

Knowledge and awareness of HIV/AIDS among high school girls in Ghana

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Abstract: HIV/AIDS is recognized as a national priority health issue in Ghana. Consequently, the Ghana AIDS Commission and the National AIDS Control Programme were established, among other things, to enhance the knowledge and awareness on the nature, causes, effects and means of managing the spread of HIV/AIDS among populations at risk in Ghana. Through the efforts of these bodies and other stakeholders in health, several awareness creation and sensitization efforts have been targeted at teenage girls, a high risk group in Ghana. This study therefore assesses the knowledge and awareness of HIV/AIDS among senior high school girls in their teens in Ghana using a sample of 260 female students of West African Senior High School. The data collected were analyzed and discussed under relevant themes and within the context of the literature. The study revealed that generally, senior high school girls were knowledgeable on the nature, modes of transmission, and prevention of HIV/AIDS. There were however some students who exhibited limited knowledge on some issues including the spiritual causes and treatment of HIV/AIDS, contacts and associations with infected persons, as well as determination of HIV infection from appearances rather than testing. The study also raised important concerns about the reluctance of senior high school girls to use condoms as a preventive measure and the need to reorient HIV/AIDS awareness interventions in Ghana.

Keywords: adolescent school girls, HIV/AIDS, Ghana, awareness, knowledge

Introduction

Although overall HIV prevalence is low (1.5%–1.8%),¹ Ghana like other developing countries is still considered a high-risk country for several reasons: the presence of covert multi-partner sexual activity and denial, the low level of knowledge and low condom use, unsafe professional blood donation, high incidence of self-reported sexually transmitted infections among vulnerable groups, infected expatriates who infect their sexual partners when they return to Ghana, and high levels of HIV/AIDS in the bordering countries all contribute to the spread of HIV.²

Of all the various age groups affected by this pandemic, Dehne and Riedner³ identified the adolescent age group as that group that is most at risk of contracting HIV/AIDS and other sexually transmitted diseases (STDs). Defined by the World Health Organization (WHO)⁴ as persons between 10 and 19 years of age, many adolescents around the world are sexually active and many sexual contacts among them are unprotected. Their vulnerability is further heightened by the fact that most parents do not discuss issues bordering on sex at home and hence many teens turn to peers and to the media and get inaccurate information.

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Against the background that more than half of newly infected HIV adolescents are female,⁵ the knowledge and awareness of female adolescents on HIV/AIDS is of paramount concern in developing countries with high risks of transmission. However, a preliminary investigation revealed a paucity of information on the knowledge level on HIV/AIDS among high school girls in sub-Saharan Africa. Further, there is a dearth of empirical research on HIV/AIDS among Senior High School (SHS) girls in Ghana and other West African countries.

This study was therefore undertaken to fill the knowledge gap on the subject matter and further arm health educators, peer counselors, and other stakeholders with the necessary information to address the information needs of SHS girls in Ghana on HIV/AIDS. Particular reference is made by the study to causative factors, modes of transmission, prevention, and the sources of information on HIV/AIDS among SHS girls.

Methods

A cross-sectional design was used in this study. The study was carried out in the West African Senior High School [WASHS] which was established in 1946 and is currently ranked a first class SHS by the Ghana Education Service (GES). The school is situated in Accra and has a student population of approximately 1960. Currently, there are 87 teachers and approximately 50 ancillary workers. The school was selected primarily because of its regular participation in HIV/AIDS awareness interventions organized by the Ghana AIDS Commission (GAC).

The study selected 260 female students from the total 1080 female students in the school. Stratified sampling technique was employed in grouping female students into four strata according to their year of study (that is SHS 1, 2, 3, and 4). The stratified sampling technique was used in order to get a fair sample that is representative of the heterogeneous student population. Thus, 65 students were randomly selected from each year group. A structured questionnaire was then used to collect data. The questionnaire was anonymous and solicited information on respondents' background as well as their knowledge on the causes, mode of transmission, and prevention of HIV/AIDS.

The questionnaire used had three parts. The first part was closed ended and contained questions on the background of the respondents. The second part contained questions on HIV/AIDS found in HIV/AIDS awareness leaflets used by the Ghana AIDS Commission and other HIV/AIDS materials used by the Ghana Education Service. Questions in this section were presented in the form of a 3-point Likert scale. The final part of the questionnaire was open ended in nature

and sought respondents' views on how awareness creation on HIV/AIDS could be further enhanced in SHSs.

Appropriate permission was sought from the Headmaster of the school who nominated a teacher to assist and facilitate the administration of the questionnaires. The teacher served primarily as a guide and helped in gaining access to students in class, introducing the research team and participants, ensuring that the research team did not obstruct normal student activities, as well as seeking permission from other teachers and staff encountered during the data collection. Participation in the study was voluntary and prospective participants regardless of their choice to participate in the study or not were briefed on the purpose, use, and significance of the study. Appropriate consent was then sought from all final participants.

The data collected were analyzed using Statistical Package for the Social Sciences (SPSS[®]; IBM Corporation, Armonk, NY, USA) version 16 with the key issues being presented in summary frequency tables. The analyzed data were then grouped under the relevant themes and discussed qualitatively. The qualitative analysis was done using the thematic analysis approach based on Braun and Clarke's⁶ assertion that it offers an accessible and theoretically-flexible approach to analyzing qualitative data. Using this approach, the data were reviewed and sorted out under the relevant themes based on the study objectives. Subsequently, the data were discussed under each theme within the context of relevant literature and with the aim of identifying other subthemes and patterns under each theme. Particular attention was also paid to comments and answers to follow up questions by respondents during the discussion.

Results

As shown in Table 1, more than two-thirds (70.4%) of the respondents were between the ages of 16 and 19. Those between 12 and 15 years accounted for 16.5% while the remaining 13.1% of the respondents were above 19 years of age. The age variation of respondents in this study is consistent with Adamchak⁷ which found that students in SHS in Ghana were more likely to be in their teens. This was explained by the 12-year primary and junior high school they had to attend before getting into SHS.

Table 1 also shows that equal numbers of respondents were selected from each year group (65 students per year group). This was done to ensure that responses provided reflected the views of all female students from the first year through to the final year. Respondents were also selected from across all programs offered by the school with 23.5%, 26.2%,

Table 1 Demographic characteristics of the study respondents

	N	%
Age group		
16–19	183	70.4
12–15	43	16.5
Above 19	34	13.1
Year of study		
1st year	65	25
2nd year	65	25
3rd year	65	25
4th year	65	25
Program studied		
Science	61	23.5
General arts	68	26.2
Business	57	21.9
Visual arts	74	28.4

21.9%, and 28.4% being drawn from the Science, General Arts, Business, and Visual Arts Programs, respectively.

Respondents were also asked a number of questions bordering on the nature of HIV/AIDS, transmission of HIV/AIDS, prevention and cure of HIV/AIDS, as well as awareness creation on HIV/AIDS. These results are shown in Table 2.

Discussion

Governments all around Africa have launched institutions and special initiatives to create awareness, reduce stigmatization

and support people living with HIV/AIDS. This is in recognition of the fact that the best approach to addressing the HIV/AIDS pandemic remains prevention through awareness creation and sensitization since neither treatment nor vaccine is readily available. In Ghana, this initiative is embodied in the creation and massive support for the Ghana AIDS Commission and the National HIV/AIDS Control Program (NHACP) by successive governments over the past decade. Together with other key governmental and nongovernmental stakeholders, these institutions continue to design and implement several HIV/AIDS interventions tailored to suit particular vulnerable populations at risk in Ghana.

One such group that is often the focus of these interventions in Ghana and other developing countries has been adolescent school girls. Evidence from Lal et al⁸ and Gregson et al⁹ among others suggest that this group has become a key focus of HIV/AIDS interventions because of their relatively high sexual activity and high risk of contracting the disease. This is supported by Bandawe and Foster's¹⁰ findings that HIV/AIDS incidence was very high among females aged 15–19 in the third world. Additionally, studies by Kaur et al¹¹ in India conclude that most girls in developing countries become sexually aware and active in SHS and generally after 15 years.

Knowledge and awareness on HIV/AIDS among adolescent school girls is therefore crucial not only in preventing

Table 2 A summary of findings on HIV/AIDS knowledge and practice among high school girls in Ghana

Question	Agree (%)	Disagree (%)	Not sure (%)
HIV stands for Human Immunodeficiency Virus	73.3	23.3	3.3
AIDS stands for Acquired Immune Deficiency Syndrome	96.7	3.3	0
HIV is a virus that replicates in the body and can develop into AIDS	96.7	3.3	0
HIV virus can potentially live in the human body for years (sometimes 10 to 15 years) before it is noticed or develops into AIDS	76.7	10	13.3
Although symptoms may not be present in an infected person, the virus is still transmittable	63.3	20	16.7
HIV is transmitted through bodily fluids like blood, semen, vaginal secretions, and breast milk	90	3.3	6.7
Having sex with someone who is HIV infected and not using a barrier (ie, condom, oral dam, etc) can transmit HIV/AIDS	96.7	3.3	0
Sharing unsterilized instruments/personal items like toothbrushes with someone who is HIV infected can transmit HIV/AIDS	100	0	0
HIV can be transmitted through blood transfusion	83.3	3.3	13.3
HIV can be transmitted from an infected mother to her child at birth or through breastfeeding	96.7	0	3.3
Witchcraft and other spiritual factors can cause HIV/AIDS	16.7	70	13.3
A scientifically proven cure exists for HIV/AIDS	16.7	50	33.3
HIV/AIDS can be cured with herbal medicine	13.3	56.7	30
You can tell by looking at a person whether they are HIV+	16.7	66.6	16.7
A, B and C of HIV/AIDS prevention helps reduce the risk of infection	66.7	13.3	20
Abstinence is the best way of preventing HIV/AIDS	96.7	0	3.3
Knowing your HIV/AIDS status can help prevent HIV/AIDS	73.3	10	16.7
I have taken an HIV test recently/I know my status	13	77	10
I will readily use a condom during sexual intercourse	35	51	14

the spread of the virus, but also in addressing the threats posed by HIV/AIDS to Education For All goals¹² and other interventions aimed at enhancing girl child education.

Nature of HIV/AIDS awareness

The key to HIV/AIDS awareness therefore hinges on knowledge of what HIV and AIDS are, and what exposures and risky behaviors can potentially lead to contracting the virus. Accordingly, substantial effort has been put in over the years to provide students in SHS with the basic information on the nature of HIV/AIDS. Against this background, and in spite of the numerous educational campaigns and advertisements on HIV/AIDS in the mass media, it was therefore surprising that only 73.3% of respondents could correctly mention the meaning of the acronym HIV. However, a relatively higher percentage of respondents (96.7%) were able to identify the meaning of the acronym AIDS. These results confirm earlier studies by Bauni and Jarabi¹³ that explain that AIDS is more often used to represent HIV/AIDS in most African societies where no clear distinction is made among the general population between HIV and AIDS.

Almost all respondents (96.7%) agreed that HIV is a virus that replicates in the body and can develop into AIDS. However, this percentage dropped significantly by 20% to 76.7% on the issue that the virus can potentially live in the human body for years (sometimes 10 to 15 years) before it is noticed or develops into AIDS. Aside the 10% of respondents who disagreed, a further 13.3% were not sure whether the virus could live in the human body for a long time before detection. The fact that as much as 23.3% of respondents were not aware that HIV could live in the human body for years asks serious questions on HIV/AIDS prevention and control in Ghana. As explained by Seeley et al,¹⁴ ignorance or refusal to acknowledge that persons currently exhibiting signs and symptoms of AIDS may have acquired it years ago hinders HIV/AIDS prevention efforts since such persons are not able to alert their partners and other close ones who they may have transferred the virus to or contracted the virus from over the years. Further, in Mozambique, UNAIDS¹⁵ states that most high school girls are stigmatized and seen as bad or immoral for testing positive to HIV/AIDS because of the misconception that they acquired the virus through teenage sexual activities. Rather, these high school girls might have contracted the virus at birth, during immunization, or from other non-sexual causes earlier on in their lives. This arises from the lack of recognition that the virus could be contracted years before visible signs and symptoms are discovered and it explains why persons in whom signs and symptoms manifest are thus stigmatized and

seen as promiscuous without considering that the virus may have been acquired years before. Also, efforts at managing the source and further spread of HIV/AIDS are often centered on the immediate people around the victim neglecting those who may have had prior contact in earlier years with the victim. Thus, the source of transmission is not easily detected.

Transmission of HIV/AIDS

It was disturbing to note that as much as 36.7% of the SHS girls were either not sure or disagreed that, although symptoms may not be present, the virus was still transmittable. Such persons therefore stood a higher chance of infection because this perception that only persons exhibiting symptoms of HIV/AIDS could transmit the virus will lead to them being less careful in their associations with seemingly healthy-looking persons. Furthermore, studies on HIV/AIDS have shown that most relatives of Persons Living With HIV/AIDS (PLWHA) get infected because they failed to take precaution in their interactions and even shared personal items like blades, shaving sticks, tooth brushes, etc, with their seemingly healthy loved ones who though not currently exhibiting signs of the virus were infected. Thus, problems could arise in schools simply because girls who are unaware that though symptoms may not be present, the virus is still transmissible may be sharing personal items with colleagues who may not be exhibiting signs or symptoms of the virus but may be infected. Interestingly, follow up questions revealed that some students believed that the physical appearance of a person was an accurate measure of whether the person was infected with the HIV. In this regard, students were less careful, associated freely, and shared personal effects with persons who did not exhibit any physical sign or symptom of HIV/AIDS but might still be infected. One such student in response to whether she knew her HIV/AIDS status, was quick to respond with the following: “see how I am healthy and fresh, do I look like I have HIV/AIDS?”

Respondents were however able to clearly point out that HIV/AIDS may be transmitted through having unprotected sex with an infected partner, being born to a mother who is infected with HIV, or through the infected mother’s breast milk. The majority (83.3%) of respondents were also aware that HIV/AIDS could be acquired through blood transfusion. This is a positive result considering Bennell et al¹⁶ findings advised that even though HIV/AIDS transmission through blood transfusion is rare as blood donors are screened before they donate, and blood products are tested before they are used, there is still a likelihood of infection via this route.

All the SHS girls were also aware that using unsterilized instruments or sharing personal items like toothbrushes could

lead to acquiring the virus. Their awareness has a positive impact on prevention of HIV/AIDS considering that sharing items like blades, toothbrushes, pins and needles, cooking and pocket knives, hair and nail clippers, and other sharp objects is a major cause of transmission in less developed countries.¹⁷⁻¹⁹ In the words of one respondent, “until I learnt about HIV/AIDS transmission last term, I used to share nail clippers, shaving sticks and toothbrushes with my cousins every time they came to visit.”

Aside from HIV/AIDS transmissions through sharing personal items, there have been cases of HIV/AIDS transmissions during mass immunizations, blood donations, and during clinical injections. Even though this is a rare occurrence in most countries because the needles and instruments are only used once and disposed of or properly sterilized, the same does not apply to less developed countries where with underresourced health sectors, the misconception that merely washing items makes them safe for repetitive use and the acute lack of instruments significantly increases their level of risk.

Almost all the respondents (90%) were also aware that HIV/AIDS could be transmitted through bodily fluids like blood, semen, vaginal secretions, and breast milk. Follow up questions however revealed that some SHS girls still believed that physical contact with infected persons or sharing public space with infected persons could be a source of transmission of HIV/AIDS. This might explain the relatively high stigmatization and discrimination against PLWHA by their colleagues in schools that was identified by Asiimwe-Okiror et al²⁰ in Uganda.

The above is in sharp contrast to the content of educational materials and information provided by the Ghana Aids Commission, National HIV/AIDS Control Program, and the mass media on HIV/AIDS transmission. These materials clearly explain that it is a scientifically proven fact that physical contact, without the exchange of bodily fluids with an infected person, cannot transmit the virus. In fact, a lot of HIV/AIDS awareness messages in Ghana focus on this point because of the realization that poor awareness of this fact leads to high stigmatization, seclusion, and discrimination of PLWHA. Such perceptions also explain the case made by World Bank²¹ that PLWHA in rural areas and less developed countries are sometimes denied access to public transport, swimming in public pools, fetching water from public standpipes, engaging in contact sports, and other activities that involve physical proximity.

Another contentious issue in the HIV/AIDS dialogue in sub-Saharan Africa is the question of whether HIV/AIDS could be caused by witchcraft or other spiritual factors. Evidence provided by Gregson and Garnett²² suggest that in

the early to mid 1990s when the causes, means of transmission, and prevention were still controversial, most traditional societies in Africa blamed HIV/AIDS, like other inexplicable ailments, on witchcraft and other spiritual causes. However, as information on the virus became available over the years such misconceptions have become less commonplace. It is thus a serious setback for HIV/AIDS prevention that in the 21st century and in the modern Information and Communications Technology (ICT) era where information in HIV/AIDS abounds, as much as 30% of the respondents believed fully or were not sure that witchcraft and other spiritual factors caused HIV/AIDS. Attention must also be paid to studies like that of Bennell²³ that have also unearthed unproven allegations of persons bewitching others with the virus or suffering from the virus as a result of a punishment for offending some spirits.

If such perceptions are still being held by some people, then prevention and even management of new and existing cases of HIV/AIDS are seriously hindered. Instead of getting attention from voluntary counseling and testing centers, hospitals, and other commissioned bodies, PLWHAs as well as persons suspected to be infected are sent to prayer camps for the virus to be exorcised. This not only increases victimization and stigmatization but also increases the risk of infecting church members, family, and friends as well as other victims in these prayer or witch camps.

Prevention and cure of HIV/AIDS

Though trends in modern medicine are far advanced, the world is yet to possess a universally acceptable medically tested cure for the HIV virus.²⁴ This is in spite of the numerous claims by both traditional and orthodox medicine practitioners as well as spiritual healers of curing HIV/AIDS patients. Regardless of these claims and in the interest of public health, the Ghana Aids Commission and the National HIV/AIDS Control Program maintains in Ghana that no scientific cure exists for HIV/AIDS. Rather, it supports medically approved ways including (but not limited to) the use of anti-retrovirals and regenerative health practices as the sanctioned means of managing the disease in order to prolong the life of infected persons, reduce the risk of transmission, and increase the quality of life of PLWHAs and their families. It was therefore surprising that as much as 50% of the SHS girls believed that HIV/AIDS had a scientifically proven cure.

Even more controversial is the notion that herbal or traditional medicine as well as spiritual treatment could cure HIV/AIDS. Though many HIV/AIDS patients or their relatives have come out to substantiate claims made by herbal,

traditional, or spiritual healers of possessing a cure to the virus, such claims are yet to be scientifically confirmed. This notwithstanding, it is not uncommon to hear religious and herbal healers make open claims of curing HIV/AIDS in both print and electronic media adverts often with purportedly infected persons giving testimonies of their healing. This may explain why 43.3% of respondents believed that a herbal or spiritual treatment to HIV/AIDS existed. In buttressing her point, one girl who shared this belief noted that “one of our relatives who had tested positive with HIV/AIDS was cured by Dr Togo (a traditional herbal priest) in Kumasi. I know because after she came back from Dr Togo’s place, she took another test which was negative.”

A number of girls also believed strongly that HIV/AIDS and in fact all the opportunistic infections arising thereof could be cured through anointed men of God. They were quick to share testimonies of several people they had seen on television or heard on radio who had been cured of HIV/AIDS. As put by one respondent: “we have had several people in our church who have been cured of HIV/AIDS. They mostly come and give their testimonies and thanks-offering to God in church after being cured.”

However, some respondents disagreed on the veracity of the claims of being healed from HIV/AIDS accusing those pastors and traditional priests of being charlatans. They accused these pastors and traditional priests of conniving with hired people to give those testimonies in order to ensnare unsuspecting victims. To that end, a respondent recounted that “I had a neighbor who tested HIV/AIDS positive, after going through a number of churches which claimed they had healed him, his conditions got worse and worse till he finally died from HIV/AIDS.”

Further, it is impossible to tell that a person is infected with the HIV/AIDS virus by just looking at him/her. This is because persons with the virus show symptoms not of AIDS but of the opportunistic infections like tuberculosis that they suffer as a result of the deficiency in their immune system. Physically assessing their behaviors as well as change in their bodies cannot be used in any instance as a means of detecting the absence or presence of the virus in any individual. However, 35.4% of the respondents were not aware of this fact but rather believed or were not sure that you could tell that a person was HIV positive by merely looking at them. This is in spite of the HIV/AIDS educational materials that clearly point out that only testing can be used as a determinant of who has or has not. These persons are more likely to stigmatize those who exhibit any form of chronic ailment or who lose weight significantly as an HIV positive patient. Further, as

expressed in the previous sections, these persons are more at risk because of the tendency to relate carelessly with seemingly healthy looking persons who may be infected.

Additionally, it is now accepted globally that knowing your HIV/AIDS status can help prevent HIV/AIDS transmission. Though knowing your status cannot directly prevent infection from the virus, knowing your status is the key step in making decisions on your health. In other words, knowing your status means that you could make choices that can prevent persons around you from contracting the virus (that is, if you are infected) or the know-how to live healthily to prolong your life. It is therefore not surprising that 73.3% of respondents interviewed agreed that knowing their status could help prevent infection. When follow up questions were asked on how many had taken HIV/AIDS tests recently or knew their status, as much as 77% of respondents responded in the negative. Thus, even though they knew that knowing their HIV status was key, only 13% of respondents had taken the test in recent times. An additional 10% had taken the test before but were not sure of their current status. This confirms the Ghana AIDS Commission campaign message that merely testing negative once in your life does not necessarily mean that your HIV status will always remain negative. Rather, the tests must be continuous in so far as you engage in any form of risky behaviors. The fact that 77% of SHS girls had not taken any HIV test before is worrying considering that most girls are sexually active and/or are exposed to other means of contracting HIV/AIDS in their teens in developing countries.^{25,26}

As no scientifically proven cure exists for HIV/AIDS, the universally accepted means of handling the pandemic is prevention. Prevention of HIV/AIDS aims to reduce the risk of infection by encouraging individuals to make healthy sexual life choices. In the 21st century, prevention of HIV/AIDS is seen in the context of abstinence, being faithful, and wearing a condom (A, B, and C). As Seeley and Barnett¹⁴ explain, until a cure for the virus surfaces, A, B, and C remain the best way of handling HIV/AIDS. Disappointingly, only 66.7% of respondents were aware of this fact with the remaining 33.3% disagreeing that A, B, and C helped reduce the risk of getting infected by the virus. In contrast however, 96.7% of respondents were aware that of A, B, and C, abstinence was the best means of preventing infection from the virus.

The study also unearthed a worrying fact that some SHS girls, even though aware of the likelihood of contracting the virus through unprotected sex, were still reluctant to use condoms and other forms of protection for various reasons. As shown in Table 2, as much as 51% of respondents were unlikely to use condoms during sexual intercourse. Though

few questions are raised about transmission of HIV/AIDS through the use of unsterilized instruments, condoms certainly remain highly controversial, since many churches and other religious groups believe strongly that condom use (even among adults) promotes promiscuity.

The efficacy of condoms in preventing HIV transmission is also hotly debated, even among those without strong religious convictions.²⁷ On one hand, it is argued that since condoms do not offer absolute protection (because of improper use, reuse, inconsistent use, use while intoxicated, and manufacturing defects that lead to breakage or bursting), they should not be promoted as a method for preventing HIV transmission. The counterargument is that, since the only options to condom use are total sexual abstinence and having only one sexual partner (which are not realistic options for many youth and adults), condom use must be actively promoted. Bennell et al¹⁶ therefore advises, deriving from the above debate that recent efforts at creating awareness on HIV/AIDS, that prevention among the youth especially in developing countries must not focus merely on the use of condoms but on the correct use of condoms and also on the fact that condoms are not 100% safe but are subject to human error and manufacturing defects.

Conclusion

The study reveals that SHS girls in Ghana generally had adequate knowledge on the basics of HIV/AIDS. The study also shows a positive impact of the HIV/AIDS awareness campaigns by the National HIV/AIDS Control Program, Ghana AIDS Commission, and other stakeholders in SHS in Ghana. However, knowledge on some vital information including the existence of herbal or scientifically proven cures, spiritual causes of HIV/AIDS, the transmission of HIV through body contact, and the determination of persons infected with HIV/AIDS by visual observation is deficient among segments of the students and needs further attention. Particularly, the knowledge and awareness on HIV/AIDS related information did not translate to students' decision to undergo voluntary testing with more than two-thirds of the student population not knowing their HIV status. The study therefore suggests that HIV/AIDS awareness campaigns among SHS students in Ghana in general must pay particular attention to specific issues on the transmission and management of HIV/AIDS. Further, HIV/AIDS prevention drives must move beyond education into encouraging and enhancing voluntary counseling and testing services among students. HIV/AIDS awareness and prevention efforts must also pay close attention to addressing the social, cultural, and religious barriers to condom usage in Ghana.

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Disclosure

The authors report no conflicts of interest in this work.

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