



Assessment of Knowledge and Attitudes towards Prevention of Hepatitis B Infection among Undergraduate Medical student at Government Medical Collage, Rajnandgaon C.G India

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ABSTRACT

Introduction:

Hepatitis B infection remains a major global public health concern, particularly among healthcare workers and trainees who are at risk of occupational exposure. Despite this risk, limited data are available regarding the level of awareness and preventive practices among medical students in our institution. This study was therefore conducted to assess their knowledge, attitudes, and preventive practices related to hepatitis B infection.

Materials and Methods:

A cross-sectional descriptive study was carried out among 212 medical students. Data were collected using a pre-tested, semi-structured questionnaire designed to evaluate knowledge and attitudes regarding hepatitis B infection and its prevention. Descriptive statistics were used to summarize participant characteristics, and Pearson's correlation test was applied to explore associations between variables.

Results:

A total of 212 students participated in the study. Less than half of the participants demonstrated adequate knowledge regarding the risk of acquiring hepatitis B infection in hospital or other high-risk settings. In contrast, a large proportion of students recognized the importance of hepatitis B vaccination for healthcare workers. However, gaps were observed in knowledge related to modes of transmission, clinical features, and complications of the disease.

Conclusion:

Although medical students showed a generally positive attitude toward hepatitis B prevention, their overall knowledge remains suboptimal. Strengthening educational initiatives, including targeted training and awareness programs, is essential to improve understanding and promote safe practices among future healthcare providers.

Key-words: Hepatitis B, Immunization, Healthcare Workers, Knowledge, Attitude, Risk Factors, Rajnandgaon.

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INTRODUCTION

Hepatitis B virus (HBV) infection is a highly contagious blood-borne disease and a major global public health problem, posing a substantial occupational risk to healthcare professionals. Globally, about 5.3% of healthcare workers have evidence of acute hepatitis B infection, and the World Health Organization (WHO) estimates that nearly 37% of these infections are attributable to occupational exposures such as needle-stick injuries and contact with contaminated blood and body fluids.(1-3)

HBV is a leading cause of chronic hepatitis, liver cirrhosis, and hepatocellular carcinoma, contributing significantly to global morbidity and mortality.(4) The WHO estimates that nearly two billion people have been infected with HBV at some point in their lives, with approximately 296–400 million individuals living as chronic carriers, the majority residing in low- and middle-income countries, particularly in the Asian region. HBV-related complications account for more than one million deaths annually.(4-6)

Healthcare workers and medical students constitute a high-risk group for HBV infection because of frequent occupational exposure to blood and body fluids through needle-stick injuries, unsafe injection practices, and inadequate adherence to standard precautions. WHO attributes nearly 37% of HBV infections among healthcare workers to occupational exposure.(3) Undergraduate medical students are particularly vulnerable due to limited clinical experience, insufficient training in infection control practices, and early exposure to high-risk clinical environments.(7,8)

Hepatitis B is largely preventable through a safe and effective vaccine; however, gaps persist in vaccination coverage, screening practices, and post-exposure prophylaxis, even among healthcare trainees. Knowledge, attitude, and practice (KAP) studies are valuable tools for identifying deficiencies in awareness, misconceptions, and behavioural gaps that may contribute to the continued transmission of HBV in healthcare settings.(9)

Despite the inclusion of hepatitis B vaccination

under the Universal Immunization Programme and increasing emphasis on occupational safety, evidence suggests that awareness does not always translate into safe practices. Studies conducted among medical students and healthcare providers in India have reported moderate knowledge and positive attitudes toward hepatitis B, but suboptimal preventive practices, particularly with respect to screening and completion of the vaccination schedule.(10-12)

In this context, assessing the knowledge and attitudes of undergraduate medical students toward the prevention of hepatitis B infection is essential. Understanding these factors will help identify gaps that can be addressed through targeted educational interventions, policy implementation, and institutional screening and vaccination programs. Therefore, the present study was undertaken to assess the knowledge and attitudes regarding hepatitis B infection and its prevention among undergraduate medical students at Government Medical Collage, Rajnandgaon, C.G India.

Methodology

This institutional-based, cross-sectional study was conducted over three months among 212 undergraduate medical students at B.R.L.S.A.B.V.M. Medical College, Rajnandgaon, Chhattisgarh. Participants were selected via convenience sampling, a practical approach which, while efficient, is noted as a limitation regarding the generalizability of results to the wider student population.

Data were gathered through face-to-face interviews using a pre-designed, semi-structured questionnaire. The tool underwent a pilot study with 20 students to refine clarity and estimate administration time; these pilot data were excluded from the final results. The questionnaire was divided into four distinct modules:

Section I: Socio-demographic profiles and vaccination status.

Section II: Knowledge regarding HBV clinical features and transmission.

Section III: Attitudes toward the perceived risk of infection.

Section IV: Preventive practices and precautions.

Response accuracy was verified against current literature and standard healthcare guidelines. Eligibility was limited to active medical students; those who declined participation were excluded. Statistical analysis was performed using Microsoft Excel and Epi Info, utilizing descriptive statistics to summarize the findings.

Ethical clearance was granted by the Institutional Ethical Committee (Ref No. 102/IECGMCRJN/2025). All participants provided written informed consent, acknowledging that their involvement was voluntary and that withdrawal would carry no consequences for their future medical care or hospital access.

Results

212 study participants participated 1st year (44.4%), 2nd year (20.3%) & Final part-I (34.9%) Table 1 shows that knowledge regarding hepatitis B vaccination and its storage was suboptimal among the study participants. Only 8% correctly knew that the hepatitis B vaccine dose is the same for children and adults, while nearly three-fourths (72.7%) answered incorrectly. A large proportion (83%) had never been tested for hepatitis B. Regarding cold chain knowledge, 73.6% correctly identified the use of an ice-lined refrigerator for vaccine storage; however, gaps were evident in temperature knowledge, with only 12.8% correctly identifying the recommended storage temperature range. Awareness about correct vaccine storage placement was also inadequate, as 35.4% of respondents did not know the appropriate storage site

Table 1 Distribution of study participant according to their knowledge about vaccination (n=212)

	Variable	Response Categories	n	%
1	Knowledge about dose difference (Child vs Adult)	Yes	17	8%
		No	153	72.7%
		Don't know	41	19.3%
2	Tested for Hepatitis B	Yes	36	17%
		No	176	83%
3	Hep-B Vaccine is storage	Ice lined Refrigerator	156	73.6%
		Deep freeze	56	26.4%

				%
		Don't know	31	15%
4.	Complete dose of hepatitis	Yes	40	19%
		Incomplete Dose	44	21%
		No	128	60%
5.	Hep –B Vaccine is stored at	Temp. oC to 8 C	26	13%
		Temp -2C to 8 C	123	58%
		Don't Know	38	18%
6	Hep- vaccine storage site	Top	78	37%
		Bottom	59	28%
		Don't know	75	35%

Overall knowledge about Hepatitis B vaccination was inadequate. While many students knew about vaccine storage equipment, knowledge of dosage, temperature,

and cold chain practices was poor. Additionally, low testing and incomplete vaccination indicate gaps in preventive practices, highlighting the need for improved training and awareness.

Table 2: Comparison of Awareness and Knowledge Regarding Hepatitis B Vaccination Among First-Year and Final-Year Students

Variable		First Year (n = 94) n (%)	Final Year (n = 74) n (%)
Awareness of Hepatitis B vaccine importance		70 (74.5)	68 (91.9)

	Original Articles	
Correct knowledge of dose (same for child & adult)	5 (5.3)	10 (13.5)
Ever tested for Hepatitis B	10 (10.6)	20 (27.0)
Knowledge of vaccine storage (ILR)	60 (63.8)	65 (87.8)
Knowledge of correct storage temperature	8 (8.5)	15 (20.3)
Knowledge of correct storage site (ILR compartment)	25 (26.6)	40 (54.1)
Complete vaccination status	15 (16.0)	50 (67.6)

The study shows that final-year students have better awareness and knowledge of Hepatitis B vaccination than first-year students, likely due to greater clinical exposure. However, important gaps persist in both groups, especially regarding vaccine dosage, storage temperature, and cold chain practices. Final-year students also

demonstrate better vaccination and testing practices, whereas first-year students remain inadequately protected. Overall, while knowledge improves with advancing education, early training and practical skill-based teaching are needed to address existing deficiencies

Figure 1 Distribution of study participants according to their knowledge about infection (n= 212)

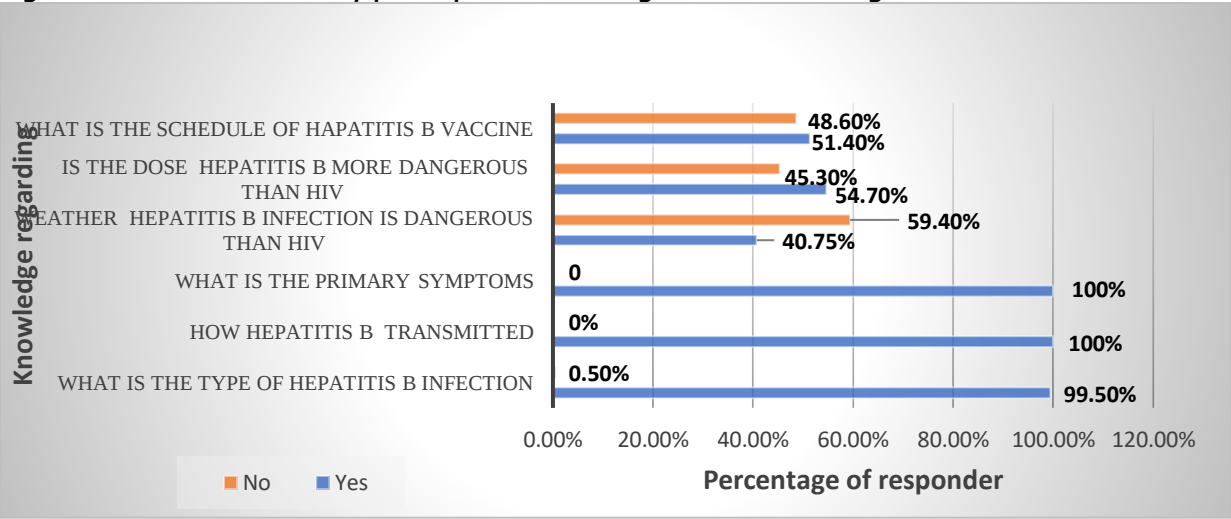


Figure 1 indicates that almost all participants (99.5%) were aware of hepatitis B as an infectious disease. However, detailed knowledge was lacking, as only 51.4% knew

the correct vaccination schedule. This highlights that while general awareness was high, specific and actionable knowledge related to prevention remained insufficient.

Figure.2 Distribution of study participants according to their attitude (n=212)

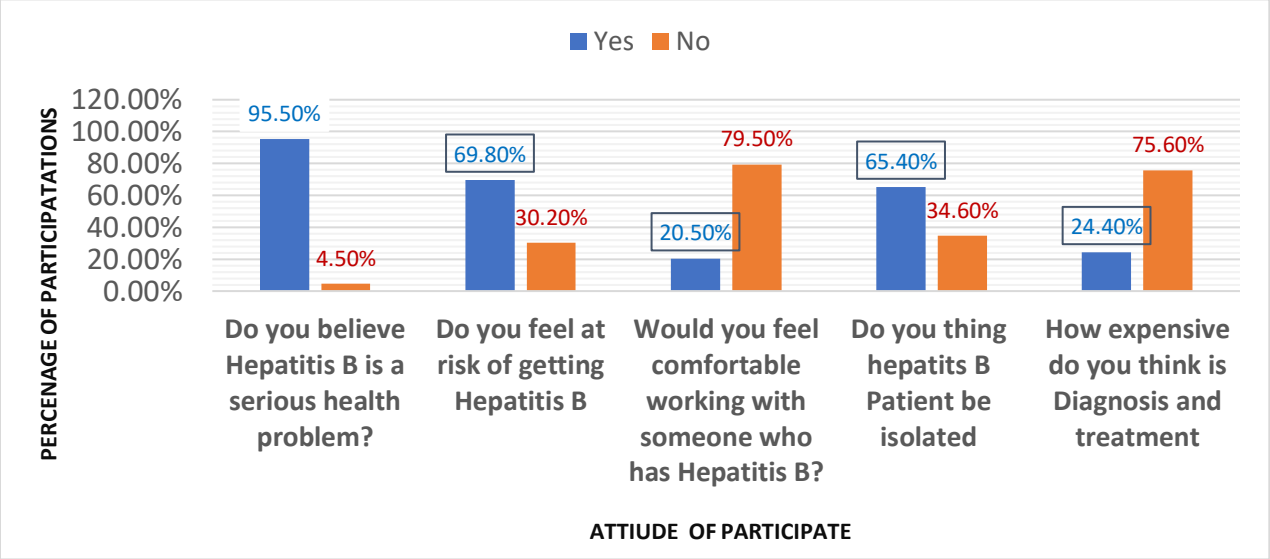


Figure 2 demonstrates an overall **positive attitude** toward hepatitis B. The majority (95.5%) perceived hepatitis B as a serious health problem. However, a high proportion (79.5%) reported discomfort in social interactions,

suggesting the presence of stigma, fear, and misconceptions regarding transmission. Most participants perceived hepatitis B treatment as affordable, which may positively influence health-seeking behavior.

Figure.3 Status of Hepatitis B Vaccination

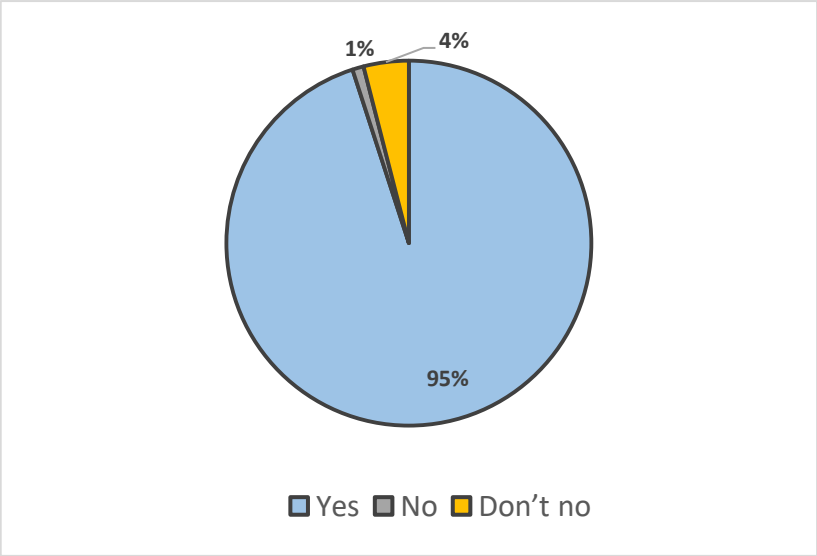


Figure 3 The pie chart indicates that the majority of participants (95%) reported having received the Hepatitis B vaccination, reflecting a very high level of vaccine coverage in the study population. Only a small proportion reported not being vaccinated (1%), while (4%) were unsure of their vaccination status. This finding suggests

strong awareness and uptake of the Hepatitis B vaccination program among the respondents, highlighting the effectiveness of immunization efforts. However, the presence of a small “don’t know” group indicates the need for better documentation and reinforcement of vaccination records.

DISCUSSION

The present study observed that 95% of medical students have received the hepatitis B vaccination, while 5% either remained unvaccinated or were unaware of their status. These findings mirror observations by Rath et al. (13), who documented similar gaps in vaccination coverage among medical trainees. Given India's estimated HBV carrier rate of approximately 4%, achieving universal immunization among healthcare providers is a critical priority for reducing disease incidence (16). The study demonstrated a moderate overall Knowledge, Attitude, and Practice (KAP) level, with a mean knowledge score of 15.66 ± 1.9 . Although most respondents identified major transmission routes—such as infected blood and contaminated needles—their comprehensive awareness was lower than levels reported among healthcare providers by Allene and Deleegn et al. (14,15). While awareness of perinatal transmission was high (75%), the "relatively insufficient" mean score suggests that proximity to health services does not automatically ensure mastery of the subject (16,17). Negative attitudes and misconceptions regarding HBV management persist. Nearly 20% of respondents perceived hepatitis B treatment as costly, a factor that often drives a preference for alternative, unverified therapies. Samuel et al. (18) identified several systemic barriers to vaccination uptake, including busy work schedules, doubts about vaccine effectiveness, and a perceived low occupational risk. These barriers, combined with limited access to educational resources, reinforce the need for institutional intervention.

A significant finding was the persistent social stigma associated with HBV. Approximately one-tenth of respondents feared social isolation, and 25% reported avoiding social interactions. Such stigma, often underexplored in conservative societies, leads to reduced health-related quality of life and social withdrawal (19,20). For medical students, these attitudes are particularly detrimental; they may hinder personal health-seeking behaviour and negatively influence their future empathy toward patients, potentially compromising the standard of care provided to chronic HBV carriers while participants generally demonstrated good preventive practices—likely influenced by shared awareness of HIV/AIDS transmission routes (13,18)—only 55% had attended formal health education programs. This highlights a lack of structured training. To improve both clinical awareness and de-stigmatization, the study strongly recommends implementing workshops, institutional training programs, and mass media campaigns to better equip future healthcare providers (21).

Conclusion

Our study shows that medical students have a positive attitude toward hepatitis B; however, their knowledge of transmission, symptoms, complications, and prevention remains inadequate. Routine screening of newly enrolled students and high-risk individuals for immunization status during initial health assessments is essential to address low vaccination coverage. Establishing mandatory vaccination records and implementing structured hepatitis B education modules within the medical curriculum are key institutional measures. Comprehensive catch-up vaccination programs can further support policymakers in achieving hepatitis B elimination targets.

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