease their risk of HIV infection[35].

Another interesting finding of the study is that over 90% of the students reported not to have had HIV test, although over 45% of them knew where to access Counseling and Testing services. This finding is consistent with the studies of [10, 19] that indicated that majority of public university students had not taken the HIV test. The unwillingness of students to take HIV test could be attributed to fear, anxiety and stigma and discrimination associated with the Counseling and Testing and AIDS respectively. The fact that over 90% of the participants are single and "in relationship" raises a lot of health issues as only 33% and 67% of females and males students respectively indicated they would offer themselves for a test in the future.

Implication for intervention and policy

The present study showed that university students in a tertiary institution in Ghana were knowledgeable about HIV/AIDS, used both print and electronic media (especially television and the internet) as their sources to HIV information, and majority of them have not had HIV test, although some know about the availability of Counseling and Testing services. There is however, the need to embark on extensive and sustained HIV/AIDS educational programs. The following recommendations should be taken into consideration when developing an effective education strategy:

A strong collaboration among universities, polytechnic, colleges of education and Ministry of Health should be built to help in the design and implementation of comprehensive special education to curtail the spread of HIV/AIDS in Ghana. Such programs should begin at the primary school levels and extending beyond formal education to reach parents and other adults in the larger community. The existing of HIV/AIDS Clubs in some tertiary institutions in Ghana should be scaled up to cover all higher and tertiary institutions.

Parents, teachers and sex educators should be more involved in HIV/AIDS education and prevention strategies. Parents for instance, should be encouraged to discuss sexual reproductive health issues such as condom usage and abstinence with their children. Availability of condoms is definitely important but individuals need to have confidence and firm belief that they can actually use it for effective intervention programs.

The use of the internet for the dissemination of HIV/AIDS information should be intensified since most of the youth as indicated in this study used that medium. The Ghana AIDS Commission should encourage its development partners (Non Governmental Organizations, Community Based Organizations, etc.) to provide up to date health related HIV information on their websites.

This study was the first of its kind to be conducted among private university students in a Ghanaian context. This study therefore fills a gap in research with respect to HIV/AIDS knowledge among private university students in a Ghanaian context.

Study limitations

The data analyses were done based on a cross – sectional data; therefore, causal interpretation of the results cannot be established. The results cannot be generalized to the entire population of undergraduate students in Ghana due to the relative sample size and the non-probability sampling technique used. In addition to this, since all variables were measured by self-report instruments, which may have caused some bias considering the sensitive nature of the HIV/AIDS as young people may be reluctant to provide information about their sexual activity and may have tended toward more socially acceptable responses. It is important for future studies also to use other forms of data collection, such as interviews, and focus group discussions. Future studies should assess student's risky sexual behaviour and attitudes towards people living with HIV, to help provide a comprehensive understanding of sexual issues among university students.

Conclusion

The present study showed that university students in a tertiary institution in Ghana are knowledgeable about HIV/AIDS, used both print and electronic media (especially television and the internet) as their sources of HIV information, and majority of them have not had HIV test, although some know about the availability of Counseling and Testing services. The few numbers of students willing to have HIV test in the future should be of great concern to public health practitioners. Further extensive studies that will explore the reasons for their intensions for not willing to have HIV test are recommended.

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