

## Original Article

# Hepatitis B Awareness - Does it relate with Vaccination among Undergraduate medical students

### Authors

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### Abstract

**Context** : In India, about 4% of the population is estimated to be HBV carriers giving a total pool of approximately 36 million carriers. Transmission of infection is rare in persons who have been immunized and transmission rate is high as 30% among those who are not immunized. Medical students being part of the health care delivery system are exposed to risk when they come in contact with patients and contaminated instruments. Medical students receive percutaneous injuries as often or more than health care workers. **Aims** : To assess awareness about Hepatitis B in medical students. To compare awareness about Hepatitis B among vaccinated and non vaccinated students. **Settings and Design** : A descriptive cross-sectional study was conducted amongst MBBS students at MIMS Medical College, Vizianagaram, Andhra Pradesh, India. **Methods and Material** : The study included 200 students. A pretested structured printed questionnaire was administered to the students to collect data. **Statistical analysis used** : Chi square test and p value. **Results and Conclusions** : Among the study participants, 134 (67%) had received full vaccination course of 3 vaccines against Hepatitis B. The correct awareness that the causative agent of Hepatitis B is Hepatitis B virus was present in 197 (98.5%) participants, of which 132 were vaccinated for Hepatitis B. Awareness about modes of transmission of Hepatitis B and the number of doses of vaccine was noted in 75.5% and 69% of the study participants respectively. Awareness regarding almost all aspects of Hepatitis B was better in vaccinated students.

**Key-words:** Hepatitis B, Awareness, Medical students, Vaccinated

### Introduction:

Hepatitis B, an infection due to Hepatitis B virus (HBV) is a major public health problem worldwide. Approximately 30 percent of the world's population, i.e. about two billion persons, have serological evidence of current or past HBV infection<sup>1</sup>. Of these, an estimated 360 million have chronic infection and 600,000 die each year from HBV related liver disease or hepatocellular carcinoma<sup>2</sup>. HBV infection leads to Hepatitis<sup>3</sup>. It is a leading cause of chronic hepatitis, cirrhosis, and hepatocellular carcinoma, accounting for 1 million deaths annually<sup>4</sup>.

While the prevalence of HBV ranges between 5-10% in South East Asia and 1% in Northern Europe and America, the situation in India is somewhere in between with nearly 3-4% of the population infected by the virus.<sup>5</sup> HBV is 50 to 100 times more infectious than HIV.<sup>1</sup> In India, about 4% of the population is estimated to be HBV carriers giving a total pool of approximately 36 million carriers.

Fortunately, knowledge of the intricacies of viral infection and of the molecular biology of this fascinating virus has led to the successful development of a vaccine and to treatment sometimes capable of eradicating chronic infection.<sup>4</sup> Transmission of infection is rare in persons who have been immunized and transmission rate is high as 30% among those who are not immunized. HBV is transmitted by activities that involve contact with blood, blood products, and other body fluids (such as semen)<sup>6</sup>. Among the health care personnel, HBV is transmitted by skin prick with infected, contaminated needles and syringes or through accidental inoculation of minute quantities of blood during surgical and dental procedures<sup>7</sup>. Knowledge regarding the Hepatitis B virus and safety precautions is needed to minimize the health care settings acquired infections among health personnel. Medical students being part of the health care delivery system are exposed to the same, if not greater, magnitude of risk as other health care workers when they come in contact with patients and contaminated instruments. Medical students receive percutaneous injuries as often or more than health care workers<sup>8</sup>. Literature search on internet and library revealed only 3 studies in India among

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students about awareness of Hepatitis B<sup>7,9,10</sup>. Thus this topic is not being considered often. Hence this study was conducted to assess the awareness about Hepatitis B in medical students and to investigate the self reported vaccination status of these students.

### Materials and Methods

A descriptive cross-sectional study was conducted amongst the students of 2nd MBBS, 3rd MBBS part I and part II at MIMS Medical College, Vizianagaram, Andhra Pradesh, India. The 2nd year medical students begin their clinical postings at majority of the institutions across India. Hence, students of preclinical years (1st year) were excluded from the study. A total of 200 students were included in the study. A pretested structured printed questionnaire was administered to the students during a two weeks period in February 2014, to collect data about the various aspects about awareness of the students about Hepatitis B virus and Hepatitis B vaccine. Data was entered and analyzed in SPSS version -16 and was presented in form of simple tables and graphs. Mean and Percentages were calculated. Tests of significance applied were chi square test to obtain the p value.

### Results

The information was collected from a total of 200 medical students belonging to 2nd MBBS, 3rd MBBS part I and part II. Year wise distribution of study participants according to their vaccination status is shown in figure 1.

Out of these 53 (26.5%) were males and 147(73.5%) females. The mean age of the respondents was  $21.045 \pm 1.162$  years. Majority of them (90%) were in the age group of 20-22 years. Among the study participants, 134 (67%) had received full vaccination course of 3 vaccines against Hepatitis B.

The gender wise details of the participants are shown in table 1. The correct awareness that the causative agent of Hepatitis B is Hepatitis B virus was present in 197 (98.5%) participants, of which 132 were vaccinated for Hepatitis B. Hepatitis B has various antigens such as HBsAg, HBcAg and HBeAg. The details about the awareness of the same are shown in figure 2.

After Hepatitis B infection, the first antigen to appear in blood is HBeAg. The correct awareness about this was present in 69 (34.5%) of the study participants. The antigen which decides the infectivity of Hepatitis B is HBsAg. The study participants who had awareness about this fact

were 95 (47.5%). The details of awareness about various facts of Hepatitis B virus are shown in table 2.

The students were asked about the type of vaccine, number of doses and post-exposure prophylaxis schedule and the route of administration of Hepatitis B vaccine. Awareness regarding the relevant details about the vaccine is represented in table 3.

The awareness in all the study participants regarding the above said facts is presented in a nutshell ahead in Table 4. The students were also assessed for their awareness regarding the method disposal of used needle-syringe so as to prevent the transmission of Hepatitis B. The participants' awareness about the correct method of disposing used needle for injection purpose is destroying the needle head and cutting the syringe tip was present in 132 (66%). The details are depicted in figure 3.

### Discussion

The increasing prevalence of infection with Hepatitis B virus is the greatest threat for health care workers including medical students. Exposure of students to infections results from lack of knowledge, experience and appropriate techniques to handle sharp instruments during their clinical postings. Adequate and appropriate knowledge about Hepatitis B virus infection is essential for medical students, as they have to play an important role in limiting the increasing prevalence of Hepatitis B virus infection and in promoting health education.

The vaccination status of the students also acts as a protective factor from the risk of acquiring Hepatitis B. In the present study, vaccinated students were 134 (67%) of the respondents. Similar vaccination status of 58%-68% among the various years of MBBS students has been reported in another study<sup>7</sup> conducted among medical students in Ahmedabad, India. Another study conducted in Karachi, Pakistan has reported the fully vaccinated rate as 70.6%<sup>11</sup>. However higher vaccination rates of 80% were reported in a study in Orissa, India. Thus inspite of medical students being at risk for Hepatitis B, the vaccination rates seem to be variable.

The awareness regarding first Ag to appear in blood was more in vaccinated students in comparison with those not vaccinated. It was found to be statistically not significant ( $p$  value=0.23). Awareness about Ag responsible for infectivity and modes of transmission of Hepatitis B was found to be statistically significant among vaccinated

students ( $p$  value=0.02 and 0.04 respectively). Awareness about dose schedule of vaccine was statistically significant among vaccinated students ( $p$  value=0.04).

Regarding antigen appearing first in blood and antigen determining infectivity, the overall correct knowledge was present in one-third and more than one-third of the students respectively. Two thirds of the students had an overall correct awareness regarding the various modes of transmission of Hepatitis B.

Another study <sup>7</sup> reported a fair knowledge regarding the antigens to appear first in the blood and to determine infectivity and that majority of medical students had correct knowledge regarding mode of transmission. The correct awareness regarding type of vaccine and dose schedule of Hepatitis B vaccine was observed in one third of the medical students. Nearly two thirds of them were correct about number of doses and routes of administration of vaccine.

### Summary & Conclusion

In brief, present study revealed an overall good awareness about various aspects of Hepatitis B virus; its modes of transmission and vaccine. Awareness regarding almost all aspects of Hepatitis B was better in vaccinated students. Sufficient level of knowledge about various aspects of hepatitis B at the time of starting clinical postings will prevent undesirable accidental exposure to Hepatitis B.

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### Tables and figures

Table 1 Gender wise details of study participants

| Gender | Vaccinated | Non vaccinated | Total |
|--------|------------|----------------|-------|
| Male   | 28         | 25             | 53    |
| Female | 106        | 41             | 147   |
| Total  | 134        | 66             | 200   |

Chi square=6.55, df=1,  $p$  value=0.01

Table 2 Comparison of awareness about facts regarding Hepatitis B among the vaccinated and non-vaccinated study participants

| Awareness                      | Vaccinated | Non-vaccinated | Chi square | $p$ value |
|--------------------------------|------------|----------------|------------|-----------|
| First Ag to appear in blood    | 50         | 19             | 1.42       | 0.23      |
| Ag responsible for infectivity | 70         | 25             | 5.38       | 0.02*     |
| Modes of transmission          | 107        | 44             | 4.15       | 0.04*     |

\* Indicates statistically significant  $p$  value

Table 3 Comparison of awareness about facts regarding Hepatitis B vaccine among the vaccinated and non-vaccinated study participants

| Correct asarencess         | Vaccinated | Non-vaccinated | Chi square | $p$ value |
|----------------------------|------------|----------------|------------|-----------|
| Type of vaccine            | 46         | 21             | 0.13       | 0.72      |
| Number of doses of vaccine | 98         | 40             | 3.25       | 0.07      |
| Dose schedule of vaccine   | 52         | 16             | 4.18       | 0.04      |
| Route of administration    | 92         | 46             | 0.02       | 0.88      |

Table 4. Awareness about Hepatitis B and its vaccine in all the study participants

| Awareness about Hepatitis B and its vaccine | Correct responses |            |
|---|-------------------|------------|
|   | Number            | Percentage |
| First Ag to appear in blood is HBeAg        | 69                | 34.5       |
| Ag responsible for infectivity is HBsAg     | 95                | 47.5       |
| Various modes of transmission               | 151               | 75.5       |
| Type of vaccine                             | 67                | 33.5       |
| Number of doses of vaccine                  | 138               | 69         |
| Dose schedule of vaccine                    | 68                | 34         |
| Route of administration                     | 138               | 69         |

Figure-1 Distribution of the study participants according to their vaccination status

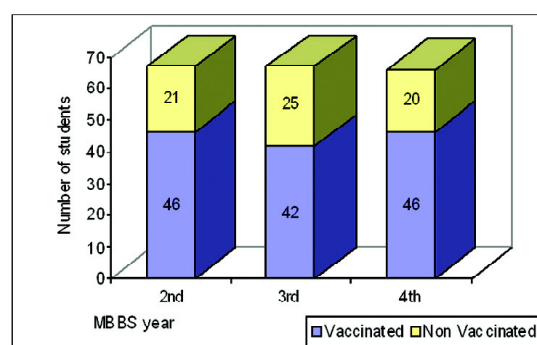


Figure-2 Awareness about various antigens of Hepatitis B

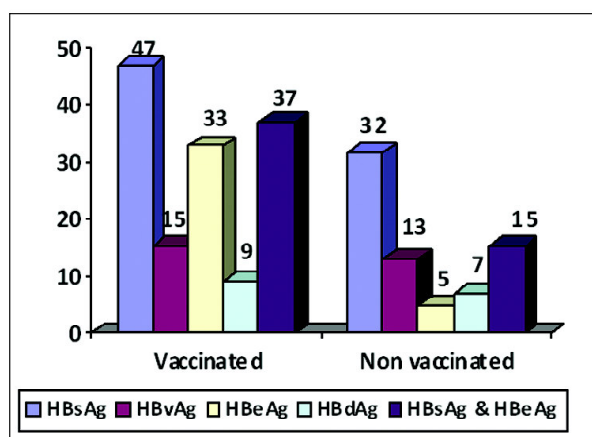
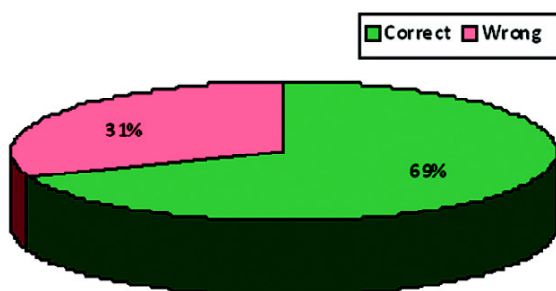
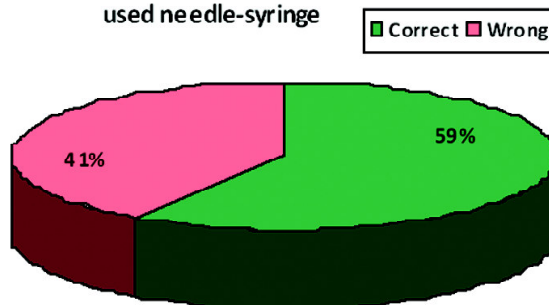


Figure-3 Awareness about disposal method of used needle syringe

Awareness about disposal method of used needle-syringe in vaccinated



Awareness about disposal method of used needle-syringe



## References

- World Health Organization, Country Office for India, Core Programme Clusters, Family and community health, Hepatitis B, <http://www.whoindia.org/en/section6%5Csection8.htm> (Accessed on 24 august 2008).
- Shepard CW, Simard EP, Finelli L, Fiore AE, Bell BP. Hepatitis B virus infection: epidemiology and vaccination. *Epidemiol Rev* 2006;28:112-25.
- Park J.E., Park K, Text Book of Preventive and Social Medicine, 19th Edition, M.S. Banarsidas Bhanot, Jabalpur; 2007: 267.
- Lee WM. Hepatitis B virus infection. *N Engl J Med* 1997;337:1733-45.
- Lavanchy D. Public health measures in the control of viral hepatitis: A World Health Organization perspective for the next millennium. *J Gastroenterol Hepatol* 2002;17:452-9.
- CDC Health information for International Travel, Chapter 4, Prevention of Specific Infectious disease, Hepatitis, Viral, Type B ( <http://wwwn.cdc.gov/travel/yellowBookCh4-HepB.aspx> ).
- Singh A, Jain S Prevention of Hepatitis B; knowledge and practices among Medical students. *Healthline* 2011;2(2):8-11.
- Nisar N, Baloach R, MunirJ AA Does clinical experience affect knowledge regarding Hepatitis-B among male medical students at a private university? *J Pak Med Assoc* 2009;59 (12):808-11.
- 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.
- Tirunilacandin P, Krishnaraj S, Chakravarthy K. Hepatitis B infection: Awareness among medical, dental interns in India. *Ann Trop Med Public Health* 2009;2:33-6.
- 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;60:450-5.
- Singh et al. Hepatitis B vaccination among medical college: results of a survey .*Indian J Gastroenterol* 2000; 19(2):A33-4.