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Research Article

A study on awareness, occupational risk perception & level of vaccination against hepatitis-B among medical & nursing students in tertiary care hospital, Hyderabad

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ABSTRACT

Background: HBV(Hepatitis B Virus) infection is an occupational hazard for health care workers and the risk of acquiring HBV infections depends on the frequency of percutaneous and permucosal exposure to blood or blood-contaminated body fluids. Avoiding occupational blood exposure is primary preventive means for the transmission of HBV. However, the single most effective measure for the prevention of hepatitis B is active immunisation.
Methods: A cross-sectional study was carried among 204 medical and nursing students in second year of their course using pre-designed questionnaire comprised of questions which included age, sex, qualification, awareness, occupational risk perception & vaccination against hepatitis B infection.
Results: 69.12% of the respondents knew various modes of transmission of hepatitis B. More than half (56.86%) of the respondents knew that HBV infection causes liver cancer. 79.41% of the respondents knew the correct course of action after a needle stick injury. Only 61.27% of the respondents knew that blood soaked cotton and dressings are discarded in yellow coloured bags and that sharps and needles are disposed in white coloured bags. Only 36.46% of medical students & 57.41% of nursing students were completely vaccinated.
Conclusion: Considering the long-term consequences of HBV infection, the health of the study population is at risk. Preventive strategies against the diseases, especially vaccination programmes, should be developed and taken aggressively to improve the vaccination coverage among the study population.

Keywords: HBV (Hepatitis B virus), Hepatitis B surface antigen (HBsAg), Hepatitis B surface antigen (anti-HBsAb), Healthcare workers (HCWs)

INTRODUCTION

Hepatitis B Virus (HBV) is a double-stranded, enveloped DNA virus of the Hepadnaviridae family. It is transmitted parenterally or permucosal exposure to infected blood or other body fluids. Hepatitis B is a serious infectious disease of the liver which affects millions of people worldwide. Chronic viral hepatitis is a major global public health problem, an important cause of morbidity and mortality from sequelae which include chronic hepatitis, cirrhosis and primary liver cancer.[1] India has intermediate endemicity of hepatitis B, with hepatitis B surface antigen (HBsAg) prevalence between 2% and 7%.[2]

HBV (Hepatitis B Virus) infection is an occupational hazard for health care workers and for public safety workers who have exposure to blood and blood products in the workplace and the risk of acquiring HBV infections depends on the frequency of percutaneous and

permucosal exposure to blood or blood-contaminated body fluids.[1] Throughout the world, millions of healthcare professionals work in health institutions and it is estimated that 600000 to 800000 cut and puncture injuries occur among them per year, of which approximately 50% are not registered.[3]

Blood contains the highest HBV titres of all body fluids and is the most important vehicle of transmission in the health care settings. Avoiding occupational blood exposure is the primary preventive means for the transmission of HBV. However, the single most effective measure for the prevention of Hepatitis B is active immunisation.[1]

Recombinant DNA Vaccine is available since 1987. Since 1991, the Occupational Safety and Health Administration have mandated that health care workers be educated about the vaccine and that employers offer it free of charge. Vaccination involves a series of 3 shots given over 6 months, and can provide lifelong immunity against HBV. The hepatitis B vaccine is so effective at preventing HBV infection and liver cancer that it is known as the world's first "anti-cancer vaccine." Hepatitis B vaccines have proved to be safe, highly immunogenic, and effective in preventing acute and chronic disease.[1] No routine booster shots are recommended by the CDC.

Post vaccination serologic testing for antibody to hepatitis B surface antigen (anti-HBsAb) is recommended 1-2 months after the last vaccine dose for healthcare workers (HCW) at risk for occupational percutaneous or mucosal exposures.[4] Persons with >10 mIU/ml of anti-HBsAb levels were considered protective.[5] Completely vaccinated HCWs with anti-HBs <10 mIU/mL should receive 3 additional doses of hepatitis B vaccine (with higher dosage), followed by anti-HBs testing 1-2 months after the last dose.[6]

With increasing number of invasive diagnostic and therapeutic procedures, there is an increasing risk of HBV infection to the healthcare workers (HCWs).[7]

The HCWs constantly come in contact with blood and its products due to daily handling of biomedical wastes and while performing invasive procedures. Hence, it is necessary for them to be aware of Hepatitis B Virus Infection (HBI) and its prevention.

The present study was carried out to judge the extent of awareness about hepatitis B virus infection, occupational risk perception and vaccination among the medical and nursing students.

METHODS

A cross-sectional study was carried out in Apollo institute of medical sciences & research among 204 medical and nursing students in second year of their course. After ethical clearance and written consent, they were counselled and explained about the objective of the study and were requested to answer a standard questionnaire with multiple choices which was prepared in two languages, one being English and the other in the local language.

The devised questionnaire comprised of questions which included age, sex, qualification, awareness, occupational risk perception & vaccination against hepatitis B infection.

The study was conducted in the month of May 2014 to August 2014. A short discussion class was taken after filling the questionnaire to provide them with a better knowledge regarding hepatitis B infection and vaccination.

Data collection: Primary and secondary data was collected. With the aid of the pre-designed questionnaire, the primary data was collected. Secondary data was collected from journals and articles, obtained from websites and from the library.

RESULTS

Total of 204 students were included in the study. A total of respondents who participated in this study included 96 medical students & 108 nursing students.

Out of these 170 (82.9%) were females and 35 (17.1%) males. The age range of study participants was 18-25 years.

Awareness of HBV infection: 69.12% of the respondents knew various modes of transmission of hepatitis B. More than half (56.86%) of the respondents knew that HBV infection causes liver cancer. 71.08% respondents knew that HBV is more infectious than HIV. 76.47% respondents knew that three doses of HBV vaccine are needed for complete protection.

85.42% of medical students were aware about various modes of transmission of HBV compared to 54.63% of nursing students. 84.38% of medical students knew that HBV is more infectious than HIV compared to 59.26% of nursing students.

Risk perception of HBV infection: 79.41% of the respondents knew the correct course of action after a needle stick injury. Only 61.27% of the respondents knew that blood soaked cotton and dressings are discarded in yellow coloured bags and that sharps and needles are disposed in white coloured bags.

96.87% of the medical students knew the correct course of action after a needle stick injury compared to 63.89% of nursing students.

Only 68.75% of the medical students and 54.63% of nursing students knew that sharps and needles are disposed in white coloured bags.

The questions on the awareness and occupational risk perception of HBV infection and the percentage of correct responses are enlisted in Tables 1 and 2 respectively.

Vaccination status in study group: Only 36.46% of medical students & 57.41% of nursing students were completely vaccinated. Assessment of Vaccination status in study groups is shown in Table 3.

Table 1: Assessment of awareness about hepatitis-B among study groups.

Questions	Groups		Total N (%)
	Medical students N (%)	Nursing students N (%)	
Cause of hepatitis-B			
Bacteria	2 (2.08)	29 (26.85)	31 (15.2)
Hepatitis virus*	94 (97.92)	72 (66.67)	166 (81.37)
Life style modification	0	0	0
All above	0	7(6.48)	7 (3.43)
Hepatitis-B primarily affects			
Kidney	9 (9.37)	19 (17.6)	28 (13.73)
Liver*	87 (90.63)	65 (60.18)	152 (74.51)
Stomach	0	0	0
Skin	0	24 (22.22)	24 (11.76)
Modes of transmission			
Blood transfusion / needle stick injury	12 (12.5)	19 (17.6)	31 (15.2)
Sexual route	0	10(9.26)	10 (4.9)
Contaminated food & water	2 (2.08)	20 (18.51)	22 (10.78)
Blood transfusion / needle stick injury / sexual route*	82 (85.42)	59 (54.63)	141 (69.12)
HBV is more infectious than HIV			
True*	81 (84.38)	64 (59.26)	145 (71.08)
False	5 (5.2)	33 (30.56)	38 (18.63)
Don't Know	10 (10.42)	11 (10.18)	21 (10.29)
Chronic hepatitis-B leads to liver cancer			
True*	57 (59.38)	59 (54.63)	116 (56.86)
False	26 (27.08)	28(25.92)	54 (26.47)
Don't know	13 (13.54)	21 (19.45)	34 (16.67)
How many doses of HBV vaccine are needed for complete protection			
1	4 (4.17)	8 (7.4)	12 (5.88)
2	15 (15.63)	21 (19.45)	36 (17.65)
3*	77 (80.2)	79 (73.15)	156 (76.47)

Correct answers are marked with asterisk*

Table 2: Assessment of occupational risk perception of hepatitis B infection in study groups.

Questions	Groups		Total N (%)
	Medical students N (%)	Nursing students N (%)	
Can your profession put you at risk of hepatitis B infection?			
Yes*	92 (95.83)	89 (82.4)	181 (88.73)
No	4 (4.17)	19 (17.6)	23 (11.27)
Do you wear gloves while handling medical wastes, biological samples and doing procedures on patients?			
Yes*	94 (97.92)	98 (90.74)	192 (94.12)
No	2 (2.08)	10 (9.26)	12 (5.88)
Do you use a used - needle breaking instrument to dispose used needles and syringes?			
Yes *	78 (81.25)	86 (79.63)	164 (80.39)
No	18 (18.75)	22 (20.37)	40 (19.61)
If you get pricked accidentally by a used needle, what will you do?			
Consult a physician for screening & vaccination	93 (96.87)	69 (63.89)	162 (79.41)
None	3 (3.13)	39 (36.11)	42 (20.59)
In which colour bags are blood soaked cotton, dressings, etc., discarded?			
Red	15 (15.63)	39 (36.11)	54 (26.47)
Yellow*	70 (72.92)	55 (50.93)	125 (61.27)
Green	11 (11.45)	14 (12.96)	25 (12.26)
In which colour bags are sharps/needles/syringes/scalpels discarded?			
Yellow	14 (14.58)	28 (25.92)	42 (20.59)
White/translucent*	66 (68.75)	59 (54.63)	125 (61.27)
Red	16 (16.67)	21 (19.45)	37 (18.14)
Can an infected health worker transmit hepatitis B infection to a patient?			
Yes*	87 (90.63)	80 (74.08)	167 (81.86)
No	9 (9.37)	28 (25.92)	37 (18.14)
Can hepatitis B infection be prevented by vaccination?			
Yes*	81 (84.37)	76 (70.37)	157 (76.96)
No	15 (15.63)	32 (29.63)	47 (23.04)

Correct answers are marked with asterisk*

Table 3: Assessment of vaccination status in study groups.

Vaccination status	Groups		Total N (%)
	Medical students N (%)	Nursing students N (%)	
Vaccinated: Dose:			
1X	15 (15.63)	9(8.34)	24 (11.76)
2X	26 (27.08)	26(24.07)	52 (25.49)
3X	35 (36.46)	62 (57.41)	97 (47.55)
Not vaccinated	18 (18.75)	11 (10.18)	29 (14.22)
Not sure	2 (2.08)	0	2 (0.98)

DISCUSSION

Overall, an adequate HBV infection related awareness was found among the groups. A moderate occupational risk perception was found among the groups. It was noticed that HBV vaccination status was poor in both the study groups. It was observed that most of the subjects were incompletely vaccinated and also did not follow-up on their immunisation status.

In comparison, medical students had far better knowledge about hepatitis B as they had a higher level of education and were more exposed to health information. Both of the groups were ignorant about the complications of HBV infection. Awareness of the transmission modes is important, so that effective preventive measures could be taken such as standard precautions and vaccination against hepatitis B.

The risk perception was found to be moderate to low among both study groups. Information regarding biomedical waste management was particularly found to be inadequate among nursing students and this is a matter of great concern. Suggestions for remedial steps to be taken to prevent nosocomial HBV infection were elaborated.

A low vaccination rate among participants was probably due to the moderate level of knowledge about the diseases and the availability of the vaccines. Vaccination coverage of participants from both groups was poor. Medical students, who had a moderate level of knowledge, had very low vaccination coverage for hepatitis B (36.46%). This might be due to their negligence, dependence on parents or study loans for financial assistance. The results also implicated that most of the subjects who had been vaccinated, did not complete the course of vaccination and also did not follow-up on their immunisation status. In the present study 36.46% of the students were fully vaccinated against hepatitis B. This was comparable with vaccination status of 42% reported among medical students of Lahore.[8] However, in the present study vaccination status of medical students was lower than the vaccination rate of 79.5% in medical student, highlighted by a study conducted in Odisha, India.[9]

It was found that different studies around the globe have reported different results for various parameters, most likely due to differences in awareness of the various study groups in those regions about hepatitis and also the differences in the subjects involved.

Within India as well, there are wide variations in social, economic and health factors which may explain the differences in related awareness in different parts of the country.

Considering the long-term consequences of HBV infection, the health of the study population is at risk. Preventive strategies against the diseases, especially vaccination programmes, should be developed and taken aggressively to improve the vaccination coverage among the study population.

CONCLUSION

The present study concludes that there is a lack of awareness among the medical and nursing students entering into the profession about hepatitis B infection. Moreover all the students were not vaccinated against hepatitis B, increasing the risk of HBV infection and nosocomial spread of disease. Since medical and nursing students are at increased risk of acquiring needle stick injury, they should be routinely vaccinated upon entry into the professional college. It is recommended that a policy be implemented for complete vaccination and health education of students in first year in all professional colleges in India. To achieve awareness and protection there is a need for educational & training programs and policies for HBV screening, vaccination, and serological response checkups for all HCWs. Hospital waste management is an important aspect in preventing the HBI which should not be overlooked.

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