

“EVALUATION OF KNOWLEDGE AND AWARENESS ABOUT BLOOD BORNE INFECTIONS IN MEDICAL & PARAMEDICAL STUDENTS AS WELL AS HEALTH CARE WORKERS OF TERTIARY CARE HOSPITAL”

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Abstract

Introduction: In developing countries, nosocomial transmission of blood borne infection is terrific hinderance, largely due to reduced resources, limited education on infection control and fewer enforcement structures. **Aims:** The present study aimed to provide information on the level of awareness, knowledge, and attitude among medical and paramedical students as well as the health care workers about blood borne infections. **Methods:** This prospective cross-sectional study included a total of 449 participants. Out of which 177 (39.42%) were medical students, 103 (22.94%) were paramedical students and 169 (37.64%) were health care workers of tertiary care hospital. Anand. Pre-validated Google form questionnaire consisting of three sections were used to assess the knowledge and awareness about blood borne infections. **Result:** The results of present study shows that the knowledge and awareness regarding section I (General precautions to be taken) and section II (mode of transmission, signs, and symptoms) were statistically significant (p value: 0.000) and very poor hence need more educational programs to be conducted to increase the level of significance. **Conclusion:** The present study concludes the need of the educational programs on universal precaution to increase awareness and also to build up positive attitude towards blood borne infections. It will help in reducing the risk of transmission in the students as well as healthcare professionals and will improve knowledge, skills, and competency in treating infected patients.

Keywords: Blood-borne infections, occupational exposures, health care workers, students

INTRODUCTION

Blood borne infections are one of the huge obstacles faced by developing nations and is destroying the lives and livelihoods of million people. Medical & paramedical students and health care workers are at high risk to face contaminated needle stick injuries, sharp injuries, and splash of infected blood and body fluids on to damaged skin or mucous membranes that may pose significant risk of transmission of blood bone infections such as Hepatitis B virus, Hepatitis C virus and human immunodeficiency virus (HIV) and therefore acquiring blood borne cases. According to world Health Organization (WHO), approximately 40% of hepatitis B and C infections and 2.5% of the HIV infections among health care workers are attributable globally to infected blood and body fluids exposures at work [1]. WHO has also reported that 90% of reporting of occupational exposures is from the developed world [2].

In the health care setting, blood-borne pathogen transmission occurs predominantly by percutaneous or mucosal exposure of workers to the blood or body fluids of infected patients. Occupational exposures that may result in HIV, HBV, or HCV transmission include needlestick and other sharps injuries; direct inoculation of virus into cutaneous scratches, skin lesions, abrasions, or burns; and inoculation of virus onto mucosal surfaces of the eyes, nose, or mouth through accidental splashes. HIV, HBV, and HCV do not spontaneously penetrate intact skin, and does not transmit through airborne route [3].

Young medical and paramedical students are exposed to patients and are supposed to perform procedures involved in minor bed side and patient care as well as minor surgical procedures where they are likely to get exposed to infective clinical waste, blood products or accidental injuries by sharp instruments. It is necessary to have enough knowledge to reduce the risk of occupationally acquired blood borne infections and it also necessary to change their attitude towards care of blood borne infectious patients when they enter clinical practice. Adequate teaching through educational programs aimed at creating awareness regarding the mode of transmission and prevention of blood borne infections could be done for protecting

themselves as well as others who encounter these deadly diseases [4].

Health-care professionals are also at a significant risk of being exposed to blood and body fluids as a result of stick injuries, and hence of contracting blood-borne illnesses. Needlesticks and sharp injuries have been documented to transmit at least 20 different diseases. [1,3] Hence, Students and Health care workers are more likely to be exposed to blood borne infections as they become increasingly involved in patient contact during their training. [2] The needle stick injuries are a major source of infections with bloodborne diseases like Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and Human Immunodeficiency Virus (HIV). There are also many different bloodborne pathogens that includes malaria, syphilis, and brucellosis. The risk of transmission of the infection after exposure to percutaneous injuries with infected blood is 2– 7% for HBV, 2– 10% for HCV, and 0.3% for HIV. [4]

Very few studies have been conducted to assess the knowledge and awareness of medical and paramedical students as well as health care workers regarding blood borne infections in the Gujarat. Thus, the need arises to take up this study to assess the level of knowledge and awareness regarding blood borne infections recommended for preventing of their transmissions.

METHODS:

This was a prospective Cross-sectional study and carried out after the approval from Institute Ethics Committee during the period of June 2021 to June 2022. Pre structured Google form questionnaire validated by Hospital Infection Committee member and Institute Ethical Committee Member, Shree Krishna Hospital was circulated to all the medical and paramedical students of Bhaikaka University and Health care workers of Shree Krishna Hospital, Karamsad after taking their informed consent. A total of 449 participants responded to the google form and included in the study. Out of which 177 were Medical and 103 were paramedical students of Bhaikaka University and 169 were health care workers of Shree Krishna Hospital, Karamsad.

A total of 17 questions were included in the questionnaire and divided in three different sections. Section I included six questions regarding general precautions to be taken, Section II included five questions regarding mode of transmission, sign and symptoms of infections and Section III included six questions regarding vaccination and exposure prophylaxis. The languages of the questions used were English and local language (Gujrati). The participants were anonymously responded to the items on the questionnaire.

Statistical Analysis: The responses were analysed in the form of percentage. Inter-group comparisons were performed using the chi-square method of statistical significance between different branches of the students and health care workers. P value less than 0.05 were considered to be statistically significant.

RESULTS:

A total of 449 participants were included in the study. Out of which 177 were Medical and 103 were paramedical students of Bhaikaka University and 169 were health care workers of Shree Krishna Hospital, Karamsad.

Table 1: Demographic characteristic of study participants (N= 449)

Age in years	Male (%)	Female (%)	Total (%)
11-20	44 (9.79%)	131 (29.17%)	175 (35.07%)
21-30	42 (9.35%)	156 (34.74%)	198 (44.09%)
31-40	3 (0.66%)	34 (7.57%)	37 (8.24%)
41-50	0 (0%)	25 (5.56%)	25 (5.56%)
51-60	2 (0.44%)	12 (2.67%)	14 (3.11%)
Total	91 (20.26%)	358 (79.73%)	449 (100%)

As per table 1, total of 91 (20.26%) males and 358 (79.73%) of females responded to the google form questionnaires. Among these Maximum 198 (44.09%) responses were received from 21-30 years of age group followed by 175 (35.07%) from 11-20 years and 37 (8.24%) from 31-40 years of age group.

Table 2: A level of knowledge and awareness about blood borne infections in Medical, Paramedical students and health care workers. (N= 449)

No.	Sections	Medical Students (n=177)	Paramedical Students (n=103)	Health Care Workers (n= 169)	P value
1	General precautions to be taken	34 (7.57%)	14 (3.11%)	76 (16.92%)	0.000
2	Mode of transmission, signs, and symptoms	26 (5.79%)	34 (7.57%)	56 (12.47%)	0.000
3	Vaccination and exposure prophylaxis	7 (1.55%)	2 (0.44%)	5 (1.11%)	0.695
	Total	67 (14.92%)	50 (11.13%)	137 (30.51%)	0.000

As shown in Table 2, Out of 449 respondents, 177 (39.42%) were medical students, 103 (22.93%) were paramedical students and 169 (37.63%) were healthcare workers.

In section: I (general precaution to be taken) only 34 (7.57%) medical students, 14 (3.11%) paramedical students and 76 (16.92%) health care workers has given correct answers to all questions of the section. Furthermore, Health care workers shows higher knowledge compare to medical and paramedical students.

25.39% respondents believed that used needle should put in a red bag in the trash, 4.90% believed that it should be thrown in the trash with all the other garbage. Only 67.04% participants given correct answer that the used needle should be put in an appropriate sharp container. 9.35% participants said that gloves are not single used items and should be reused whereas 90.42% participants agreed that gloves are single used items and it should not be reused.

The data analysis of section II (mode of transmission, signs and symptoms) shows that only 26 (5.79%) medical students, 34 (7.57%) paramedical students and 56 (12.47%) health care workers were aware about mode of transmission, signs and symptoms of blood borne infections which also represents the higher knowledge in health care workers compared to the students.

88.19% participants believe that blood borne pathogens are disease causing microorganisms that are present in human blood and body fluids whereas (2.70%) participants still believe that they are present in river water or certain kinds of soil.

10.24% study participants stated that hepatitis B can be caused by toxic substances, 7.13% believed that it can be caused by eating non-hygienic food whereas only 51.23% answered correctly that hepatitis B can be caused through contact with infected blood or body fluids in absence of protective wears.

The result of section III shows the knowledge of students and healthcare workers regarding vaccination and exposure prophylaxis of blood borne infections, in which only 07 (1.55%) medical students, 02(0.44%) paramedical students and 05 (5.11%) healthcare workers gave the correct answers. It represents a very poor knowledge in the students as well as health care workers regarding vaccination and exposure prophylaxis.

Only 65.92% study participants knows that if Hepatitis B vaccine series is not completed then one should resume the vaccine series at the earliest. Whereas 18.04% participants believe that vaccine series need to be restarted and 02.00% believe that series does not need to be completed.

The results of present study shows that the knowledge and awareness regarding blood borne infections in medical, paramedical students and health care workers were statistically significant (p value: 0.000) and very poor hence need more educational programs to be conducted to increase the level of significance.

DISCUSSION:

The goal of the current study was to evaluate the level of awareness and understanding of blood-borne illnesses among medical students, paramedical students, and healthcare professionals. The responders were a diverse bunch, ranging in age from 18 to 50 years. Some students held false beliefs about how diseases are transferred, believing that they may be spread through sharing utensils, shaking hands with infected people, kissing on the cheeks, mosquito bites, or using public restrooms. According to a study conducted among slum dwellers in Chennai, 67 percent of men and 55 percent of women were aware of the sexual mode of transmission, but 45 percent of men and 62 percent of women believed AIDS could spread through mosquito bites. [5] In contrast, only 5.79 percent of medical students, 7.57 percent of paramedical students, and 12.47 percent of healthcare professionals were aware of the mode of transmission in our study. In a study of Karnataka, India, 98% of participants were aware of the route of transmission, and just 8% believed that AIDS could spread through mosquito bites [6]

which in favour of the current study that showed 90 percent of students were aware that HIV transmission occurs through sharing needles. An intriguing finding from the current study was that only a small percentage of students were aware that a senior doctor or higher authority should be notified in the event of an accidental exposures to body fluids or a needle stick injury. Agarwal et al. made a similar finding in their study. [7] In one more study by Saleem et al. only 14 out of the 47 students who suffered needle sticks injury reported the incident to a senior expert.[8] According to Norsayani and Noor Hassim's research.[9] the incidence of needle stick injuries decreased with the effective application of general precautions. They noted that there was a higher risk of needle stick injuries in medical students. These in favour of the study done by Esin at al. [10] who claimed that very little was known about post-exposure prophylaxis against HIV infection. In contrast to healthcare professionals, the majority of medical and paramedical students in our survey were unaware of general precautions. Diekema and his team [11,12] found that understanding of the general precautions significantly increased after a proper training session. Kwee and Ka'anehe [13] noted that medical student's understanding of general precautions may not correspond with their reduced risk of occupational exposure. Helfgott and colleagues [14] found that resident doctors in gynaecology and obstetrics were completely aware of the general precautions whereas total compliance was just 89 percent. Our findings lead us to the conclusion that, in order to improve understanding in this area, universal precautions should be adequately included in the teaching curricula. In this study, participants showed a least interest in treating HIV/AIDS patients; however, if suitable training will be offered, interest may increase, demonstrating the necessity of a good training session. Our findings are consistent with research by Diekema et al. (1995) [11] who also claimed that following a post-training session, people's willingness to handle HIV positive cases increased. As against to 76 percent in our survey, the percentage of the general public who desired the names of PLWHA to be made publicly open in studies conducted in Hyderabad (India) [15] and Karnataka (India) [6] was 51 percent and 8 percent, respectively. According to the study of B Unnikrishnan et al,[6] 81 percent of the study population believed that PLWHA should not be barred from attending public events, 89 percent believed that infected children should attend regular schools, 45 percent would fire their HIV-positive maid, 5.2 percent would hesitate to sit next to an HIV-positive person, 80 percent would aid an HIV positive road accident victim, and 24 percent believed that HIV-positive people deserved to suffer showing negative attitude toward blood-borne diseases. The unfavourable sentiments about HIV-positive patients among the respondents were also noticed by Hentgen et al. [16]

CONCLUSION:

The present study concludes the need of an educational programs on universal precaution to increase awareness to build up positive attitude towards blood borne infections. In the students as well as healthcare professionals it will help in reducing the risk of transmission and to improve knowledge, skills and competency in treating infected patients. Thus, there is an immediate need to plan and implement various new strategies to educate the students and health care professionals. A teaching curriculum should contain comprehensive information about blood born infections and should related medical, ethical and legal issues that will be beneficial in elevating positive attitude and decline negative attitude improving the healthcare system.

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