

## KNOWLEDGE AND PRACTICES REGARDING HEPATITIS B VIRUS INFECTION AMONG MEDICAL STUDENTS IN A TERTIARY CARE HOSPITAL

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### Abstract

**Background:** Hepatitis B virus (HBV) infection is a major global health problem affecting large number of people every year. HBV primarily targets liver and can cause both acute and chronic liver disease. HBV infection is asymptomatic in majority of the people and the chronic infection may lead to serious complications such as cirrhosis of the liver and hepatocellular carcinoma. Health-care workers and medical students in clinical years, who come in contact with the patients and their potentially infectious materials such as blood and other body fluids, are at highest risk of acquiring the infection and should be protected. Medical students form the integral part of health-care system and they must have a proper knowledge about hepatitis B infection, modes of transmission, clinical features, complications, and preventive measures. The proper knowledge helps them to take necessary precautions to prevent the disease and also to spread awareness about hepatitis B infection among public, patients, and other health-care professionals. **Materials and Methods:** This hospital based cross sectional study was carried out in NRI institute of medical sciences, Visakhapatnam. All the medical students who are willing to participate in the study and who were available at the time of data collection were included in this study from June 2022 to August 2022. Based on the study objectives, the instrument was divided into 3 sections: Socio demographic profile, Knowledge questionnaire & Practice questionnaire. **Results & Conclusion:** Students had good knowledge and good practices regarding hepatitis B infection prevention. Recommendations: Special emphasis on HBV infection prevention training for health science students before they start their clinical attachment should be done.

## INTRODUCTION

Hepatitis B virus (HBV) infection is a major global health problem affecting large number of people every year.<sup>[1]</sup> HBV primarily targets liver and can cause both acute and chronic liver disease. HBV infection is asymptomatic in majority of the people and the chronic infection may lead to serious complications such as cirrhosis of the liver and hepatocellular carcinoma.<sup>[2-4]</sup>

WHO estimates that 296 million people were living with chronic hepatitis B infection in 2019, with 1.5 million new infections each year. In 2019, hepatitis B resulted in an estimated 8,20,000 deaths, mostly from cirrhosis and hepatocellular carcinoma (primary liver cancer). The burden of hepatitis B infection is highest in the WHO Western Pacific Region and the WHO African Region, where 116 million and 81 million people, respectively, are chronically infected. Sixty million people are infected in the WHO Eastern

Mediterranean Region, 18 million in the WHO South-East Asia Region, 14 million in the WHO European Region and 5 million in the WHO Region of the Americas.<sup>[5]</sup>

Health-care workers and medical students in clinical years, who come in contact with the patients and their potentially infectious materials such as blood and other body fluids, are at highest risk of acquiring the infection and should be protected. Medical students form the integral part of health-care system and they must have a proper knowledge about hepatitis B infection, modes of transmission, clinical features, complications, and preventive measures. The proper knowledge helps them to take necessary precautions to prevent the disease and also to spread awareness about hepatitis B infection among public, patients, and other health-care professionals. Vaccination and the use of personal protective equipment are the two major weapons for the prevention of hepatitis B infection. Recombinant hepatitis B vaccine, which is

licensed for use, is advised for all health-care workers and medical students. Three doses of vaccine at 0, 1, and 6–12 months are recommended for optimum protection.<sup>[6]</sup>

This study assessed the knowledge and practice of students towards HBV infection prevention among health students. The result of this study will assist the stakeholders to be aware of the knowledge and practice level of students to prevent the burden of HBV infection.

## MATERIALS AND METHODS

**Study Area:** The study was carried out in NRI institute of medical sciences, Visakhapatnam.

**Study Population:** All the medical students who started their clinical postings fulfilling the selection criteria were included in this study.

**Study Design:** This is a hospital based cross sectional study.

**Sample Size:** All the medical students studying in NRI institute of medical sciences were included.

**Time Frame to Address the Study:** June 2022 to August 2022

### Inclusion Criteria

- MBBS phase 2 to phase 4 students
- Students who are willing to participate in the study.
- Students who are available at the time of data collection

### Exclusion Criteria

- Students who were not willing to participate in the study.

### Method of data collection:

The instrument is a vehicle that could best obtain pertinent data to the study and at the same time adds to the body of knowledge in the discipline.

Based on the study objectives, the instrument was divided into 3 sections

- Socio demographic profile
- Knowledge questionnaire
- Practice questionnaire

Definitions for scoring knowledge and practices

The following operational definitions were used in this study.

- Good knowledge: if the respondents were able to answer 70 % or more of knowledge items correctly.
- Poor knowledge: if the respondents answered less than 70 % of knowledge items.
- Good practice: if the respondents were able to give the correct answer for 70 % or more of practice items.
- Poor practice: if the respondents answered less than 70 % of practice items.

### Ethical Consideration

- Permission was obtained from the ethical committee of NRI Institute of Medical Sciences, Visakhapatnam.
- Consent was obtained from the study subjects.

### Statistical Analysis

Data entry was done using M.S. Excel and statistically analysed using Statistical package for social sciences (SPSS Version 16) for M.S Windows. Descriptive statistical analysis was carried out to explore the distribution of several categorical and quantitative variables. Categorical variables were summarized with n (%), while quantitative variables were summarized by mean  $\pm$  S.D. All results were presented in tabular form and are also shown graphically using bar diagram or pie diagram as appropriate.

## RESULTS

**Table 1: Socio - demographic variables**

		Frequency (n=388)	Percent
Age	19-21 years	158	40.7
	22-24 years	216	55.7
	25-26 years	14	3.6
Gender	Male	149	38.4
	Female	239	61.6
Religion	Hindu	325	83.8
	Muslim	14	3.6
	Christian	48	12.4
	Others	1	0.3
Type of family	Nuclear family	351	90.5
	Joint family	28	7.2
	Extended family	9	2.3
Habitat	Rural	99	25.5
	Urban	289	74.5
Level of study	Phase 2	137	35.3
	Phase 3	120	30.9
	Phase 4	131	33.8

Source of information	Print media (news paper, magazines, brochures, News letter books, Leaflets and pamphlets)	148	38.2
	Electronic media (TV, Radio)	93	23.9
	New age media (mobile phone and internet)	278	71.6
	Peer group and social circle	122	31.4
	Health professionals	140	36.1

**Table 2: Knowledge regarding hepatitis B Infection among medical students**

Knowledge	Yes	
	n	%
Have you heard about hepatitis B infection?	387	99.7
Is hepatitis B an infectious disease?	368	94.8
Do you think doctors and medical students are at risk of acquiring hepatitis B infection from the patients?	354	91.2
HBV is 200 times transmissible than HIV	300	91.2
Hepatitis B is resistant to alcohol and some detergents	170	43.8
HBV could be an infectious outside the body (e.g., in the environment)	166	42.8
Hepatitis B can transmit by fecal-oral?	131	33.8
Hepatitis B can transmit by mother to child?	346	89.2
Hepatitis B can transmit by contaminated water?	112	28.9
Hepatitis B can transmit by sexual contact?	343	88.4
Carriers can transmit hepatitis B?	336	86.6
Hepatitis B can transmit by handshaking?	50	12.9
Hepatitis B can transmit by contact with open wounds?	330	85.1
Hepatitis B can transmit by blood and body fluid?	375	96.6
Hepatitis B can transmit by unsterilized syringe, the needle?	375	96.6
HBV causes liver cancer	344	88.7
HBV carriers can transmit the infection	346	89.2
HBV spread by casual contact such as hand shaking	90	23.2
HBV spread by contact with open wounds/cut?	318	82
HBV can be transmitted by contaminated blood and body fluids	363	93.6
HBV can be transmitted by unsterilized syringes, needles and surgical instruments	338	87.1
Hepatitis B transmitted by unsafe sex	356	91.8
HBV has post exposure prophylaxis	322	83
Hepatitis B can be cured/treated	290	74.7
Is hepatitis B infection preventable?	361	93
Is there a laboratory test for HBV?	362	93.3
Infected people are asymptomatic at the acute phase	296	76.3
Most of the patients with chronic hepatitis B infection are symptomatic:	286	73.7
Jaundice is a sign of hepatitis B infection	341	87.9
Hepatitis B can affect other organs other than the liver	273	70.4
Do you think chronic hepatitis B infection can lead to liver cancer?	348	89.7
Do you know about the vaccine of hepatitis B?	371	95.6
Hepatitis B infection is preventable by vaccination	341	87.9
Have you ever been vaccinated against hepatitis B?	200	51.5
If yes, how many doses of vaccine have you taken?	90	23.2

**Table 3: Practices among medical students**

Practices	Frequency	Percent
Always wear glove during giving care?	379	97.7
I always change gloves for each patient during blood taking	366	94.3
Have you ever had a needle prick injury	138	35.6
To dispose of the needle properly?	364	93.8
Have you ever screened?	115	29.6
Have you been vaccinated for hepatitis B?	200	51.5
Do you ask the screening of blood before transfusion?	366	94.3
Did you ask a new syringe before use?	373	96.1
Have you participated in health education?	294	75.8

## DISCUSSION

The World Health Organization has designated the year 2030 as the target date for the eradication of viral hepatitis, and it appears that a lack of general knowledge and awareness about HBV infection is a barrier to achieving this objective.<sup>[8]</sup> Exposure to blood-borne pathogens, such as HBV and human immunodeficiency virus, represents a significant risk to the occupational health of those who work in the medical field.<sup>[9]</sup> The knowledge and practices surveys

are important tools for determining the problems, making recommendations for solutions, and putting policies into action.<sup>[9]</sup> The data of knowledge and practices surveys on hepatitis B among medical students in this part of Visakhapatnam are unavailable, and hence this study was sought to assess the knowledge and practices about hepatitis B among medical students.

### Knowledge

In the study that was conducted by Sannathimmappa MB et al, approximately four-fifths of the students were aware of the fact that hepatitis B is a disease that

can be avoided. The vast majority of the students have a solid comprehension of the significance of screening blood donors (81.1%), receiving vaccinations (72.7%), and making sure to always use sterile needles and syringes (74.2%) as preventative measures. Only 53.8% of the students indicated that they took preventative measures by using personal protective equipment like gloves, caps, masks, and gowns to protect themselves from potential hazards. Fewer than half of the participants (40.2% of all participants) reported having received the vaccine. Only 31 (23.5%) of those students stated that they had received all three required doses of the vaccine to be considered fully immunised.<sup>[6]</sup>

In Abdela A et al, In general, the majority of people who took part in the study had sufficient knowledge about HBV infection and the way in which it is spread. According to the survey, 81.3% of the students were aware that HBV infection is associated with liver cancer. When asked about the mode of transmission, 97.2% of respondents reported coming into contact with the blood or other body fluids of HBV carriers; 96.7% mentioned the use of unsterilized medical equipment such as needles and syringes; and 84.1% answered unsafe sexual contact. Regarding vaccination knowledge, 84.6% of those who participated in the survey were aware of the HBV vaccine and the fact that it offers protection against HBV infection. On the other hand, only 67.1% of the people who took part in the study were aware that there is a post-exposure prophylaxis for HBV and that it can be treated or cured 52.4% of the time.<sup>[7]</sup>

In Al-Hazmi AH et al., 10 37.0% students knew that HBV could be infectious outside the body.

According to Gebremeskel T et al., 48% of participants had inadequate knowledge, while 52% demonstrated good knowledge regarding HBV. 32.5 percent of the people who took part in the study were unaware of the hepatitis B postexposure prophylaxis.<sup>[11]</sup>

In the study conducted by Alhowaish MA et al., 81% of students were aware that carriers could spread infection (89.5% of them believed that it could not be spread by casual contact, 80% believed that it could be spread by contact with an open wound, 96.5% believed that it could be transmitted by contaminated blood and body fluids, 92.5% believed that HBV could be transmitted by unsterilized syringe, needle, or surgical instruments, and 79.5% believed that.<sup>[12]</sup>

In the study conducted by Osei E et al., 65.9% of the participants answered correctly that HBV can be spread through unprotected sexual activity, 83.2% of the participants correctly identified blood transfusion, and 62.7% of the participants confirmed that HBV infection can be spread by sharing a towel with an infected person. It was known by more than half of the students, 56.7%, that HBV cannot be transmitted through the faeco-oral route. It was also known by 75.9% of the students that people can acquire the infection by sharing sharps with an infected person. However, only 53.2% of the students

believed that HBV is not hereditary. In addition, 63.6% of students were aware that it is not possible to contract HBV by simply shaking hands with an infected individual, and 76.4% of students correctly answered that HBV is more contagious than HIV/AIDS. Furthermore, 73.2% of students were aware that asymptomatic individuals are capable of transmitting HBV to others.<sup>[13]</sup>

In the study conducted by Chhabra D. and colleagues, more than half of the medical subjects were knowledgeable about both screening and diagnostic tests for hepatitis B (75.6% vs. 64.5%), in contrast to only 4.4% of the nursing students. When compared to medical candidates, a significantly higher percentage of nursing students (94.5%) had accurate knowledge regarding the mandatory notification of Hepatitis B (P 0.001) A significant number of medical and nursing candidates recognised HCWs as an HRG, leading to the implementation of screening requirements at blood banks (P 0.001). When compared with nursing students, more than two thirds of medical students (67.8%) were able to correctly identify immunisation as the best method to eliminate Hepatitis B, whereas less than half of nursing students (45.9%) were capable of doing so (P 0.001). Students in the medical (98.3%) and nursing (86.9%) fields had a high level of awareness regarding the availability of the Hep B vaccine (P 0.001).<sup>[14]</sup>

Less than half of the students in the study by Altamimi AR et al. were able to correctly identify the HBV incubation period (17.4%), the HBV site of replication (4.5%), the HBsAg persistence duration in chronically infected patients (23.8%), the highly infectious or contagious patients (33.2%), whether or not HBV is infectious outside the body (33.9%), whether or not HBV is more transmissible than HIV (40%) and whether or not HBV Only 33.2% of respondents were aware that chronic infection would develop in almost all of the children who were infected perinatally; however, 48.6% were aware that infected mothers pass the virus perinatally to 70–90% of their offspring. 61.8% of health care providers were aware that they were at a higher risk of contracting and spreading HBV, and 78.5% of health care providers were aware that they should receive the HBV vaccine.<sup>[15]</sup>

In the study done by Rathi A et al., only 50.3% of the participants were aware that it could be transmitted through percutaneous injury, 39.8% were aware that it could be transmitted through contact of mucous membrane with potentially infectious material, and 44.1% were aware that it could be transmitted if breached skin came into contact with infectious material. Only 29.2% of students were aware that a needlestick injury poses a 10%–30% risk of transmitting the HBV infection to another person. The mode of transmission or source of infection was correctly answered by 24–94% of the students, with the majority of students (94%) knowing that blood or blood products are the source of infection for hepatitis B, and only a small percentage of students (24%) knowing that breast milk is the source of

infection for hepatitis B. The vast majority of students were aware of the steps that could be taken to reduce their risk of contracting hepatitis B. For example, 92.5% of students were aware of safe sexual practises, 98% were aware of the hepatitis B vaccination, and 81.6% were aware of the importance of wearing gloves when working with infectious materials.<sup>[16]</sup>

### Practices

According to the research conducted by Abdela A et al., approximately 77% of the students were aware that they are at risk for HBV infection, and 83.3% of them agreed that adhering to infection control guidelines would protect them from becoming infected while they were working.<sup>[7]</sup>

According to Gebremeskel T et al., only 39.5% of students have good practice when it comes to preventing HBV infection, while 59.5% of students have poor practice. 74.5 percent of the respondents had never been tested for HBV, and only 8 percent of the students had ever received an HBV vaccination. Within the group of individuals who received vaccinations, 12.5% of students completed all three doses of the vaccination schedule, while the remaining 25.4% and 62.5% of students received only the first or second dose.<sup>[11]</sup>

In Chhabra D et al,<sup>[14]</sup> A comparatively higher proportion of medical students (83.9%) identified the need for post vaccination antibody titer assessment compared with less than two third of nursing students (62.3%).

## CONCLUSION

Students had good knowledge and good practices regarding hepatitis B infection prevention.

### Recommendations

Special emphasis on HBV infection prevention training for health science students before they start their clinical attachment should be done.

Limitation of the study: This study did not measure anti-HBs antibody level to know the immune status of the participants against hepatitis B. It is recommended for further studies to estimate anti-HBs levels in the serum of students to know their actual immune status against hepatitis B.

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