Original Article

Hepatitis B: Its awareness, practice and frequency of vaccination among selected high risk health-care workers at tertiary care hospitals in Agartala city

Abstract

Background: Hepatitis B virus (HBV) infection is a global problem and >350 million HBV carriers in the world. **Objectives:** The aim was to assess awareness, practice of selected high risk health care workers (HCW) regarding risk for contracting hepatitis B and self-reported vaccination status. **Materials and Methods:** A cross-sectional study was conducted among 300 selected HCW of AGMC and GBP Hospital, TMC and Dr BRAM Teaching Hospital and Indira Gandhi Memorial Hospital, Agartala during Jan to March 2014. **Results:** About 72.1% respondents were females with overall mean age of 24.10 (standard deviation ±7.011). 67.5% females were within the age group of 18-23 years. Majority (70.4%) of the participants were nursing students and Hindu (92.5%) nuclear families (54.6%). Majority (69.3%) of them were aware that hepatitis B transmission was possible through unsafe sex, infected blood/body fluid, contaminated syringe, needle and scalpel, 19.6% knew through infected blood and body fluids, 5.7% knew through contaminated syringe, needle and scalpel, 1.8% knew through unsafe sex. 59.3% had a history of contact with known hepatitis B case. 62.2% were vaccinated with three doses of hepatitis B vaccine. Majority of the participants had exposed to hepatitis B positive case while at work (P = 0.001). The exposed persons with known hepatitis B cases have consulted doctor, vaccinated and treated with medicines (P = 0.002); used needle destroyer (P = 0.012); vaccinated with 3 doses of hepatitis B vaccine (P = 0.001); and used sterile gloves while performing work (P = 0.000), especially while dealing with blood and body fluid. **Conclusion:** In spite of having good knowledge, the way they practice for prevention of hepatitis B infections were inadequate and need further improvement.

Key words: Health care workers, hepatitis B, knowledge, practice, tertiary care hospitals

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INTRODUCTION

Hepatitis B virus (HBV) infection is a global pandemic, and there are >350 million HBV carriers in the world and with low, nonprofessional attitudes and practices.[1] HBV is a DNA virus and one of many unrelated viruses that cause viral hepatitis and can lead to liver cirrhosis and hepatocellular carcinoma.[2,3] More than three quarters of its infections occur in Asia, Middle East and Africa.[4,5] According to a WHO estimate, >2 billion people in the world have serological evidence of prior HBV infection.[6] Of the world's carriers of HBV, 75% are from Asia.[7] Globally, more than a million people die annually from its related causes.[8] This high prevalence rate with its sequels like liver cirrhosis and hepatocellular carcinoma makes HBV infection a disease of major public health importance worldwide.[9] The prevalence of HBV inadequate policies and inconsistent enforcement of carriers varies from lowest in Japan (<0.00005%),[10] to highest (10-20%) in areas like southeast Asia, China and sub-Saharan Africa.[11] According to a study from Lahore, prevalence of HBsAg in normal subjects was 2.6%,[12] and 3.37% in blood donors of Multan.[13] By virtue of occupation, the health care workers (HCW) are placed in constant danger of acquiring HBV from the infected patients.[14,15] It is the most commonly transmitted as blood-borne infection.[16] Nosocomial transmission can be prevented by the vaccination of healthcare workers.[17] The hepatitis B vaccine provides protection

against the infection.[18] The HCW and laboratory workers generally faced with many occupational risks at work and his/her health and safety may be severely jeopardized if adequate preventive measures are not taken. The prevention of occupational hazards requires a thorough knowledge of the risks and practical measures to be taken.[19] They should familiarize themselves with "universal work precautions," as defined by Center for Disease Control, are a set of precautions designed to prevent transmission of HBV/hepatitis C virus (HCV), human immunodeficiency virus (HIV), and other blood borne infections when providing first aid or health care. Under universal precautions, blood and certain body fluids of all patients are considered potentially infectious for HIV, HBV/HCV and other blood borne pathogens.[20] It is recommended that all HCW take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices.[21]

This system of infection control is, therefore, very important if the risk of transmission of infections in working places are to be minimized, as they may not be aware of the outcome of blood and fluid specimens until they are investigated.[20]

In Tripura, Hepatitis Foundation of Tripura (HFT) a Non Governmental Organization (NGO) is actively working for combating hepatitis B infection in the state. Till 2011, a total of 69, 8811 persons have been vaccinated with a population coverage of 19.41%.[22] It needs to be mentioned that hepatitis B positivity rate in Tripura is between 4% and 5%.[23] Further, 12% of the state's total Muslim population and 8% of the total tribal population suffer from hepatitis B infection.[24]

The purpose of this study is therefore to determine knowledge of HBV and hepatitis B vaccine, frequency of vaccination, and understanding the risk factors for HBV infection among nursing staff, nursing students, nursing interns, and laboratory technicians who are considered high risk and are working in tertiary care hospitals in Agartala city.

MATERIALS AND METHODS

A cross-sectional study was conducted among selected HCW of Agartala Government Medical College and Govinda Ballabh Pant Hospital; Tripura Medical College and Dr BR Ambedkar Memorial Teaching Hospital; and Indira Gandhi Memorial Hospital (a state referral hospital), located at Agartala city during Jan to March 2014. A sample size of 300 was calculated based on 60% prevalence[25] with an absolute error of 6% including 10% nonresponse. Individual sample was selected by convenience sampling and data were collected by pre tested structured questionnaire. The questionnaire had three parts, the first part included the general information related to the participants, and the second part contained the questions related to knowledge and third part related to practice/self-reported vaccination status on HBV. There were 15-item questions related to knowledge and response was binary, recorded as either yes or no. Each item with the correct answer was given 1 (one) with a maximum score of 15 and wrong answer 0 (zero) with a minimum of 0 (zero). The knowledge part had been scored into three categories, that is, poor (0-5), average (6-11) and good (12-15). The participants were asked to complete the questionnaire without leaving any un-attempted or incomplete questions, which were relevant. Verbal informed consent was obtained from the participants and strict confidentiality maintained. Workers who had a history of HBV infection, unlikely to come in contact with blood/body fluid, and those who did not agree were excluded from the study. High-risk HCW were defined as hospital staff exposed to greater risk of acquiring HBV infection due to the specific nature of job including residents, house officers, nursing staff, nursing assistants, sanitary workers, and lady health workers working in surgery/allied, medicine/allied and gynecology/obstetrics operation theatres, emergency reception, Intensive Care Units, hemodialysis department and dental unit.[25] Effectively vaccinated subjects were defined as those who had received three doses of hepatitis B vaccine according to the schedule (0, 1 and 6 months).[25] Data were entered in the computer after preparing master chart and analyzed using Epi info version 6.0, CDC, Atlanta, Georgia, USA. Microsoft Corporation, Redmond, Washington, USA.

RESULTS

In the present study, majority of the respondent's (72.1%) were females and within the age group 18-23 years (67.5%) with an overall mean age of 24.10 (standard deviation [SD] ±7.011), ranging from 18 to 57 years. Majority (70.4%) of the participants were nursing students and remaining were nursing staff (21.1%), lab technician (4.6%) and nursing internees (3.9%). Among them, 92.5% were Hindu, 2.9% Muslim, 2.9% Christian, 1.8% Buddhist and majority of them (54.6%) belonged to the nuclear family.

Majority (98.2%) of them responded that hepatitis B as a virus and the remaining (1.8%) of them responded that hepatitis B as a bacteria. Among them, 259 (92.5%) participants knew about HFT (an NGO) initiated the hepatitis B vaccination in the whole state (in subsidized rate) of Tripura. Majority (69.3%) of them knew that hepatitis B transmission was possible through unsafe sex, blood/body fluid, syringe, needle and scalpel, 55 (19.6%) knew through blood and body fluids, 16 (5.7%) knew through infected syringe, needle and scalpel, 5 (1.8%) knew through sexual route only and the remaining 3.6% could not explain. Seventy-five participants (26.8%) wrongly reported that specific curative treatment was available, whereas 73.2% of them reported no such treatment was available. According to 251 (89.6%) participants, transmission was possible from infected mother to child and 245 (87.5%) were aware that mother to child transmission was preventable possibly through vaccination (91.8%) at birth.

Analysis of the knowledge of hepatitis B infection revealed that 171 (61.5%) respondents knew that hepatitis B vaccine could be given to pregnant mother, while majority of them (62.1%) knew that the vaccine should be avoided to acutely febrile patient. Among the respondents, 245 (87.5%) knew about three doses of the vaccine while 223 (79.6%) of them were aware that the vaccine

was effective for the life time. Majority of the respondents (52.9%) correctly knew about the modes of prevention of hepatitis B infection. Almost half (51.1%) of the respondents were aware of the possible cause of transmission; (55.7%) could explain that hepatitis B infection leads to liver cirrhosis, 36 (12.9%) persons explained for liver cancer and 64 (22.9%) persons explained for both liver cirrhosis and cancer. The occupation of the participants was an important associated factor for awareness regarding hepatitis B infection ($P = 0.005$). The age, religion, type of family and income did not play any role in awareness of hepatitis B infection among the sampled population [Table 1].

One hundred and sixty-six (59.3%) participants reported the history of contact with known hepatitis B case. Among the respondents who had contacted with known hepatitis B case 34.9% had consulted a doctor, vaccinated and treated. 155 (53.6%) respondents recapped needles after use and 89.6% of respondents used needle destroyer. 267 (95.4%) of the respondents were vaccinated with hepatitis B vaccine but 168 (62.2%) participants had completed three doses of hepatitis B vaccine till the time of carrying out of this survey. 271 (96.8%) used sterile gloves while injecting or drawing blood, 96.8% used sterile equipments and 84.6% discarded the used needle and syringe in the safe puncture proof container [Table 2]. The analysis of knowledge with practice revealed that majority of respondents had contacted with hepatitis B positive case while at work ($P = 0.001$); consulted doctors, vaccinated and treated with medicines ($P = 0.002$); used needle destroyer ($P = 0.012$); 3 doses of hepatitis B vaccinated ($P = 0.001$); and used sterile gloves before performing work ($P = 0.000$), especially while dealing with blood and body fluid [Table 3].

Table 1: Association of knowledge with selected sociodemographic variables

Variables	Knowledge score			*P*
	0-5, *n* (%)	6-11, *n* (%)	12-15, *n* (%)	
Age (years)				
18-24	0 (0.0)	15 (27.8)	39 (72.2)	0.066
25-29	0 (0.0)	7 (63.6)	4 (36.4)	
≥30	0 (0.0)	1 (50.0)	1 (50.0)	
Sex				
Male	3 (3.8)	36 (46.2)	39 (50.0)	0.20
Female	3 (1.5)	78 (38.6)	121 (59.9)	
Occupation				
Nursing staff	2 (3.4)	21 (35.6)	36 (61.0)	0.005
Intern nursing	0 (0.0)	8 (72.7)	3 (27.3)	
Nursing student	2 (1.0)	79 (40.1)	116 (58.9)	
Lab technician	2 (15.4)	6 (46.2)	5 (38.50)	
Religion				
Hindu	6 (2.3)	103 (39.8)	150 (57.9)	0.248
Christian	0 (0.0)	3 (37.5)	5 (62.5)	
Buddhist	0 (0.0)	5 (100.0)	0 (0.0)	
Muslim	0 (0.0)	3 (37.50)	5 (62.5)	
Type of family				
Joint	4 (3.1)	49 (38.6)	74 (58.3)	0.494
Nuclear	2 (1.3)	65 (42.50)	86 (56.2)	
Income (Rs.)				
≤10,000	4 (1.6)	103 (41.5)	141 (56.9)	0.281
10,001-20,000	1 (5.3)	5 (26.3)	13 (68.4)	
20,001-30,000	1 (12.5)	4 (50.0)	3 (37.5)	
≥30,001	0 (0.0)	2 (40.0)	3 (60.0)	

The knowledge score of (0-5) was clubbed with average knowledge score (5-11) while performing Chi-square test

DISCUSSION

The present study was conducted among 300 HCW in tertiary care hospitals in Agartala city. Among the participants 72.1% were females and within the age group 18-23 years (67.5%) with a mean age of 24.10 (SD ±7.011), ranging from 18 to 57 years. It was in concurrence with a study from Islamabad, Pakistan where nurses were 72% and lab workers were 27.5%. Their age ranged from 17 to 59 years with a mean age of 34.38 years.[26] Nurses made up the majority of the respondents in the present study. It

Table 2: Distribution of participant's according to their practice regarding hepatitis B infection

Variables	Number	Percentage
History of contact with known hepatitis B case		
Yes	166	59.3
No	114	40.7
Precautionary measure taken after contact with infected case		
Consult a doctor and vaccinated	100	60.2
Consulted doctor, vaccinated and treatment received	58	34.9
Wait and watch	3	1.8
Nothing	5	3.0
Recapping needles after use		
Yes	150	53.6
No	130	46.4
Use of needle destroyer		
Yes	251	89.6
No	29	10.4
Vaccinated with hepatitis B vaccine		
Yes	267	95.4
No	13	4.6
Number of doses received		
One	4	1.5
Two	8	3.0
Three	168	62.2
More than three	86	31.9
Don't remember	4	1.5
Use of sterile gloves while injecting or drawing bloods		
Yes	271	96.8
No	9	3.2
Use of sterile equipments before using		
Yes	271	96.8
No	9	3.2
Discarding the used syringe in		
Safe puncture proof container	237	84.6
Polythene bag	17	6.1
Empty carton box	26	9.3

Table 3: Association of knowledge with practice of the respondent's regarding hepatitis B infection

Variables	Response variables	Knowledge score			*P*
		(0-5), *n* (%)	(6-10), *n* (%)	(11-15), *n* (%)	
History of contact with known hepatitis B case	Yes	0 (0.0)	60 (36.14)	106 (63.86)	0.001
	No	6 (5.26)	54 (47.36)	54 (47.36)	
Measures taken after contact with hepatitis B case*	Consult a doctor and vaccinated	0 (0.0)	44 (44.0)	56 (56.0)	0.002
	Consulted doctor, vaccinated and medicines taken	0 (0.0)	12 (28.69)	46 (79.31)	
	Wait and watch	0 (0.0)	3 (100.0)	0 (0.0)	
	Nothing	0 (0.0)	1 (20.0)	4 (80.0)	
Recap needles after use	Yes	3 (2.0)	54 (36.0)	93 (62.0)	0.209
	No	3 (2.31)	60 (46.15)	67 (51.54)	
Use of needle destroyer	Yes	4 (1.6)	97 (38.6)	150 (59.8)	0.012
	No	2 (6.9)	17 (58.6)	10 (34.5)	
Vaccinated with hepatitis B vaccine	Yes	5 (1.9)	108 (40.4)	154 (57.4)	0.309
	No	1 (7.7)	6 (46.2)	6 (46.2)	
Number of doses taken**	One	1 (25.0)	1 (25.0)	2 (50.0)	0.001
	Two	1 (12.5)	4 (50.0)	3 (37.5)	
	Three	1 (0.59)	67 (39.89)	100 (59.52)	
	More than three	2 (2.33)	33 (38.37)	51 (59.30)	
	Don't remember	0 (0.0)	4 (100.0)	0 (0.0)	
Use of sterile gloves while injecting or drawing bloods	Yes	4 (1.48)	110 (40.60)	157 (57.93)	0.000
	No	2 (22.00)	4 (44.0)	3 (34.00)	
Use of sterile equipments	Yes	5 (1.85)	109 (40.22)	157 (57.93)	0.086
	No	1 (11.11)	5 (55.56)	3 (33.33)	
Discarded the used needle/ syringe in***	Safe puncture proof container	3 (1.27)	95 (40.08)	139 (58.65)	0.158
	Polythene bag	1 (5.88)	7 (41.18)	9 (52.94)	
	Empty carton box	2 (7.70)	12 (46.15)	12 (46.15)	

NB: The knowledge of (0-5) for *, ** and *** were clubbed together with average score (6-11) and 0 cells were also clubbed with adjacent row while performing Chi-square test

was also in concurrence with a study in Kuwait where majority of the respondents were participated from nurses and doctors.[27] The availability in the working place during working hours and greater numbers positioned in different wards and clinics in the hospitals might be the reason for more participation from this group compared to laboratory and others technicians.

Majority (98.2%) of them responded that hepatitis B as a virus. A study from Sindh, Pakistan showed that 67.76% women correctly responded that virus was a cause of hepatitis.[28] We found that the majority of them knew that hepatitis B transmission was possible through unsafe sex, infected blood/body fluid, contaminated syringe, needle and razor blade. Bakry *et al.* reported that, 98.6% of nurses, 94.8% of laboratory technicians and 95.7% of other paramedical knew that HBV transmitted via blood.[29] A study from Sindh,[28] Pakistan showed that 33.88% transmission of HBV via infected blood transfusion, 40.49% contaminated needles, 38.0% un-sterilized instruments, and 19.0% mentioned sexual intercourse.

According to participants, transmission was possible from an infected mother to child and was aware that the mother to child transmission was preventable possibly through vaccination (91.8%) at birth. A study among Pakistani women from Sindh showed that transmission could be possible from the mother to child (17.35%). Only 42.14% women knew that the vaccine was available for prevention.[28] The knowledge level we found in the present study was quite high. This could be due to fact that the IEC activities carried out by NGOs like HFT might have contributed in this regards, over and above the public health sector activities.

In the present study, 87.5% knew that three doses of the vaccine as a full course while 79.6% of them were aware that the vaccine was effective for the life time. 168 (62.2%) participants had taken three doses of hepatitis B vaccine. Shagufta *et al.*[26] reported that 57.6% were completely vaccinated, 18.3% partially vaccinated and 24% were not vaccinated at all. More than 50% ($P < 0.001$) of HCW were not vaccinated against HBV.[29] Jitendra and Jignai reported that 91.5% were not immunized against HBV among the study participants.[21] Lack of awareness and unfavorable attitude was identified as the main factor responsible for the lack of vaccination.[26] In the present study, 53.6% respondents recapped needles after use and 89.6% used needle destroyer. Bakry *et al.* reported that 81% of the respondents were routinely used to recap needles after use.[29] Recapping of needle was crucial for accidental finger prick injury leading to contracting blood borne disease including hepatitis B. Majority of respondents had contacted with hepatitis B positive case while at work; consulted doctors, vaccinated and treated with medicines; vaccinated with 3 doses of hepatitis B vaccine. Shagufta *et al.* (2010)[26] reported that 53.5% had been exposed to needle stick injury at least 1-5 times in their whole professional life; 48.1% (99) of the needle stick injury exposed personnel were aware of post exposure prophylaxis whereas 51.9% of them were ignorant of standard prophylaxis.

Two hundred and seventy-one (96.8%) wear sterile gloves while injecting or drawing blood, 96.8% used sterile equipments and 84.6%

discarded the used needle and syringe in the safe puncture proof container. Jitendra and Jigna reported that all lab technicians (100.0%) among the study participants wore gloves while performing work in the health facility.[21] It was in concurrence with our study results.

CONCLUSION

In spite of having good knowledge, the way they practice for the prevention of hepatitis B infections were inadequate and needed further improvement. Reorientation training for the HCW is to be carried out regularly to increase awareness and changes of attitude among them. Further research is recommended including all level of HCW.

REFERENCES

1. Pyrsopoulos NT, Rajendar K. Hepatitis B. Practice essentials. eMed J; 3: 2005. Available from: http://www.emedicine.com/gastroenterology/hepatitis B.
2. Barker LF, Shulman NR, Murray R, Hirschman RJ, Ratner F, Diefenbach WC, *et al.* Transmission of serum hepatitis 1970. JAMA 1996;276:841-4.
3. Ozaras R, Tahan V. Acute hepatitis C: Prevention and treatment. Expert Rev Anti Infect Ther 2009;7:351-61.
4. Alavian SM, Hosseini-Moghaddam SM, Rahnavardi M. Hepatitis C among hemodialysis patients: A review on epidemiologic, diagnostic, and therapeutic features. Hepat Mon 2007;7:153-62.
5. Williams R. Global challenges in liver diseases. Hepatology 2006;44:521-6.
6. World Health Organization. Hepatitis B. Fact Sheet No. 204. Geneva: WHO; 2000.
7. Ameen R, Sanad N, Al-Shemmari S, Siddique I, Chowdhury RI, Al-Hamdan S, *et al.* Prevalence of viral markers among first-time Arab blood donors in Kuwait. Transfusion 2005;45:1973-80.
8. Chang MH. Hepatitis B virus infection. Semin Fetal Neonatal Med 2007;12:160-7.
9. Amazigo UO, Chime AB. Hepatitis-B virus infection in rural and urban populations of eastern Nigeria: Prevalence of serological markers. East Afr Med J 1990;67:539-44.
10. Tanaka J, Mizui M, Nagakami H, Katayama K, Tabuchi A, Komiya Y, *et al.* Incidence rates of hepatitis B and C virus infections among blood donors in Hiroshima, Japan, during 10 years from 1994 to 2004. Intervirology 2008;51:33-41.
11. Hu KQ, Pan CQ, Goodwin D. Barriers to screening for hepatitis B virus infection in Asian Americans. Dig Dis Sci 2011;56:3163-71.
12. Amin J, Yousuf H, Mumtaz A, Iqbal M, Ahmad R, Adhani SZ, *et al.* Prevalence of hepatitis B surface antigen and anti hepatitis C virus. Prof Med J 2004;11:334-7.
13. Mahmood MA, Khawar S, Anjum AH, Ahmed SM, Rafiq S, Nazir I, *et al.* Prevalence of hepatitis B, C and HIV infection in blood donors of multan region. Ann King Edward Med Coll 2004;10:459-61.
14. Tariq WZ, Ghani E, Karamat KA. Hepatitis B in health care personnel. Pak Armed Forces Med J 2000;50:56-7.
15. Ciorlia LA, Zanetta DM. Hepatitis B in healthcare workers: Prevalence, vaccination and relation to occupational factors. Braz J Infect Dis 2005;9:384-9.
16. Tan L, Hawk JC 3rd, Sterling ML. Report of the Council on Scientific Affairs: Preventing needlestick injuries in health care settings. Arch Intern Med 2001;161:929-36.
17. Petti S, Messano GA, Polimeni A. Dentists' awareness toward vaccine preventable diseases. Vaccine 2011;29:8108-12.
18. Lin CS, Zhu JY, Mai L, Lee WH, Gao ZL. Status of vaccination against hepatitis B among postgraduate students in medical higher education institutions in Guangzhou. Zhonghua Shi Yan He Lin Chuang Bing Du Xue Za Zhi 2007;21:114-6.
19. Ogunbodede EO. Occupational hazard and safety in dental practice. Niger J Med 1996;5:11-3.
20. Johnson & Johnson Medical, Inc. Blood-borne Infection: A Practical Guide to OSHA Compliance. Arlington, Texas: Johnson & Johnson Medical, 1992.
21. Jitendra Z, Jigna K. Knowledge, attitudes and practice of laboratory technicians regarding universal work precaution. Natl J Med Res 2012;2:113-5.
22. Bhowmik P, Choudhury AR, Sinha P. Combating hepatitis B: The Tripura model. Euroasian J Hepatogastroenterol 2011;1:39-41.
23. Bhowmik P. Three injections for everyone. Available from: http://www.tripurainfo.com/login/Archives/274.htm. [Last accessed on 2013 Dec 12].
24. Hepatitis cases rises in Tripura. The Telegraph, Calcutta. Sunday, July 17, 2005. Available from: http://www.telegraphindia.com/1050717/asp/northeast/story_4998811.asp. [Last accessed on 2013 Dec 11].
25. Saad AR, Amer E, Humayun A, Imran F. Awareness and frequency of hepatitis B vaccination in high-risk health care workers at a tertiary care hospital. Rawal Med J 2013;38:3-6.
26. Shagufta H, Niveen AP, Rabia S. Hepatitis B and C prevalence and prevention awareness among health care workers in a tertiary care hospital. Int J Pathol 2010;8:16-21.
27. Soad AH, Ghadeer AA, Afaf EM, Ghizayel RA, Gamal M, Medhat KE. Knowledge, attitude and behavior of health care workers regarding hepatitis B infection in primary health care, Kuwait. Greener J Med Sci 2012;2:77-83.
28. Haider G, Haider A. Awareness of women regarding hepatitis B. J Ayub Med Coll Abbottabad 2008;20:141-4.
29. Bakry SH, Mustafa AF, Eldalo AS, Yousif MA. Knowledge, attitude and practice of health care workers toward Hepatitis B virus infection, Sudan. Int J Risk Saf Med 2012;24:95-102.

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