

A comparative cross sectional study of awareness and practice among medical and dental students regarding hepatitis b infection and prevention

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Abstract

Introduction: Hepatitis implies injury to the liver by inflammatory cells. Most cases of hepatitis are caused by viruses, predominantly the hepatitis B. The risk of occupational exposure to HBV especially among students in health professions is a major concern. Awareness regarding this serious preventable disease was lacking among them. This study was conducted to assess the level of awareness and practice among medical and dental students regarding hepatitis B infection and prevention.

Materials and Methods: A cross sectional study was conducted from 1st Feb 2014 to 30th April 2014. 352 medical students and 269 dental students were included. Data were collected by self-administered structured questionnaire and analyzed by using EPI INFO 3.5.1.

Results: Response of students regarding transmission, hepatitis B was transmitted by sex (84.4%), contaminated blood & body fluid (90%) and by unsterilized syringes, needles and surgical instruments (96.4%). Regarding diagnosis, treatment & PEP – 96.6% said hepatitis B was diagnosed by hepatitis markers test, 89.5% said that vaccination was the choice for treatment of hepatitis B, 95.8% said that vaccination was main source of post exposure prophylaxis and 93% said that HBIG was used for post exposure prophylaxis. Good knowledge score was significantly higher among female students ($p = 0.042$), intern ($p = 0.047$), fully vaccinated students ($p = 0.002$) and medical students ($p = 0.047$)

Conclusion: This study showed that overall awareness regarding hepatitis B was quite good among students but there was a gap in practice as 45.4% students were unvaccinated or partially vaccinated against Hepatitis B. So we recommend that all students in the health profession should be vaccinated prior to their entry into professional practices.

Keywords: Hepatitis B, Medical students, Dental students, Awareness and practice.

Introduction

Hepatitis implies injury to the liver by inflammatory cells. Most cases of hepatitis are caused by viruses, predominantly the hepatitis B. HBV has been recognized since 1965, and the first vaccine was approved in the early 1980s. 66% of global population living in areas with high level of hepatitis B infection.¹ 10-15% of HBV carriers of the world resides in India.² In India 2% to 5% of general population and in South East Asian Region 5% to 10% of adult population were chronically infected.³ It is estimated that more than 2 billion people worldwide have current or past hepatitis B infection including 240 million chronic carriers and 686,000 deaths each year from cirrhosis and hepatocellular carcinoma.⁴ Parenteral drug use, needle stick injuries, haemodialysis, tattooing and various sexual partners have been recognized as frequent means of viral hepatitis B transmission all over the world.⁵ Parenteral routes are considered as the most probable issues for HBV transmission include unsterilized needles and syringes in health-care settings.^{6,7}

Among HCWs prevalence of Hepatitis B is 2–10 times higher as compared to the general populations' globally.⁸ HBV transmitted by skin injury with contaminated needles and syringes or through unintentional inoculation of a minimal amount of blood throughout surgical and dental procedures. Knowledge regarding HBV and safety measures is desired to reduce

the acquired infections among health care providers. Health care personnel should have comprehensive knowledge of viral hepatitis infections, significance of vaccinations and practice of modest hygienic measures like proper hospital wastes management, sterilized medical equipment together with specific protective measures.⁹⁻¹¹

Medical and dental students being a part of the health care delivery system are liable to the similar hazard as other health care workers at the time they come in contact with patients and contaminated instruments. They are predictable to start activities associated with patient care with the start of their clinical years. Consequently, this study was done to measure the degree of knowledge, attitude and practice of medical and dental students regarding hepatitis B infection and its transmission and prevention.

Aims and Objectives

1. To study awareness level and practice among medical and dental students regarding hepatitis B infection and prevention.
2. To compare knowledge level and practice among medical and dental students regarding hepatitis B infection and prevention.

Materials and Methods

Study Design: This was a cross sectional study

Study Settings: The study was conducted at Kalinga Institute of Medical Sciences (KIMS) and Kalinga Institute of Dental Sciences (KIDS), KIIT University, Bhubaneswar.

Study Period: The study was completed during a period of three months from 1stFeb 2014 to 30th April 2014.

Study Tools: The study tool used was a pre-designed, self-administered structured questionnaire. A pilot study was conducted among 30 students for pre-testing of the questionnaire. The results of the pre-test were evaluated, and some modifications were accordingly made. The average time needed to fill all items in the questionnaire was about 15 min. Results of the pilot study were not integrated into the final analysis. The questionnaire was used to collect information about the socio-demographic characteristics of student and awareness among medical and dental students regarding hepatitis B transmission and prevention.

Study Population: The study was conducted among 352 undergraduate medical students from 2nd year to interns and 269 undergraduate dental students from 3rd year to interns.

Inclusion Criteria

1. Undergraduate medical (2nd year onwards) and dental (3rd year onwards) students having clinical posting.
2. Those who give consent to participate in the study.

Exclusion Criteria

1. Undergraduate medical (1st year) and dental students (1st & 2nd year) not having clinical posting.
2. Those who did not give consent to participate in the study.

Scores of Knowledge: Each correct answer was given a score of '1' while a wrong answer or an unanswered was given a score of '0'. Students' knowledge was classified to three levels; a total score of 0-6 was regarded as poor knowledge, 7-12 as acceptable knowledge and 13 and above as good knowledge.

Statistical Analysis of Data: The data were analyzed using EPI INFO 3.5.1. Quantitative data were summarized by the Mean±SD and range. Qualitative data were tabulated and summarized in proportions and percentage. Chi-Square test was used for determination of associations between categorical variables. A p value of ≤0.05 was regarded as statistically significant.

Ethical Consideration: Study was approved by ethical committee of institution. Oral consent was obtained from each student in the study and those who refused participation were excluded. Confidentiality and privacy were maintained during the whole period of the study.

Results

Table 1: Demographic characteristics of study sample and their knowledge sources

Variables	Average and frequencies no. (%)
Age	
Range	19 - 26
Mean ±SD	21 ± 1.515
Sex	
Male	268 (43.1)
Female	353 (56.9)
Study year	
Clinical posting year	453 (72.9)
Intern	168 (27.1)

Table 1 reveals that 621 students were participated in the study, out of which 43.1% were male and 56.9% were female. The ages of the participants ranged between 19 and 26 years with an average of 21 ± 1.515. The participants included 27.1% intern and 72.9% Clinical posting year students.

Table 2: Students' correct, incorrect and not known information regarding hepatitis B

Information items	Correct N (%)	Incorrect N (%)	Not known N (%)
Modes of transmission			
by sexual contact	524(84.4)	58(9.3)	39(6.3)
by unsterilized syringes, needles and surgical instruments	599(96.4)	21(3.4)	1(0.2)
by contaminated blood & body fluid	559(90)	52(8.4)	10(1.6)
by casual contact such as hand shaking	46(7.4)	573(92.3)	2(0.3)
by food	71(11.4)	541(87.2)	9(1.4)
from mother to child	501(80.7)	52(8.4)	68(10.9)
By HBV carriers	534(85.9)	75(12.2)	12(1.9)
Diagnosis, treatment and sequel			
by hepatitis markers test	600(96.6)	18(2.9)	3(0.5)
by medical history	92(14.8)	529(85.2)	0(0)
by vaccination	556(89.5)	50(8)	15(2.5)
by immunotherapy	488(78.6)	124(19.9)	9(1.5)

byanti-viral therapy	120(19.3)	480(77.3)	21(3.4)
causes liver cancer	520(83.8)	94(15.1)	7(1.1)
Post exposure prophylaxis (PEP) and prevention			
Hepatitis B vaccine (HBV) used for PEP	594(95.8)	25(3.9)	2(0.3)
HBIG used for PEP	578(93)	32(5.2)	11(1.8)
Anti-viral therapy used for PEP	137(22)	468(75.4)	16(2.6)
Hepatitis B vaccine prevents hepatitis B infection	613(98.7)	8(1.3)	0(0)
Screened blood transfusion prevents hepatitis B infection	607(97.7)	13(2.1)	1(0.2)
Hygiene Prevents hepatitis B infection	24(3.8)	596(96)	1(0.2)

Table 2 displays students' correct, incorrect and not known information regarding hepatitis B. In this study the knowledge that sexual contact, blood & body fluid, mother to child and HBV carriers are potential sources of HBV transmission was incorrectly known or not known by 15.6%, 10%, 19.3% and 14.1% of the students respectively. The fact casual contact such as hand shaking and food didn't transmit the infection was not known correctly by 11.5% and 15.6% of the students respectively. 95.9% and 83.6% students knew correctly hepatitis B was diagnosed by hepatitis

markers test and chronic infection may cause liver cancer respectively. 10% students didn't know correctly that hepatitis B was treated by vaccination and immunotherapy (21.9%). 97% of students acknowledged hepatitis B vaccine was used for PEP and 95.5% told hepatitis B immunoglobulin was used but for prevention of infection screened blood transfusion (96.6%) and hepatitis B Vaccine (98.1%) was required.

Table 3: Association of gender, study year and vaccination status with knowledge score

Variables	Knowledge		Significance
	Acceptable (7-12) N (%)	Good (≥ 13) N (%)	
Gender			
Male (268)	64(23.9)	204(76.1)	$X^2 = 4.128$ P = 0.042
Female(353)	61(17.3)	292(82.7)	
Study year			
Clinical posting year (453)	100(22.1)	353(77.9)	$X^2 = 3.945$ P = 0.047
Intern (168)	25(14.9)	143(85.1)	
Vaccination against HBV (3doses)			
Yes (339)	53(15.6)	286(84.4)	$X^2 = 9.38$ P = 0.002
No (282)	72(25.5)	210(74.5)	

Table 3 depicts good knowledge score was significantly higher among female students ($p = 0.042$), intern ($p = 0.047$) and students having 3 doses of HBV vaccine as compared to male students, Clinical posting

year students and students not having 3 doses of HBV vaccine respectively.

Table 4: Comparison of knowledge score status between medical and dental students

Variables	Knowledge		Significance
	Acceptable (7-12) N (%)	Good (≥ 13) N (%)	
Male students			
Medical (151)	29 (19.2)	122 (80.8)	$X^2 = 4.16$ P = 0.041
Dental (117)	35(29.9)	82 (70.1)	
Female students			
Medical (201)	32 (15.9)	169 (84.1)	$X^2 = 0.604$ P = 0.437
Dental (152)	29 (19.1)	123 (80.9)	
Total students			
Medical (352)	61(17.3)	291(82.7)	$X^2 = 3.96$ P = 0.047
Dental (269)	64(23.8)	205(76.2)	

Table 4 shows there was no statistically significant association between female students and their knowledge scores, while good knowledge score was significantly higher among medical students as compare to dental students ($P = 0.047$).

Discussions

HBV is a major health problem globally casting an enormous burden on health care system. Health care related transmissions have long been recognized as a source of HBV infection especially in developing countries. Transmission of infection from patients to health care providers was common before widespread HBV vaccination of health care workers.¹² So they should be aware of the risk involved in the treatment procedures and should take appropriate precautions in dealing with patients.^{10,12} In this study medical and dental students were targeted as they might be exposed to infection either during their practical training or during their future career. They might have also a direct or indirect health education role in their communities. So assessing the awareness and knowledge is a useful step to assess the extent to which the students are in a position to adopt a disease risk-free behaviour in their practice and provide useful data to design health intervention methods and public health policies.

The present study revealed that 79.9% of the participants had good knowledge score about B viral hepatitis, which was more in comparison to the studies conducted by Samir M et al (14%),¹³ Wadi FH et al (49.3%)¹⁴, Atlam SA et al (57.8%)¹⁵ and Velvzhi G et al (72%)¹⁶ but low in comparison to the study conducted by Singh A et al (86.7%).¹⁷

There was statistically significant association between knowledge scores with gender and study year of students. Students of female gender and interns were significantly associated with good knowledge score. These findings were in agreement with the results of the studies by Samir M et al¹³, Zuberi BF et al¹⁸ and Al-Jabri AA et al¹⁹ but similar research held by Abdela A et al²⁰ and El-Nasser GA et al²¹ showed no statistically significant association. Good knowledge score was significantly higher among students completely vaccinated against HBV (3 doses) which was in agreement with the studies by Samir M et al¹³, Wadi FH et al¹⁴ and Velvzhi G et al.¹⁶

In comparison of knowledge score status between medical and dental students good knowledge score was significantly higher among medical students, which was supported by the study conducted by Paul P et al.²²

Limitations

The findings are limited to a relatively small sample of medical and dental students only. It does not cover other HCWs like nursing and paramedical students who are also frequently exposed to the risk of HBV infection. The data were obtained by questionnaire and therefore there could be a recall bias

and information bias of the participants. The relatively small sample makes it difficult to detect factors that have statistically significant association with students' knowledge and vaccination status.

Conclusions

In this study high proportion of study participants had good knowledge score which was encouraging as knowledge was usually the first step towards modification of a desirable behaviour, but despite of good knowledge only 54.6% study participants were fully vaccinated against Hepatitis B. The low vaccination rate could be attributed to two main factors. Firstly, vaccination against HBV was not introduced to the National immunization program at that time. Secondly, HBV vaccination was not routinely provided to the students.

Recommendation

Poor compliance to hepatitis B vaccination is an issue that deserves serious attention for which all students should be routinely vaccinated upon entry into the medical and dental college to decrease the burden of the disease as they were exposed to the risk factors frequently in their day to day activities. There is a need for health education campaigns for health workers so that they can understand the risks that they are exposed to based on the nature of their work.

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Conflict of Interest: None declared

Ethical Approval: The study was approved by the Institutional Ethics Committee

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