Section: Community Medicine

Original Research Article

HEPATITIS B VACCINATION STATUS AND KNOWLEDGE, ATTITUDE, AND PRACTICE AMONG UNDERGRADUATE STUDENTS OF GOVERNMENT MEDICAL COLLEGE OF INDORE – A CROSS SECTIONAL STUDY

Abhishek Kumrawat[1], Bhagwan Waskel[2], Shailesh Rai[3], Rahul Ganava[1], Arpit Kumar Jain[1], Shivam Dixit[4]

[1]*PG Resident, Department of Community Medicine, MGM Medical College, Indore, Madhya Pradesh, India*
[2]*Associate Professor, Department of Community Medicine, MGM Medical College, Indore, Madhya Pradesh, India*
[3]*Assistant Professor, Department of Community Medicine, MGM Medical College, Indore, Madhya Pradesh, India*
[4]*Assistant Professor (Statistician), Department of Community Medicine, MGM Medical College, Indore, Madhya Pradesh, India*

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Corresponding Author:
Dr. Shailesh Rai,
Assistant Professor, Department of Community Medicine, MGM Medical College, Indore, Madhya Pradesh, India.
Email: dr.shailesh@gmail.com

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ABSTRACT

Background: Hepatitis B virus (HBV) infection remains a major occupational hazard for healthcare workers. Medical students are particularly vulnerable due to early clinical exposure. Despite availability of an effective vaccine, vaccination coverage among medical students in India remains suboptimal. The objective is to estimate the Hepatitis B vaccination status among medical undergraduates. To estimate the knowledge, attitude, and practice (KAP) regarding Hepatitis B among undergraduate medical students of a tertiary care teaching institution in central India.

Materials and Methods: A cross-sectional study conducted out in Government Medical College of Indore district in M.P. over 3 months. The subjects included 205 Undergraduate Students selected by simple random sampling. Pre designed semi structured questionnaire were administered to the study participants. Data was entered into Microsoft Excel and analysed by using JAMOVI software. Necessary appropriate statistical tests were applied.

Results: Only 48.5% of participants reported receiving at least one dose of Hepatitis B vaccine, while complete vaccination (three doses) was reported by 14.6%. Knowledge regarding Hepatitis B was adequate in 60.5% of students, and 68.2% demonstrated a positive attitude toward vaccination. However, good preventive practices were observed in only 29.2% of participants. Vaccination status showed a significant association with year of study and KAP adequacy ($p < 0.01$). The most commonly reported barrier to vaccination was absence of an institutional vaccination program (41.3%). Only 16.3% of students had ever undergone Hepatitis B screening.

Conclusion: Despite adequate knowledge and favourable attitudes, Hepatitis B vaccination coverage and preventive practices among medical students were suboptimal. Institutional policies ensuring mandatory vaccination and regular screening are essential to bridge the knowledge–practice gap.

Keywords: Hepatitis B; Vaccination; Medical students; Knowledge attitude practice; India.

INTRODUCTION

Hepatitis B is a viral infection of the liver that can be acute or chronic, spread through blood and body fluids, and is preventable by vaccination. The virus is most commonly transmitted from mother to child during birth and delivery, in early childhood, as well as through contact with blood or other body fluids[1]. Hepatitis B remains an important global public health problem and poses a substantial occupational risk to healthcare workers and trainees[2]. Medical students encounter exposure risks during clinical

rotations.[1,2] The World Health Assembly noted with appreciation the new Global Health Sector Strategies (GHSS) on, respectively, HIV, Viral Hepatitis and STI to end the epidemics of viral hepatitis by 2030.[3] Vaccination is the most effective preventive measure.[1,3] Hence, vaccination of groups at highest risk of acquiring HBV is recommended[23]. Despite recommendations, gaps in vaccination coverage and completion are reported from many settings.[1,3] This study evaluates vaccination status and KAP among undergraduate medical students of Government Medical College of Indore, to identify gaps and inform institutional measures.

MATERIALS AND METHODS

This Cross-sectional study was carried out in Indore (M.P.) by the Department of Community Medicine M.G.M. Medical College & M.Y. Hospital, Indore, M.P. over a period of 3 months. The study participants were undergraduate (MBBS) students of medical college. Based on the formula n = Z2pq / d2 taking (p) as vaccination coverage 39.2% in previous study4 and margin of error (d) as 7%, considering non-response rate of 10%, sample size came out to be 205 using the simple random sampling method. After taking informed consent from the participants who were willing to participate, interpersonal interview using a pre-designed semi structured questionnaire was carried out. Data were entered into Microsoft Excel spread sheet and analysed by using JAMOVI software. Appropriate statistical tests were applied wherever necessary. Descriptive statistics employed to establish sociodemographic characteristics. Descriptive data was presented in terms of means and percentages. Chi square test was applied to compare categorical data p value < 0.05 was considered statistically significant.

RESULTS

The present study was conducted among 205 participants including 91 males and 114 females to determine the Hepatitis B vaccination status among medical students at M.G.M. Medical College, Indore, to assess knowledge about Hepatitis B transmission, prevention, and safe practices and to evaluate attitudes toward Hepatitis B vaccination and perceived barriers.

[Table 1] shows out of total 205 subjects covered in the study 102(49.7%) subjects were age ≤ 20 years of age, 89(43.4%) subjects were between 21-23 years of age and rest 14(6.8%) were age ≥ 24 years. The mean age of study participants was 20.8±1.9 (Years). The participants were spread across five different academic years, with the highest participation in the First year (34.1%) followed by Final year part II (33.6%) and Second Year (20.5%).

[Table 2] depicts the vaccination status of the participants. It was observed that the largest proportion of participants were not vaccinated (41.5%). Among the vaccinated participants, 49 (23.9%) had received one dose, 41 (20%) had received two doses, and 30 (14.6%) participants were fully vaccinated with three doses.

[Figure 1] illustrates the various barriers reported by participants regarding vaccination. The most commonly reported barrier was the non-availability of a vaccination program offered (41.3%). This was followed by lack of awareness (30.3%), indicating that a substantial proportion of participants were not adequately informed about vaccination. Additionally, vaccine safety concerns were reported by 13.8% of participants, reflecting apprehension regarding the safety and possible side effects of the vaccine. A smaller proportion of participants reported perceived low risk of exposure (8.3%) while financial constraints were the least reported barrier (5.5%) among the participants. About 64.2% preferred private hospitals over Government hospitals for vaccination due to better equipment and hygiene.

These findings suggest that institutional availability of vaccination programs and awareness regarding vaccination are major factors influencing vaccination uptake among the study participants.

[Table 3] shows the association of sex, age group, and vaccination status with the adequacy of knowledge, attitude, and practice (KAP) regarding hepatitis B vaccination, considering a ≥70% score as adequate.

With respect to sex, adequate knowledge was observed in 40.2% of males and 45.1% of females. Adequate attitude was reported among 66.7% of males and 70.2% of females, while adequate practice was seen in 27.4% of males and 31.2% of females. However, the association between sex and KAP adequacy was not statistically significant (p = 0.146).

Regarding age group, adequate knowledge was observed in 39.8% of participants aged ≤ 20 years, 45.6% among those aged 21–23 years, and 48.3% among those aged ≥24 years. Adequate attitude was reported by 66.9%, 69.7%, and 72.4% of participants in the respective age groups, while adequate practice was observed in 27.6%, 30.8%, and 33.1% respectively. The association between age group and KAP adequacy was found to be statistically significant (p = 0.041).

With respect to vaccination status, adequate knowledge was observed among 38.9% of participants who were not vaccinated, 44.1% among those who had received one dose, 47.6% among those who had received two doses, and 55.8% among those fully vaccinated with three doses. Similarly, adequate attitude was observed among 65.2%, 68.3%, 71.2%, and 76.9% respectively, while adequate practice was reported among 25.7%, 29.4%, 32.6%, and 41.7% of participants. The association between vaccination status and KAP

adequacy was found to be highly statistically significant (p = 0.001). Relation of year of study (Batch) with vaccination showed significant association (Chi.Sq = 98.173, p < 0.001) where senior batch (2019) showed 100% partial vaccination, than the 2023 batch (34.7%). These findings indicate that vaccination status, Batch and age group were significantly associated with KAP adequacy, whereas sex did not show a significant association.

Among participants 46.1% were unaware of vaccination policies at their medical college. Other significant findings of study include that only 16.3% had ever been screened for Hepatitis B, despite being in a high-risk group.

Table 1: Socio-demographic Profile of U.G. Medical Students

Socio demographic	Total	Percentage (%)
Age		
≤ 20	102	49.8
21-23	89	43.4
≥ 24	14	6.8
Sex		
Male	91	44.4
Female	114	55.6
MBBS Prof		
1st prof	70	34.1
2nd prof	42	20.5
Final prof I	24	11.7
Final Prof II	69	33.7

Table 2: Vaccination Status among medical students (n=205)

Vaccination Status	Frequency	Percentage
Not vaccinated	85	41.5
Partially vaccinated (1 doses)	49	23.9
Partially vaccinated (2 doses)	41	20
Fully vaccinated (3 doses)	30	14.6

Table 3: Association of Sex, Age Group, and Vaccination Status with KAP) Adequacy (≥70%)

Variable		Knowledge Adequate (%)	Attitude Adequate (%)	Practice Adequate (%)	χ^2	p value
Sex	Male	40.2	66.7	27.4	2.11	0.146
	Female	45.1	70.2	31.2		
Age group	≤ 20 year	39.8	66.9	27.6	6.42	0.041*
	21–23 year	45.6	69.7	30.8		
	≥ 24 year	48.3	72.4	33.1		
Vaccination status	Not vaccinated	38.9	65.2	25.7		
	1 dose	44.1	68.3	29.4		
	2 doses	47.6	71.2	32.6		
	3 doses	55.8	76.9	41.7	16.84	0.001**

Note. Values represent percentage of participants achieving ≥70% adequacy in each domain. χ^2 = Chi-square test. *p < 0.05; **p < 0.01.

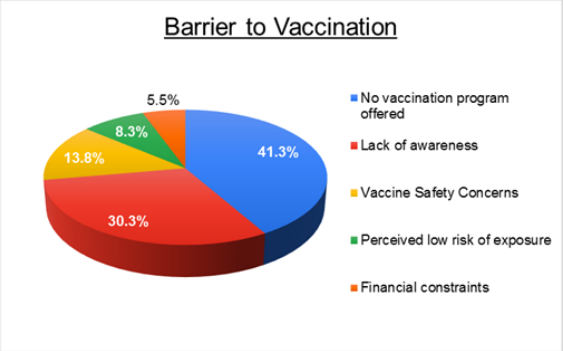

Figure 1: Barriers of Vaccination

DISCUSSION

In the present study, the majority of participants (49.7%) belonged to the age ≤ 20 years group, followed by 43.4% in the 21–23 years age group. Similar findings were reported in the study conducted by Pathak et al., where most medical students were in the 18–22 years age group.[5]

In present study among 205 medical students 48.5% of students vaccinated, with only 14.6% completing the full three-dose schedule revealing a significant protection gap. These numbers align closely with Thote et al. (Central India, 2023, 51.6% vaccinated), Shah et al. (Pune, 2015, 48% vaccinated), and Dalal et al. (Punjab, 2015, 52.4% vaccinated). Similar rates (42–60%) have also been reported from North India by Jain et al. (2012), in North India by Jain Etal and South Asia Meta analysis.[4-12]

In the present study, the major barriers to vaccination included lack of vaccination program availability (41.3%), followed by lack of awareness (30.3%), vaccine safety concerns (13.8%), perceived low risk of exposure (8.3%), and financial constraints (5.5%). Similar barriers were identified in the study conducted by Dhapola etal from Almora Dalal etal and Shah etal and Siyad etal from

Mumbai (2025) where lack of awareness and absence of institutional vaccination programs were the major factors affecting vaccination uptake among medical students.[4,8,10,11]

Among students in the study 29.2% demonstrated good practice such as screening, reporting of needle-stick injuries. Only 16.3% had ever been screened for Hepatitis B, despite being in a high-risk group. This mirrors national trends where screening and post-vaccination serology are rarely practiced among medical trainees. Same findings seen with Thote et al.'s (Feb-Jul 2022), where 32.5% reported needle-sticks amid similar KAP gaps.[9]

In the study Full vaccination stood at 14.6%, with seniors outperforming juniors (χ^2=98.173, p<0.001). Same trends observed by Giri et al. (2016) and Rathi et al. (2018), where knowledge levels improved significantly with academic progression. Similar studies by Dhapola et al. (2024) Thote et al. (2023) and Hussain et al. (2016) found vaccination and KAP scores significantly increase with seniority.[4,6,9]

CONCLUSION

Vaccination coverage among the participants was found to be suboptimal, with only a small proportion of students being fully vaccinated with all three doses of the Hepatitis B vaccine. A significant number of students were either partially vaccinated or had not received the vaccine at all. The study also identified several barriers affecting vaccination uptake, including lack of availability of institutional vaccination programs, lack of awareness, vaccine safety concerns, perceived low risk of exposure, and financial constraints. A significant association was observed between age group and vaccination status with the adequacy of knowledge, attitude, and practices, whereas sex did not show a statistically significant association. These findings highlight the importance of improving awareness, strengthening institutional vaccination programs, and promoting complete vaccination among medical students.

Recommendation:

1. Awareness and Sensitization Programs by regular workshops, seminars, and awareness campaigns in medical colleges to educate students about Hepatitis B infection to address knowledge gaps regarding vaccine safety, occupational risks (needle stick injury protocols).
2. Implementation of Institutional Vaccination and mandatory screening programs for medical students to establish clear vaccination policies and improve awareness especially at the time of admission.
3. Institutions should maintain vaccination records of students and periodically monitor their vaccination status to ensure completion of all three doses of the Hepatitis B vaccine.
4. Strengthening Preventive Practices by repeated training programs on infection control practices, safe handling of sharps, and post-exposure to enhance preventive practices among medical students.

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