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Original Article

A Comprehensive Cross-Sectional Assessment of Hepatitis B Infection: Awareness, Knowledge, Transmission Insights and Vaccination Status among Medical Students and Graduates in Ahmedabad's diverse Medical Institutions

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ABSTRACT

Introduction: Hepatitis B virus (HBV) infection is a major global health problem affecting large number of people every year. WHO estimates that 296 million people were living with chronic hepatitis B infection in 2019, with 1.5 million new infections each year. 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 and they must have a proper knowledge about hepatitis B infection, modes of transmission, clinical features, complications, and preventive measures. **Aims and Objectives:** To assess Hepatitis B knowledge and vaccination status. **Materials and Methods:** A descriptive cross sectional study. Data including knowledge of Hepatitis B transmission, vaccination status was collected in a predesigned questionnaire. **Results:** 100% participants have taken at-least one dose of the vaccine and 78.7% (96/122) have taken all the three doses. 96.7% (118/122) and 95.1% (116/122) participants reported blood transfusion and needle prick to be one of the cause for transmission of Hepatitis B virus respectively. **Conclusion:** There was a significant level of awareness of hepatitis b virus transmission and vaccination status among this high risk group participants. Attitude towards getting themselves tested for serology is an important area that is good to address.

Key Words: *Hepatitis B, Hepatitis B Vaccination, Hepatitis B mode of transmission, High risk group, Health care workers.*

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INTRODUCTION:

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. 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 820 000 deaths, mostly from cirrhosis and hepatocellular carcinoma (primary liver cancer). The virus transmits through blood and other body fluids from the infected persons. Use of contaminated needles for injections, blood transfusion, sexual contact, and vertical transmission from mother to fetus are the most common routes of transmission.[1] HBV infection is an occupational hazard and the risk in health-care professionals is 2–10 times higher than the general population[2]. 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. This research was intended to assess the knowledge and awareness regarding hepatitis B among preclinical year medical students and Medical Graduates of different medical colleges in Ahmedabad.

Objectives:

1. To estimate Hepatitis B vaccination status among medical professionals including medical students and graduates.

2. To assess knowledge of Hepatitis B among medical professionals including medical students and graduates.

Materials and methods:

Study design: It is a descriptive cross-sectional study conducted at diverse medical institutions of Ahmedabad during the academic year 2022–2023. The study group included medical students and medical graduates of different medical colleges in Ahmedabad. The study is conducted after obtaining necessary informed consent from the students. A notice regarding the study was circulated to all the medical students and medical graduates through proper channels and efforts were made to make them participate in the study voluntarily. A predesigned self-administered questionnaire confined to knowledge and awareness regarding hepatitis B, its modes of transmission and prevention, and their vaccination status was prepared in a Microsoft Word document and distributed to all the participants. The data were collected, tabulated, and statistically analysed using Microsoft Excel. Quantitative data were expressed in numbers and percentages.

Results:

Table-1: Sociodemographic Distribution

	Factor	Frequency (%)
1.	Gender	
	Male	33 (27%)
	Female	89 (73%)
2.	Year of Medical College	
	First year	4 (3.3%)
	Second year	9 (7.4%)
	Final year	2 (1.6%)
	Internship	15 (12.3%)
	Graduates	92 (75.4%)
3.	Type of Medical College	
	Government College	102 (83.6%)
	Self-Finance College	20 (16.4%)
3.	Sexually active	
	Yes	37 (30.3%)
	No	89 (69.7%)

Majority participants are of female gender (73%), graduated from medical school (75.4%), from government medical college (83.6%) and sexually inactive (69.7%).

Table-2: Knowledge assessment of participants of different academic stages.

	Academic stage	**1st year**	**2nd year**	**Final**	**Intern**	**Graduates**
1.	Incubation Period					
	1 month	0	2(22.2%)	1(50%)	6(40%)	23(25%)
	3 month	0	4(44.5%)	0	4(26.7%)	32(34.8%)
	6 month	4(100%)	3(33.3%)	1(50%)	5(33.3%)	36(39.1%)
	1 year	0	0	0	0	1(1.1%)
2.	Average percentage transmission by needle prick					
	30%	1(25%)	7(77.8%)	0	3(20%)	27(29.3%)
	Other (3%/0.3%)	3(75%)	2(22.2%)	2(100%)	12(80%)	65(70.7%)
3.	Is Prenatal/Vertical transmission possible?					
	Yes	4(100%)	7(77.8%)	2(100%)	11(73.3%)	83(90.2%)
	No	0	2(22.2%)	0	4(26.7%)	9(9.8%)
4.	Most common mode of transmission					
	Needle prick	2(50%)	4(44.5%)	0	3(20%)	33(35.9%)
	Blood transfusion	1(25%)	2(22.2%)	1(50%)	5(33.3%)	32(34.8%)
	Sexual transmission	1(25%)	3(33.3%)	1(50%)	6(40%)	27(29.3%)
	Food and water	0	0	0	1(6.7%)	0
5.	How does hepatitis B infection manifests?					
	Acute	0	2(22.2%)	0	0	7(7.6%)
	Chronic	3(75%)	0	0	2(13.3%)	30(32.6%)
	Both (depends on course)	1(25%)	7(77.8%)	2(100%)	13(86.7%)	55(59.8%)
6.	Major symptom of the disease					
	Jaundice and anorexia	4(100%)	9(100%)	1(50%)	14(93.3%)	88(95.7%)
	Fever	0	0	1(50%)	1(6.7%)	4(4.3%)
7.	Most common course of the disease					
	No long term complication	1(25%)	0	0	6(40%)	18(19.6%)
	Liver Failure	3(75%)	7(77.8%)	0	9(60%)	47(51.1%)
	Hepatic Cancer	0	2(22.2%)	2(100%)	0	27(29.3%)
8.	Most common co-infection of Hepatitis B					
	HIV	4(100%)	7(77.8%)	2(100%)	15(100%)	82(89%)
	Coxsackie virus	0	1(11.1%)	0	0	4(4.4%)
	Dengue Virus	0	1(11.1%)	0	0	3(3.3%)
	Influenza Virus	0	0	0	0	3(3.3%)
9.	Hepatitis B Campaign day					
	28th July	2(50%)	7(77.8%)	1(50%)	8(53.3%)	65(70.7%)
	Other	2(50%)	2(22.2%)	1(50%)	7(46.7%)	27(29.3%)

The above table categorises the knowledge and perception related responses of the study participants with respect to their academic stage. At-least half of the participants of each academic stage responded to the incubation period of Hepatitis B to be around 3 to 6 months. Only from the 2nd year participants majority of them responded that the average percentage risk of hepatitis b transmission from needle prick injury was 30%, from rest of the groups majority believed that the risk is less than 30% (i.e. 3% or 0.3%). Majority participants from all groups believed that vertical transmission of hepatitis b is possible. Majority participants from 1st year, 2nd year and others believed that most common route of transmission of hepatitis b is by needle prick, almost no one believed food and water to be the mode of transmission

except that one intern. Majority participants among all groups except 1st year medical student called the hepatitis b infection to be both acute and chronic depending on the course of the disease. Major symptom of the disease is Jaundice or anorexia according to most participants among all the groups. Liver failure is believed to be the most common course of the disease by most participants among all the groups except the final year students. More than 50% of participants of all the groups responds that most common co-infection with hepatitis b is that of HIV. At-least 50% participants from all the groups are aware that hepatitis b campaign day is celebrated on 28th of July every year.

Following chart shows the most options selected as routes of transmission of hepatitis b virus when multiple options were given to the participants to choose from, blood transfusion being the most answered choice and 'via food products' being the least.

Image-1:

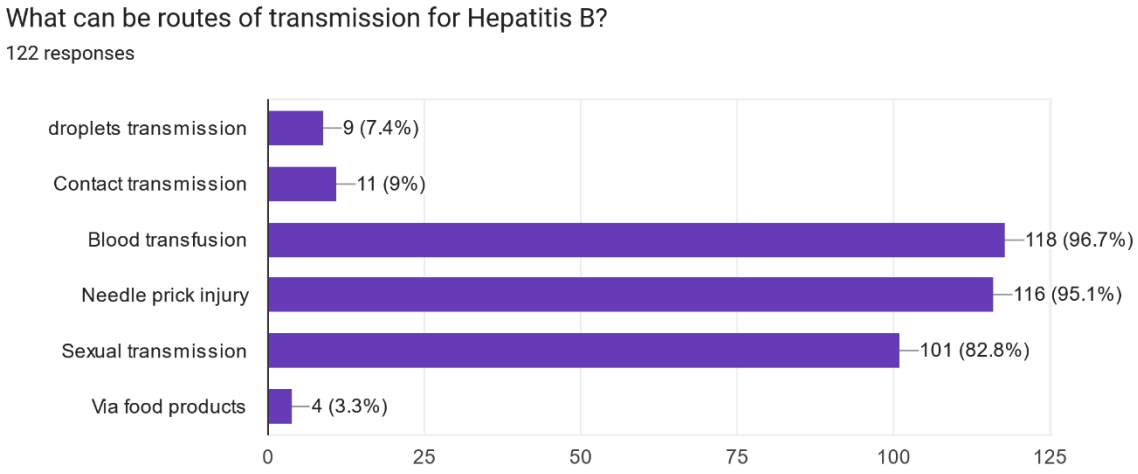

Table-3: Vaccine and attitude related responses with respect to academic stage of participants

	Academic stage	1st year	2nd year	Final	Intern	Graduates
1.	Did you take Hepatitis B vaccine before?					
	Yes	4(100%)	9(100%)	2(100%)	11(73.3%)	90(97.8%)
	No	0	0	0	4(26.7%)	2(2.2%)
2.	How many doses did you take?					
	One	0	0	1(50%)	1(6.7%)	1(1.1%)
	Two	1(25%)	2(22.2%)	0	2(13.3%)	18(19.6%)
	Three	3(75%)	7(77.8%)	1(50%)	12(80%)	73(79.3%)
3.	Did you have your Hepatitis B serology checked?					
	Yes	4(100%)	7(77.8%)	0	12(80%)	67(72.8%)
	No	0	2(22.2%)	2(100%)	3(20%)	25(27.2%)
4.	When to get another series of vaccine after completion of first series?					
	After 1 year	0	0	0	22(13.3%)	14(15.3%)
	After 2 years	0	2(22.2%)	0	1(6.7%)	6(6.5%)
	After 3 years	3(75%)	5(55.6%)	0	4(26.7%)	35(38%)
	No need of 2nd series	1(25%)	2(22.2%)	2(100%)	8(53.3%)	37(40.2%)

Among all the study subjects 78.7% (96/122) have taken all the three doses. Only 2 participants have ever got infected with Hepatitis B Virus and 99% of them believe that vaccination is the best way to prevent Hepatitis B Virus infection. Almost all the participants reported themselves of being vaccinated against Hepatitis except for 4(26.7%) interns and 2(2.2%) Graduates. All the participants have taken at-least 1 dose of Hepatitis B Vaccine.

Table-4: Vaccine status with respect to type of college and sexual status

	Three doses taken	Less than 3 doses taken
Type of medical college		
Government college	81(79.4%)	21(20.6%)
Self-financed college	15(75%)	5(25%)
Sexual activity		
Sexually inactive	69(81.2%)	16(18.8%)
Sexually active	27(73%)	10(27%)

79.4% participants of government medical college while 75% self-financed medical college participants had taken all the three doses. 81.2% sexually inactive participants and 73% sexually active participants had completed all three doses of hepatitis B vaccination. Though this difference was found to be statistically insignificant on applying Chi-square test.

Discussion:

Knowledge about transmission of hepatitis B is important due to multiple reasons and especially for health care professionals. It is transmitted both horizontally and vertical (mother to child transmission) also it is the overall most common cause of Hepatocellular carcinoma and most common viral cause of Chronic hepatitis[3]. Overall this study shows good level of awareness regarding Hepatitis B and its vaccination. All the participants were vaccinated with at-least one dose of hepatitis b vaccine. This much level of positive findings are probably reflected because of the occupation of the study participants and the fact of being in high risk group being an health care professional. Many studies show that not other sociodemographic factors like age, sex, religion, etc. rather occupation, income level and their or their family members exposure to the infection are important determinants for a person's knowledge regarding Hepatitis B and vaccination status. People of high income, high risk group persons i.e. health care workers/professionals, and those who contracted the infection having higher knowledge and higher vaccination prevalence[4]. The attitude of high risk groups towards getting their serology for hepatitis b checked, is an important gap to address. Along with increase in vaccination awareness and uptake by high risk groups, it is important to get serology checked as it decides the management protocol and serological markers reflects the acute/chronic status of the disease and any complication if occurs[5]. This all evidence shows that Hepatitis B is a bigger threat to the High risk population (health care providers) than it is to the normal population. And income group being a factor for more positive attitude towards taking Hepatitis B vaccine, making the vaccine available free of cost or at-least at lower rates for high risk adults it can increase the population compliance and decrease the morbidity of Hepatitis B infection and its complications and sequel.

CONCLUSION:

This study takes into account only the high risk group in whom it is found that the knowledge and awareness regarding hepatitis b is significantly more satisfying than general population which is observed from the literature review. The vaccination status is also high but can be still improved by promoting to complete the vaccination regime. Increased serology testing can help in even better control of hepatitis b from a public health perspective.

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