

# Knowledge and vaccination status of hepatitis B amongst medical interns of Rural Medical College, Loni, Maharashtra, India

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## Abstract

Hepatitis B Virus (HBV) infection is a serious global public health problem. It is the most common blood borne viral infection which places healthcare professional at higher occupational risk. The present study was conducted to assess the current knowledge and vaccination status about hepatitis B amongst medical interns. A cross-sectional study was conducted between February and March 2009 on 100 medical interns of the Rural Medical College, Loni, India. A pre-designed questionnaire which assessed their knowledge of hepatitis B was the tool of data collection. The data was analyzed in the form of percentage and proportions, and the chi-square test was applied. In the present study, 83.3% of interns showed a good level of knowledge regarding hepatitis B infection. The percentage of interns with the correct knowledge regarding post exposure prophylaxis and mode of transmission of hepatitis B were 89% and 90% respectively. It was found that 87% of the respondents espoused vaccination as a measure for the prevention of hepatitis B and 72% of the interns were fully immunized against hepatitis B. However, there is a misconception about prophylaxis, vaccination and the treatment of HBV. Hence there is an imperative need for health education to improve the knowledge of the interns towards hepatitis B infection.

**Keywords:** Knowledge, Vaccination status, Hepatitis B infection, Medical interns, rural India.

## Introduction

Hepatitis B Virus (HBV) infection is a serious global public health problem. Worldwide, nearly two billion people have been acutely infected with HBV and there are nearly 350 million people have chronically infected.<sup>1</sup> Of these 350 million, at least one million die annually from HBV-related chronic liver disease, including cirrhosis and liver cancer. However, the significance and magnitude of the problem vary from country to country.<sup>2</sup> Throughout the world, millions of healthcare professionals work in health institutions and it is esteemed that 6,00,000 to 8,00,000 cut and puncture injuries occur among them per year. The annual proportion of healthcare workers exposed to blood borne pathogens was 5.9% for HBV, corresponding to about 66,000 HBV infections in healthcare workers worldwide.<sup>3</sup>

In India it is the second most common cause for acute hepatitis. The prevalence of HBV infection ranges between 5-10% in South East Asian Region and 1% in Northern Europe and America.<sup>3</sup> In India, prevalence of HBV among general population varies from 2 to 8%, and about three to four times greater in medical professionals and six times greater in non-immunized surgical specialties than that of general population.<sup>3</sup> HBV is a DNA virus classified in the virus family Hepadnaviridae. Humans are the only known natural host. HBV enters the liver via the bloodstream, and replication occurs only in liver tissue.<sup>4</sup> To increase the awareness and knowledge about viral hepatitis, World Health Organization (WHO) has declared

## Practice Points

- Viral hepatitis as an occupational hazard for medical and paramedical personnel.
- The high prevalence of HBV in developing countries like India substantially increases the risk of occupational exposure.
- There exists a gap between knowledge and practice as many healthcare workers are still not immunized against HBV.
- The present study revealed that 83.3% interns had shown a good level of knowledge regarding hepatitis B, and 72% of interns are fully immunized against it.
- The most important approach for the prevention of occupational HBV infection is the use of the vaccine, so efforts must be made to introduce well planned and clear policies for HBV screening and vaccination in healthcare professionals.

28th July as the World Hepatitis Day/Eradication day.

Medical interns were expected to have sufficient knowledge on the mode of transmission and treatment of HBV. Like other healthcare workers, interns are at a higher risk of acquiring HBV infection compared to the other population.<sup>3</sup> A study conducted by Singh *et*

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*al.*<sup>5</sup> concluded that there is a lack of awareness among the medical students entering into the profession about Hepatitis B, its route of transmission and modes of prevention. These interns represent the physicians who would graduate and practice medicine from next year. Therefore, they are expected to play an imperative role in limiting the increasing number of HBV infection cases and in promoting health education in India.

Hence the present study was carried out to assess the current knowledge regarding hepatitis B infection among medical interns of rural medical college, Loni, Maharashtra, India.

## Materials and Methods

A cross-sectional study was carried out amongst interns of Rural Medical College, Loni, Maharashtra, India during the period between February to March 2009. All 100 interns of regular batch of 2009 year were enrolled, and given a briefing about the design and objectives of the study. The informed consent was obtained from each participant. Ethical approval was obtained from the institutional ethics committee.

The data were collected on a pre-designed, pre-structured questionnaire distributed among these interns. The questionnaire was pretested on 20 interns, apart from study subjects and necessary changes were made accordingly. The questionnaire was in English and consisted of questions related to knowledge of hepatitis B infection as regards to basic information, epidemiological aspects and prevention related issues. All the questions were objective in nature with 'Yes' or 'No' as the options, although a few questions were of multiple-choice type. Knowledge was assessed through 12 questions. A scoring mechanism was used to understand overall knowledge level. Each correct answer was given one score, and the range of the score varied between 0 (with no correct answer) to 12 (for all correct answers). Respondents with all correct response get a maximum of 12 points; higher points indicate good knowledge. Based on total score, knowledge level was categorized into poor ( $\leq 4$  points), average (5-8 points), and good ( $\geq 9$  points).

Demographic details like age, sex and marital status of the respondents were also recorded. Data were entered into Microsoft Excel and analyzed using the Statistical Package of Social Sciences (SPSS) version-13.0. Statistical significance was set at  $p \leq 0.05$ .

## Results

The demographic characteristics and vaccination status of the study population was shown in Table 1. Out of total 100 participants, 64% were males and 36% were females and only 12% were married. There were 31% and 39% participants in the age groups 22-23 and 23-24 years respectively and majority 72% of interns are fully immunized for hepatitis B.

The responses of the interns regarding their knowledge towards hepatitis B infection were depicted in Table 2. Majority (83.3%) interns had shown good level of

**Table 1:** Demographic characteristics and vaccination status of the study population

Particulars	Respondents*
<i>Age (in years)</i>	
21-22	28
22-23	31
23-24	39
Above 24	02
<i>Gender</i>	
Male	64
Female	36
<i>Marital status</i>	
Married	12
Unmarried	88
<i>Vaccination status</i>	
Yes	72
No	18

\*Data indicates both number and percentage

knowledge, whereas 16.6% had average level of knowledge. Ninety percentages of interns had correct knowledge regarding mode of transmission. However, only 35% interns could know about hepatitis B virus is a member of the hepadnavirus family. When asks the question like 'Immunity after receiving hepatitis B vaccination lasts lifelong', the more than half i.e. 51% interns couldn't gave the correct answer ( $p < 0.05$ ). Vaccination as a measure to prevent hepatitis B infection was espoused by 87% of the respondents. Although hepatitis B vaccination was included in national immunization program in India, but it is surprising that 30% interns are not aware of the program and even 27% interns didn't know the correct WHO schedule for hepatitis B immunization ( $p < 0.05$ ).

## Discussion

Hepatitis B virus infection is considered as a serious health problem in the developing countries since it causes chronic liver cirrhosis and hepatocellular carcinoma.<sup>6</sup> HBV infection is an occupational risk for physicians and surgeons especially in developing countries where a carrier rate is about 4% and kills about 1.1 million people globally every year.<sup>7</sup> The present study revealed that 83.3% interns had shown good level of knowledge, whereas 16.6% had average level of knowledge. This may be attributed to coverage of topic in undergraduate curriculum and further reinforcement on universal precaution during internship training program. Similar findings by Khan *et al.*<sup>8</sup> and Magdy *et al.*<sup>9</sup> reported that, the overall knowledge level regarding hepatitis B among medical students, ranged between 'good' to 'average'.

Majority 90% of interns had correct knowledge regarding mode of transmission of hepatitis B in the present study. Similar findings by Magdy *et al.*<sup>9</sup> and Singh *et al.*<sup>5</sup> among medical students, revealed that 77.7% and 86.7% of students had correct knowledge regarding mode of transmission of hepatitis B respectively. Another study done by Kasetty *et al.*<sup>10</sup> among dental professionals, showed that 82.1% had correct

**Table 2:** Gender wise distribution of respondent's knowledge about HBV infection

Questions regarding knowledge	Correct answer <sup>†</sup>			Incorrect answer <sup>†</sup>			$\chi^2$ -value p-value‡
	Male	Female	Total	Male	Female	Total	
Is Hepatitis B virus is a member of hepadnavirus family? (Yes)*	25	10	35	39	26	65	$\chi^2=1.289$ $p=0.256$
Is Hepatitis B infection preventable by vaccination? (Yes)*	54	33	87	10	03	13	$\chi^2=0.53$ $p=0.46$
Was Hepatitis B infection originally known as serum hepatitis? (Yes)*	53	32	85	11	04	15	$\chi^2=0.28$ $p=0.60$
What is the mode of transmission of Hepatitis B virus infection? (Sexual & parental)*	57	33	90	07	03	10	$\chi^2=0.00$ $p=0.94$
Who remain HBsAg positive for at least 6 months are considered to be hepatitis B carriers? (Yes)*	51	27	78	13	09	22	$\chi^2=0.295$ $p=0.587$
Is transmission percentage higher after needle stick for HBV in comparison with HIV? (Yes)*	51	23	74	13	13	26	$\chi^2=2.988$ $p=0.083$
Do you know about post exposure prophylaxis (PEP) about Hepatitis B? (Hepatitis B vaccine & Hepatitis B immunoglobulin)*	58	31	89	06	05	11	$\chi^2=0.479$ $p=0.488$
Is hepatitis-B vaccination included in national immunization program? (Yes)*	48	22	70	16	14	30	$\chi^2=5.116$ $p=0.045$
Is immunity after receiving hepatitis B vaccination lasts life long? (No)*	26	23	49	38	13	51	$\chi^2=4.989$ $p=0.025$
Do you know the correct WHO schedule for Hepatitis B immunization? (0, 1 & 6 months followed by 1 booster dose after 5 yrs)*	53	20	73	11	16	27	$\chi^2=8.684$ $p=0.003$
Do you think all patients undergoing major surgeries should be investigated for HBV? (Yes)*	49	22	71	15	14	29	$\chi^2=2.671$ $p=0.102$
Do you think medical personnel infected with hepatitis B should avoid patient care/treatment? (Yes)*	53	31	86	11	05	14	$\chi^2=0.186$ $p=0.605$

<sup>†</sup>Data indicates both number and percentage; \*Correct answers; ‡Values are significant  $p<0.05$ .

knowledge regarding the mode of transmission. Whereas a study done by Khan *et al.*<sup>8</sup> among medical students of Karachi, found that only 57.1% had correct knowledge regarding the same.

In the present study, 89% interns had the correct knowledge regarding post exposure prophylaxis (PEP) for hepatitis B. Similarly a study by Kasetty *et al.*<sup>10</sup> found that 93.9% dental professionals had correct knowledge regarding post exposure prophylaxis. However, in contrast, a study done by Khan *et al.*<sup>8</sup> revealed that 76% medical students did not have the knowledge regarding post exposure prophylaxis. Low level of knowledge about post exposure treatment for hepatitis B among the medical students was also revealed by Magdy *et al.*<sup>9</sup> Whereas a study done by Singh *et al.*<sup>5</sup> found that majority of third year undergraduate medical students gave correct answers, while only 20% of the second year had the correct knowledge regarding the same.

The most effective means to prevent HBV infection is through vaccination. Fortunately, infective hepatitis B is largely preventable disease by hepatitis B vaccine which is 95% effective in preventing such disease and its chronic consequences.<sup>11</sup> In our study, vaccination as a measure to prevent hepatitis B infection was espoused

by 87% of the respondents. Similarly a study by Singh *et al.*<sup>5</sup> also revealed that final year medical students had better knowledge regarding prevention of HBV as compared to first year students.

Prevention is ultimately the most efficient and humane means toward improved health. Viral hepatitis is preventable with effective vaccines, which is available since 1982 and have proven safe to both adults and children.<sup>12</sup> In the present study, majority 72% of interns are fully immunized for hepatitis-B. The proportion of male and female interns completely vaccinated with three doses of hepatitis B vaccine was 51/64 (79.7%) and 21/36 (58.3%) respectively. However 28% of interns not immunized is the matter of concern. This is area showing knowledge application gap. They need further reinforcement in this matter. Similar results were observed in other studies also.<sup>5,8</sup> However, in contrast, a study conducted by Magdy *et al.*<sup>9</sup> revealed that only 28.1% of medical students were vaccinated against HBV. Since medical interns are at increased risk of acquiring needle stick injury and increased prevalence rate of hepatitis B in India, interns should be routinely vaccinated upon entry into the medical college.

The overall knowledge amongst medical interns were satisfactory as compared to other studies but there was a

gap which needs to be corrected regarding inclusion of hepatitis B vaccination in national immunization program and even the correct WHO schedule for immunization, prevention and post-exposure management of hepatitis B. Therefore there is an essential need for continuing education among the interns to improve and update their knowledge about HBV infection.

This cross-sectional study was conducted amongst certain group of population i.e. medical interns only; therefore the findings cannot be generalized to all the interns or other healthcare professional in the country.

## Conclusion

Hepatitis B is the most common blood borne viral infection which places healthcare professional at higher occupational risk. High prevalence of HBV in India substantially increases the risk of exposure to the virus. The present study revealed that 83.3% interns had shown good level of knowledge regarding hepatitis-B, and 72% of interns are fully immunized for the same, however 28% were not immunized which is matter of concern. Appropriate knowledge should be provided to the medical and other health care professional students regarding HBV in the curriculum.

Most important approach for prevention of occupational HBV infection is the use of hepatitis B vaccine, so efforts must be made to introduce well planned and clear polices for HBV screening and vaccination in healthcare professionals. Emphasis on mandatory vaccination policy, including the topic in internship orientation program will help to reduce the transmission of hepatitis B in healthcare settings.

## Acknowledgement

We express our deep sense of gratitude to the Management, Pravara Medical Trust and the Principal, Rural Medical College Loni, Maharashtra, India. We also acknowledge the help and support of medical interns – Mabel Bishnoi and Kusum Lata during data collection.

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