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Knowledge, attitudes and practices about hepatitis B in dentists, dental students, interns and auxiliaries in Jammu and Kashmir- an epidemiological study

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Abstract

Background: Hepatitis B is a silent epidemic. The Hepatitis B virus has only human reservoir. Dental professionals are at an increased risk of contracting this highly infectious disease due to the nature of their work.

Aim: To assess the knowledge, attitudes and practices of first year, second year, third year, fourth year BDS students, dental interns, practicing dentists and the dental auxiliaries about Hepatitis B infection.

Materials and methods: A pre-tested, self-administered cross-sectional survey containing 16 questions about various aspects of Hepatitis B was conducted among 354 subjects.

Statistical analysis: Descriptive statistics were carried out and statistical tools such as Chi-square test and contingency coefficient (CC) were employed. A P-value of less than 0.05 was considered statistically significant. All P-values were two tailed.

Results: The response rate was 100% (n=354). Majority of the dental professionals were aware of the hepatitis B infection and transmission. Their knowledge about the vaccination schedule and post exposure prophylaxis was lower. The dental auxiliaries showed a very know level of knowledge and awareness in all the questions.

Conclusion: Overall good awareness level in the professionals studied but a less than satisfactory level in the auxiliary workers. Amongst the professionals, the first and second year students showed a relatively lower level of awareness.

Keywords: Awareness, Knowledge, Practices, Hepatitis B virus, HBV, Vaccination, Dental professionals, Dental auxiliaries

Introduction

Hepatitis may well be considered as a silent epidemic of the modern world. It is a highly infectious disease which is 50-100 times more contagious than HIV.[(1)] Hepatitis B is a potentially life-threatening liver infection caused by the hepatitis B virus (HBV). It is a major global health problem. It can cause chronic infection and puts people at high risk of death from cirrhosis and liver cancer.[(2)]

HBV is a DNA virus[(3)] belonging to the hepadnavirus family[(4)] and human beings are the sole reservoir. Acute infection manifests as acute viral hepatitis – an illness that begins with general malaise, loss of appetite, nausea/vomiting, body aches, low-grade fever, darkened urine, and then progresses to development of jaundice.[(5)] The incubation period is 30–180 days. Chronic infection with HBV may be either asymptomatic or may be associated with a chronic inflammation of the liver (chronic hepatitis), leading to cirrhosis over a period of several years.[(6)]

The average estimated carrier rate of hepatitis B virus (HBV) in India is 4%,[(7)] with a total pool of approximately 40 million carriers.[(8)] Approximately 780 000 persons die each year from hepatitis B infection -- 650 000 from cirrhosis and liver cancer due to chronic hepatitis B infection and another 130 000 from acute hepatitis B.[(9)]

Dental surgeons are at a great risk of exposure to hepatitis due of their numerous encounters involving the use and disposal of sharps. Every health care specialty that involves contact with mucosa, blood, or blood contaminated with bodily fluids should have the goal of ensuring compliance with standard precautions and other methods to minimize infection risks. It has been documented that HBV infection is the most important infectious occupational hazard in the dental profession.[(10)]

With this data in mind, we decided to assess the knowledge, attitudes and practices of various personnel in dentistry including the auxiliaries about Hepatitis B infection.

Materials and Methods

We conducted a cross-sectional observational study with a survey amongst practicing dentists, students, interns and dental auxiliaries in December 2016. In this 45 first year students, 48 second year students, 47 third year students, 49 final year students, 30 interns, 112 dentists and 23 dental auxiliaries were included.

The study aimed at studying the awareness about the knowledge, attitudes and practices regarding HBV infection amongst various dental personnel and also to make them aware about the correct information.

Clearance was sought from the institutional ethical committee prior to conducting the study. Written

informed consent was collected from all the participants. Thus those participants who were present and provided the written informed consent were enrolled into the study and constituted the sample population.

A self-administered pretested questionnaire[1] containing 16 close-ended questions was prepared both in English and the regional languages. The regional language questionnaires were provided to the auxiliary staff along with needful assistance to the illiterate candidates. Anonymity was assured. Later, the participants were educated about the correct answers and the unimmunized candidates were referred for immediate vaccination.

Statistical Analysis: The recorded data was compiled and entered in a spreadsheet (Microsoft Excel) and then exported to data editor of SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistical analysis of data was carried out and statistical tools such as Chi-square test and contingency coefficient (CC) were employed. A P-value of less than 0.05 was considered statistically significant. All P-values were two tailed.

Results

A total of 354 subjects were included in the study of which 45 belonged to first year, 48 to second year, 47 to third year and 49 to final year BDS; 30 were dental interns and 112 were practicing dentists. 23 dental auxiliaries were also included in the survey.

16 questions were asked in total which were evaluated as either yes, no or can't say.

The results obtained were tabulated as overall distribution of answers of all the dental personnel to each question and the maximum and minimum response of dental respondents to each question. [See Table 1, 2].

Table 1: Showing overall distribution of answers of all the dental personnel to each question

Question	Response			Chi-square	P-value
	Yes	No	Cannot Say		
	N (%)	N (%)	N (%)		
Knowledge-based questions					
Q1 Have you heard of hepatitis B disease?	314 (88.7)	22 (6.2)	18 (5.1)	488.4	<0.001
Q2 Is it transmitted by virus?	284 (80.2)	39 (11.0)	31 (8.8)	350.6	<0.001
Q3 Is it transmitted through contaminated/infected blood transfusions?	280 (79.1)	30 (8.5)	44 (12.4)	334.4	<0.001
Q4 Is it transmitted through food, clothing, and hugging?	38 (10.7)	287 (81.1)	29 (8.2)	363.4	<0.001
Q5 Is hepatitis B transmitted through tattoo or acupuncture needles?	279 (78.8)	46 (13.0)	29 (8.2)	330.7	<0.001
Q6 Does hepatitis B manifest as jaundice?	274 (77.4)	42 (11.9)	38 (10.7)	309.4	<0.001
Attitude-based questions					
Q7 Do you have any history of hepatitis B in the past?	8 (2.3)	341 (96.3)	5 (1.4)	632.2	<0.001
Q8 Is there any history of hepatitis B in your family?	8 (2.3)	329 (92.9)	17 (4.8)	566.3	<0.001
Q9 Do you recommend vaccination against hepatitis B among your family members?	321 (90.7)	12 (3.4)	21 (5.9)	524.2	<0.001
Q10 Are you vaccinated against hepatitis B?	278 (78.5)	35 (9.9)	41 (11.6)	325.6	<0.001
Q11 Are you aware of the appropriate intervals of the hepatitis B vaccination?	179 (50.5)	156 (44.1)	19 (5.4)	126.8	<0.001
Q12 Are you aware about the risk of transmission of hepatitis B among your profession?	270 (76.3)	59 (16.6)	25 (7.1)	298.6	<0.001
Q13 Are you aware of the first aid treatment in case of accidental exposure to hepatitis B?	194 (54.8)	107 (30.2)	53 (15.0)	85.8	<0.001

Practice-based questions					
Q14 Do you know the precautionary measures to be taken against hepatitis B in your routine practice?	270 (76.3)	47 (13.3)	37 (10.4)	294.1	<0.001
Q15 Before entering the dental college, were you aware of the risk of exposure to hepatitis B?	131 (37.0)	179 (50.6)	44 (12.4)	79.4	<0.001
Q16 Would you have joined this profession after knowing the potential risk of exposure to hepatitis B?	269 (76.0)	60 (16.9)	25 (7.1)	295.0	<0.001

Chi-square was applied to every question and the p-value was found to be <0.05 for all questions. Therefore, all findings were highly significant. [Table 1]. The subject responses to the questions were also recorded according to what category they belonged to. The CC and p-values were found to be significant for most questions. [Table 2].

Table 2: Showing maximum and minimum response of dental personnel to each question

Question	Max	Min	CC	P-value
Q1 Have you heard of hepatitis B disease?	4th Year and Interns	Dental Auxiliaries	0.514	<0.001
Q2 Is it transmitted by virus?	Interns	Dental Auxiliaries	0.449	<0.001
Q3 Is it transmitted through contaminated/infected blood transfusions?	Interns	Dental Auxiliaries	0.421	<0.001
Q4 Is it transmitted through food, clothing, and hugging?	4th Year	Dental Auxiliaries	0.476	<0.001
Q5 Is hepatitis B transmitted through tattoo or acupuncture needles?	4th Year	Dental Auxiliaries	0.479	<0.001
Q6 Does hepatitis B manifest as jaundice?	Dentists	Dental Auxiliaries	0.416	<0.001
Q7 Do you have any history of hepatitis B in the past?	2nd & 3rd Year	4th Year	0.239	0.042
Q8 Is there any history of hepatitis B in your family?	1st Year	Dental Auxiliaries	0.328	<0.001
Q9 Do you recommend vaccination against hepatitis B among your family members?	Dentists	Interns	0.279	0.003
Q10 Are you vaccinated against hepatitis B?	Dentists	Dental Auxiliaries	0.437	<0.001
Q11 Are you aware of the appropriate intervals of the hepatitis B vaccination?	Dentists	Dental Auxiliaries	0.407	<0.001
Q12 Are you aware about the risk of transmission of hepatitis B among your profession?	Dentists	Dental Auxiliaries	0.490	<0.001
Q13 Are you aware of the first aid treatment in case of acci-dental exposure to hepatitis B?	Interns	Dental Auxiliaries	0.298	0.001
Q14 Do you know the precautionary measures to be taken against hepatitis B in your routine practice?	Interns	Dental Auxiliaries	0.314	<0.001
Q15 Before entering the dental college, were you aware of the risk of exposure to hepatitis B?	4th Year	Dental Auxiliaries	0.189	0.359

Q16 Would you have joined this profession after knowing the potential risk of exposure to hepatitis B?	4th Year	Dental Auxiliaries	0.166	0.611

Majority of the dental professionals were aware of the hepatitis B infection and transmission. Their knowledge about the vaccination schedule and post exposure prophylaxis was lower. The dental auxiliaries showed a very know level of knowledge and awareness in all the questions.

Discussion

Dental health care personnel are at risk for occupational exposure to blood-borne pathogens, including HBV.[11] Universal vaccination against HBV at infancy is currently recommended, and those who have not been vaccinated previously and want protection from HBV infection should also be vaccinated.[11,12] Historically, dental professionals had a three- to four-fold higher risk of HBV infection than in the general population, but vaccines and precautionary methods have contributed to decrease that risk.[13] Dental health care personnel should make sure they have received all three doses of the hepatitis B vaccine, and if unsure whether they have been fully vaccinated, can test their immunity to HBV through serologic assays.[12]

"Prevention is better than cure". We are all familiar with this old adage. However, prevention can only be possible when there is knowledge. Through this study, we aimed at indirectly increasing the awareness about Hepatitis B whilst collecting the data amongst the dental fraternity of Jammu and Kashmir.

Among a total study population of 354 subjects, we found an overall good knowledge among the dental students, interns and dentists. Results showed highly disappointing and dismal performance of the dental auxiliaries in most of the questions. We found an overall awareness level of 88.7% which is comparable to the 84.9 % as found by Bansal et al,[14] 86.6% by Tirupati et al,[5] and 90.6% by Padharbale et al.[15] Nagpal et al[1] found a high percentage of 97.7% subjects to be aware about hepatitis. This high percentage may be attributable to the fact that they studied only dental students. As far as the knowledge about transmission of HBV is concerned, we found 81.55% subjects to be aware of the same which is in concurrence with other studies.[1,16] Knowledge about anti-Hep B vaccination schedule was found to be the lowest amongst all referred studies at 46.6% which is in stark contrast with the study of Sain et al[16] (94%). When asked about their vaccination status, 75.8% subjects from our study stated that they were vaccinated as compared to the 23.7% reported by Bansal et al[14] and 62% by Gayathri et al[17] in India. Among other countries, a study in Brazil[18] in 2013 reported 79.9% vaccination in its cohort and in Bulgaria[19] in 2015, 57.4% subjects reported being vaccinated against HBV. The practice based questions showed a good response of 76.3% for knowledge regarding the precautionary measure to be taken against HBV. About half of the studied subjects were not aware about the risk of exposure to HBV but yet they claim to still have joined the profession after knowing the potential risk of exposure to hepatitis B which echoes the findings of Nagpal et al.[1]

Back in 1991, Chobe et al[20] found a higher incidence of seropositivity of dental personnel when compared to voluntary donors and found a positive linear association with increasing age and number of years spent in dentistry. Thus, they recommended vaccination for all before starting their clinical phase. Inspiration can be derived from the high success rate of Department of Dental Surgery and Periodontology at University of Dundee, Dundee, which showed that 99.2% of the medical and dental students were aware of immunization of HBV.[21] This can be attributed to their policy of immunizing prospective students before admission.

In case of most answers, a general temporal relationship was seen between knowledge and relative seniority in the profession i.e. the first and second year students were found to be less knowledgeable as compared to the interns and dentists. This could be due to the lack of school based health education in India as hypothesized by Nagpal et al.[1]

The fact that the auxiliary staff was ignorant in most aspects underlines the fact that they need particular care and attention in this respect. Our findings are in stark contrast to those of Patil et al[22] who found a relatively adequate level of knowledge amongst their Auxiliary Health Care Workers (AHCW). This, points towards the gross disparity between the north and south India. It is our primary responsibility to ensure the safety of the AHCW as they form the backbone of healthcare. Since, most of them are either illiterate or not adequately educated, it becomes our duty to raise awareness about various health hazards associated in the profession amongst them.

The authors recommend conducting regular continuing dental education (CDE) programs and workshops in which all of the dental staff in the hospitals be included so as to improve their awareness about such highly infectious diseases. The need for enforcing strict preventive measures like following the universal precautions cannot be stressed enough by the dental staff amongst all the fellows. The Dental Council of India should make mandatory vaccination in the first year of entering dental school a norm. Also, it should be

ensured by the concerned authorities such as the hospital administrators and superintendents that the employees of the dental hospitals and clinics especially the auxiliary workers are adequately immunized. Furthermore, the authors propose a mandatory pre-requisite for starting dental clinical practice in India on the lines of Sacchetto et al.[18] The dentists must furnish Anti-HBS test results before setting up their respective practices. In this manner, the government can ensure a restriction on the HBV spread to the patients and the general population.

The limitations of this study includes the fact that it was restricted to a small demographic in Jammu and Kashmir with a sample size of 354 individuals. Further studies with large cohorts are required to extrapolate these findings to the general population. Furthermore, the study design which was a survey, was a challenge. As it was a self-administered questionnaire, there was no way to verify the answers. For example, how to distinguish between the absence of vaccine and the absence of knowledge about it? Specific tests such as checking the sero-positivity of the subjects in relation to HBV can address this issue. Lastly, it was a cross-sectional study which means that the results depict the level of awareness only the time at which the data was collected. Ideally follow-up studies in the same cohort studied previously would depict the usefulness of such studies in improving the awareness regarding the subject.

Conclusion

Our study found an overall good awareness level in the professionals studied but a less than satisfactory level in the auxiliary workers. Amongst the professionals, the first and second year students showed a relatively lower level of awareness. The authors thus recommend regular awareness camps, CDEs and workshops for whole of the dental fraternity. Moreover, the government should enforce mandatory laws to curb the HBV menace in our country.

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