

ASSESSMENT OF KNOWLEDGE AND PRACTICE REGARDING HEPATITIS B VIRUS INFECTION PREVENTION AMONG UNDERGRADUATE NURSING STUDENTS IN DISTRICT SWABI

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Abstract

Hepatitis B virus (HBV) infection remains a major global public health concern, causing chronic liver disease, cirrhosis, and hepatocellular carcinoma. However, limited data exist on the knowledge and practices regarding HBV prevention among undergraduate nursing students in District Swabi, Khyber Pakhtunkhwa, Pakistan. This descriptive, quantitative, cross-sectional study assessed the knowledge and practices regarding Hepatitis B virus infection prevention and vaccination status among 299 undergraduate nursing students selected through stratified random sampling from nursing colleges in District Swabi. Data were collected using a structured, self-administered questionnaire adapted from validated KAP frameworks and analyzed using SPSS with descriptive statistics including frequencies, percentages, means, and standard deviations. The mean age of respondents was 22.57 years (SD = 1.472), with ages ranging from 20 to 26 years. The majority were male (65%) and from the 6th semester (43.5%). Regarding knowledge, 42.5% had moderate knowledge, 32.4% had good knowledge, and 25.1% had poor knowledge. For practices, 57.2% demonstrated good practice while 42.8% exhibited poor practice. Item-wise analysis showed knowledge scores ranged from 60.2% to 84.9% while practice scores ranged from 58.5% to 86.6%. Vaccination coverage was suboptimal, consistent with previous Pakistani studies. No statistically significant association was found between demographic variables and knowledge or practice levels. While the majority of nursing students had moderate to good knowledge and practices regarding Hepatitis B prevention, significant gaps remain. One-quarter had poor knowledge, over 40% exhibited poor practice, and vaccination coverage was inadequate. There is a notable knowledge-practice gap. Comprehensive educational interventions, mandatory vaccination policies, and improved access to vaccines and infection control supplies are urgently needed to protect nursing students and enhance patient safety.

1. INTRODUCTION

Hepatitis is a serious public health problem and is one of the most important causes of morbidity and mortality in the world. It is the

inflammation of the liver, usually caused by viral infection Hepatitis A, B, C, D and E. Of these, the Hepatitis B virus (HBV) is most threatening as it may lead to chronic liver disease, cirrhosis

and cancer of the liver unless treated in time (Waseem et al., 2025). Hepatitis B is usually spread via contact with contaminated blood and bodily fluids. The virus is transmitted via needle-stick injuries, unsafe injections and blood transfusion, and unprotected sex. The close contact that nurses have with patients and procedures makes them especially susceptible to infection (Sagheer et al., 2023).

Hepatitis is a significant health issue globally, causing millions of cases and deaths each year. Many deaths due to liver cirrhosis and hepatocellular carcinoma have been reported to be caused by hepatitis B alone (Waseem et al., 2025). The burden of hepatitis is even higher in developing countries including Pakistan, as awareness is low, health care facilities are not adequate and vaccines are not accessible (Waseem et al., 2025). In Pakistan, health-care workers, especially nursing students and nurses, are considered to be at risk of contracting hepatitis B infection. The students are in training and may not have enough clinical experience and knowledge to prevent infection. Studies have shown that health-care workers are more likely to be infected with hepatitis than the public (Al-Mohani et al., 2025).

Nursing students are an important part of health care teams and their knowledge and practices related to infection control are vital to patient safety. However, studies have shown that there are deficiencies in nursing students' knowledge, attitude and practices. For example, in Karachi, the study has revealed that although students were aware of hepatitis, they had a lack of knowledge about the transmission and prevention of the disease (Al-Mohani et al., 2025). Nursing students are also lacking in vaccination, as well as gaps in knowledge. While vaccination is safe and effective in preventing hepatitis B infection, not all students are fully vaccinated. For example, in Pakistan, only 50.6% of the nursing students were immunized for hepatitis B (Ali et al., 2023).

Hand hygiene, wearing personal protective equipment (PPE) and safe disposal of sharps are

important safe practices to prevent the spread of hepatitis. Studies have shown, however, that while there is basic knowledge, practices may not be as consistent among health care workers. In one study, the researchers found that vaccination rates were low and there was a lack of knowledge about hepatitis among nurses (Ghanghro et al., 2024). Therefore, it is crucial to evaluate the knowledge and practices of nursing students about hepatitis infection, prevention and vaccination. This will give feedback on what needs to be improved and will improve teaching. Not much research is conducted in this area in District Swabi. Knowledge and practices among undergraduate nursing students in this regard is important to inform strategies and improve health care outcomes.

2. Objective of the Study

The specific objectives of this study are:

1. To determine the knowledge regarding hepatitis infection among nursing students.
2. To determine the practices of hepatitis prevention.

3. Result and Discussion

The quantitative results of $N = 299$ undergraduate nursing students in District Swabi corroborate that there is a foundation of knowledge and practice, but there are still significant gaps. The mean age of the participants was 22.57 years ($SD = 1.472$) ranging from 20 to 26 years. Male students comprised 65% ($n = 194$) while females represented 35% ($n = 105$). In terms of academic semester, 43.5% ($n = 130$) were enrolled in the 6th semester, 30.8% ($n = 92$) in the 8th semester, and 25.8% ($n = 77$) in the 4th semester. This distribution ensured that students at different stages of their academic program were represented, thus giving a complete picture of knowledge and practices at various clinical exposure levels.

Demographic Variable	Category	Frequency (n)	Percentage (%)
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Age (Years)	Mean $\pm$ SD: 22.57 $\pm$ 1.472 (Range: 20–26)	–	–
Gender	Male	194	65.0%
	Female	105	35.0%
Semester	4th Semester	77	25.8%
	6th Semester	130	43.5%
	8th Semester	92	30.8%

The general level of knowledge of the respondents was grouped into three categories: Poor, Moderate and Good. The results showed that the majority of the respondents had moderate knowledge (42.5%, $n = 127$), followed by good knowledge (32.4%, $n = 97$), and poor knowledge (25.1%, $n = 75$). This indicates that though a large proportion of the respondents had good knowledge, there is scope to improve as one fourth of the respondents showed poor knowledge. The results are consistent with a

number of international and regional studies. Al-Redha and Majeed (2017) investigated the knowledge of 125 nursing students in Iraqi nursing colleges, and found that the majority of students had poor knowledge about HBV transmission, prevention, and complications. Likewise, nursing students in Greece were found to have moderate levels of knowledge with a mean knowledge score of 62.2% (SD = 17.0%) (Statiri et al., 2024).

Table 2: Frequency Distribution of Knowledge Level

Knowledge Level	Frequency	Percent	Valid Percent	Cumulative Percent
Poor Knowledge	75	25.1	25.1	25.1
Moderate Knowledge	127	42.5	42.5	67.6
Good Knowledge	97	32.4	32.4	100.0
Total	299	100.0	100.0	–

The item wise analysis showed that the highest level of knowledge was for K1 (84.9% "yes" responses) which was related to awareness of Hepatitis B as a serious health problem. The result indicated that the general knowledge about the disease among the nursing students is relatively high. The lowest knowledge was seen for K6 (60.2% "yes" answers) specifically about transmission or prevention knowledge. This is in

line with the results of Togtoga et al. (2024) in Senegal, where 26.6% of college students were unaware of anything about the disease and 63% had poor knowledge of the disease. The fact that there were significant differences in the level of knowledge among the various items highlights the importance of a broad educational intervention covering all aspects of Hepatitis B transmission, prevention and vaccination.

Table 3: Item-Wise Frequency Distribution of Knowledge Items

Item	Response	Frequency	Percent	Valid Percent	Cumulative Percent
K1	No	45	15.1	15.1	15.1
	Yes	254	84.9	84.9	100.0
K2	No	90	30.1	30.1	30.1
	Yes	209	69.9	69.9	100.0
K3	No	115	38.5	38.5	38.5
	Yes	184	61.5	61.5	100.0
K4	No	86	28.8	28.8	28.8
	Yes	213	71.2	71.2	100.0
K5	No	103	34.4	34.4	34.4

	Yes	196	65.6	65.6	100.0
K6	No	119	39.8	39.8	39.8
	Yes	180	60.2	60.2	100.0
K7	No	97	32.4	32.4	32.4
	Yes	202	67.6	67.6	100.0
K8	No	94	31.4	31.4	31.4
	Yes	205	68.6	68.6	100.0
K9	No	74	24.7	24.7	24.7
	Yes	225	75.3	75.3	100.0
K10	No	101	33.8	33.8	33.8
	Yes	198	66.2	66.2	100.0
K11	No	93	31.1	31.1	31.1
	Yes	206	68.9	68.9	100.0
K12	No	96	32.1	32.1	32.1
	Yes	203	67.9	67.9	100.0
K13	No	99	33.1	33.1	33.1
	Yes	200	66.9	66.9	100.0
K14	No	88	29.4	29.4	29.4
	Yes	211	70.6	70.6	100.0
K15	No	96	32.1	32.1	32.1
	Yes	203	67.9	67.9	100.0

The overall practice level of respondents was categorized into two levels: Poor Practice and Good Practice. The findings show that over half of the respondents (57.2%, $n = 171$) had good practice and 42.8% ($n = 128$) had poor practice. This indicates that although the majority of respondents had good practices, a substantial proportion still needs improvement in their practice behaviors. The results of the study are similar to those of Modawi et al. (2020) in Saudi Arabia, which revealed that 76.7% of the

nursing students had good practices regarding Hepatitis B prevention, such as proper disposal of waste, using coloured plastic bags for medical waste and general waste, and wearing personal protective equipment. The result of 42.8% poor practice among respondents in the present study, however, is disturbing and similar to the observation of Ganghro et al. (2024) which noted that while healthcare workers have basic knowledge, practices may not be consistent.

Table 4: Frequency Distribution of Practice Level

Practice Level	Frequency	Percent	Valid Percent	Cumulative Percent
Poor Practice	128	42.8	42.8	42.8
Good Practice	171	57.2	57.2	100.0
Total	299	100.0	100.0	—

The item wise analysis showed that the highest practice was noted in relation to P1 (86.6% "yes" responses) and the lowest practice was noted in relation to P4 (58.5% "yes" responses) which was a specific preventive behaviour. The differences in practice levels between the various items indicates that nursing students may be taking some preventive measures but that are certain areas where there is less compliance. This gap

between knowledge and practice is a well-documented phenomenon in health professions education as found in this study. The knowledge, attitude and practice gap among nursing students is missing and this gap between knowledge and practice may pose a serious threat to patient safety and the health of healthcare workers as well (Al-Mohani et al. 2025).

Table 5: Item-Wise Frequency Distribution of Practice Items

Item	Response	Frequency	Percent	Valid Percent	Cumulative Percent
P1	No	40	13.4	13.4	13.4
	Yes	259	86.6	86.6	100.0
P2	No	101	33.8	33.8	33.8
	Yes	198	66.2	66.2	100.0
P3	No	107	35.8	35.8	35.8
	Yes	192	64.2	64.2	100.0
P4	No	124	41.5	41.5	41.5
	Yes	175	58.5	58.5	100.0
P5	No	79	26.4	26.4	26.4
	Yes	220	73.6	73.6	100.0
P6	No	104	34.8	34.8	34.8
	Yes	195	65.2	65.2	100.0
P7	No	109	36.5	36.5	36.5
	Yes	190	63.5	63.5	100.0

The vaccination status of nursing students was evaluated in the present study during the practice assessment. The results showed that many respondents were not fully vaccinated against Hepatitis B. This is consistent with the study conducted by Ali et al. (2023) in Karachi, where 50.6% of the nursing students had received at least one dose of HBV vaccine and 58.8% of those who had received the vaccine were completely vaccinated. The low vaccination coverage seen in this study is alarming as vaccination is a safe and effective method of preventing Hepatitis B infection. The WHO aims to eliminate viral hepatitis as a public health threat by 2030, including 100% coverage of healthcare workers and other high-risk groups with vaccination (Statiri et al., 2024). The results of this study indicate that Pakistan is not on the path to reach this goal at least in the case of nursing students in District Swabi. The literature review revealed that the reasons for non-vaccination were lack of knowledge about the HBV vaccine (31.88%), unavailability of free-of-cost vaccine (22%), having no time to vaccinate (11.96%), fear of side effects or complications (10.14%), fear of being injected (9.42%), belief that the vaccine is not effective (5.07%), and high cost of vaccination (3.99%) (Ali et al., 2023). The results of this study indicate that more comprehensive interventions are needed to bridge the knowledge gaps,

increase access to free vaccines, and overcome vaccination-related fears and misconceptions.

There were no statistically significant relationships between the demographic variables (age, gender, and semester) and the knowledge or practice levels in the present study. The literature, however, indicates that there are several factors that affect the knowledge and practices of nursing students about Hepatitis B. Statiri et al., (2024) found that there was a strong positive correlation between knowledge scores and full vaccination ($p < 0.001$), which means that the higher the student's knowledge, the higher the likelihood of their being fully vaccinated. This discovery confirms the role of knowledge as a factor influencing preventive behaviour. In the current study, the correlation was not significant, but there was an increasing tendency for students with higher practice levels to have higher knowledge scores. The authors of Ali et al. (2023) found that vaccination coverage was significantly higher in public institutes (80%) due to the free-of-cost provision of the vaccine in these institutes. The study underscores the importance of institution policies and free vaccines to encourage nursing students to be vaccinated.

4. Conclusion

The study showed that majority of undergraduate nursing students in District

Swabi have moderate to good knowledge about Hepatitis B infection, prevention and vaccination, however, a significant proportion (25.1%) have poor knowledge. Lack of knowledge was especially notable in certain specific areas, like transmission and prevention. Practice Levels: Over half (57.2%) of the respondents had good practice in Hepatitis B prevention, with 42.8% having poor practice. This means that although there is knowledge of preventive measures, there is a lack of practice by a significant number of nursing students. Vaccination Status: Vaccination coverage among nursing students is sub-optimal with a large proportion of students being under-vaccinated against Hepatitis B. This is an important issue because nursing students are at risk for occupational exposure while in clinical practice. Knowledge-Practice Gap: There is a gap between knowledge and practice, with some students possessing adequate knowledge but not consistently practicing preventive measures. This emphasises the importance of interventions that are not only about knowledge acquisition but also about behaviour change. Demographic Factors: Age, gender and semester of study were not statistically significantly associated with knowledge or practice levels. This indicates that other factors like institutional policies, access to vaccination and individual attitudes might have a more important influence. Finally, the study gives an insight into the knowledge and practices about Hepatitis B among the undergraduate nursing students of District Swabi. The results can guide the formulation of targeted interventions to enhance knowledge, encourage preventive practices and boost vaccination coverage among nursing students, which will help in the prevention and control of Hepatitis B in Pakistan.

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