

ORIGINAL ARTICLE

KNOWLEDGE, ATTITUDE, AND PRACTICE SURVEY ON HEPATITIS B IMMUNIZATION AMONG HEALTHCARE PERSONNEL: A CROSS-SECTIONAL STUDY FROM A TERTIARY CARE TEACHING HOSPITAL IN WESTERN MAHARASHTRA

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Abstract

Background: Healthcare personnel are at increased risk of hepatitis B virus (HBV) infection because of occupational exposure to blood and body fluids. Although effective vaccines are available, gaps may persist in vaccination-related knowledge and preventive practices. This study assessed the knowledge, attitudes, and practices regarding hepatitis B immunization among healthcare personnel in a tertiary care teaching hospital. **Methods:** A cross-sectional study was conducted among healthcare personnel using a structured electronic survey. Information regarding demographics, knowledge of hepatitis B infection and prevention, attitudes towards vaccination, vaccination status, post-exposure prophylaxis (PEP), and post-vaccination serological testing was collected. Data were analysed using descriptive statistics and the chi-square test. **Results:** A total of 117 healthcare personnel participated in the study. Overall, 84.6% had received at least one dose of hepatitis B vaccine and 79.5% had completed the recommended three-dose schedule. Knowledge regarding hepatitis B was generally satisfactory, with 99.1% correctly identifying the causative agent, 97.4% recognizing the protective role of vaccination, and 88.9% being aware of PEP. Attitudes towards vaccination were favourable, with 91.5% supporting universal hepatitis B vaccination for healthcare personnel. Despite high vaccination coverage, only 4.3% of participants reported undergoing post-vaccination anti-HBs testing. Vaccination uptake was significantly higher among medical students than among non-student healthcare personnel ($\chi^2 = 5.31$, $p = 0.021$). **Conclusion:** High hepatitis B vaccination coverage coexisted with extremely low uptake of post-vaccination anti-HBs testing, highlighting a substantial gap between vaccine administration and verification of protective immunity. Strengthening post-vaccination monitoring and serological assessment may improve occupational protection against hepatitis B among healthcare personnel.

Keywords: Hepatitis B vaccination; Healthcare personnel; Anti-HBs testing; Occupational health; Post-exposure prophylaxis

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Introduction:

Hepatitis B virus (HBV) infection remains a significant global public health challenge, with an estimated 254 million people living with chronic HBV infection worldwide.¹ Healthcare personnel are at increased risk of acquiring HBV because of occupational exposure to blood, body fluids, and sharps injuries encountered during clinical practice. Vaccination remains the most effective preventive measure, providing protection in more than 90–95% of immunocompetent individuals.² Consequently, national and international guidelines recommend universal hepatitis B vaccination for all healthcare personnel, along with appropriate post-exposure management and documentation of immune status.^{2,3}

Despite the availability of an effective vaccine, studies from India and other low- and middle-income countries continue to report gaps in vaccination coverage, completion of the recommended vaccination schedule, awareness of post-exposure prophylaxis (PEP), and uptake of post-vaccination serological testing among healthcare personnel.[4–9] These deficiencies may increase the risk of occupationally acquired HBV infection and compromise healthcare personnel safety.

Knowledge, attitude, and practice (KAP) surveys are valuable tools for identifying deficiencies in awareness and preventive behaviours. Understanding these gaps is essential for developing targeted educational interventions and strengthening institutional occupational health policies. The present study was undertaken to assess the knowledge, attitudes, and practices regarding hepatitis B immunization among healthcare personnel in a tertiary care teaching hospital in Western Maharashtra and to identify areas requiring improvement in vaccination-related practices and occupational protection.

Methods:

A cross-sectional study was conducted over a three-month period among healthcare personnel in a tertiary care teaching hospital in Western Maharashtra. Eligible participants included medical students, doctors, nurses, and other healthcare personnel aged 18 years or older with actual or potential occupational exposure to blood and body fluids. Participation was voluntary, and electronic informed consent was obtained from all participants.

Data were collected using a structured, pre-validated questionnaire administered electronically through Google Forms. The questionnaire comprised four domains: demographic characteristics; knowledge regarding hepatitis B infection, transmission, vaccination, post-vaccination antibody testing, and

post-exposure prophylaxis (PEP); attitudes towards hepatitis B vaccination and perceived occupational risk; and practices related to vaccination status, completion of the vaccination schedule, and post-vaccination serological testing. Responses were collected anonymously, and confidentiality was maintained throughout the study.

Data were analysed using descriptive statistics and expressed as frequencies and percentages. Associations between categorical variables were assessed using the chi-square test. A p-value of <0.05 was considered statistically significant.

Results:

A total of 117 healthcare personnel participated in the study. Males constituted 64.1% of participants, while medical students accounted for 93.2% of the study population, reflecting the teaching hospital setting (Table-1).

Table-I

Variable	Value
Total participants	117
Male	75 (64.1)
Female	42 (35.9)
Medical Students	109 (93.2)
Doctors	6 (5.1)
Nurses	2 (1.7)

Overall, 84.6%(99) of participants reported receiving at least one dose of hepatitis B vaccine, and 79.5%(93) had completed the recommended three-dose vaccination schedule. However, only 4.3%(5) reported undergoing post-vaccination anti-HBs antibody testing. Awareness regarding the availability of post-exposure prophylaxis (PEP) following occupational exposure was reported by 88.9% of participants.

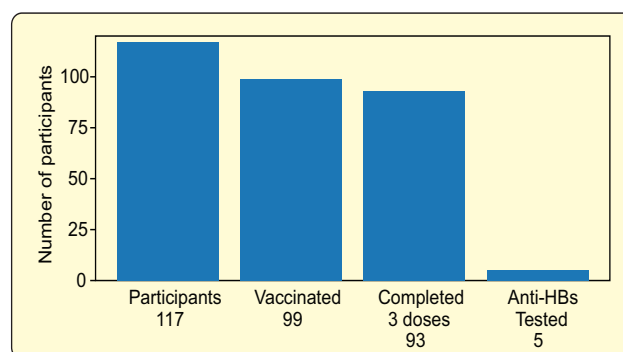


Figure 1. Uptake of Hepatitis B Vaccination and Post-Vaccination Anti-HBs Testing Among Healthcare Workers

Knowledge regarding hepatitis B infection and its prevention was generally satisfactory. Correct identification of the causative agent, awareness of vaccine effectiveness, and awareness of PEP were observed in 99.1%, 97.4%, and 88.9% of participants, respectively. Knowledge regarding the recommended three-dose vaccination schedule and major routes of transmission was observed in 82.1% and 67.5% of participants, respectively.

Table-II
Knowledge regarding Hepatitis B

Knowledge item	Correct response (%)
Identified HBV as the causative agent	116 (99.1)
Correctly identified transmission route	79 (67.5)
Aware that vaccination prevents HBV	114 (97.4)
Correctly identified 3-dose schedule	96 (82.1)
Aware that post-exposure prophylaxis is available	104 (88.9)

Attitudes towards hepatitis B vaccination were favourable, with 89.7% of participants recognizing hepatitis B as a significant occupational health risk and 91.5% supporting universal hepatitis B vaccination for healthcare personnel.

Table-III
Attitude towards Hepatitis B Vaccination

Attitude statement	Agree (%)
HBV is a serious occupational risk	105 (89.7)
All HCWs should be vaccinated against HBV	107 (91.5)

Vaccination uptake was significantly higher among medical students than among non-student healthcare personnel ($\chi^2 = 5.31$, $p = 0.021$). No statistically significant association was observed between vaccination status and gender.

Table-IV
Vaccination and Preventive Practices

Practice Item	n (%)
Received at least one dose of HBV vaccine	99 (84.6)
Completed full 3-dose schedule	93 (79.5)
Underwent post-vaccination anti-HBs testing	5 (4.3)

Discussion:

Our study highlights an important paradox in hepatitis B prevention among healthcare personnel. Vaccination coverage was high, with 79.5% of participants completing the recommended three-dose schedule, and knowledge regarding hepatitis B infection, vaccination, and post-exposure prophylaxis was generally satisfactory. These findings compare favourably with reports from several Indian and international studies that continue to document gaps in vaccination uptake and awareness among healthcare personnel.⁴⁻⁹ At first glance, the results suggest substantial progress in occupational hepatitis B prevention.

A closer examination, however, reveals a more nuanced reality. Despite high vaccine uptake, only 4.3% of participants reported undergoing post-vaccination anti-HBs testing. This striking disparity between vaccination and verification of immune protection emerged as the central finding of our study. While vaccination appears to have been successfully integrated into routine preventive practice, assessment of vaccine-induced immunity remains conspicuously neglected. Consequently, a substantial proportion of healthcare personnel may remain unaware of their immune status despite having completed the recommended vaccination schedule.

The significance of this finding extends beyond individual practice. Contemporary recommendations emphasize that protection against hepatitis B is not defined solely by vaccine administration but also by confirmation of an adequate serological response in individuals at occupational risk.^{2,3} The low uptake of anti-HBs testing observed in our study suggests that the remaining challenge in hepatitis B prevention is no longer one of vaccine acceptance, but of ensuring continuity between vaccination, documentation, and verification of protection.

Several factors may contribute to this disconnect. Vaccination is frequently reinforced through induction programmes, academic curricula, and institutional health initiatives, whereas post-vaccination serological assessment often receives comparatively little attention. Completion of the vaccine schedule may be perceived as the endpoint of prevention, diminishing the perceived need for subsequent antibody testing. The significantly higher vaccination uptake observed among medical students further supports the influence of structured educational environments and organized preventive health services on vaccination behaviour.

The study has certain limitations. The predominance of medical students limits extrapolation of the findings to other categories of healthcare personnel, while

reliance on self-reported information introduces the possibility of recall bias. Nevertheless, our study identifies a potentially modifiable deficiency within existing hepatitis B prevention programmes. Maintaining high vaccination coverage remains essential, but equal emphasis must now be placed on systematic post-vaccination follow-up, serological confirmation of immunity, and robust occupational health surveillance. Without these measures, successful vaccination programmes may create a perception of protection that is not always verified in practice.

Conclusion:

Our study demonstrates that the challenge in hepatitis B prevention is no longer simply achieving vaccine uptake. High vaccination coverage in the presence of extremely low post-vaccination anti-HBs testing suggests that protection is often assumed rather than verified. Future occupational health programmes must move beyond vaccine administration and place equal emphasis on documenting immune protection. Without this transition, successful vaccination programmes may create confidence in protection that is not always confirmed in practice.

Limitations of the study:

It was a single-center study. The study population was relatively small. Long-term follow-up was not included.

Conflict of Interest:

The authors stated that there is no conflict of interest in this study

Funding:

This research received no external funding.

Ethical considerations:

The study was approved by the Institutional Ethics Committee (IEC S.No. IEC/2025/945). Participation was voluntary, and all data were anonymised prior to analysis.

Author Contributions:

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis, and interpretation, or all these areas; took part in drafting, revising, or critically reviewing the article; gave final

approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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