



HIV/AIDS and Its Prevention: A Cross-sectional Study to Evaluate Knowledge, Awareness, and Attitude among Medical Students

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ABSTRACT

Background and Objective: HIV and AIDS is a major global health problem. The lack of knowledge and misconceptions about its modes of transmission among the public, medical students, and healthcare professionals is accountable for the rapid spread of HIV, social stigmatization and discrimination of HIV infected patients. This study aimed to evaluate the knowledge and awareness about HIV and AIDS and also to know the attitude of medical students towards HIV and AIDS patients. **Materials and methods:** A total of 117 medical students of the 5th year participated voluntarily in this descriptive cross-sectional study. The data was collected in a pretested questionnaire, tabulated and analyzed in Microsoft Excel and SPSS software version 22. The quantitative data were expressed in terms of numbers and percentages. **Results:** The knowledge among students about HIV is satisfactory. All students (100%) were aware of HIV and AIDS, and its causative agent. The majority of students were aware of modes of transmission, diagnostic tests, and major preventive measures. However, only a few students were aware of the availability of anti-retroviral drugs for treating HIV, few had an erroneous belief that HIV is curable and vaccine-preventable. The study also observed misconceptions among students (12-40%) about spreading of HIV such as by mosquito bite, handshaking, sharing toilets, utensils, and food. **Conclusion:** From the results of our study, it is suggested that there is a need for an implementation of HIV and AIDS training programs at regular intervals to medical students at the beginning of their inception into a medical course. This would reduce the knowledge, attitude, and practice gap among medical students.

Keywords: AIDS, Antiretroviral drugs, HIV, Needle stick injury, Sexually transmitted infection

INTRODUCTION

Human immunodeficiency virus (HIV) and Acquired immunodeficiency syndrome (AIDS) is one of the major global health problems associated with high morbidity and mortality [1,2]. It is the leading cause of death in Africa and the fourth leading cause of mortality in the world [3,4]. Acquired immunodeficiency syndrome (AIDS) is a fatal condition resulting from an infection with a retrovirus called as Human immunodeficiency virus (HIV), which breaks down host's immune system and makes the person susceptible for various opportunistic infections, neurological disorders, and unusual malignancies such as Kaposi's sarcoma [5,6]. The first case of AIDS was reported in 1981 in the USA and within a few decades of its documentation, it has spread rapidly across the world [7]. No country in the world including Middle Eastern countries is spared from HIV infection [8].

HIV and AIDS are one of the occupational health hazards and the risk of transmission among healthcare professionals including medical students is high [9-12]. The human immunodeficiency virus is present in various body fluids of the infected person such as blood, semen, vaginal fluid, saliva, breast milk, and others [7,13,14]. Blood transfusion, organ transplantation, use of contaminated needles and syringes, unsafe sexual practices, vertical transmission from mother to baby, and through breast milk are the major modes of transmission of HIV infection [3,8,14]. Studies have also shown that there are misconceptions among the medical students and general public that sharing eating utensils, meal, room, handshaking, kissing, and speaking with infected persons can lead to HIV transmission [3,14,15]. The lack of knowledge and misconceptions contribute to the rapid spread of HIV and social stigmatization and discrimination of HIV infected individuals [3,9].

People of all age groups and gender are susceptible to HIV infection but the prevalence is high among adults because

of their risk-taking behavior such as unsafe sexual practices, sharing of needles and syringes with friends, etc. and negligence towards preventive measures [3,8,15].

In spite of rapid advances in diagnosis and management, the complete cure and vaccine for the prevention of HIV are still unavailable. Hence preventive measures are highly significant for successful controlling of infection [8]. One must be aware that HIV can be prevented by modifying risky sexual behavior, avoiding sharing needles and razors among friends, use of sterile needles and syringes, strict screening of blood donors, and by the use of personal protective equipment by medical professionals [14]. Apart from this, health workers must notify the accidental needle stick injuries and receive post-exposure prophylaxis if necessary. Also, one should be aware of that early diagnosis and early initiation of antiretroviral therapy (HAART) has proven to be effective in prolonging the course of HIV infection and development of AIDS [16].

Health professionals including medical students play a major role in the prevention and control of HIV and AIDS. Therefore instilling the proper knowledge about HIV transmission, prevention, and the right attitude towards HIV patients among medical students is imperative [17]. Many studies conducted in different countries reflected the varied general knowledge about HIV and AIDS among medical and other college students [18-20]. Thus it is important to insight into medical students' knowledge, attitude, and practices towards HIV and AIDS prevention and that would help in developing proper training programs to educate them to have a complete knowledge [21]. Many studies have shown that early educational interventions can have a significant impact on reducing the knowledge, attitude, and practice gap among medical students and other medical professionals [3,22,23]. Hence this study was intended to assess the medical students' knowledge about awareness, transmission and prevention and also their attitude towards HIV and AIDS patients.

MATERIALS AND METHODS

It is a descriptive cross-sectional study conducted at the College of Medicine and Health Sciences (CMHS), National University of Science and Technology (NUST) and the study group included all the 5th year medical students enrolled in the academic year 2018-2019 (sample size is 130 students). The study was approved by the Institutional Research and Ethical Committee (CMHS/REC/002/18/C) and the study was conducted after obtaining prior informed consent from the students.

A pre-designed well-structured questionnaire was the data collection tool and was developed and modified after a thorough scientific literature review [3,6,14,15,17]. The questionnaire was validated for its contents and relevance by microbiology and medicine subject experts. The final questionnaire includes items to assess the various aspects of the participants' knowledge, awareness, and attitude towards HIV and AIDS prevention. The study group was approached for voluntary participation through personal communication. Students were explained about the objectives of the study and the need for their participation. A pre-designed self-administered questionnaire was distributed to all the voluntary participants in the classroom on a pre-notified date and time. The filled-in questionnaire was collected; the data were entered in Microsoft Excel and analyzed using descriptive statistics of SPSS (statistical package for the social sciences) version 22. IBM Chicago. The data were expressed in terms of numbers and percentages.

RESULTS

A total of 117 students of the 5th year completed the survey. The survey revealed that all the students (100%) had heard about HIV and AIDS and its causative agent. The majority of students (82.91%) knew that it suppresses the host's immunity and it can be diagnosed by blood tests (88.89%). Among the participants, 24.79% believed that HIV is a curable condition, 16.24% of the students indicated that it can be prevented by vaccination, while only 35.04% of them were aware of the availability of antiretroviral therapy for HIV treatment (Table 1).

Table 1 Awareness about HIV and AIDS

Awareness	Number of Students with "Yes" Responses (n)
Have you heard of HIV and AIDS?	117 (100.00%)
HIV is caused by a Virus	117 (100.00%)
HIV attacks and destroys the immune system	97 (82.91%)
HIV is curable Disease	29 (24.79%)
HIV can be prevented by the vaccine	19 (16.24%)

Drugs for treating HIV and AIDS are available	42 (35.04%)
HIV can be diagnosed rapidly by blood tests	104 (88.89%)

The students' knowledge about different modes of transmission is fairly good ranging between 83%-98%. However, only 54.7% indicated that HIV is transmitted from the mother to the baby through breast milk (Table 2).

Table 2 Knowledge about modes of HIV transmission

Modes of Transmission	Number of Correct Responses
Transfusion of unscreened blood and blood products	109 (93.16%)
Use of contaminated needles and syringes	104 (88.89%)
Sexual intercourse with an HIV infected person	114 (97.43%)
Sharing of needles/intravenous drug users	101 (86.32%)
Mother to the baby through breast milk	64 (54.70%)
Mother to the baby through the placenta	98 (83.76%)

Table 3 depicts the participants' misconceptions about HIV transmission. A small percentage of students had a misbelief that HIV is transmitted by hugging and handshaking (12.82%), sharing toilets and bathrooms (28.21%), sharing glass and utensils (14.52%), and through the bite of blood-sucking insects (39.32%).

Table 3 Misconception about modes of transmission

Modes of Transmission	Number of Students Responded "Yes"
Hugging and handshaking with an HIV infected person	15 (12.82%)
Sharing toilets and bathroom with an HIV infected person	33 (28.21%)
HIV spreads by the bite of blood-sucking insects	46 (39.32%)
Sharing glass and utensils with an infected person	17 (14.52%)

Table 4 shows students' responses to the questions related to the prevention of HIV. The majority of the students opined that avoiding multiple sexual partners (100%), safe blood transfusion (93.16%), use of condoms (77.78%), and avoiding sharing needles and syringes (74.36%) are important measures for halting HIV transmission. Approximately 70% of the students stated that healthcare professionals should treat all patients as potentially infectious of HIV and HBV. However, only 47.86% of the students had correct knowledge about immediate measures to be taken for accidental needle sticks injuries that would occur during patient care.

Table 4 Awareness about HIV prevention

Awareness about Prevention	Number of Students Responded with "Yes"
Avoiding sex with multiple partners	117 (100%)
Screening and safe transfusion of blood and blood products	109 (93.16%)
Use of condoms	91 (77.78%)
Avoiding sharing of needles with intravenous drug users	87 (74.36%)
Health professionals should treat all the patients as if potentially infectious of HIV and HBV	83 (70.94%)
Immediate measure one should take following accidental needle stick injury includes	
Wash with soap and Water	12 (10.26%)
Inform the infection control head	39 (33.33%)
take post-exposure prophylaxis	10 (8.55%)
All of the above	56 (47.86%)

The study also measured students' attitudes towards HIV and AIDS patients (Table 5). The majority of the students indicated that they have a willingness (69.23%) to treat HIV patients and 88.03% believe that it is an ethical responsibility of every healthcare worker. While 55.56% of the respondents opined that the fear about HIV transmission is a hindrance for providing proper health care to HIV patients. With regards to attitudes, 43.59% of respondents opined HIV patients should be treated in isolated wards, 28.21% said that they will end the relationship with HIV infected person, and approximately 38% of the students indicated that they were afraid of buying or sharing food items with HIV infected persons.

Table 5 Attitude of the students towards HIV and AIDS patient

Questions related to attitude towards HIV	Yes	No
Will you treat a patient who is HIV positive?	81 (69.23%)	36 (30.77%)
Do you think treating an HIV positive patient is a doctor's ethical responsibility?	103 (88.03%)	10 (11.97%)
Do you think the fear of HIV transmission from the patients in a hindrance in providing medical care by the health care workers to HIV patients?	65 (55.56%)	47 (40.17%)
HIV infected person should be isolated and treated	51 (43.59%)	66 (56.41%)
If I know that my friend has HIV infection, I will end the relationship	33 (28.21%)	84 (71.79%)
Would you mind buying food items from a food seller who has been diagnosed with HIV?	73 (62.39%)	44 (37.61%)
Would you mind sharing a meal with your close friend or family member who has been diagnosed with HIV?	72 (61.54%)	45 (38.46%)

DISCUSSION

The HIV infected people face severe discrimination from the community as well as from the healthcare professionals. Inadequate knowledge about HIV transmission and fear of getting infected from HIV positive individuals is bestowed for this indifference attitude of the people and healthcare workers towards HIV and AIDS patients. This would lead to the deprivation of HIV infected persons from proper medical care by healthcare workers. Inculcating proper knowledge about HIV and AIDS in medical students and other healthcare professionals is a critical component for reducing a gap of HIV related knowledge, attitude, and practice [24]. Several studies conducted globally have shown that medical education plays a pivotal role in improving knowledge and changing the attitude of healthcare workers and medical students towards HIV and AIDS patients. The present study evaluated the fifth-year medical students' knowledge and attitude towards HIV and AIDS patients.

In the present study, it was observed that all students had heard about HIV and AIDS and its causative agent and the majority of them knew that it attacks and destroys the immune system. However, their awareness with respect to transmission, treatment, and prevention of HIV is inadequate. These results were in line with the observations made by Parcaoglu, et al., [7]

It was encouraging to observe that the majority of the students knew about the availability of blood test for rapid diagnosis of HIV (88.89%). This finding is slightly lower than the similar observations made by Parcaoglu, et al., on medical students (97.06%) [7]. The data of our results pertaining to treatment and prevention of HIV shows lacunae in students' knowledge as only a few students were aware of the availability of drugs for HIV treatment (35.04%) and few had a misapprehension that HIV is curable (24.79%) and vaccine-preventable (16.24%) condition. HIV is neither curable nor vaccine-preventable and hence the best way is its prevention which can be achieved through health education. Similar observations were reported by several studies conducted across the world [25-27].

The knowledge about transmission of HIV infection through sexual contact, by blood or its products, and by contaminated needle and syringes was fairly high (83-98%) in our study participants. However, only 54.70% of them were aware of its transmission to infants through breast milk. A similarly high percentage of results about the knowledge of HIV transmission among the participants was reported by many other similar studies [15,19,25,26]. It was observed that few students had a misconception about the modes of transmission by insect bites (39.32%), sharing toilets (28.21%), sharing glass and utensils (14.52%), and hugging and handshaking (12.82%). Many other studies have revealed similar misconceptions about modes of transmission among the participants [3,14-15]. These misconceptions may hinder their efficiencies in providing health care services to affected individuals in the community. Hence these misconceptions need to be alleviated during their medical teaching and training programs.

It was good to observe that the majority of our participants were aware that strict screening of blood donors, use of sterile needles and syringes, avoiding sex with multiple partners, and use of condoms are important preventive measures. These findings are in conformity with the observations made by Shankar, et al., and Kumar, et al., [15,19]. Centers for disease control (CDC) and prevention recommends that all healthcare workers should strictly adhere to universal precautions and treat all patients considering them as potentially infectious of HIV and HBV regardless of their HIV and HBV status [28]. This might be due to the fact that not all patients know about their HIV status and some patients hide the information from healthcare professionals. Therefore it is extremely important to follow universal precautions routinely to avoid transmission from patient to health workers and also from one patient to

another patient. Approximately 71% of our participants knew this fact and these results were consistent with a study conducted by Sukhvinder, et al., [11].

In the present study, nearly 50% of the students lack adequate knowledge regarding immediate measures to be taken in case of needle sticks injuries. The immediate measure of accidental needle stick injury involves taking first aid in the form of washing the wound thoroughly with soap and water. Further, empiric prophylactic antiretroviral therapy is indicated if the risk of HIV in a patient is high and no laboratory facilities available to obtain rapid HIV test results [11,29].

In our study, the majority (88.03%) of the respondents indicated that it is a moral responsibility of all healthcare professionals to treat HIV and AIDS patients. However, only 69.23% of participants stated that they have their willingness to treat patients living with HIV and AIDS. These results were consistent with similar studies conducted by Fotedar, et al., and Seacat, et al., [1,30].

An unethical behavior or indifference attitude of the healthcare workers towards people living with HIV and AIDS has been documented by several studies and this would interfere with effective prevention and management of HIV and AIDS [14]. The fear of treating HIV infected patients is most likely due to inadequate knowledge of HIV transmission among healthcare workers. In our study, almost 50% of the participants believe that the risk of HIV transmission from infected patients is a hindrance to providing proper healthcare to HIV and AIDS patients. Nearly 40% of the respondents indicated that HIV patients should be treated in an isolated room. These findings were consistent with the results of a study by McCarthy, et al., but were comparatively higher compared to the reports of Crossley, et al., [31,32]. According to current guidelines, healthcare professionals must not refuse to treat a patient solely on the facts of HIV [10].

Our study results revealed a negative attitude among one-third of the respondents towards HIV and AIDS patients. The participants responded that they would not share a room, not use any items of an infected person, and not share a meal with an HIV infected person. This is due to a misconception about modes of transmission and could lead to stigmatization and discrimination of HIV positive individuals in society. Therefore it should be emphasized in medical training programs and seminars that HIV is not transmitted by having a social relationship with people living with HIV and AIDS [7].

The results of the present study cannot be generalized since the study sample size was small involving only 5th-year students of CMHS. The study results could have been more meaningful if the study was conducted with a larger sample size by including all the students of CMHS and possibly students of other medical colleges in Oman.

CONCLUSION

This study was undertaken to assess the knowledge and attitude towards HIV and AIDS patients among the undergraduate medical students of basic medical sciences, who have not yet exposed to the patients. The results of this study revealed that medical students have a knowledge deficit concerning some crucial aspects of control and prevention of HIV and AIDS. Therefore, it is suggested that there is a need for the development and implementation of proper training programs in HIV and AIDS at the beginning of their inception into a medical course. The dissemination of accurate knowledge among healthcare workers and medical students contribute immensely to spread awareness among the public and also to change their attitudes towards patients living with HIV and AIDS.

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