

# A Study to Assess the Level of Awareness in Medical Students about HIV and AIDS

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## ABSTRACT

**Background:** Healthcare providers have faced potentially lethal infection risks throughout history but HIV/AIDS has motivated doctors and healthcare workers to address occupational health risks. Exposure to blood-borne diseases during clinical training of medical students raises medical, legal, ethical and professional issues. Students are at greater risk of sustaining blood-borne disease exposure as they are not aware.

**Aim:** The aim of the present study was to examine the knowledge and attitude of medical students regarding HIV/AIDS.

**Materials and Methods:** A cross-sectional survey was carried out among 200 medical students to assess their awareness of the disease and its prevention. In a classroom setting, an anonymous, self-administered questionnaire eliciting information about the etiopathogenesis of the disease, precautions to be taken in handling HIV/AIDS patients, disinfection and attitude was circulated. Data entry and analysis were carried out using MS excel 2016.

**Results:** The response analyses showed that majority of students were aware of the etiopathogenesis, mode of transmission and precautions of HIV/AIDS. Few students (10%) knew how the virus could be deactivated and the types of high-level disinfectant agents used. Most of them knew the correct methods for collection and transportation of blood

samples. None were aware of the exact management and notification of accidental exposure. Student willing to work with HIV/AIDS patients was very less (5%) but increased to (15%) if proper training was given and doctors are covered under insurance. Few students (20%) were aware of the 'universal precautions'. All students were aware of the concept of safe sex.

**Conclusion:** Our findings highlight the need for a training programme in "universal precautions" for medical students to help minimize the risk of transmission and to improve knowledge, skill and competency in treating HIV/AIDS patients.

**Key words:** Medical Students, HIV, AIDS.


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## INTRODUCTION

Globally, the number of people living with HIV is estimated to be nearly 33.4 million as per year 2008 data. Number of estimated people with newly infected HIV and AIDS related death stood at 2.7 million and 2.0 million. Nearly, 40 % of new hiv infection was among the age of 15 – 24 years.<sup>1</sup>

In India, overall prevalence among different population groups continues to reflect the concentrated epidemic situation in the country with 2.3 million people living with HIV/AIDS and estimated adult prevalence of 0.34 % (0.25-0.43%).<sup>2</sup>

Healthcare providers have faced potentially lethal infection risks throughout the medical history but HIV/AIDS has motivated doctors and other healthcare workers to address their occupational health risk with a greater intensity.<sup>3,4</sup>

The HIV retrovirus undergoes rapid mutation making it impossible to prepare an effective vaccine. The mode of transmission is through sexual intercourse and the disease is spread from human to human via blood and body fluids.<sup>5</sup> The best way to minimize the spread of this infection is by educating people.

Young medical students just completing their pre-clinical training are exposed to patients and are expected to perform minor bed side, surgical procedures where they are likely to get exposed to infective clinical waste, blood products or accidental injuries by sharp instruments during these clinical postings. Students therefore face a greater risk of acquiring this blood-borne disease. Coupled to this, the rate at which HIV positive cases are increasing is becoming more of a threat to medical students,

healthcare workers and the government. Reports have already shown that healthcare providers have a 0.3% risk of acquiring HIV following a contaminated needle stick injury.<sup>6,7</sup> Accidental exposure to blood-borne diseases during clinical training of medical students therefore raises medical, legal, ethical and professional issues for students, faculty and administrators.

A large number of accidental exposures to infected clinical material and procedure can be prevented through knowledgeable handling of sharp instruments and blood products. Therefore, the concept of "universal precautions" was introduced by the World Health Organization (W.H.O.) which is a set of guidelines that aim to protect people working in health care from blood-borne infections.<sup>8</sup>

The aim of the present study was to examine the general awareness of medical students in SGRRIMHS, Dehradun about HIV/AIDS. In particular, knowledge and attitude of the medical students was assessed using a cross-sectional survey.

## MATERIAL AND METHODS

### Study Design, Setting, Participants and Data Collection

The present study is an anonymous random cross-sectional survey which was done among the 200 medical students at the SGRRIMHS, Dehradun from Jan 2019 to August 2019. The study aims were explained to the students and verbal consents were obtained from them. They were advised that participation in the survey was anonymous and voluntary. They were also informed that gender and age would be the only personal information required.

A questionnaire containing fifteen items was circulated in a classroom setting. The students were given 60 minutes to complete the questionnaire to assess their awareness about HIV/AIDS. Information was elicited about the etiopathogenesis of the disease, precautions to be taken in handling the patients, disinfection methods and attitude towards HIV/AIDS patients.

## RESULTS

The total number of respondents was 200 within the age group of 18 to 24 years. Majority of the students were females (54%). The data analyses showed that majority of students were aware of the etiopathogenesis of the disease.

98% of respondents indicated correctly that the causative agent was a virus. Only 1.5% of the population believed that a bacteria or fungus were the causative agents of HIV whereas 0.5% indicated that a protozoa was the causative agent. Regarding systems involved, 92% indicated correctly in their responses that the immune system was the major system affected whereas 2% believed it to be the musculoskeletal system, 2% the vascular system and 4% the nervous system.

The majority of respondents (80%) rightly select that the virus attacked white blood cells whereas 14% believed that red blood cells were attacked and 6% believed that platelets were attacked.

Regarding the transmission of infection, 90% students rightly believed that the infection was commonly transmitted by sexual intercourse/transfusion of infected blood/sharing of infected needles. Few students had misconceptions about the mode of disease transmission with 8% thinking that the disease could be spread by sharing utensils, 4% by shaking hands with infected persons and 8% by using public toilets.

Awareness about infected clinical material responsible for transmission of infection, 80% respondents, infection spread through infected blood transfusion and blood products and this was the correct response. In comparison, few students believed that other bodily excreted material spread the infection such as stool indicated by 6%, saliva indicated by 12% and sweat indicated by 2% of the student population.

In general, a wide variety of responses in this area was observed. 40% students indicated that the virus can be inactivated by boiling instruments and the time required for this was 60 minutes, 25% believed it took 40 minutes, whereas 25% believed it took 10 minutes and only 10% answered correctly that it took 20 minutes.

It was noted that the chemical agents used as high-level disinfectants to inactivate the virus were glutaraldehyde as answered correctly by 10% of students, chlorine (30%), sodium hypochlorite (35%) and benzene (25%).

Respondents had varying concepts regarding the use of gloves while handling body fluids and collecting blood samples from a patient. 90% of students were correct and indicated the need for gloves to be used whereas 10% felt that gloves were not required. Regarding transporting samples to the laboratory, the majority of students (60%) were right and indicated that using disposable screw capped bottles in a closed container was the best way of transporting blood samples to the laboratory. 5% thought an ordinary rubber bottle was sufficient, 10% felt bottles with screw caps were adequate whereas 25% indicated that using disposable screw capped bottles in an open container was the best method of sample transportation to the laboratory.

The data collected for the responses on how to do needle disposal and what to do in case of accidental needle stick injury. Regarding disposal of used needles, 32% of students select the right answer indicating that uncapped needles should be placed in a puncture resistant container as a disposal method. 8% respondents suggested that the needle should be destroyed after use. A few students (60%) indicated that the needle should be recapped before disposal, 0% suggested that the needle can be re-used after boiling.

In the case of accidental exposure to body fluids or injury by needle or sharp instruments, the correct protocol was to immediately wash the exposed area with soap and water and then notify a senior doctor along with higher authorities and start post exposure prophylaxis. Only 36% of respondents suggested the correct protocol, while 64% indicated getting a blood test for HIV infection only.

Regarding the concept of safe sex, 100% of respondents agreed to the use of condoms with a single partner which was the correct response.

The willingness to treat HIV/AIDS patients was however low. Only 5% were ready to handle HIV/AIDS patients. If adequate training was provided along with insurance coverage and adequate compensation in case of acquiring infection as an occupational hazard, then willingness increased to 15%.

Regarding universal precautions, only 10% of respondents were aware of this.

## DISCUSSION

The present study was conducted to assess the knowledge and attitude of medical students in SGRRIMHS, Dehradun about HIV and AIDS. An anonymous cross-sectional survey was carried out

among medical students. The purpose of the study was explained to the students to minimize any apprehension. The group of respondents ranged between the age group 18 to 24 years.

Regarding the transmission of infection, a subset of students had misconceptions about the mode of disease transmission thinking that the disease could be spread by sharing utensils, by shaking hands with infected persons or by using public toilets. These results indicate the importance of getting over the misconceptions, myths and stigma, that also have been reported previously amongst students in other studies.<sup>9-11</sup> A teaching curriculum should contain comprehensive information about HIV/AIDS and associated medical, ethical and legal issues will be beneficial in alleviating these negative attitudes and thus assist in improving the health care system.

In the present study, the medical students had varying concepts regarding the use of gloves while handling body fluids and collecting blood samples from a patient however, 90% of them indicated that gloves should be used while handling body fluids and collecting blood samples from a patient.

According to a study conducted by Diekema DJ et al. (1995)<sup>12</sup>, 95-99% students agreed to use gloves while handling blood and body fluids. Overall, their findings are similar to ours in that only 10% of our students felt that the use of gloves was not required.

An interesting observation made in the present study was that minority of the students were aware about notification to the senior doctor or higher authorities in case of accidental exposure to body fluids or needle stick injury. In another study, 47 students received needle stick injury but only 14 students reported the incident to a senior consultant.<sup>13</sup>

According to a study by Norsayani and Noor Hassim.<sup>14</sup> The numbers of episodes of needle stick injury decreased with proper use of universal precautions. The group also reported that medical students faced a higher risk of needle stick injury. These findings are in agreement with those by Esin and co-workers<sup>15</sup> who reported that knowledge of post exposure prophylaxis against HIV infection was very low.

In another study conducted in Nigeria and Delhi, proportion of respondents who were aware about existence of anti-retroviral drugs for HIV/AIDS was 52.6 % and 28.6 % respectively.<sup>16,17</sup> But our study recorded 27.4% for the same indicator in spite of availability of free ART in India.

In the present study, the willingness to treat HIV/AIDS patients was low; however, if adequate training was provided during pre-clinical years, then willingness increased thus indicating the need for a proper training session. Our findings are in alignment with the study by Diekema and group<sup>12</sup> who also reported that willingness to handle HIV positive cases increased after a post training session.

Only a minority of students in our study were aware of universal precautions. Diekema and group<sup>12,18</sup> observed that after a proper training session, knowledge about the universal precautions was much improved. However, Kwee and Ka'anehe<sup>19</sup> stated that knowledge of universal precautions may not correlate with minimized risk of occupational exposure among medical students. Helfgott and group<sup>20</sup> observed that knowledge about the universal precautions was 100% among the resident doctors of Gynaecology and Obstetrics, while overall compliance was only 89%. Based on our findings, we recommend that the teaching

curriculum should have adequate coverage regarding universal precautions in order to increase knowledge in this area.

Our study has provided information on the general awareness of medical students to HIV/AIDS and highlights the need for early and relevant training. In conclusion, the devastating outcome of this global pandemic can be reduced by prevention of HIV/AIDS. This can only be achieved by educating our medical students, health care professionals and the general public.

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