



**A Descriptive study to assess the knowledge regarding the mode of
transmission and prevention of hepatitis B among first year students of B.Sc.
nursing college, Jamuhar**

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Abstract

Background

Hepatitis B is a major public health problem and an important occupational hazard for healthcare professionals, including nursing students. Adequate knowledge regarding its modes of transmission and preventive measures is essential to reduce the risk of infection and ensure safe clinical practice.

Objective

1. To assess the knowledge regarding the modes of transmission and prevention of Hepatitis B among first-year B.Sc. Nursing students and to determine the association between knowledge level and selected demographic variables.



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Methods

A quantitative research approach with a descriptive cross-sectional design was adopted. Sixty first-year B.Sc. Nursing students of Narayan Nursing College, Jamuhar, Bihar, were selected using a non-probability convenience sampling technique. Data were collected using a structured self-administered questionnaire consisting of demographic variables and knowledge-related questions on Hepatitis B transmission and prevention. Data were analysed using descriptive and inferential statistics.

Results

Among the 60 participants, 51.7% had moderate knowledge, 28.3% had adequate knowledge, and 20.0% had inadequate knowledge regarding the transmission and prevention of Hepatitis B. Most students correctly identified blood transfusion and needle-stick injuries as major routes of transmission; however, knowledge gaps existed regarding vaccination schedules, post-exposure prophylaxis, and certain preventive measures. A statistically significant association was observed between knowledge level and gender ($p < 0.05$), whereas other selected demographic variables showed no significant association.

Conclusion

The study concluded that first-year B.Sc. Nursing students possessed a moderate level of knowledge regarding Hepatitis B. The findings highlight the need for regular educational programmes, vaccination awareness, and reinforcement of infection prevention practices before clinical exposure.

Keywords

Hepatitis B, Knowledge, Nursing Students, Transmission, Prevention, HBV, Occupational Exposure. Stress, Nursing Students, Coping Strategies, Stress Management, Nursing Education

Introduction



Hepatitis B virus (HBV) infection is a major global health concern affecting millions of people worldwide and continues to contribute significantly to morbidity and mortality due to chronic liver disease, cirrhosis, and hepatocellular carcinoma. Healthcare professionals, including nursing students, are particularly vulnerable because of their frequent exposure to blood, body fluids, contaminated needles, and other sharp instruments during clinical practice.

The World Health Organization reports that Hepatitis B remains one of the leading causes of chronic liver disease worldwide. Although an effective vaccine is available, inadequate awareness regarding vaccination schedules, infection prevention measures, and post-exposure management continues to increase the occupational risk among healthcare workers and students entering clinical settings.

Nursing students represent an important group for assessing baseline knowledge because they begin clinical training with varying levels of awareness regarding universal precautions and infection control practices. Early identification of knowledge gaps enables educators to implement targeted educational interventions, improve vaccination compliance, and promote safe clinical behaviour.

Considering the occupational risk associated with Hepatitis B and the limited evidence regarding the knowledge level among first-year nursing students in the study setting, the present study was undertaken to assess their knowledge regarding the modes of transmission and prevention of Hepatitis B.

Background of the study

Hepatitis B is a major global public health problem caused by the Hepatitis B virus (HBV). Hepatitis B is a major global public health problem caused by the Hepatitis B virus (HBV), which primarily affects the liver. The infection may present as an acute illness or progress to a chronic condition, leading to serious complications such as liver cirrhosis, liver failure, and hepatocellular carcinoma. Despite the availability of an effective vaccine, Hepatitis B



continues to be a significant cause of morbidity and mortality worldwide, particularly in low- and middle-income countries.

Healthcare workers, including nursing students, are at a higher risk of acquiring Hepatitis B infection due to their frequent exposure to blood, body fluids, contaminated needles, and other sharp instruments during clinical training. Nursing students begin their clinical postings early in their academic program, making adequate knowledge regarding the transmission and prevention of Hepatitis B essential for their personal safety as well as patient care.

The World Health Organization (WHO) has identified Hepatitis B as a preventable disease and recommends universal vaccination, adherence to standard infection prevention practices, safe handling of sharps, proper biomedical waste management, and post-exposure prophylaxis to reduce occupational transmission. However, studies conducted in various settings have reported that many nursing students have inadequate knowledge regarding the modes of transmission, preventive measures, vaccination schedules, and post-exposure management of Hepatitis B.

Assessing the level of knowledge among nursing students is important for identifying knowledge gaps and planning appropriate educational interventions. Improving awareness and understanding of Hepatitis B can promote safe clinical practices, increase vaccination uptake, and reduce the risk of occupational exposure.

Therefore, the present study was undertaken to assess the knowledge regarding the transmission and prevention of Hepatitis B among first-year B.Sc. Nursing students. The findings of this study are expected to provide evidence for strengthening nursing education programs and promoting effective infection prevention practices among future healthcare professionals., infection prevention measures.

Considering the occupational risk associated with Hepatitis B and the limited evidence regarding the knowledge level among first-year nursing students in the study setting, the present study was undertaken to assess their knowledge regarding the modes of transmission and prevention of Hepatitis B.



.Need for the Study

Hepatitis B remains one of the leading causes of chronic liver disease and continues to pose a significant public health challenge worldwide. Although it is a vaccine-preventable disease, many healthcare workers and nursing students remain at risk due to occupational exposure to infected blood and body fluids during clinical practice. Nursing students, particularly those in their first year, often have limited clinical experience and may lack adequate knowledge regarding the transmission, prevention, vaccination, and post-exposure management of Hepatitis B.

Adequate knowledge about Hepatitis B is essential for nursing students to protect themselves, prevent the spread of infection, and provide safe and effective patient care. Identifying knowledge gaps at the beginning of nursing education can help educators develop appropriate educational strategies and strengthen infection prevention practices before students are exposed to clinical settings.

Therefore, there is a need to assess the knowledge regarding the transmission and prevention of Hepatitis B among first-year B.Sc. Nursing students. The findings of this study will help nursing educators identify areas requiring improvement, promote awareness about Hepatitis B vaccination and standard precautions, and contribute to the development of educational interventions that enhance the safety of future healthcare professionals.

Materials and Methods

Study Design and Setting

A quantitative research approach with a descriptive cross-sectional research design was adopted to assess the knowledge regarding the modes of transmission and prevention of Hepatitis B among first-year B.Sc. Nursing students. The study was conducted at Narayan Nursing College, Jamuhar, Rohtas, Bihar.



Study Population and Sample

The target population comprised all first-year B.Sc. Nursing students of Narayan Nursing College. A total of 60 students who fulfilled the inclusion criteria participated in the study. Participants were selected using a non-probability convenience sampling technique.

Inclusion Criteria

- * First-year B.Sc. Nursing students available during the period of data collection.
- * Students willing to participate in the study.

Exclusion Criteria

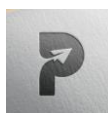
- * Students who were absent during data collection.
- * Students unwilling to participate in the study.

Research Instrument

Data were collected using a structured self-administered questionnaire developed by the investigators. The tool consisted of two sections:

- * **Section A:** Demographic variables including age, gender, religion, marital status, place of residence, parents' occupation, monthly family income, dietary pattern, type of family, and previous source of information regarding Hepatitis B.
- * **Section B:** Questions assessing knowledge regarding Hepatitis B, including its causative agent, modes of transmission, hospital-acquired transmission, preventive measures, vaccination, and post-exposure management.

The content validity of the tool was established through expert review, and necessary modifications were incorporated before data collection.



Data Collection Procedure

After obtaining administrative permission from the concerned authorities and informed consent from the participants, data were collected using the structured questionnaire. Participants were informed about the purpose of the study and assured that confidentiality and anonymity would be maintained throughout the research process. Each participant completed the questionnaire independently, and the completed questionnaires were collected immediately after completion.

Ethical Considerations

Permission to conduct the study was obtained from the concerned institutional authorities before data collection. Written informed consent was obtained from all participants. Confidentiality, anonymity, and privacy of the participants were strictly maintained, and participation in the study was entirely voluntary.

Statistical Analysis

The collected data were coded, entered, and analysed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize demographic characteristics and knowledge scores. Inferential statistics, particularly the Chi-square test, were applied to determine the association between knowledge level and selected demographic variables. A p-value <0.05 was considered statistically significant.

Research Instruments

The research instrument used in the present study was a structured self-administered questionnaire developed after an extensive review of the literature and expert guidance. The questionnaire was designed to assess the knowledge regarding the transmission and prevention of Hepatitis B among first-year B.Sc. Nursing students.

The instrument consisted of two sections:

Section A: Socio-demographic Data



This section included items related to the participants' demographic characteristics such as age, gender, religion, residence, family type, previous knowledge regarding Hepatitis B, source of information, and Hepatitis B vaccination status.

Section B: Knowledge Questionnaire

This section consisted of multiple-choice questions (MCQs) assessing the participants' knowledge regarding Hepatitis B. The questions covered:

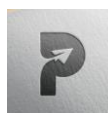
- * Introduction and causes of Hepatitis B
- * Modes of transmission
- * Signs and symptoms
- * Prevention and control measures
- * Hepatitis B vaccination
- * Standard precautions and infection control practices
- * Post-exposure prophylaxis

Each correct response was awarded one mark, and each incorrect response was awarded zero marks. The total knowledge score was calculated by summing the correct responses. Higher scores indicated better knowledge regarding the transmission and prevention of Hepatitis

Results

A total of 60 first-year B.Sc. Nursing students participated in the study. The majority of the participants belonged to the 18–20 years age group. Female students constituted the larger proportion of the sample. Most participants were Hindus, belonged to nuclear families, and had previously received information regarding Hepatitis B through academic teaching.

The assessment of knowledge revealed that 31 (51.7%) students had moderate knowledge, 17 (28.3%) had adequate knowledge, and 12 (20.0%) had inadequate knowledge regarding the modes of transmission and prevention of Hepatitis B.



Most participants correctly identified contaminated blood transfusion, needle-stick injuries, and infected body fluids as important routes of HBV transmission. A high proportion of students were also aware that Hepatitis B is a vaccine-preventable disease. However, deficiencies were observed regarding the recommended vaccination schedule, post-exposure prophylaxis, and certain infection prevention measures practiced in healthcare settings.

The association between knowledge level and selected demographic variables was analysed using the Chi-square test. A statistically significant association was observed between knowledge level and gender ($p < 0.05$). However, no statistically significant association was found between knowledge level and other demographic variables, including age, religion, marital status, place of residence, type of family, parents' occupation, monthly family income, dietary pattern, and previous source of information.

Table 1. Distribution of Participants According to Overall Knowledge Level (n = 60)

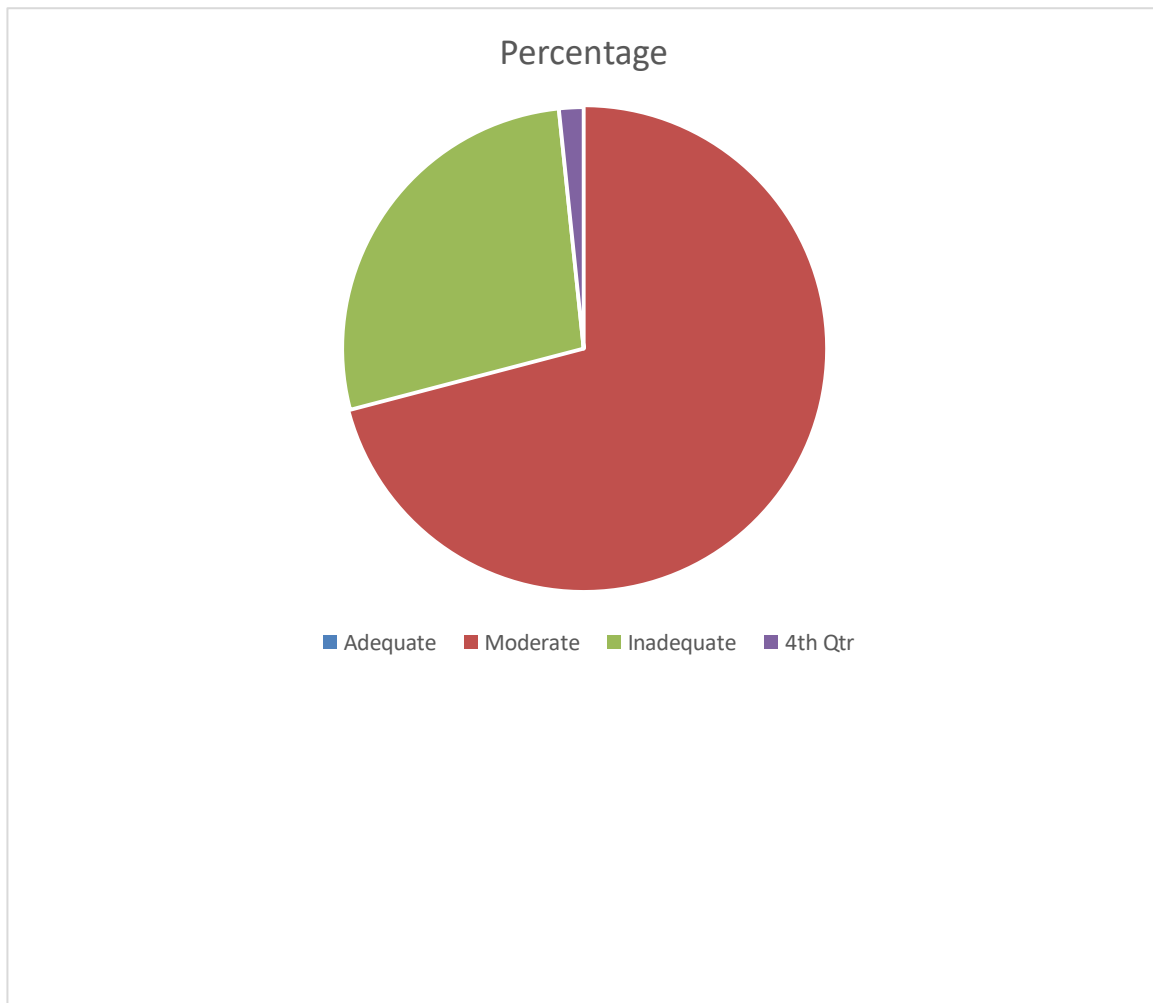
Knowledge	Level Frerquency (n)	Percentage (%)
Adequate	17	28.3
Moderate	31	51.7
Inadequate	12	20

Interpretation:

The findings show that the majority of participants, 31 (51.7%), had a moderate level of knowledge regarding the modes of transmission and prevention of Hepatitis B. 17 (28.3%) had adequate knowledge, while 12 (20.0%) had inadequate knowledge.



Figure 1. Pie chart showing distribution of participants according to overall knowledge level regarding Hepatitis B



Interpretation:

The pie chart shows that the majority of participants (51.7%) had moderate knowledge regarding Hepatitis B, followed by adequate knowledge (28.3%) and inadequate knowledge (20.0%).

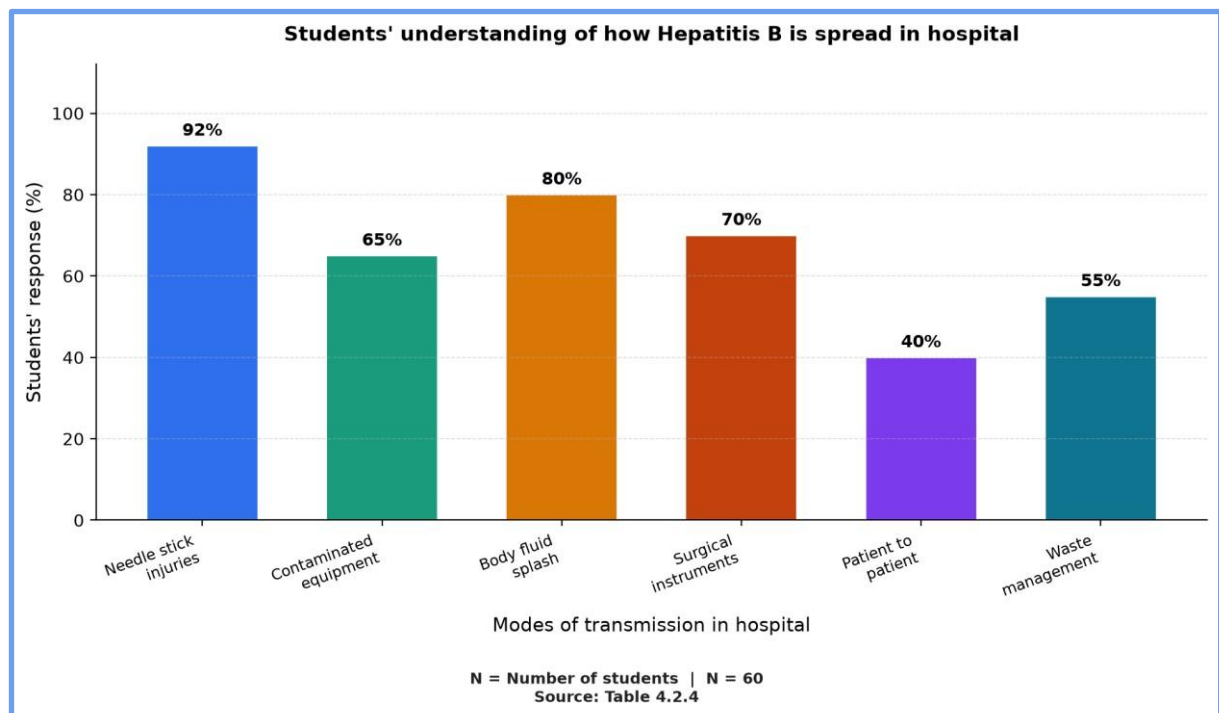
Table 2. Knowledge regarding HBV transmission in hospital



Transmission	Expected knowledge level	Students' response
Needle stick injuries	High	92%
Contaminated equipment	Moderate	65%
Body fluid splash	High	80%
Surgical instruments	Moderate	70%
Patient to patient	Low	40%
Waste management	Moderate	55%

Table 2: Knowledge regarding HBV transmission in hospital

Figure 2. Distribution of students knowledge regarding mode of Hepatitis B transmission in hospital





Interpretation:

Participants demonstrated the highest awareness regarding needle-stick injuries (92%), followed by body-fluid splash (80%). The lowest awareness was observed for patient-to-patient transmission (40%), indicating an important knowledge gap.

Table 3. Association Between Knowledge Level and Selected Demographic Variables

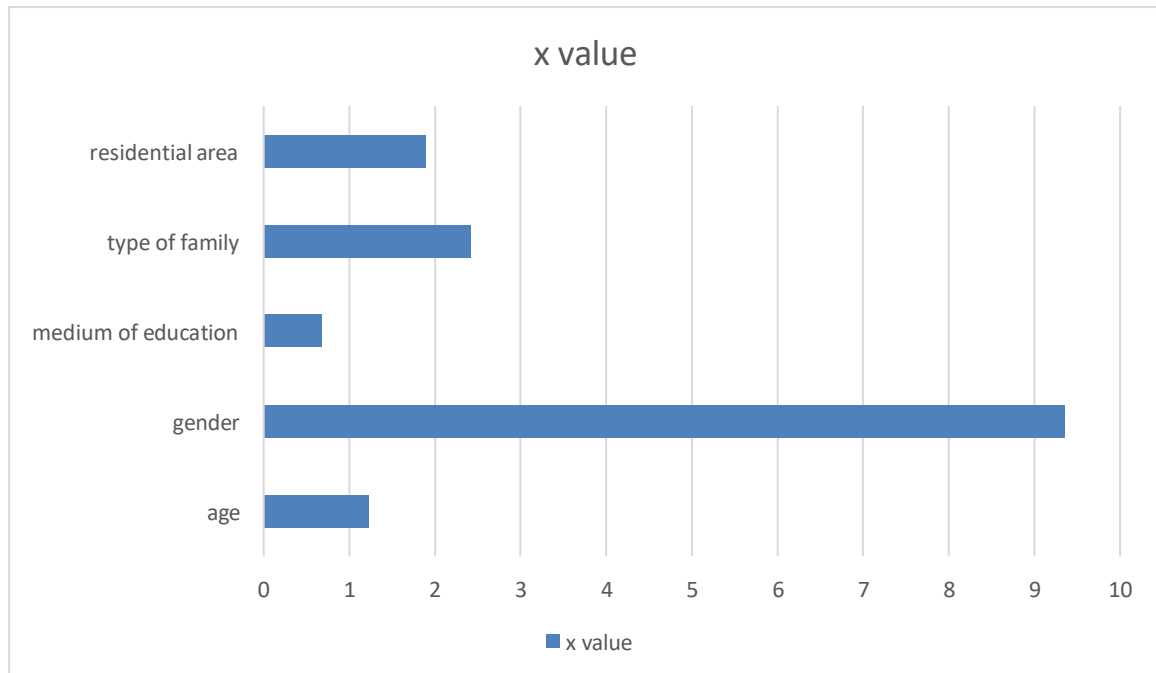
Demographic variable	χ^2	df	p-valueSignificance
Age	1.224	4	NS
Gender	9.351	2	S
Religion	2.679	2	NS
Medium of education	0.622	2	NS
Type of family	2.411	4	NS
Residential area	1.892	4	NS

Interpretation:

A statistically significant association was observed between gender and knowledge level ($\chi^2 = 9.351$, $df = 2$, $p = 0.009$). No statistically significant association was found between knowledge level and age, religion, medium of education, type of family, residential area.

S = Significant; NS = Not significant; $p < 0.05$ considered significant.

Figure 3. Chi-Square Value Showing



Interpretation:

The bar graph shows that gender had the highest chi-square value ($\chi^2 = 9.351$), indicating a statistically significant association with knowledge level. The other selected demographic variables did not show statistically significant associations.

Summary of Findings

The present study was conducted to assess the knowledge regarding the transmission and prevention of Hepatitis B among first-year B.Sc. Nursing students. A quantitative research



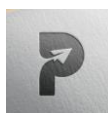
approach with a descriptive research design was adopted. The study was conducted among 60 first-year B.Sc. Nursing students selected using a convenient sampling technique. Data were collected using a structured self-administered questionnaire and analyzed using descriptive statistics, including frequency and percentage.

The findings revealed that the majority of the participants had moderate knowledge regarding the transmission and prevention of Hepatitis B. Out of 60 participants, 31 (51.7%) had moderate knowledge, 17 (28.3%) had adequate knowledge, and 12 (20.0%) had inadequate knowledge.

These findings indicate that although most nursing students possess a moderate level of knowledge, a considerable proportion still have inadequate knowledge regarding Hepatitis B. This highlights the need for continuous educational programmes, awareness campaigns, and reinforcement of infection prevention and control practices to improve students' knowledge before they enter clinical practice. Strengthening nursing education on Hepatitis B transmission, vaccination, standard precautions, and post-exposure management can enhance patient safety and reduce the risk of occupational exposure among future healthcare professionals.

Discussion

The present study assessed the knowledge regarding the modes of transmission and prevention of Hepatitis B among first-year B.Sc. Nursing students. The findings demonstrated that more than half of the participants possessed a moderate level of knowledge, while less than one-third had adequate knowledge. These findings indicate that although students have basic awareness of Hepatitis B, important knowledge gaps still exist.

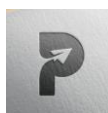


Participants showed satisfactory awareness regarding common routes of transmission, particularly exposure to contaminated blood, infected body fluids, and needle-stick injuries. Nevertheless, limited knowledge was observed regarding the complete vaccination schedule, post-exposure prophylaxis, and several infection prevention practices. Such deficiencies may increase the occupational risk of Hepatitis B infection during clinical postings if not addressed through structured educational programmes.

The study also identified a statistically significant association between knowledge level and gender, whereas no significant association was observed with other selected demographic variables. This suggests that demographic characteristics had minimal influence on students' overall knowledge regarding Hepatitis B.

Conclusion

1. The present study assessed the knowledge regarding the modes of transmission and prevention of Hepatitis B among first-year B.Sc. Nursing students at Narayan Nursing College, Jamuhar, Bihar. The findings revealed that most students possessed a moderate level of knowledge, while a considerable proportion demonstrated inadequate knowledge regarding important aspects such as vaccination schedule, post-exposure prophylaxis, and infection prevention practices.
2. Although the participants were aware of the common modes of transmission, the identified knowledge gaps indicate the need for strengthening educational strategies before clinical exposure. Regular educational programmes, vaccination awareness campaigns, and reinforcement of standard infection control practices are essential to improve students' knowledge and promote safe clinical practice.



Recommandations

Based on the findings of the study, the following recommendations are proposed:

Regular educational programmes and structured teaching sessions should be organized to improve knowledge regarding Hepatitis B among nursing students.

Hepatitis B vaccination awareness and immunization status should be assessed before students begin clinical postings.

Periodic training on standard precautions, biomedical waste management, and post-exposure prophylaxis should be incorporated into the nursing curriculum.

Similar studies involving larger sample sizes and multiple nursing institutions are recommended to improve the generalizability of the findings.

Limitation

- * The study was limited to one nursing college.
- * The sample size was restricted to 60 first-year B.Sc. Nursing students.
- * Convenience sampling was used, which may limit the generalization of the findings.
- * The study assessed knowledge only and did not evaluate actual preventive practices.

Ethical Approval

Administrative permission was obtained from the concerned authorities of Narayan Nursing College before conducting the study. Informed consent was obtained from all participants prior to data collection. Confidentiality, anonymity, and voluntary participation were ensured throughout the study.



Conflict of Interest

The authors declare that there is no conflict of interest.

Acknowledgement

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