Break the Silence: HIV/AIDS Knowledge, Attitudes, and Educational Needs among Arab University Students in United Arab Emirates

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Abstract

Purpose: In light of increasing spread of human immunodeficiency virus (HIV) in the Middle East, we assessed knowledge, attitudes, and educational needs of young people in United Arab Emirates (UAE), a modern and moderately conservative Islamic country.

Methods: A cross-sectional survey among randomly selected first-year, gender-segregated Arab students at the national university in Al Ain in 2005 was conducted using an adaptation of an anonymous self-administered World Health Organization questionnaire. Knowledge and attitudes were scored.

Results: Response was 89%; 119 males and 148 females. Knowledge scores about HIV/AIDS were low for 75\%, moderate for 24\%, high for \(<1\%\). Although 90\% knew main routes of infection, there were misconceptions about transmission, and only 31\% knew there is no vaccine and 34\% no cure. Religion was stated as a reason to avoid extramarital relationships by 91\% and sexually transmitted diseases (STDs) by 38\%; 94\% favored premarital testing. Attitudes toward people living with HIV (PLH) were neither friendly nor tolerant, including 97\% who felt all people entering UAE should be tested, 53\% that PLH should be forced to live apart, and only 27\% who felt children with HIV should be allowed to attend school. Ninety-six percent stated that young people should be taught how to protect themselves and 57\% that teaching at school was insufficient. Main information sources were books/media; preferred sources were media, schools, and health professionals. Males scored higher on knowledge and were more susceptible to fear of STDs, society, and family; females showed greater compassion and interest in premarital testing and education to protect themselves.

Conclusions: Alarming gaps in knowledge about transmission and curability put young Arabs at risk of contracting HIV. Fear and intolerant attitudes toward PLH were prevalent. HIV/AIDS education designed to raise knowledge and change attitudes, and respectful of community values, is urgently needed from media, schools, and health professionals. © 2007 Society for Adolescent Medicine. All rights reserved.

Keywords: HIV; AIDS; Health promotion; Stigma; Students

We fear things in proportion to our ignorance of them.
Titus Livius

At the end of 2005, about 510,000 people were reported to be living with human immunodeficiency virus (HIV) in the World Health Organization’s (WHO) Eastern Mediterranean and North African regions, which includes the Middle East [1,2]. Although the average HIV prevalence of .2%
in the Eastern Mediterranean region is similar to that of Western Europe, evidence suggests that the epidemic is spreading faster. The outlook could be alarming unless effective prevention strategies are rapidly developed [3].

The United Arab Emirates (UAE) is a modern and moderately conservative Islamic country [4]. It grew from 180,000 inhabitants in 1968 to 4.1 million in 2005 [5,6], 22% were citizens and the remainder mainly foreign workers. About half reside in Dubai, Abu Dhabi, and Al Ain, cities in the two largest of seven emirates. Young people aged 0–19 years accounted for 51% of citizens. In 2005, 32% of adults had completed high school, and 11% had completed university. However, because there are now many universities and technical colleges, 80% of young people today go on to higher education at government institutions; at least 50% complete a degree, diploma, or certificate program, and others attend private institutions at home or abroad [7]. Although the economy and culture were once mainly based upon activities such as desert farming of dates and coastal pearl fishing, today resource extraction of oil along with international shipping and trade, modern date agriculture, real estate, tourism, and other activities dominate the economy. Most citizens live in modern urban housing with an ever-changing blend of traditional and western culture.

Despite rapid development of infrastructure and education in UAE, the number of cases of HIV/AIDS (acquired immune deficiency syndrome) and routes of transmission have been kept confidential and were unavailable in the UNAIDS 2005 global report. Mode of transmission is believed similar to that in neighboring Saudi Arabia, where heterosexual transmission is the main mode—most married and unmarried males acquire HIV from sex workers and most women from their spouses [8]. Nonetheless, this is not certain and an anonymous epidemiological study on transmission would be helpful because infected individuals tend to be unwilling to disclose how they became infected. As in many other parts of the world, prostitution and unsafe sex between males are long established, and exacerbated due to gender imbalances in different locations, institutions, and professions. In the absence of effective harm reduction, such behavior poses significant risks to UAE male youth and their future spouses.

Whereas formerly, society was closed and Islam helped limit the spread of HIV, recent national openness to rapid development has led to employment of foreigners of many nationalities, races, cultures, and religions, together with promotion of UAE as a tourist destination. Ease of international transportation and communication are ever increasing, together with temptation due to media, large differences in incomes, and decreased influence of family and religion, engendering rapid changes in family, cultural, and religious values. Nearby, war and occupation have displaced millions and killed or rendered unemployed many parents, devastat-
five classes in each course, separately for females and males. By systematic sampling every second class was chosen for each course, providing 10 classes for each gender. All present when questionnaires were administered were asked to participate. Our total target sample size was 300 because we wanted to compare genders. Although new surveys with multiple variables do not lend themselves to formal power evaluations, precision generally increases steadily as sample size increases to about 150 to 200, and then falls off [16].

Data collection procedures

University classroom supervisors administered the questionnaires under examination conditions, asking each student to complete it when they passed in their examination. Due to insufficient coordination with a few supervisors, another 50 questionnaires had to be distributed by the investigators among females as they left those classrooms. There were no significant differences in answers between the two groups, so we combined them for analysis. Approval was obtained from the University Ethics Committee and informed consent from each student.

Survey instrument

The questionnaire was an adaptation of a WHO Cross-National Study questionnaire, Health Behavior in School-Aged Children (HBSC) [17] and consisted of 29 closed-ended questions, including 15 on knowledge about HIV/AIDS, one on perceptions and vulnerability, one on reasons for avoiding sexual relationships out of marriage, one on willingness for pre-marital testing, eight on attitudes toward PLH, and three on educational needs. It was piloted on 17 students. Knowledge was scored by “yes/no/don’t know” and other categories by “yes” or “no.” To assess overall knowledge, we developed a score with a point for each answer and defined three levels: low, for correct responses to ≤50% of questions, medium for 51% to 74%, and high for ≥75. Scores on positive attitudes were based on seven items; a question about punishing PLH for transmitting the virus was ambiguous and was excluded. Because no education was provided on HIV/AIDS in schools, we added two questions on students’ expectations, including the best age for instruction and number of hours needed per year. We also added questions on reasons for avoiding sexual relationships out of marriage and on premarital HIV testing. Because Islam prohibits nonmarital sex, homosexuality, and intravenous drug use [4,8], questions on these issues are sensitive. Because this was the first HIV/AIDS survey in UAE, and among students with no HIV education, local colleagues and students requested omission of questions on those practices from the original WHO questionnaire.

Data analysis

Data were doubly entered, compared for errors, and analysed in SPSS (SPSS Inc., Chicago, IL). Differences between observed and expected were assessed using chi-square and independent t-tests, with significance set at \( p < .05 \). Correlation coefficients were used to test association between knowledge and attitude scores.

Results

Response was 89% (269/302), including 119 males, 148 females, and two gender unknown. Mean age was 18.3 years.

Knowledge About HIV/AIDS

Most students knew about the biology of HIV, but knowledge was much less on other knowledge questions (Figure 1).

Although the majority knew the main routes of transmission, many misconceptions existed (Figure 2). Mean ± SD knowledge scores out of 14 were 6.45 ± 2.1 and 5.56 ± 1.8 in men and women, respectively (\( p = .01 \)). Knowledge about HIV/AIDS was low for 75%, moderate for 24%, and only a single student had a high level.

Perception of severity of HIV/AIDS

AIDS was regarded as a serious disease by 99.6% of students.

Sexual relationships in the context of AIDS

According to students, young people should avoid sexual relationships outside marriage because of religion (91%), fear of sexually transmitted diseases (STDs) (38%), fear of society (12%), and fear of family (12%). As for HIV testing before marriage, 94% favored it.

![Figure 1. UAE University Study: HIV Knowledge Questions, Al Ain, United Arab Emirates 2005 (n = 269).](image-url)
Attitudes toward people living with HIV and having AIDS

Nearly all students felt that everyone entering the country should be tested for HIV and that PLH should inform others about their infection (Figure 3). Although many students did say they would visit a friend with AIDS, many also stated that PLH should not be allowed to become teachers and should be made to live apart from the general population. Few believed that children with HIV should be allowed to attend school with other children.

Means ± SD of positive attitude scores out of 7 were 2.44 ± 1.5 and 2.61 ± 1.6 in men and women, respectively ($p = .08$). There was no correlation between knowledge and attitude scores ($R^2 = .03$).

Gender differences in knowledge and attitudes

Males were more knowledgeable overall (Table 1). Females were more willing to be tested for HIV before marriage and more supportive of teaching young people to protect themselves. Females were also more compassionate toward people who contracted HIV. Males cited STDs, fear of society, and fear of family much more often than females as reasons for young people to avoid sex outside of marriage.

Previous and preferred sources of HIV/AIDS information

Students had obtained information on HIV/AIDS from various sources, most frequently books and media such as radio/TV/newspapers (90%), friends and relatives (81%), school (80%), and health personnel (78%). Main preferred sources included media (32%), school (28%), and health personnel (19%).

Educational needs

Ninety-six percent of subjects believed that young people their age should be taught how to protect themselves against HIV/AIDS, 80% said they needed to know more, and 57% that they had not been taught enough at school. As for the best age for schools to provide information, responses included 17–18 years (48%), 16 years (28%), and 13, 14, or 15 years (19%). As for hours per year sufficient to provide knowledge, 29% responded 3 or 4, 54% said 2 hours, and 17% responded 1 hour.

Discussion

This study revealed an alarming lack of knowledge about HIV/AIDS among UAE university students, with only one respondent obtaining a score $\geq 75\%$. Only a third knew that there is no vaccine or cure for AIDS. The fact that most did not know the basics of HIV transmission and that there is no
cure indicated inadequate teaching. With knowledge so limited at university, it is probably lower among persons with less education. Gender differences could reflect existence of segregated programs in government high schools and undergraduate universities.

Although similar problems have been observed elsewhere [15,18,19], the degree of misinformation among UAE students was higher [15,17,20,21]. The belief that a “cure” exists for AIDS is a risk factor for contracting HIV. Although students may have been poorly informed about a cure or vaccine because HIV/AIDS is not of immediate consequence to their daily lives, lack of knowledge could have resulted from conflicting media coverage of AIDS research, because complexity of information on treatments and cures may confuse young people [17]. As in other countries, most participants regarded AIDS as a serious disease [19,21,22] and wanted to know more. Not knowing much, perception of personal risk could be inappropriately low, because appropriate information improves risk perception.

Misinformation probably resulted in support of HIV testing of everyone entering the country. Much lower proportions of students in other countries supported such testing [17,21]. In UAE, testing is mandatory for all foreign workers; tourists, and prostitutes who enter on tourist visas, are excluded. Students may mistakenly believe that universal testing for foreigners would stop transmission of the virus among their own society. HIV antibody screening is not always valid in HIV prevention because the viral load is highest before seroconversion.

Compared with some countries [21,23], liberalization of sexual attitudes in UAE is not evident. Although for 50% of males and 28% of females, fear of STDs was a reason to avoid sex outside marriage, nearly all cited religion as the main reason to avoid extramarital relationships. The UAE shares with other Islamic countries the protective shield of religious values that perpetuate family virtues and provide some safeguard against risky practices such as extramarital relations [3,4].

In UAE, testing for HIV, syphilis, and hepatitis B is mandatory prior to marriage, along with certain genetic diseases. Nearly all students supported premarital HIV testing. Motivations may have included valid reasons such as any probability, even minimal, of exposure to contact with HIV, such as sex with a casual partner, and invalid reasons such as unjustified fears due to misperceptions on sources of infection. The fact that marriages tend to be arranged by parents with specific contractual expectations may be another reason why desire for testing was high.

Our findings revealed gaps in knowledge regarding HIV transmission, together with unfriendly and intolerant attitudes toward PLH. Other studies [18,21,22,24] reported much greater tolerance. Girls showed higher levels of empathy, possibly due to a more compassionate and supportive feminine model of behavior [15,17,18,21]. A main issue in a society’s tolerance toward PLH is acceptance of their civil rights to autonomy in personal decisions, privacy, and freedom from discrimination [25]. It is unknown whether students’ views were due to differences in knowledge, in perceptions of human rights, or to policies that stigmatize PLH.

Effective education and knowledge are tools that offer hope to overcome resistance and barriers such as students’ attitudes [11]. UAE educators should introduce active

<table>
<thead>
<tr>
<th>Question</th>
<th>Correct answer</th>
<th>Total</th>
<th>Males</th>
<th>Females</th>
<th>p-Value</th>
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<tbody>
<tr>
<td>Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Once infected with HIV a person can infect others for his/her entire life</td>
<td>Yes</td>
<td>194</td>
<td>97</td>
<td>82</td>
<td>.004</td>
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<td>A person can be infected with HIV by:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Having unprotected sex with someone who has HIV</td>
<td>Yes</td>
<td>226</td>
<td>109</td>
<td>92</td>
<td>.005</td>
</tr>
<tr>
<td>Mosquito bite</td>
<td>No</td>
<td>24</td>
<td>16</td>
<td>13</td>
<td>.022</td>
</tr>
<tr>
<td>Donating blood</td>
<td>No</td>
<td>24</td>
<td>16</td>
<td>13</td>
<td>.022</td>
</tr>
<tr>
<td>Women are more likely to become infected during their period</td>
<td>Yes</td>
<td>91</td>
<td>47</td>
<td>44</td>
<td>.094</td>
</tr>
<tr>
<td>A new vaccine has recently been developed to prevent AIDS</td>
<td>No</td>
<td>31</td>
<td>20</td>
<td>16</td>
<td>.017</td>
</tr>
<tr>
<td>Sexual relationships in context of AIDS</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I will be keen to be tested for HIV infection before getting married</td>
<td></td>
<td>250</td>
<td>107</td>
<td>93</td>
<td>.071</td>
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<td>Young people should avoid sexual relationships out of marriage because of:</td>
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<td></td>
<td></td>
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<td>241</td>
<td>111</td>
<td>93</td>
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<tr>
<td>Getting STD</td>
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<td>101</td>
<td>59</td>
<td>50</td>
<td>.000</td>
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<tr>
<td>Fear of society</td>
<td></td>
<td>33</td>
<td>25</td>
<td>21</td>
<td>.000</td>
</tr>
<tr>
<td>Fear of family</td>
<td></td>
<td>32</td>
<td>24</td>
<td>20</td>
<td>.000</td>
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<td>Attitudes toward people living with HIV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I don’t feel sorry for people who caught AIDS because it is their own fault</td>
<td></td>
<td>84</td>
<td>47</td>
<td>37</td>
<td>.012</td>
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<tr>
<td>Educational needs</td>
<td></td>
<td>255</td>
<td>110</td>
<td>92</td>
<td>.041</td>
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</table>
teaching methods to disseminate facts about HIV/AIDS and emphasize respect and legitimate human rights for PLH. Open discussion of controversial issues is a challenge. Even programs carefully developed elsewhere should be adapted to local cultural and religious contexts, which facilitates wider distribution of messages among youth. As reported elsewhere [15,18,19,26], books and media were main sources of information, and offer potential to improve knowledge of prevention. Unfortunately, media sources have done little to improve cultural values and prejudices about sexuality or stigmatization of PLH [15,27]. The second category of information sources was family. Transmission of values and attitudes on sexuality from parents to children is inevitable; however, such topics are often taboo, or at least sensitive and highly personal. Furthermore, most families have insufficient knowledge to provide sex education in the context of HIV/AIDS [26].

In addition to mass media, health personnel and teachers were preferred sources of information, probably because media and professionals are perceived as trustworthy and credible [15]. For schools, this indicates an urgent need for specialized training of professionals to reduce gaps in the educational process. Educators should coordinate HIV/AIDS and sex education, and develop locally acceptable methods of teaching about behaviors of youth that contribute to risk of acquiring HIV, such as sex without condoms, multiple partners, substance abuse, and feelings of invulnerability.

Nearly all students wanted more information on how to protect themselves; all teens, regardless of age, gender, religion, or whether sexually active, want to know more [20,22]. Half perceived knowledge from school as insufficient and over three-fourths recommended one to three hours per year of instruction for 16–18-year-olds. Although the current situation is ideal for further education, there is a discrepancy between the reality at schools, with little place for HIV/AIDS education, and students’ expectations.

Contextual factors such as local culture, politics, religion, and social surroundings can be helpful in understanding why young people in the UAE are receiving insufficient HIV/AIDS information. Where religion is dominant in a culture, sexuality is dealt with not only in terms of reproductive, sexual, family, and psychological health, but also religion. Because of fears that HIV and sex education promote high-risk forbidden behaviors, it is considered inappropriate to orient HIV/AIDS prevention specifically to young people as a target group. Many health providers find it difficult to fill the void because of their own cultural, political, and religious views about sexuality of youth. Most lack training and skills to understand their own beliefs and to discuss sensitive topics with adolescents. Although some can provide facts, few are trained in workshops effective to modify attitudes, such as those developed by WHO. Such issues need addressing in many countries, not only the UAE [15,28,29].

Before advocating education as a main means of prevention of HIV among young people, feasibility of other options should be considered. Young women tend to be protected by their families, culture, religion, and society from sexual contact until marriage. Young men are less protected and are at potential risk from prostitutes. Early marriage and/or abstinence are acceptable strategies for protecting young men, but not easy to implement when young women wish to delay marriage to complete postsecondary and professional education.

Islam protects against HIV by promoting family values as well as male circumcision, and by prohibiting nonmarital sex, homosexuality, intravenous drug use, and alcohol [2,3,30]. Other aspects of Islam theoretically useful to prevent HIV transmission by limiting nonmarital relationships are that men can marry up to four women and there is no age limit for marriage, thus limiting extramarital and premarital sex by early marriage [3,4,8,30,31]. In today’s world, however, as noted above, many women delay marriage for educational reasons.

In some Arab countries, limitations of education, economic opportunities, and legal empowerment make women especially vulnerable to contracting HIV [3]. Such factors are less pertinent to UAE youth because the status of women is rising rapidly, with females now in a substantial majority as students in most university faculties, including medicine. Fortunately, the first ruler of the UAE, Sheikh Zayed, instilled into government policies values of religious tolerance and equality, especially for women [32].

Family allocentrism, putting a higher value on family interests than personal ones, is strong in UAE; elsewhere such values are associated with conservative sexual behavior, potentially protective for HIV/AIDS [33]. Nonetheless, not all Muslims are capable of adhering to such high collective standards in their personal sexual lives, as dramatically portrayed by Nobel-prize winning Egyptian author Naguib Mahfouz in his classic saga of a Muslim family, The Cairo Trilogy [34].

HIV cannot easily be stopped at international borders or religious zones because of increasing international interdependence. Large numbers of male workers, tourists, and business travellers generate demand leading to a supply of prostitutes arriving on tourist visas, and therefore not screened. Although it seems bizarre that all foreign workers who enter on a valid work permit undergo periodic HIV testing and prostitutes do not, mandatory testing of sex workers is highly controversial and implementation would be difficult without legalizing a forbidden occupation. Local affluence and travel to high-risk destinations also affect spread of HIV because unfamiliar surroundings can cause people to take health risks they might avoid in their home environment. Intravenous drug use is not believed frequent in UAE, but is expected to increase because it is highly prevalent in some neighboring countries such as Iran [35].
Public health approaches to harm reduction for protection of male youth, although not condoning or encouraging undesirable but prevalent behaviors, could mitigate consequences for society by education about safe sex, such as use of condoms with high-risk partners, and hazards of injectable drugs. Such interventions have been difficult to implement in societies where behaviors necessitating the prevention strategies were forbidden [35–39]. As observed in Africa, when the reality of human sexual behaviors conflicts with high standards upheld by churches, people and their political leaders are reluctant to openly discuss and promote solutions for forbidden and dangerous practices [2,37]. “Safe sex” strategies have been considered unacceptable by most conservative Islamic and Christian leaders for preventing spread of HIV because such methods could be viewed as promoting nonmarital sex, prohibited by religious beliefs [2,30]. Hence governments in North America, Africa, Latin America, and many Muslim countries opposed elements of key proposals for a five-year United Nations package to combat AIDS because of opposition to condoms and/or needle exchanges, or to reference to prostitutes, drug addicts, and homosexuals [2,8,38,39]. Nevertheless, encouraging openness has evolved in Iran to HIV harm reduction dicta, and homosexuals [2,8,38,39]. Hence governments in North America, Africa, Latin America, and many Muslim countries opposed elements of key proposals for a five-year United Nations package to combat AIDS because of opposition to condoms and/or needle exchanges, or to reference to prostitutes, drug addicts, and homosexuals [2,8,38,39].

The foregoing suggests that as the UAE opens itself to the modern world, education of youth about HIV/AIDS and other health hazards will need to keep pace. To be effective, education should be based on sound surveillance and research on incidence, prevalence, and risk factors, and be delivered using evidence-based educational methodologies.

Limitations of study

Because our study was conducted among first-year university students, results may not be generalizable to all young people in UAE. Further research is needed in different settings. Caution is also warranted in generalizing results for students from relatively prosperous, moderately conservative, mainly UAE Arab families to other Arab societies with different socioeconomic levels, cultures, and religious practices. Gender differences may in part be attributable to segregation during undergraduate studies. Nevertheless, our results may be more generalizable to other Islamic cultures with segregated education than research from countries with different cultural and religious qualities.

Although we found no correlation between knowledge and attitude, our ability to detect a correlation was limited because both were clustered at the low end. As to validity of studies using questionnaires, young people, indeed all people, sometimes want to give “right” answers. Anonymous questionnaires help in obtaining unconstrained opinions.

Many studies show that adolescents perceive others, but not themselves, as at risk, thereby distancing themselves from the possibility of contracting HIV [40]. For future educational interventions it would be helpful to explore UAE adolescents’ risk-taking in the context of HIV/AIDS, including drug addiction, premarital, and perhaps even extramarital sexual relationships. Because HIV testing is mandatory before but not after marriage, extramarital relationships probably pose the greatest threat to families. Although religious teaching and values are against such behavior, it is unknown to what degree they are effective among today’s youth.

Because response was nearly 90%, significant selection bias is improbable. Nonresponders were from the same classes as responders, and might have been students who felt rushed because the survey was completed during an examination period. Nonresponders might have been in academic difficulty and, if anything, their inclusion could have made the results even worse.

Conclusions and recommendations

Our study provided data on UAE young peoples’ knowledge, attitudes, and educational needs, a basis for planning educational interventions and future HIV surveys. Misconceptions about transmission and negative attitudes toward PLH were evident. Further research should focus on personal risk behaviors, sexual or otherwise, together with perceptions of personal risk and how HIV is transmitted within UAE culture, together with evaluation of interventions. Most students wanted more information, a need corroborated by their low scores. To meet expectations, valid and practical information should come from several sources. Decision-makers and community leaders, such as health and education administrators and providers, as well as religious leaders, should be mobilized as lobbyists in and out of schools to ensure up-to-date education on HIV/AIDS in the context of local values. Whereas lectures and discussion can transmit information, short workshops are essential for a compassionate understanding of the reality of living with HIV [17]. The country itself would benefit from the “umbrella” of the Joint United Nations Programme on HIV/AIDS (UNAIDS) to implement an HIV/AIDS curriculum. Because openness of government and religious leaders is evolving rapidly, and young people want information to protect themselves and their families, appropriate research and interventions should be welcomed.

Acknowledgments

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