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RESEARCH ARTICLE

KNOWLEDGE AND AWARENESS ABOUT HBV INFECTION AND TRANSMISSION AMONG DENTAL STUDENTS

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ABSTRACT

Exposure to blood borne pathogens such as HBV remains a significant occupational hazard to health care workers especially among dental professionals and they are higlyvulnerable. Infection through saliva contamination or via needle stick injuries remains a common cause. Hence this study was conducted to determine the level of knowledge and awareness about HBV transmission. It was found that third year students have least knowledge when compared to final year and interns necessitating the need for formal education about these infectious disesases, mandatory vaccination protocol once a student enters clinics and knowledge about post exposure prophylaxis if a mishap occurs.

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INTRODUCTION

Hepatitis B is a potentially life-threatening liver infection caused by the hepatitis B virus (HBV). HBV is a small DNA virus and belongs to hepadnaviridae family (http:// www.who. int/ mediacentre/factsheets/fs204/en/index.html). HBV is a major global health problem. Based on the hepatitis B surface antigen (HBsAg), different areas of the world are classified as having high (≥8%), intermediate (2%–7%), or low (<2%) HBV endemicity (Puri, 2014). India is in the intermediate HBV endemicity zone (HBsAg prevalence among the general population ranges from 2% to 8%) with 50 million cases which makes it the second largest global pool of chronic HBV infection (http:// www.who.int/csr/disease/ hepatitis/ whocdscsrlyo20022/en/ print.html; Gupta, 2008). In dental settings the most common mode of transmission is from percutaneous exposureie needle stick injuries and from contact with blood or saliva of infected patients. The possibility of HBV transmission from exposure to saliva and gingival crevicular fluid has been confirmed making oral health care professionals more vulnerable for hepatitis infection [5].HBV can be prevented by strict adherence to standard microbiological practices and techniques, and routine use of appropriate barrier precautions to prevent skin and mucous membrane exposure when handling blood and other body fluids of all patients in healthcare settings and pre exposure vaccines. HBV infection is a communicable disease and is more infectious than HIV. The incidence of HBV infection can be reduced by giving proper education and awareness regarding its transmission and vaccination to the dental students. Hence, this study was conducted to access the baseline knowledge and awareness about HBV infection and transmission among dental students.

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MATERIALS AND METHODS

A cross sectional observational study was conducted among the dental students of government dental college and hospital, Patiala. The study population comprised of students of 3rd year, final year and interns. A self-administered questionnaire which included 20 questions regarding knowledge and awareness, vaccination and preventive measures taken by dentist to prevent HBV infection were distributed to collect the required data. All questions were given 2 answers (yes/no) .The students who were present at the day of the study were included in the study. The sample size of the study was 110. The collected data was put to stastical analysis (SPSS version 17 for windows) and ANOVA was performed for each variable to assess whether significant difference was observed between the 3 years.

RESULTS

A total of 110 students participated in the study with 35 third year students, 35 final year students and 30 interns. Of these 21(19.09%) were males and 89(80.90%) were females. Table 1 shows the distribution of answers to each question. All the students have heard about hepatitis B infection. High percentage of students ie 28(80%) students of third year, 33(94.29%) of final year and 28(93.33%) interns thinks that hepatitis is symptomatic. 9(25.71%) of third year students ,7(20%) of final year and 13(43.33%) interns responded that hepatitis B infection is temporary. 28(80%) third year, 30(85.71%) final year and 26(86.67%) interns knew that hepatitis B infection is preventable and 32(91.43%), 34(97.14%) and 29(96.67%) students of third year , final year and interns respectively were aware of HBV vaccination. Only 11(31.43%) third year students, 1(2.86%)final year students and 8(26.67%) interns were vaccinated against HBV and there was statistically significant difference between various academic years (p=.0063).When asked about other types of hepatitis infections, 33(94.29%) of third year,35(100%) final year and 29(96.67%) of interns were aware.21(60%) of third year,7(20%) of final year and 8(26.67%) of interns didn't know that HBV can be transmitted via saliva and there was statistically significant difference between years (p=.001). Questions regarding HBV transmission from dentist to patient and patient to dentist 18(51.43%) third year , 30(85.7%) final year and 28(93.33%) interns and 33(94.29%) third year, and 100% final year and interns were aware respectively.26(74.29%) third year, 34(94.28%) final year and 28(96.67%) interns were aware about risk of HBV transmission via dental instruments and 31(88.57%) third year, 33(94.28%) final year and 29(96.67%) interns knew that they are at high risk of getting HBV than general population.30(85.71%) third year, 34(97.14%) final year and 28(93.33%) interns agrees that dentist experience considerable amount of needle stick injuries. Also when asked about the higher risk of HBV transmission than HIV 18(51.43%) third year,26(74.29%) final year and 24(80%) interns knew about it.13(37.14%) third year, 21(60%) final year and 21(70%) interns knew that there is high risk of HBV transmission as compared to HCV. There was statistically significant difference between various years regarding information about higher risk of HBV transmission than HIV.26(74.29%) third year, 25(71.43%) final year, 25(83.33%) interns believes that HBV patient to patient transmission can be prevented using gloves and 25(71.43%) third year, 32(91.43%) final year and 19(63.33%) interns knew that HBV transmission from dentist to patient can be prevented by using gloves and this difference is statistically significant (p=.022). 26(74.29%)third year, 27(77.14%) final year and 19(63.33%)interns follow universal precautions while treating HBV patients and 19(54.29%) third year, 25(71.43%) final year and 23(76.67%) interns are aware of post exposure prophylaxis with significant difference between them (p=.0009 and p=.008 respectively).Mere 1(2.85%) third year , 2(5.71%) final year

Table 1

Questions	response of dental students(n=110) Third year	final year	interns	chi-square	p value
1.Have you heard of hepatitis B Yes no	35(100%) 0(0%)	35(100%) 0(0%)	30(100%) 0(0%)	-	- N/A
2.Hepatitis B infection is symptomatic Yes no	28(80%) 7(20%)	33(94.29%) 2(5.71%)	28(93.33%) 2(6.67%)	4.4710	0.1069
3.Is hepatitis B infection temporary Yes No	9(25.71%) 26(74.29%)	7(20%) 28(80%)	13(43.33%) 17(56.67%)	4.538	0.1026
4.Is hepatitis B infection preventable Yes no	28(80%) 7(20%)	30(85.71%) 5(14.29%)	26(86.67%) 4(13.33%)	0.6519	0.7218
5. Are you aware of hepatits B vaccination Yes no	32(91.43%) 3(8.57%)	34(97.14%) 1(2.86%)	29(96.67%) 1(3.33%)	1.4536	0.48344
6.Are you vaccinated against hepatitis B Yes no	11(31.43%) 24(68.57%)	1(2.86%) 34(97.14%)	8(26.67%) 22(73.33%)	10.119	0.00635 Sig
7. Have you heard of any other type of hepatitis Yes no	33(94.29%) 2(5.71%)	35(100%) 0(0%)	29(96.67%) 1(3.33%)	-	-
8.Is HBV transmitted through saliva Yes no	14(40%) 21(60%)	28(80%) 7(20%)	22(73.33%) 8(26.67%)	13.77	0.001021 Sig
9.Is HBV transmissible from dentist to patient Yes no	18(51.43%) 17(48.57%)	30(85.71%) 5(14.29%)	28(93.33%) 2(6.67%)	18.337 5	0.000104 Sig
10. Is HBV transmissible from patient to dentist Yes no	33(94.29%) 2(5.71%)	35(100%) 0(0%)	30(100%) 0(0%)	-	-
11. Is there any risk of transmission of HBV from dental instruments Yes no	26(74.29%) 9(25.71%)	33(94.28%) 2(5.71%)	29(96.67%) 1(3.33%)	11.912 1	0.00259 Sig
12. Do dentist have higher risk of getting HBV infection than general population Yes no	31(88.57%) 4(11.43%)	33(94.28%) 2(5.71%)	29(96.67%) 1(3.33%)	2.82	0.2441
13. Considerable amount of dentist experience needle stick injuries Yes no	30(85.71%) 5(14.29%)	34(97.14%) 1(2.86%)	28(93.33%) 2(6.67%)	3.2091	0.200979
14. high risk of HBV than HIV transmission via needle stick injury Yes no	18(51.43%) 17(48.57%)	26(74.29%) 9(25.71%)	24(80%) 6(20%)	7.0378	0.029632 Sig
15.high risk of HBV than HCV transmission via needle stick injury Yes no	13(37.14%) 22(62.86%)	21(60%) 14(40%)	21(70%) 9(30%)	4.55	0.10279
16.Patient to patient transmission of HBV can be prevented using gloves Yes no	26(74.29%) 9(25.71%)	25(71.43%) 10(28.57%)	25(83.33%) 5(16.67%)	1.3419	0.5112
17. Dentist to patient transmission of HBV can be prevented using gloves Yes no	25(71.43%) 10(28.57%)	32(91.43%) 3(8.57%)	19(63.33%) 11(36.67%)	7.607	0.02229 Sig
18. Do you follow universal precaution while treating HBV patients Yes no	26(74.29%) 9(25.71%)	27(77.14%) 8(22.86%)	19(63.33%) 11(36.67%)	13.959	0.000931 Sig
19. Are you aware of post exposure prophylaxis Yes no	19(54.29%) 16(45.71%)	25(71.43%) 10(28.57%)	23(76.67%) 7(23.33%)	9.439	0.008918 Sig
20. Do you undergo periodic antibody test against hepatitis B Yes no	1(2.85%) 34(97.15%)	2(5.71%) 33(85.71%)	2(6.67%) 28(93.33%)	1.8548	0.395589

and 2(6.67%) interns undergo periodic antibody tests against HBV.

DISCUSSION

This study revealed that overall knowledge among various years is fairly adequate. Most of the students were aware of Hepatitis B infection in our study which is also shown in a study by Singh and Jain (Singh, 2011). Mohit Bhansal *et al.* in their study on first year undergraduate dental students from three dental colleges found that they were lacking in knowledge about HBV and most of them were not vaccinated against Hepatitis B virus which is reflected in our study also where 68.57% of third year, 97.14% of final year and 73.33% interns were not vaccinated with third year being least vaccinated. Also there was statistical difference between groups for the vaccination status against HBV. Only 40% of the third year students knew that HBV is also transmissible via saliva. This can be attributed to the fact that there is no formal education in the dental curriculum for the communicable diseases for which vaccination is available and can be prevented using universal precautions. As student enters into clinics, provision of HBV vaccination should be made mandatory. Significant difference was also found when asked about the risk of HBV transmission via dental instruments with 3rd year having least knowledge 74.29% as compared to final year (94.28%) and interns (96.67%).

When asked if they know that HBV is transmissible from dentist to patient , 18(51.3%) third year students, 30(85.71%) final year students and 28(93.33%) interns were aware with interns having most awareness and third year having least and there was significant difference between the groups (p=.001).74.29% of third year students knew that there is a risk of transmission of HBV from dental instuments as compared to 94.28% of final year and 96.67%of interns with statistical significant difference p=(.002).80% of interns knew that there is a greater proability of getting HBV infection than HIV infection via needlestick injury while only 74.29% final year and 51.43% third year students were aware showing relatively less knowledge among third year and final year students. According to a study by Khan et al[8] most of the medical students were unaware about post- exposure prophylaxis [PEP for Hepatitis B].In our study 45.71% of third year, 28.57% of final year and 23.33% of interns were not aware about PEP. Exposure to blood borne pathogens such as HBV remains a significant occupational hazard to health care workers, especially in countries where this infection is highly prevalent (Abdela, 2016). There is always an increased incidence of contracting Hepatitis B, C or HIV and dentists find themselves vulnerable, therefore they are extra careful when treating such patients. It has been found that HBV and HCV exist on various surfaces in the dental operatory even many days after treating patients positive with hepatitis B and C [10].The hepatitis B virus can survive outside the body for at least 7 days, during this time the virus can still cause infection if it enters the body of the person who is not protected by the vaccine. The incubation period of the hepatitis B virus is 75 days on average, but can vary from 30-180 days. The virus may be detected within 30 days after infection and can persist and develop into chronic hepatitis B[1] .Therefore, standard precautions i.e. the use of barrier methods with correct sterilization and disinfection measures must be followed. The conventional sterilization techniques usually eliminate specific proteins and nucleic acids (HBV DNA and HCV RNA) from dental instruments previously infected with HBV and HCV

Conclusion

Hepatitis is a disease of concern and the management of a patient infected with it can be difficult and challenging. HBV can be transmitted through saliva contamination, by skin prick with infected and contaminated needles or through accidental inoculation of minute quantity of blood during dental procedures. The inference of the study was that for most of the questions, the knowledge and awareness of third year was least followed by final year and interns. In view of this there is a need for including Hepatitis B virus related-education programs in the syllabus and implement them on a regular basis in the curriculum. Proper preventive measures must be adopted with strict protocol to prevent the transmission of the virus from the dental practitioner to the patient and from the patient to the dentist. Also vaccination should be made compulsory for students entering clinics ie from 3rd year. Every patient should be considered as potential HIV, HBV and HCV carrier and universal precautions should be taken for each and every patient. Emphasis should be made on post-exposure prophylaxis against Hepatitis B virus once a needle stick injury has occurred. Hepatitis B infection transmission chain can be interrupted through vaccination, using of safety precautions while handling infectious material, proper sterilization of instruments, and legit waste handling and most importantly by creating awareness about HBV infection and inculcating a positive attitude to curb the menace of HBV.

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