Knowledge, attitude and beliefs towards HIV/AIDS among students of health institutes in Sana'a city

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المعارف والمواقف والمعتقدات حول مرض الإيدز والعدوى بفيروسه بين طلبة المعاهد الصحية في مدينة صنعاء

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الخلاصة: لطلبة الدراسات ذات الصلة بالصحة دور هام في الاستراتيجيات الوطنية للوقاية من مرض الإيدز والعدوى بفيروسه. وتقدم هذه الدراسة تقييماً للمعارف والمواقف والمعتقدات نحو مرض الإيدز والعدوى بفيروسه بين طلبة المعاهد الصحية في مدينة صنعاء، اليمن. وقد أجرى الباحثون مسحاً وصفياً مستعرضاً باستبيان شمل ست مئة طالب تم انتقاؤهم عبر الاعتيان العنقودي. واتضح أن لدى الطلبة مستوى متوسطاً من المعارف حول مرض الإيدز والعدوى بفيروسه (67.6٪ منهم وسطياً كانت معارفهم حول جميع البنود صحيحة). ولو أن 82.5٪ منهم يعرفون أنه يمكن للإيدز أن ينتقل بالجماع بدون عازل ذكري، و87.5٪ يعرفون أنه يمكن أن ينتقل بالمحاقن، و71.8٪ يعرفون أنه يمكن أن ينتقل من دم المصابين بالعدوى، و80.7٪ يعرفون أنه يمكن أن ينتقل من الأم إلى الطفل. وهناك مفاهيم مغلوطة حول كيفية سراية الإيدز (مثل سرايته عبر العناق والتقبيل والتشارك بالطعام وبأحواض السباحة وفي غرف الدراسة) لدى 41.5٪ من الطلبة. وأظهرت المواقف نحو المعايشين لفيروس الإيدز أن 59.8٪ من الذين أجابوا على الاستبيان، يقبلون بهم وهم إيجابيون إزاءهم. ومن الآراء الشائعة بين الذين أجابوا على الاستبيان، من قبيل وجوب معاقبة مرضى الإيدز (65.5٪)، وعزلهم (41.0٪)، ولو أن 86.8٪ منهم قد أعربوا عن استعدادهم لتقديم الرعاية لمرضى الإيدز.

ABSTRACT Students of health-related subjects have an important role in national strategies on HIV/AIDS prevention. This study assessed the knowledge, attitudes and beliefs towards HIV/AIDS among students at health institutes in Sana'a city, Yemen. A descriptive cross-sectional questionnaire survey was conducted on 600 students selected by cluster sampling. Students had a moderate level of HIV/AIDS knowledge (an average of 67.6% were correct on all items). Nevertheless, 82.3% knew that HIV could be transmitted by sexual intercourse without a condom, 87.5% from syringes, 71.8% from infected blood and 80.7% from mother to child. Misconceptions about how HIV is transmitted (e.g. hugging and kissing or sharing food, swimming pools and classrooms) were found among 41.5% of the students. Attitudes towards people living with HIV/AIDS showed that 59.8% of students were accepting and positive. There was a common opinion among respondents that HIV-infected persons needed to be punished (65.5%) and isolated (41.0%); however, 86.8% were willing to care for an HIV-infected person.

Connaissances, attitudes et croyances des étudiants paramédicaux en matière de VIH/sida dans la ville de Sanaa

RÉSUMÉ Les étudiants paramédicaux jouent un rôle majeur dans les stratégies nationales pour la prévention de l'infection à VIH/du sida. La présente étude évalue les connaissances, attitudes et croyances des étudiants paramédicaux concernant le VIH/sida dans la ville de Sanaa (Yémen). Une enquête transversale descriptive par questionnaire a été menée auprès de 600 étudiants sélectionnés par échantillonnage en grappe. Les étudiants possédaient un niveau de connaissances sur le VIH/sida moyen (67,6 % d'entre eux ont répondu correctement à tous les items en moyenne). Toutefois, 82,3 % d'entre eux savaient que le VIH pouvait être transmis par relation sexuelle sans préservatif, 87,5 % par les seringues, 71,8 % par du sang contaminé et 80,7 % de la mère à l'enfant. Des conceptions erronées sur le mode de transmission du VIH (exemples : par des accolades et des baisers ou le partage de nourriture, dans les piscines et les salles de classe) ont été observées chez 41,5 % des étudiants interrogés. Les questions sur les attitudes envers les personnes vivant avec le VIH/sida ont révélé que 59,8 % des répondants étaient tolérants et positifs. Toutefois, ils étaient 65,5 % à penser que les personnes infectées par le VIH devaient être punies et 41,0 % à souhaiter les voir isoler. Malgré tout, 86,8 % étaient disposés à soigner une personne infectée par le VIH.

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Introduction

HIV/AIDS has killed more than 25 million people since it was first recognized in 1981, making it one of the most destructive epidemics in recorded history [1]. The total number of people living with the virus in 2008 was more than 20% higher than the number in 2000 and roughly 3-fold higher than in 1990 [2]. Everyday, over 6800 persons become infected with HIV and over 5700 die from AIDS, mostly because of inadequate access to HIV prevention and treatment services.

An important factor fuelling the spread of HIV/AIDS in developing countries is believed to be poor knowledge about how the disease is spread and how it can be prevented. The results of a survey in Madagascar showed that 68% of participants in the study did not know that vaginal sex with a properly used condom is low risk [3]. A study of students in the Islamic Republic of Iran found that the knowledge of students about HIV/AIDS was only moderate [4,5].

In Yemen AIDS is an increasing public health problem. In 1987 there was only 1 case, while by 2002 there were 1122 cases and the latest figures from 2008 showed the number of people with HIV/AIDS had reached 2075 [6]. Students of health-related subjects have an important role to play in national strategies on HIV/AIDS prevention. The aim of this study, therefore, was to assess the knowledge, attitudes and beliefs towards HIV/AIDS among students at health institutes in Sana'a city and to determine differences by sex and by institute.

Methods

Study setting

Sana'a city has 11 health institutes (1 government institute and 10 private institutes), in which students study for specialities such as physician's assistant, laboratory technician, midwife and pharmacy technician. The institutes provide graduate diplomas after 3 years of study. All institutes are recognized by the Yemeni Ministry of Public Health and Population.

Sample and sampling

This was a descriptive cross-sectional study conducted from January to March, 2010.

The target population was all students studying at health institutes in Sana'a city. The population estimates were 4198 students based on the most up-to-date figures available from the health institutes at the time. The sample size was calculated using *Epi-Info*, version 6.0, taking into consideration the following criteria: population size of 4198; expected frequency of 46% correct responses of participants toward modes of HIV transmission (based on a previous study in 2010 [7]) based on; worst acceptable 42%. The total number of subjects required for our study with 95% confidence level was 522 students; taking into consideration a non-response rate of about 15%, the final sample size was estimated as 600 students.

Cluster sampling was carried out in which students were selected from 6 health institutes within the 10 districts of Sana'a. A sampling frame of all students at the selected institutes, of all grades and specialty area, was used. All institutes had similar numbers of students so we selected 100 students randomly from each institute by a systematic random sampling to give a total of 600 students.

Data collection

Data were collected by the research team using a simplified, structured, self-administered questionnaire completed by students at their institute. It was thought that a self-administered questionnaire would offer participants greater freedom to express their attitudes when compared with the personal interview approach. The codes and names of the courses were identified by the administrative department of each institute. The teachers of these courses were approached at the beginning of each session and given a brief explanation of the study. Permission was obtained for students to take 15–20 minutes at the beginning of the class to complete the questionnaire. Students were instructed not to discuss the questions with their colleagues. If they had any queries, they were encouraged to ask a member of the research team. At the end of the session, the research team checked all questions had been answered and returned any questionnaires with missing information for the students to complete.

The questionnaire used for this study was based on the World Health Organization AIDS programme knowledge, attitudes, beliefs and practices survey in 1988 [8] and on other available literature [9,10]. It was translated into Arabic language and modified to suit the customs and culture of Yemen. The questionnaire started by outlining the benefits and aims of the study and recording the demographic characteristics of the study sample (age, sex, marital status, name of institute, level of education and department of study). The main questionnaire was divided into 4 parts with 22 questions: sources of information about HIV/AIDS (1 question); knowledge about HIV/AIDS, e.g. causative agent and signs and symptoms (6 questions); beliefs about routes of HIV transmission (9 questions); and attitudes towards people living with HIV/AIDS (6 questions). Students were asked to mark the correct answer for each question (yes, no or don't know).

On each question, 1 point was awarded for a correct answer and 0 point for an incorrect choice or no response. Total scores for each student therefore ranged from 0–22. Students with higher scores had greater HIV/AIDS knowledge, good beliefs towards

HIV transmission routes and more accepting attitudes towards people with HIV/AIDS.

The questionnaire was pilot tested on 20 students and was refined accordingly. No substantial difficulties were encountered during the testing and only minor corrections were made. The participants of the pilot study were not included in the final analysis.

Ethical considerations

Researchers informed the study participants about the general objectives of the study and that the questionnaires were anonymous in order to ensure the confidentiality of the information provided. None of the participants refused to participate in the study and informed consent was obtained orally.

Statistical analysis

SPSS, version 16.0, was used to enter and analyse the data. *Epi-Info*, version 6.0 was used to calculated sample size. The percentage of respondents with positive responses was calculated for each question. The total for each section was calculated as the average of the percentage correct responses. The chi-squared test was performed to test for differences in proportions, when appropriate, for categorical variables. $P < 0.05$ was used as the level of significance.

Results

All 600 students completed the questionnaires; no discarded questionnaires or missing information were found. Table 1 summarizes the demographic characteristics of the respondents. The mean age was 19.0 (standard deviation 1.5) years. More than three-quarters (76.7%) were male.

Sources of HIV/AIDS information

Students' sources of information about HIV/AIDS were diverse. Most students reported that mass media (newspapers, magazines, television and radio) were their major sources of information about HIV/AIDS (313, 52.2%), followed by the health institute (133, 22.2%). Some students had received their information from the Internet (111, 18.5%) or from health workers (31, 5.2%). Information was obtained from friends for only 12 students (2.0%)

Table 1 Demographic characteristics of the respondents (*n* = 600)

Variable	No. of students	%
Sex		
Male	460	76.7
Female	140	23.3
Specialty		
Physician's assistant	200	33.3
Laboratory technician	160	26.7
Pharmacy technician	180	30.0
Midwife	60	10.0
Level of education		
1st year	350	58.3
2nd year	200	33.3
3rd year	50	8.3

Knowledge about HIV/AIDS

Responses to the knowledge questions showed that 85.3% of students knew AIDS is a communicable disease (14.7% did not know); 88.6% that HIV is the causative agent of AIDS (11.4% did not know); and 86.0% that the immune system is affected by HIV/AIDS (14.0% did not know) (Table 2). Concerning signs and symptoms 37.7% agreed that fatigue was a symptom, 45.0% were aware that diarrhoea was a sign of HIV/AIDS and 62.1% were aware of weight loss as a sign of HIV/AIDS. Overall, students had moderate knowledge about HIV/AIDS; the average percentage of students answering questions in the knowledge section correctly was 67.6%, while 32.4% were incorrect or did not know.

Beliefs about HIV/AIDS

Table 3 shows the responses to questions about modes of transmission of HIV. A higher proportion knew that HIV could be transmitted by infected syringes (87.5%), by sexual intercourse without a condom (82.3%) and from mother to child (80.7%). There were some misconceptions, however, regarding non-transmissible methods. Fewer respondents knew that HIV cannot be transmitted through hugging and

Table 2 Knowledge about HIV/AIDS among health care students in Sana'a, Yemen (*n* = 600)

Item	No of positive responses	%
AIDS is a communicable disease	512	85.3
HIV is the causative agent of AIDS	532	88.6
AIDS affects the immune system	520	86.0
Signs and symptoms of AIDS:		
Continued tiredness	226	37.8
Chronic diarrhoea	270	45.0
Rapid weight loss	373	62.1

Table 3 Beliefs of health care students in Sana'a, Yemen, about transmission of HIV (*n* = 600)

Item	No of positive responses	%
People can get HIV from:		
Sexual intercourse without a condom	494	82.3
Infected syringes and instruments	525	87.5
Receiving infected blood	431	71.8
Mother-to-child transmission	484	80.7
People cannot get HIV from:		
Hugging and kissing an infected person	416	69.3
Insect bites	342	57.0
Sharing food with an infected person	195	32.5
Sharing public swimming pools	368	61.3
From an infected person in the same classroom	487	81.2

kissing an infected person (69.3%), by bites from mosquitoes and other insects (69.3%) and by sharing public swimming pools (61.3%) and only 32.5% agreed that sharing food with an infected person was not a risk. A high percentage (81.2%) agreed that HIV cannot be transmitted via HIV-positive people in the same classroom. Overall, the average total response rate for acceptable beliefs was 58.5%, while 41.5% of students had misconceptions or did not know the modes of HIV transmission.

Attitudes toward HIV/AIDS

Overall, respondents' attitudes towards people living with HIV/AIDS were moderate and positive—the average proportion with good attitudes was 59.8%—but many students (40.2%) had negative attitudes toward HIV/AIDS patients. Table 4 shows that only 35.2% were willing to live in the same community with HIV/AIDS people and 41.0% thought that people living with HIV/AIDS should be isolated. However, 64.0% would agree to work with people living with HIV/AIDS, 66.2% thought that children living with HIV/AIDS should attend school and 65.5% would punish people with HIV/AIDS. On the other hand, a high percentage of students (86.8%) would be willing to care for a patient with HIV/AIDS in special health setting.

Differences by sex and institute

The sex of respondents was not associated with the number of correctly answered questions on HIV/AIDS knowledge (χ^2 =1.01; $P > 0.181$), beliefs ($\chi^2 = 0.81$; $P > 0.441$) or attitudes. (χ^2 = –1.153, $P > 0.221$). In comparing different institutes, there were no statistically significant differences among students from different institutes in terms of HIV/AIDS knowledge ($\chi^2 = 1.81$; $P > 0.241$), beliefs ($\chi^2 = 2.01$; $P > 1.241$) or attitudes ($\chi^2 = 1.91$; $P > 0.261$).

Discussion

One group at higher risk of HIV/AIDS infection is students, some of whom may lack proper knowledge regarding the disease. Educational institutes therefore have the potential to become the focus of outbreaks, due to their large populations of young adults with high levels of close social contact. Knowledge, attitudes and beliefs studies are very useful tools prior to any intervention to assess the extent to which individuals or communities are in a position to adopt risk-free behaviours [11]. The major limitation of the current study was in designing the questionnaire. Since Yemen has a conservative, religious society, the research team was restricted in asking questions concerning respondents' sexual beliefs and behaviours.

Sources of information about HIV/AIDS

Our study found that mass media (newspapers, magazines, television and radio) were the most common ways for participants to receive information about HIV/AIDS, followed by their institute and the Internet. This study confirms previous research findings from Yemen that television is the current and probably the future leading source knowledge about HIV/AIDS [12]. The fact that television is one of

Table 4 Attitudes of health care students in Sana'a, Yemen, towards people living with HIV/AIDS (*n* = 600)

Item	No of positive responses	%
Willing to live in the same community with people with HIV/AIDS	211	35.2
Willing to care for person with HIV/AIDS	521	86.8
Willing to work with person with HIV/AIDS	384	64.0
People with HIV/AIDS should be isolated	246	41.0
Children with HIV/AIDS should attend school	397	66.2
People with HIV/AIDS should be punished	393	65.5

the few sources of information that is used equally by both males and females is also important as it can be used to increase knowledge that was underlined by this study. On the other hand, health workers had a less important role in educating people. This outcome is similar to other previous studies showing the important role of the mass media in raising people's awareness about AIDS-related problems [13–15].

Knowledge about HIV/AIDS

Overall, the results from our study demonstrated that the students had a moderate level of HIV/AIDS knowledge, with only 67.6% on average having correct knowledge scores. This result is similar to studies conducted among students in Pakistan [16], Yemen [17] and in the Islamic Republic of Iran [4] and among the general population in Bandar-Abbas city, Islamic Republic of Iran [18]. It is also similar to other studies in China which were performed among university students [19–21], but much better than studies in China conducted among other groups, such as hotel attendants [22], criminal suspects [23] and others [24]. Similar results were observed with students of University of Sana'a [25] and in Sana'a city among the general population [12]. In a study conducted in the Islamic Republic of Iran in 2005 Montazeri reported that, despite some misconceptions, respondents had good knowledge about AIDS [13]. These differences may be because of differences in the study populations.

Beliefs about HIV transmission

The total percentage of correct responses about modes of transmission of HIV/AIDS was also moderate (58.5%). Misconceptions about how HIV/AIDS is transmitted—e.g. by hugging and kissing, sharing food or drinking with an infected person, mosquito or insect bites, sharing public swimming pools and studying in the same classroom—were widely prevalent (41.5% on average) and show that students were not getting access to the right information about how HIV is transmitted. These findings were consistent with those of other studies in China [26,27], among young people in Mongolia [28] and Turkey [14] and in neighbouring Arab countries [29]. This issue was also addressed by previous research in Bangladesh and Greece [30,31]. The findings of those studies showed that half of the sample believed that HIV can be transmitted through kissing, using closed swimming pools and through mosquito and insects bites. According to UNICEF "surveys from 60 countries indicated that more than 50% of young people aged 15–24 years had serious misconceptions about how HIV/AIDS is transmitted" [32]. Therefore, providing information about HIV/AIDS transmission that emphasizes the lack of scientific evidence for these beliefs should be a priority for any future information, education and communication campaigns about HIV/AIDS.

Attitudes toward people with HIV/AIDS

On average, the students' attitudes towards people living with HIV/AIDS were diverse; 59.8% were accepting and positive while 40.2% were negative. Most of them would punish people with HIV/AIDS and believed they should receive specialized care in special health settings. Others thought that AIDS patients should not be punished but needed to be isolated. A low percentage of students were willing to live with people having HIV/AIDS in the same community and thought that children with HIV/AIDS should not attend the school. Similar attitudinal problems were found among young people from other developing countries, in the Islamic Republic of Iran [33], India [34] and China [35]. These findings are consistent with the findings of a study conducted in Tunisia [36]. This can be explained by the similar sociocultural setting of the population, especially in the light of religious factors. On the other hand, it may also be explained by the respondents having only moderate knowledge about HIV/AIDS. It has been shown that people in the community who do not know much about AIDS or do not know anyone with AIDS have less positive attitudes towards people living with HIV/AIDS [37]. Such serious attitudinal problems and widespread misconceptions caused by lack of education about AIDS need to be addressed.

Conclusion

In conclusion, there was a moderate level of knowledge among students in Sana'a health institutes, and a number of misconceptions and negative attitudes toward HIV/AIDS were common. These need to be addressed by health education programmes targeting those at higher risk. There should also be a big push to increase education about HIV/AIDS in educational institutes. More research about young people's HIV/AIDS knowledge, attitudes and beliefs needs to be done in Yemen.

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