

## Research Article

# A study of knowledge and practice regarding Hepatitis B among nursing students attending tertiary care hospitals in Agartala city

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## ABSTRACT

**Background:** Hepatitis B virus (HBV) infection is a global problem and more than 350 million HBV carriers in the world. The objective of the study is to assess awareness, practice of selected nursing students regarding risk for contracting hepatitis B and self-reported vaccination status.

**Methods:** A Cross sectional study was conducted among 300 selected nursing students of AGMC & GBP Hospital, TMC and Dr BRAM Teaching Hospital and Indira Gandhi Memorial Hospital, Agartala during Jan to March 2015.

**Results:** 73.3% were females and majority of them were within the age group 19-22 years (50.2%) with a mean age of 21.07 years (SD±2.321). Mean age of male and female were 21.52 (SD±2.320) & 20.90 (SD±2.315) years respectively. Majority (99.7%) of participants knew Hepatitis B is a virus. The mean knowledge score was 16.2 (SD±3.209) (p=0.000). Majority (92.7%) knew that Hepatitis B is transmissible and 63.1% of them were aware that Hepatitis B transmission was possible through unsafe sex, infected blood/body fluid contaminated syringe, needle & scalpel. Almost eighty five percent (84.7%) respondents were vaccinated with three doses of Hepatitis B vaccine. Majority of the participants had accidental injuries (53.4%) case while at work and tested for HBV (75.0%). Among those who exposed were consulted doctors; used needle destroyer; vaccinated with 3 doses of hepatitis B vaccine and used sterile gloves while performing work especially while dealing with blood and body fluid.

**Conclusion:** In spite of having good knowledge their practice for prevention of hepatitis B was not satisfactory.

**Keywords:** Knowledge, Practice, Hepatitis B, Nursing students, Tertiary care Hospitals

## INTRODUCTION

Hepatitis B virus (HBV) infection is a global pandemic and there are more than 350 million HBV carriers in the world.<sup>1</sup> HBV is a DNA virus and one of many unrelated viruses that cause viral hepatitis and can lead to liver cirrhosis and hepatocellular carcinoma.<sup>2,3</sup> More than three quarters of its infections occurs in Asia, Middle East and Africa.<sup>4,5</sup> According to a WHO estimate, more than two billion people in the world have serological evidence of prior HBV infection.<sup>6</sup> Of the world's carriers of HBV, 75% are from Asia.<sup>7</sup> Globally, more than a million people die annually from its related causes.<sup>8</sup> This high

prevalence rate with its sequels like liver cirrhosis and hepatocellular carcinoma makes HBV infection a disease of major public health importance worldwide.<sup>9</sup> The prevalence of HBV inadequate policies and inconsistent enforcement of carriers varies from lowest in Japan (less than .00005%),<sup>10</sup> to highest (10 to 20 %) in areas like southeast Asia, China and sub-Saharan Africa.<sup>11</sup> Pakistan lies in the intermediate to high prevalence areas. According to a study from Lahore, prevalence of HBsAg in normal subjects was 2.6%,<sup>12</sup> and 3.37% in blood donors of Multan.<sup>13</sup> By virtue of occupation, the health care workers (HCW) are placed in constant danger of acquiring HBV from the infected patients.<sup>14,15</sup> It is the

most commonly transmitted as blood-borne infection.<sup>16</sup> Nosocomial transmission can be prevented by the vaccination of healthcare workers.<sup>17</sup> The hepatitis B vaccine provides protection against the infection.<sup>18</sup>

The health care workers and laboratory workers generally are faced with many occupational risks at work and his/her health and safety may be severely jeopardized if adequate preventive measures are not taken. These hazards can be physical, chemical and biological. The prevention of occupational hazards requires a thorough knowledge of the risks and practical measures to be taken.<sup>19</sup> They should familiarize themselves with "universal work precautions", as defined by Centre for Disease Control, are a set of precautions designed to prevent transmission of Hepatitis B/C virus, Human immunodeficiency virus (HIV), and other blood borne infections when providing first aid or health care. Under universal work precautions, blood and certain body fluids of all patients are considered potentially infectious for HIV, HBV/HCV and other blood borne pathogens.<sup>20</sup>

Universal work precautions apply to blood, other body fluids containing visible blood, semen, and vaginal secretions. Universal work precautions also apply to tissues and to the following fluids: cerebrospinal, spinal, pleural, peritoneal, pericardial, and amniotic fluids. Universal work precautions do not apply to faeces, nasal secretions, sputum, sweat, tears, urine, and vomitus unless they contain visible blood. Universal work precautions do not apply to saliva except when visibly contaminated with blood or in the dental sitting where blood contamination of saliva is predictable.<sup>21</sup> It is recommended that all health care workers take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices.

Health workers are exposed to a large pool of specimens including body fluids from patients suffering from HBV/HBC/HIV infection such HBV/HCB/HIV.<sup>22,23</sup> They seem to have a poor perception of risk of infections and are not compliant with the basic principles of universal work precautions.<sup>24</sup> 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.<sup>21</sup>

Vaccine prevents the transmission of HBV. However, vaccination awareness has been found to be poor among the health care workers in both developing and developed countries. The Hepatitis B vaccination is non-infectious, vaccine prepared from recombinant yeast culture rather than human blood or plasma. There is no risk of contamination of any other blood borne pathogens or any chance of developing HBV from the vaccine. It is achieved by administration of a three-dose regimen, with the second and third doses being given one and six months after the initial dose. Antibody levels of over 100 µ/ml indicate a

good response to vaccination. Antibody level between 10 and 100 µ/ml indicate a poor response.

The purpose of this study is therefore to determine knowledge of the HBV vaccine, frequency of vaccination, and understanding of risk factors for HBV infection among nursing students attending tertiary care hospitals in Agartala City. The objectives were to assess awareness, practice of selected nursing students regarding risk for contracting hepatitis B and self-reported vaccination status.

## METHODS

A cross-sectional study was conducted among nursing students attending 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 2015. A sample size of 300 was calculated based on 60% prevalence<sup>45</sup> with an absolute error of 6% including 5% non response. 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 22-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 22 and wrong answer 0 (zero) with a minimum of 0 (zero). The knowledge part had been scored into three categories, that is, poor (0-7), average (8-14) and good (15-22). 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.<sup>45</sup> 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).<sup>45</sup> Data were entered in the computer after preparing master chart and analyzed using Epi info version 6.0, CDC, Atlanta, Georgia, USA. Microsoft excel 2007 software Microsoft Corporation, Redmond, Washington, USA. Percentage and mean were calculated; and X<sup>2</sup> test was performed while analyzing data. P value < 0.05 was considered statistically significant.

**RESULT**

The present study was conducted among 300 nursing students to assess their knowledge and how they have adopted safety measures in preventing further spread of the disease among themselves and also towards patients.

It was observed that half (50.2%) of the participants were within the age group of 19-22 year overall mean age of the respondents was 21.07 years (SD±2.321). Almost equal proportion of the students represented in the study (1<sup>st</sup> year 33.8%, 2<sup>nd</sup> year 34.5% and 3<sup>rd</sup> year 27.5%). (Table 1).

**Table 1: Socio-demographic profiles of the participants.**

Variables	Number (n)	Percentages (%)
Age group (yrs)	<19	77 26.5
	19 - 22	146 50.2
	>22	68 23.4
Sex	Male	79 26.7
	Female	217 73.3
Year of study	1 <sup>st</sup> year	96 33.8
	2 <sup>nd</sup> year	98 34.5
	3 <sup>rd</sup> year	78 27.5
	Internee	12 4.2
Address	Rural	82 30.4
	Urban	188 69.6
Caste	ST	30 10.4
	SC	59 20.4
	OBC	74 25.6
	General	121 41.9
	Other(specific)	5 1.7
Number of family member	<4	80 27.7
	4-5	178 61.6
	>5	31 10.7
Family income (Rs.)/month	<10000	104 43.9
	10000 - 15000	65 27.4
	>15000	68 28.7
Mean age (SD±): Over all- 21.07 years (SD±2.321), M- 21.52 (SD± 2.320), F-20.90 (SD±2.315)		

Almost (99.7%) all of the respondents were aware of the Hepatitis B is a virus. They were aware that doctors, nurses and laboratory technician (80.2%) were at risk for contracting the disease while at work. This virus could be transmitted through needle stick injuries (83.2%) and unprotected sex (63.1%). More than eighty percent (83.2%) aware that it could cause liver disease, knew about screening test and 76.3% said screening required before doing surgery. Nearly eighty (78.8%) percent knew that hepatitis B vaccine has 3 doses schedule and it is the effective preventive measure (96.6%) (Table 2).

**Table 2: Distribution of the participants according to their knowledge of hepatitis B virus.**

Variables	Number (n)	Percentages (%)
Hepatitis B is a Virus	Yes	295 99.7
	No	1 .3
Knew Hepatitis Foundation of Tripura	Yes	276 94.8
	No	15 5.2
Specific Treatment Available	Yes	243 85.0
	No	43 15.0
Vertical transmission is possible	Yes	252 91.0
	No	25 9.0
Vertical transmission is preventable	Yes	246 86.0
	No	40 14.0
Vaccination at Birth can prevent	Yes	226 80.4
	No	55 19.6
HepB known as Serum Hepatitis	Yes	186 71.0
	No	76 29.0
Doses of Hepatitis B vaccine	1 dose	6 2.1
	2 doses	25 8.7
	3 doses	227 78.8
	>3 doses	22 7.6
	Don't know	8 2.8
Hepatitis B causes Liver disease	Yes	233 83.2
	No	47 16.8
HBV Surface Antigen used for Screening	Yes	188 76.4
	No	58 23.6
Patient Undergoing Surgery need for screening	Yes	203 76.3
	No	63 23.7
Doctor Nurse Lab. Tech are High risk	Yes	231 80.2
	No	57 19.8
Transmission through needle stick injuries is possible	Yes	237 83.2
	No	48 16.8
Transmission through Unprotected Sex is possible	Yes	178 63.1
	No	104 36.9
Hepatitis B not transmitted by hand shaking	Yes	214 72.5
	No	81 27.5
HepB Preventable by Vaccine	Yes	283 96.6
	No	10 3.4

NB: Responses in different items were not equal. So, total number were different.

The overall mean knowledge score was 16.2 (SD±3.209) (p=0.000). The minimum and maximum score in male and female were 4, 21 and 4, 22 respectively. More than ninety percent (94.1%) of the participants in the age group of >22 years had showed good knowledge (p=0.000). (Table 3). The academic years of study were

significantly associated with knowledge of hepatitis B virus infection (p=0.000).

**Table 3: Association of Knowledge with selected socio demographic variables.**

Variables	Knowledge score			P value
	0-7, n (%)	8-14, n (%)	15-22, n (%)	
<b>Age (years)</b>				
<19	2 (7.7)	11 (42.3)	13 (50.0)	0.000
19-22	3 (1.5)	38 (19.3)	156 (79.2)	
>22	0 (0.0)	4 (5.9)	64 (94.1)	
<b>Sex</b>				
Male	1 (1.3)	12 (15.2)	66 (83.6)	0.613
Female	4 (1.8)	43 (19.8)	170 (78.3)	
<b>Year of study</b>				
1 <sup>st</sup> year	4(4.2)	39(40.6)	53(55.2)	0.000
2 <sup>nd</sup> year	1(1.00)	7(7.1)	90(91.8)	
3 <sup>rd</sup> year	0(0.0)	9(11.5)	69(88.5)	
Intern nurse	0(0.0)	0(0.0)	12(100.0)	
<b>Occupation</b>				
Nursing students	5(1.80)	55(20.0)	215(78.2)	0.105
Intern nursing	0(0.0)	1(4.0)	24(96.0)	
<b>Address</b>				
Rural	1(1.20)	13(15.9)	68(82.9)	0.963
Urban	3(1.6)	31(16.50)	154(81.9)	
<b>Caste</b>				
ST	0(0.0)	6(20.0)	24(80.0)	0.793
SC	1(1.7)	12(20.3)	46(78.0)	
OBC	1(1.4)	8(10.8)	65(87.8)	
General	3(2.5)	25(20.7)	93(76.9)	
Others	0(0.0)	1(20.0)	4(80.0)	
<b>Income(Rs)</b>				
<10,000/-	0(0.0)	16(15.4)	88(84.6)	0.532
10000-15000	1(1.5)	10(15.4)	54(83.1)	
>15000	2(1.3)	12(16.0)	54(82.7)	
<b>Number of family members</b>				
<4	1(1.3)	18(22.5)	61(76.3)	0.463
4 - 5	4(2.2)	31(17.4)	143(80.3)	
>5	0(0.0)	3(9.7)	28(90.3)	

NB: The knowledge score of (0-7) was clubbed with average knowledge Score (8-14) while performing X2 test.

It was observed that 84.7% of the participants reported that they were vaccinated with hepatitis B vaccine. It was further observed that 69.3% reported recapping needles after use, 53.4% had accidental needle prick injuries, 75.0% tested for hepatitis B virus infection after injuries and 86.3% consulted doctor. It was worth to mention that 94.0% use sterile needles and syringes; and 94.0% use sterile gloves at all the times. 83.1% discarded the needles and syringes after use in a puncture proof container (Table 4).

**Table 4: Distribution of participants' according to their practice regarding hepatitis B virus.**

Variables	Number (N)	Percentage (%)
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<b>Vaccinated with Hepatitis B vaccine</b>		
Yes	254	84.7
No	22	7.3
<b>Recapping needles after use</b>		
Yes	199	69.3
No	88	30.7
<b>Use of needle destroyer</b>		
Yes	258	90.2
No	28	9.8
<b>Accidental injuries</b>		
Yes	133	53.4
No	116	46.6
<b>If you had accidental injuries, did you tested for Heb B?</b>		
Yes	84	75.0
No	28	25.0
<b>If positive what did you do</b>		
Consulted doctor	63	86.3
Not consulted	1	1.4
Did not suspect the person is positive for HepB	9	12.3
<b>Do you use sterile syringe</b>		
Yes	249	94.0
No	16	6.0
<b>How often you use sterile syringe</b>		
Always	150	82.9
Sometimes	9	5.0
Don't remember	15	8.3
Others	7	3.9
<b>Use of sterile gloves while injecting or drawing bloods</b>		
Yes	266	94.0
No	17	6.0
<b>Use of sterile equipments before using</b>		
Yes	261	93.5
No	18	6.5
<b>Discarding the used syringe in</b>		
Safe puncture proof container	231	83.1
Polythene bag	15	5.4
Empty Carton box	32	11.5

NB: In few items the response were missing due to non response. So, the numbers were not equal in different items. So the total numbers were not similar.

It was observed that the participants with good knowledge (92.1%) had adopted safety measures against the hepatitis B infection (p=0.653). Surprisingly the recapping of needles also more predominantly observed among the good knowledge (87.4%) group (p=0.004). As per expectations, it was further observed that self reported vaccination against hepatitis B infection were more in the good knowledge (83.5%) group (p=0.355). The participants having good knowledge (86.0%) used hub cutter as a precautionary measures against any blood borne infection (p=0.000). The use of sterile gloves before performing works also predominantly seen among the good knowledge (82.0%) group (p=0.071). The participants with good knowledge (86.3%) had used predominantly sterile needle and syringes (p=0.000) while at work. It was noteworthy to mention that of the participants with good knowledge (84.8%) used puncture proof container for discarding needles and syringes (p=0.012) (Table 5).

**Table 5: Association of knowledge with practice regarding Hepatitis B virus.**

Variables	Response variables	Knowledge score			p-value
		(0—7), n (%) <sup>*</sup>	(8—14), n (%)	(15—22) n (%)	
Measures taken after contact with Hepatitis B Case <sup>*</sup>	Consult a doctor and treated	0(0.0)	5(7.9)	58(92.1)	0.653
	Not consulted yet	0(0.0)	0(0.0)	1(100.0)	
	Did not suspect the patient if suffering from Hep B infection	0(0.0)	0(0.0)	9(100.0)	
Recap needles after use	Yes	1(0.5)	24(12.1)	174(87.4)	0.004
	No	2(2.3)	23(26.1)	63(71.6)	
Use of needle destroyer	Yes				
	No				
Vaccinated with Hepatitis B vaccine	Yes	2(0.8)	40(15.7)	212(83.5)	0.355
	No	0(0.0)	6(27.3)	16(72.7)	
Use of Hub cutter	Yes	1(0.4)	35(13.6)	222(86.0)	0.000
	No	2(7.1)	15(53.6)	11(39.3)	
Use of sterile gloves while injecting or drawing bloods	Yes	2(0.8)	46(17.3)	218(82.0)	0.071
	No	1(5.9)	1(5.9)	15(82.2)	
Use of sterile equipments	Yes	3(1.1)	41(15.7)	217(83.1)	0.145
	No	0(0.0)	6(33.3)	12(66.7)	
Use of sterile syringe & needle in each time	Yes	1(0.4)	33(13.3)	215(86.3)	0.000
	No	0(0.0)	9(56.3)	7(43.8)	
Discarded the used needle/ syringe in <sup>***</sup>	Safe puncture proof container	2(0.9)	33(14.3)	196(84.8)	0.012
	Polythene bag	0(0.0)	7(46.7)	8(53.3)	
	Empty Carton box	1(3.1)	4(12.5)	27(84.4)	

NB: The knowledge of (0-7) for \*, \*\* and \*\*\* were clubbed together with average score (8-14) and 0 cells were also clubbed with adjacent row while performing X<sup>2</sup> test. In few items the some responses were missing due to non response. So the total numbers were not similar.

## DISCUSSION

This cross sectional study was conducted among 300 nursing students who were attending tertiary care hospitals in Agartala city to assess their knowledge and current level of practice.

In this study we observed that half of the participants were within the age group of 19-22 years with a mean age 21.07 years (SD±2.321) and nearly one-third below 19 years. Paudel et al. (2012) from Nepal reported that about 60.5% were 18-20 years old (mean age ± SD =18.54 ± 2.001 years) and almost one-third (31.2%) were below 18 years.<sup>30</sup> A study conducted in North India showed that the mean age of the study population (medical and Nursing Student) was 22.36 ± 23.<sup>46</sup> Almost equal proportion of the students represented from different academic year in the present study. Paudel et al. (2012) from Nepal reported that two-fifths (39.5%) of the participants were studying in the first year, one-third (31.7%) in the second year, and the remaining 28.8% were studying in the third year of PCL nursing.<sup>30</sup> Almost forty four percent of the students family income were within Rs. 10,000/- per month followed by more than Rs. 15,000/- and Rs. 10,000/- to 15,000/-. Paudel et al. (2012)

from Nepal reported that about 42.3% had a monthly family income between Rs 10,000-15,000/-per month followed by 35.3% had less than 10,000/-per month.<sup>30</sup>

Almost all of the respondents were aware of the Hepatitis B virus and also the Hepatitis foundation of Tripura, a non-governmental organization (NGO) in the state. This NGO is looking after the total vaccination coverage in the state. This organization is arranging subsidized rate for hepatitis B vaccine for vaccination in the state. A study from Sindh, Pakistan showed that 67.76% women correctly responded that virus was a cause of hepatitis.<sup>47</sup> Samuel et al. (2009) reported that more than three-quarters of the respondents (81%) had ever heard of hepatitis B infection prior to the study.<sup>33</sup> Shah et al. (2007) in Pakistan reported that 64% responded said that virus was the cause. In the present study majority said that hepatitis B virus infection also called as serum hepatitis.<sup>36</sup> Swarnalata (2014) reported that 68.7% of the students were correctly knew that Hepatitis B infection originally known as serum hepatitis.<sup>34</sup> In the present study it was observed that majority of the students wrongly mentioned that it could be treated although no definitive curative treatment available for the hepatitis B infection. More than ninety percent of the respondents mentioned that hepatitis B positive mother to child could

be transmitted if no precautionary measures taken. They said that vaccination could prevent the mother to child transmission and one of the precautionary measures could be vaccination at birth of the child if mother was positive for HBV. They also aware that doctors, nurses and laboratory technician were at risk for contracting the disease while at work. The virus could be transmitted through needle stick injuries and unprotected sex. Shah et al (2007) in Pakistan reported that 95% mentioned that liver was affected by hepatitis B. Only 64% responded that a virus was the cause. Regarding transmission of hepatitis B, 47% mentioned infected blood transfusion, 50% contaminated needles, 25% un sterilized instruments and only 22% mentioned sexual contact. A 65% mentioned that it was curable and 38.5% said it was a preventable disease. Vaccination, use of disposable syringes, use of sterilized instruments and practicing safe sex could prevent Hepatitis B infection according to 34%, 30%, 13% and 6.5% vaccinators respectively.<sup>36</sup> Khan et al. (2010) reported that 53.9% believed that it was curable up to certain level, with females showing higher percentage than male students ( $p=0.005$ ).<sup>43</sup> In the present study more than eighty percent were aware that it could cause liver disease, aware of screening test and screening was required before doing any surgery. More than seventy two percent said that hand shaking would not transmit the virus. Swarnalata (2014) reported that acute illness due to HBV causes liver inflammation ( $p=0.01$ ) and doctors and nurses were at an increased risk for Hepatitis B infection ( $p=0.03$ ). Transmission of Hepatitis B on exposure to blood or other body fluids, needle prick injuries and unprotected sexual exposure was correctly known to 88.1%, 79.9%, and 69.4% participants respectively.<sup>34</sup> The present study results were coherent with another study among the dental students where in majority of them knew about transmission of Hepatitis B by blood borne, needle injuries or sexual exposure.<sup>48</sup> Another study conducted among first year nursing students revealed that 35.96% of study subjects were aware that unsafe blood transfusion could lead to Hepatitis B.<sup>46</sup> Paudel et al. (2012) from Nepal reported that most of the students (97.4%) said that the infected blood receivers were the high risk population followed by babies born from the infected mother (84.2%), intravenous drug users (81.3%), health workers (69.1%), and person with multiple sexual partners (67.5%).<sup>30</sup> A study in Bangladesh showed that prostitutes were the high risk group of Hepatitis B (20%) followed by health workers including doctors and nurses (15%).<sup>49</sup> A study from Karachi, Pakistan, reported that the risk of getting Hepatitis B was high among poor people living in unhygienic conditions (34%) followed by surgeons (32%), barbers (12%), intravenous drug users (8%), blood recipients (6%), uneducated people (6%), and sex workers (2%).<sup>50</sup> A study from Sindh,<sup>47</sup> 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. Swarnalata (2014) reported that 44.8% students were aware that it was not transmitted by hand shaking, 72.4% said that hepatitis B (HBsAg) surface

antigen used for screening, 65.7% said screening was necessary before undergoing surgery and 67.9% said doctors and nurses were high risk group of population for contracting HBV.<sup>34</sup> In the present study knowledge regarding hand shaking was quiet high compare to their study but coherent with another study conducted by other investigators who obtained 95% correct answers among the respondents.<sup>51</sup> Other studies reported that 56% of the respondents knew about it.<sup>46</sup> In the present study nearly eighty percent knew that hepatitis B vaccine has 3 doses schedule and vaccine was one of the effective preventive measures. Paudel et al. (2012) from Nepal reported that almost all (99.7%) participants reported that vaccination against Hepatitis B was the effective preventive measure, followed by avoiding needle sharing, use of sterile needles for tattooing and piercing, screening before blood transfusion, avoiding unsafe sex and avoidance of sharing razor and tooth brush (93.5%, 81.3%, 80.8%, 72.2%, and 69.9%), respectively. Almost all (98.9%) replied that three doses of vaccination was essential for the prevention of hepatitis B and more than half (56.9%) reported in infancy period as an ideal age of vaccination.<sup>30</sup> Swarnalata (2014) reported that 70.1% students were aware that hepatitis B infection was vaccine preventable and 63.4% aware correctly about dose schedule of the vaccine. Overall 69.3% of nursing students aware about mode of transmission of infection, it was vaccine preventable infection and correct schedule of the vaccine.<sup>34</sup> Some of the previous studies reported that 46.8% of the medical students had understanding on preventive measures such as provision of clean water, improvement in hygiene, restriction to single sex partner, avoidance of transfusion and vaccination (24%, 27%, 6%, 19%, 9%, and 15%), respectively.<sup>50,52</sup> Studies conducted in the general public in India<sup>53</sup> and abroad<sup>54,55</sup> have revealed that the awareness about HBV and Hepatitis B was less. The present study revealed that awareness among the nursing students was better than that among the general public. This could be due to the fact that the nursing students were a part of health team and hepatitis B was taught in their study curriculum. Nevertheless, the importance of the subject needed to be emphasized, so that transmission of Hepatitis B could be decreased among them as well as to the patients.

It was observed that the overall mean knowledge score was 16.2 ( $SD\pm 3.209$ ) and found to be significant ( $p=0.000$ ). In further analysis of sex wise difference in knowledge score were 16.84 ( $SD\pm 3.006$ ) for male and females 16.59 ( $SD\pm 3.279$ ) ( $p>0.05$ ). The knowledge score overall ranged 18 with median value of 17. The minimum and maximum score in male female was 4, 21 and 4, 22 respectively. Chao et al (2010) reported in China that out of a total knowledge score of 16, the median knowledge score was 13 (81%) correct (range = 4 to 16); 13 individuals (5%) responded correctly to all of the knowledge questions. Health professionals who reported having personally been screened for HBV scored 1.2 points higher (95% CI: 0.1, 2.3) than health workers who did not report having been tested.<sup>38</sup> Abiola et al. (2013)

reported that attitude towards hepatitis B vaccination was good among all of the respondents and the mean attitude score (%) was  $92.9 \pm 14.3$ . Majority (84.5%) had poor practice of hepatitis B vaccination and the mean practice score (%) was  $24.2 \pm 25.0$ . Among those who did not receive the vaccine, majority (67.6%) gave non-availability of the vaccine as reason for this.<sup>37</sup> Fayaz et al. (2012) reported that the mean knowledge score was 5.2 with a standard deviation (SD) of 1.5.<sup>32</sup> It could be mentioned that the knowledge score pattern were comparable but the values were different. It might be due to the fact that the number of items set for the questionnaire by the authors was different for different studies.

In the analysis of knowledge in relation to socio-demographic variables it was observed that 94.1% of the participants in the age group of >22 years had showed better knowledge compared to the other age group (0.000). In further analysis of the year of the study it was observed that nursing intern had better knowledge compared to 1<sup>st</sup> year, 2<sup>nd</sup> year and 3<sup>rd</sup> year students ( $p=0.000$ ). But when we analyse the participants according to each year of study, it showed that majority of them showed good knowledge. Singh et al. (2012) reported that only 20% of the II year students had the correct knowledge regarding post exposure prophylaxis for hepatitis B. Majority of the III year students knew about the vaccine type, vaccination schedule, type of syringes, route of administration, safe disposal of syringe and needles and other preventive strategies. 84 % of the medical students in II year were completely vaccinated for hepatitis B as compared to III year students.<sup>42</sup> There were similarities in knowledge between urban and rural back ground and also majority of them having good knowledge. Majority of them were from different castes but having good knowledge of hepatitis B infection ( $p>0.0\%$ ). Further to mention that acquiring knowledge was independent to the caste or class in the society in which he or she belonged.

It was observed that 84.7% of the participants reported that they were vaccinated with hepatitis B vaccine. Paudel et al. (2012) from Nepal reported that majority of the participants (three-fourths of the total) were vaccinated against Hepatitis B; however, very few ( $\approx 1/10$ ) had tested their blood for Hepatitis B.<sup>[30]</sup> A similar study in Greece showed that 80.7% of the students were vaccinated before their clinical practices.<sup>52</sup> and 66% students in Pakistan were vaccinated against Hepatitis B.<sup>50</sup> Ganesh et al. (2014) observed that 38% of nursing students and 29.6% of laboratory technicians were not vaccinated among the participants. The reason mainly asserted for not being vaccinated was found to be negligence among physiotherapy students and lab technicians whereas dental and nursing students have forgotten to take vaccine.<sup>41</sup> In other study<sup>56</sup> the reason for being not vaccinated was also found to be negligence. The present study revealed that majority of them recapped needles after use, had accidental needle prick injuries, tested for hepatitis B virus infection after injuries; and consulted and treated by doctor amongst the

positive participants till the time of survey. It was noteworthy to mention that majority of them used sterile needles and syringes and sterile gloves at all the times before performing works. Among the participants majority used sterile equipments other than needle and syringes before performing any work and discard the used needles and syringes in a puncture proof container. Paudel et al. (2012) from Nepal reported that most of the participants had good practice of recapping of needle; 85% of them did not recap the needle after using the syringe and 94.6% had the good practice of single use. Four out of every five (82.6%) students had a practice of using sterilized instruments and 81.8% had practice of wearing gloves during the time of injection and surgical procedure; nevertheless, slightly more than a quarter of the participants (27.2%) used mask during service time.<sup>30</sup>

It was observed that the participants with good knowledge had showed good practice regarding safety measures against the hepatitis B infection ( $p=0.653$ ). Surprisingly, the recapping of needles also more predominantly observed among the good knowledge group of the participants ( $p=0.004$ ). As per expectations, it was further observed that self reported vaccination against hepatitis B infection were more common in the good knowledge group ( $p=0.355$ ). The participants with good knowledge had used hub cutter as a precautionary measures against any blood borne infection ( $p=0.000$ ). The use of sterile gloves before performing works also predominantly seen among the good knowledge group ( $p=0.071$ ). The participants with good knowledge had used predominantly sterile needle and syringes ( $p=0.000$ ) while at work. It was noteworthy to mention that the participants with good knowledge used puncture proof container for discarding needle syringes etc. ( $p=0.012$ ). Paudel et al. (2012) from Nepal reported that there was a statistically significant difference in the preventive practice of Hepatitis B among different age groups ( $P < 0.05$ ) and a good preventive practice has been significantly increased ( $P < 0.01$ ) according to the academic grades (27.6% in the first year vs. 38.4% in the third year).<sup>30</sup> A study conducted among medical students in Gujrat, India, showed poor knowledge and practices for Hepatitis B prevention among I and II year students than III year students.<sup>42</sup> Gebresilassie et al. (2014) reported that 95.7% of the rooms had waste collection containers for sharp objects located closer to work area. From all room observed 63.4% of them had written guideline or picture on risk communication.<sup>31</sup>

## CONCLUSION

The overall knowledge of Hepatitis B was high among the study participants. But their practices were not satisfactory. So, regular training and awareness seminar about Hepatitis B needed to be carried out. Further studies are indicated involving all levels of health care workers.

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## REFERENCES

1. Pysopoulos N, Rajendar K. Hepatitis B. *eMed J.* 2005;3. (Accessed on 12/1/15).
2. Barker LF, Shulman NR, Murray R. Transmission of serum hepatitis. *JAMA.* 1970;276(10):841-4.
3. Ozaras R, Tahan V. Acute hepatitis C. Prevention and treatment. *Expert. Rev Anti Infect Ther.* 2009;7(3):351-61.
4. Alavian SM, Hosseini-Moghaddam SM, Rahnnavardi M. Hepatitis C among Hemodialysis Patients: A review on epidemiologic, diagnostic, and therapeutic features. *Hepat Mon.* 2007;7(3):153-62.
5. Williams R. Global challenges in liver diseases. *Hepatol.* 2006;44(3):521-6.
6. World Health Organization (2000). Hepatitis B. WHO, Geneva (Fact sheet no. 204).
7. Ameen R, Sanad N, Al-Shemmari S, Siddique I, Chowdhury RI, Al-Hamdan S, Al-Bashir A. Prevalence of viral markers among first-time Arab blood donors in Kuwait. *Transfusion.* 2005;45(12):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(8):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. *Intervirol.* 2008;51:33-41.
11. Hu K Q, 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. *Professional 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. Ciorli LA, Zanetta DM. Hepatitis B in healthcare workers: prevalence, vaccination and relation to occupational factors. *Braz J Infect Dis.* 2005;9:348-9.
16. Tan L, Hawk JC, Sterling ML. Report of the Council on Scientific Affairs: preventing needle stick injuries in health care settings. *Arch Intern Med.* 2001;161:929.
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 Guagzhou. *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. *Nig J Med.* 1996;5:11-13.
20. Johnson and Johnson Medical Inc Blood-borne infection. A practical guide to OSHA compliance Arling-ton. Johnson and Johnson Medical Inc.1992.
21. Jitendra Z, Jigna K. Knowledge, attitudes and practice of laboratory technicians regarding universal work precaution. *National J Med Res.* 2012;2(1):113-5.
22. Bhowmik P, Choudhury AR, Sinha P. Combating Hepatitis B: The Tripura model. *Euroasian J Hepato-Gastroenterol.* 2011;1(2):39-41.
23. Bhowmik P. Three injections for everyone. <http://www.tripurainfo.com/login/Archives/274.htm> <http://www.tripurainfo.com/login/Archives/274.htm> (accessed on 12/1/15).
24. Hepatitis cases rises in Tripura. *The Telegraph, Calcutta.* Sunday, July 17, 2005.[http://www.telegraphindia.com/1050717/asp/northeast/story\\_4998811.asp](http://www.telegraphindia.com/1050717/asp/northeast/story_4998811.asp) (accessed on 11/1/15).
25. Navid M, Abbas A, Rasaoul MM. Percutaneous exposure incidents in nurses. Knowledge, practice and exposure to hepatitis b infection. *Hepat mon.* 2011;11(3):186-90.
26. Gulfareen H, Ambreen H. Awareness of women regarding hepatitis B. *J Ayub Med Coll Abbottabad.* 2008;20(4):141-4.
27. Maqbool A. Knowledge, attitude and practices among health care workers on needle-stick injuries. *Annals Saudi Med.* 2002;22(5-6):396-9.
28. Jokhio AH, Bhatti TA, Memon MS. Knowledge, attitudes and practices of barbers about hepatitis B and C transmission in Hyderabad, Pakistan. *Eastern Mediterranean Health J.* 2010;6(10):1079-84.
29. Setia S, Gambhir RS, Kapoor V, G Jindal G, Garg S. Attitudes and Awareness Regarding Hepatitis B and Hepatitis C Amongst Health-care Workers of a Tertiary Hospital in India. *Ann Med Health Sci Res.* 2013;3(4):551-8.
30. Paudel DP, Prajapati PK, Paneru DP. Preventive practices against Hepatitis B. A cross-sectional study among nursing students of Kathmandu, Nepal. *J Sci Soc.* 2012;39(3):109-13.
31. Gebresilassie A, Kumei A, Yemane D. Standard Precautions Practice among Health Care Workers in Public Health Facilities of Mekelle Special Zone, Northern Ethiopia. *J Community Med Health Educ.* 2014;4(3):286.



32. Fayaz SH, Higuchi M, Hirosawa T, Sarker MAB, Djabbarova Z, Hamajima N. Knowledge and practice of universal precautions among health care workers in four national hospitals in Kabul, Afghanistan. *J Infect Dev Ctries.* 2014;4(8):535-42.
33. Samuel SO, Aderibigbe SA, Salami TAT, Babatunde OA. Health workers' knowledge, attitude and behavior towards hepatitis B infection in Southern Nigeria. *Int J Med Med Sci.* 2009;1(10):418-24.
34. Swarnalata N. Do Nursing Students Know About Hepatitis B? A study from nursing college in Tamil Nadu. *Int J Health Rehabilat Sci.* 2014;3(2):69-74.
35. Reddy RS, Swapna RS, Ramesh T, Pradeep K. Knowledge, attitude and practice on hepatitis B prevention among dental professionals in India. *Braz J Oral Sci.* 2011;10(4):241-5.
36. Shah S, Nisar N, Qadri MH. Knowledge regarding hepatitis-b among EPI vaccinators working in district south, Karachi. *Pak J Med Sci.* 2007;23(4):538-41.
37. Abiola AO, Omyeni OE, Akudu BA. Knowledge, attitude and practice of hepatitis B vaccination among health workers at the Lagos State accident and emergency centre, Toll-Gate, Alausa, Lagos State. *West Afr J Med.* 2013;32(4):257-62.
38. Chao Jonathan, et al.: Hepatitis B and liver cancer knowledge and practices among healthcare and public health professionals in China: a cross-sectional study. *BMC Public Health.* 2010;10:98:3-11. Available at <http://www.biomedcentral.com/1471-2458/10/98>.(accessed on 10/1/15).
39. Gowda A, Goud R, Patil A, Khatib M: Hepatitis awareness among students of a women's college, Bangalore. *The Health Agenda.* 2014;2(2):51-6.
40. Batool A, Misbah U, Sherwani IK, Bano KA, Aasim M. Knowledge, Attitude and Practices of Dentists about Hepatitis B and C Infection in Lahore. *Pak J Med Res.* 2012;51(3):93-6.
41. Ganesh R, Shamili K, Zeba T. How Vulnerable are Health Professionals for Hepatitis B Infection – A Cross Sectional Study. *J Vaccination Vaccines.* 2014;1(1):0000001.
42. Singh A, Jain S. Prevention of Hepatitis B- Knowledge and Practices Among Medical Students. *Indian Medical Gazette,* 2012; 52-56.
43. Khan N, Ahmed SM, Khalid MM, Siddiqui SH, Merchant AA. Effect of gender and age on the knowledge, attitude and practice regarding Hepatitis B and C and vaccination status of Hepatitis B among medical students of Karachi, Pakistan. *J Pak Med Assoc.* 2010;60(6):450-5.
44. Satekge MM. Knowledge, attitudes and practices regarding the prevention of hepatitis B virus infections, in final year college student nurses in Gauteng province. University of Limpopo, MEDUNSA Campus, Pretoria, 2010. Available at [policyresearch.limpopo.gov.za/.../knowledge,%20attitudes%20](http://policyresearch.limpopo.gov.za/.../knowledge,%20attitudes%20). (Accessed on 12.3.14).
45. 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(1):3-6.
46. Maroof KA, Bansal R, Parashar P, Sartaj A. Do the medical, dental and nursing students of first year know about Hepatitis B? A study from a university of North India. *J Pak Med Assoc.* 2012;62:257.
47. Haider G, Haider A. Awareness of women regarding hepatitis B. *J Ayub Med Coll Abbottabad,* 2008;20(4):141-4.
48. Saini R, Saini S, Sugandha RS. Knowledge and awareness of Hepatitis B infection amongst the students of Rural Dental College, Maharashtra, India. *Ann Nigerian Med.* 2010;4:18-20.
49. Hossain ZM. Knowledge and Attitude among the nurse as Hepatitis B and HIV/AIDS infection in selected Medical College Hospitals. Mohakhali, Dhaka. *Journal of National Institute of Preventive and Social Medicine (JNIPSOM)* 2000;11-15.
50. Daud S, Manzoor I, Hashmi NR. Prevention of Hepatitis B: Knowledge and Practice among first year MBBS students. *Professional Med J.* 2007;14:634-8. Available at <http://www.theprofesional.com/?p=303>.(Accessed on 13/1/15)
51. World Health organization, Country Office for India, Core Programme Clusters, Family and community health, Hepatitis B. [http://www.whoindia.org/en/section6%5Csection\\*.html](http://www.whoindia.org/en/section6%5Csection*.html) (Accessed on December 2014).
52. Georgia G, Vasilakis T, Vassiliadou D, Xanthopoulos K, Triantafyllaki E, Vasiliki KD. Knowledge of medical students about Hepatitis B. *Aristotle University Med J.* 2008;35(3):55-8. Available at [aumj.med.auth.gr](http://aumj.med.auth.gr), %). (Accessed on 12/1/15).
53. Misra B, Panda C, Das HS, Nayak KC, Singh SP. Study on awareness about Hepatitis B viral infection in coastal Eastern India. *Hep B Annual.* 2009; 6:19-28.
54. Cheung J, Lee TK, Teh CZ, Wang CY, Kwan WC, Yoshida EM. Cross-sectional study of hepatitis B awareness among Chinese and Southeast Asian Canadians in the Vancouver Richmond Community. *Can J Gastroenterol.* 2005; 19:245-9.
55. Wai CT, Mak B, Chua W, Tan MH, Ng S, Cheok A, et al. Misperceptions among patients with chronic hepatitis B in Singapore. *World J Gastroenterol.* 2005;11:5002-5.
56. Pathak R, Chaudhary C, Pathania D, Kumar Ahluwalia S, Mishra PK, et al. Hepatitis B Vaccine: Coverage and factors relating to its acceptance among health care workers of a tertiary care centre in North India. *Int J Med Pub Health.* 2013;5:55-9.

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