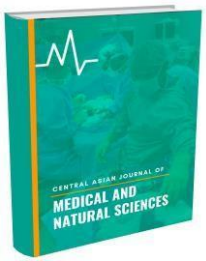

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Article

Prevention and Health Education Strategies for Hepatitis in Children: A Nursing Perspective's

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Abstract: Hepatitis B virus (HBV) is a major global cause of acute and chronic hepatitis, transmitted through body fluids and from mother to child during childbirth. Despite the availability of vaccines, HBV remains a public health concern in some regions due to its potential complications such as cirrhosis and liver cancer. This study aimed to assess nurses' knowledge and attitudes regarding HBV prevention and explore the relationship between these aspects and their demographic characteristics. A descriptive cross-sectional study was conducted in the pediatric wards of teaching hospitals in Najaf Governorate, including Al Zahraa Teaching Hospital, from September 9th, 2024, to February 2nd, 2025. A purposive sample of 99 pediatric nurses participated. Data were collected using a structured questionnaire in Arabic, comprising three parts: socio-demographic data (9 items), knowledge of HBV (22 items across 3 sections), and attitudes toward HBV (10 items). Results showed that nurses' knowledge of HBV and its clinical manifestations was generally poor, although understanding of transmission, diagnosis, and treatment was acceptable. Knowledge regarding prevention reflected a positive outlook. However, attitudes toward HBV infection and prevention were uncertain. Significant relationships were found between knowledge and demographic factors such as age and years of experience, as well as between attitudes and prior training. The study concluded that most participants were aged 21–26 and lacked prior education on HBV prevention. It recommends enhancing continuous education and training, particularly on HBV transmission, clinical signs, and treatment. Visual reminders such as posters near nurses' stations are also advised to reinforce awareness and preventive practices.

Keywords: Nurses ,Knowledge, Attitudes, Viral Hepatitis Type B Infection

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1. Introduction

An Hepatitis B virus (HBV) infection creates a global health burden with significant morbidity and mortality from both acute infection and chronic complications, including chronic hepatitis, cirrhosis, and hepatocellular carcinoma [1–5]. The number of patients with positive hepatitis B surface antigen (HBsAg) worldwide increased from 223 million in 1990 to 240 million in 2005(Mursy et al,2019).

Hepatitis B virus is a deoxyribonucleic acid (DNA) virus , and that belongs to a viral family called(Hepadnaviridae)(Gebrecherkos et al., 2020). It is estimated that(0.6) million people die from the acute or chronic effects of hepatitis B infection. About 25% of adults who are chronically infected as children die as adults from liver cancer or cirrhosis (liver scarring) caused by the chronic infection (Rahman et al., 2018).

Although the prevalence of hepatitis B virus (HBV) is declining after the introduction of a universal immunization program, approximately 1.25 million people in the United States are infected `with HBV, with 400 million HBV cases worldwide . HBV can be an acute or chronic infection, ranging from an asymptomatic, limited infection to fatal, fulminant (rapid and severe) hepatitis (Hockenberry and Wilson, 2019).

Most HBV infections in children are acquired perinatally. Transmission from mother to infant during the perinatal period (i.e., blood exposure during delivery) results in chronic infection in up to 90% of infants if the mother is positive for HBsAg and HBeAg . HBsAg has been inconsistently detected in breast milk, but no increased risk of transmission has been found, and breastfeeding is currently recommended after infant immunization (Jensen & Balistreri, 2016).

During the perinatal period, uninfected infants and children remain at significant risk of transmission from their mothers. The following groups of children and adolescents are at risk of HBV infection: those with hemophilia or other disorders who have received multiple blood transfusions, children and adolescents involved in intravenous drug use, institutionalized children, preschool children in endemic areas, and individuals who have sex with an infected partner. The incubation period for HBV infection ranges from 45 to 160 days, with a median of 120 days (Hockenberry and Wilson, 2015).

Hepatitis B virus does not spread through the gastrointestinal or respiratory system. As a result, HBV cannot be spread through routine exposure in workplaces ,schools, , and other group settings, e.g. sharing computers and other office supplies, shaking hands and embracing, living in the same dormitory, dining in the same restaurant, and using the same bathroom (Wang & Duan, 2021.)

Acute HBV infection does not necessarily result in symptoms. For instance, children under the age of five are unlikely to exhibit symptoms of infection. After infection, symptoms may take (one to six) months to manifest. It's possible that the infected person won't feel anything. Only about a third of persons with the disease are even aware Chapter One :Introduction 3 they have it. Only a blood test reveals the truth. Symptoms of chronic HBV infection are not always present, if they occur, they might resemble the signs of an acute infection(Nazario, 2020).

Chronic hepatitis B has no cure, owing to the persistence of a viral minichromosomal that is not addressed by current treatments(Revill et al., 2020). Though present antiviral treatments can efficaciously decline replication of the virus, and in some cases, provide a sustained off treatment serological response, complete eradication of HBV infection remains the desirable goal (Nicolini et al., 2019).

Infection control measures followed by nursing staff are an effort to protect them and their patients from hospital-acquired infections. Therefore, whether a patient has a known or suspected infection, nurses must apply standard precautions to all patients throughout the care process. Additionally, some strategies to consider include vaccinating all healthcare workers against the hepatitis B virus, according to the Centers for Disease Control and Prevention (CDC). This reduces the incidence of acute and chronic infections among nurses, while those who are not vaccinated remain at greater risk of contracting the virus (Babanejad et al., 2019).

When nurses and other health care workers are well trained, they are able to share their expertise with their communities, and provide accurate and competent advice to the general population and individuals seeking services, thus mitigating the social and cultural characteristics in some areas that hinder progress towards control and elimination of viral hepatitis (Researcher).

2. Materials and Methods

Design of the Study

A cross-sectional descriptive design was utilized in this study to achieve the previously stated objectives

Setting of the Study

The study was conducted at Al-Najaf Health Directorate in Pediatric units at Al-Zahraa teaching Hospital. From January 1st, 2025 up to April 6 th 2025.

Population and Study Sample

A Non-probability (purposive) sample of (100) nurses who are working in the pediatric units..

Study Instrument

An assessment tool was adopted and developed by the researcher to assess the Nurses' Knowledge and attitudes toward viral Hepatitis type B in pediatric units . The complete instrument of the study consists of (3) parts. The first part 1 Includes demographic information of nurses. the second part is the instrumental Assessment of Nurses' Knowledge toward Infection Control Measures Scale, and the third part is the instrumental Nurses' Attitude toward Infection control Scale.

Data Collection

The data collection is done by applying of the developed questionnaire with the aid of arranged interview. The researcher uses structured self-report technique with nurses as they were individually interviewed in the pediatrics units, by using the Arabic version of the questionnaire.by the same questionnaire for all those nurses who were included in the study sample . The interview technique spends about 20-30 minutes for each subject.

Validity of the Instrument

The questionnaire validity faces validity for the initial developed instrument which is specified through panel of (10) experts (with experience of > 5 years at their jobs field.

Statistical analysis

The data analysis process entailed using Statistical Package for Social Sciences computer software to categorize information in graphs and charts that SPSS created. Statistical analysis was performed using Statistical Package for Social Sciences version 20 for Windows (SPSS Inc., Chicago, IL, USA). Descriptive statistics were used to present the demographic data and patterns of answers to the different questionnaire items; categorical variables were presented as frequency and percentage, whereas numerical ones were presented as mean ± standard deviation (S.D). Chi-Square test (X^2) to test independency distribution of observed frequencies, and for measuring the association between the studies variables according to its type, and P-value ≤ 0.05 was considered statistically significant.

3. Results

Table 1. Socio-Demographic Characteristic of the studied Nurses.

Socio-demographic	Rating and intervals	Frequency	Percent
Age	<= 20	2	2.0
	21 - 26	47	47.5
	27 - 32	31	31.3
	33 - 38	10	10.1
	39 - 44	3	3.0
	45+	6	6.1
Years of experience	<= 1.00	30	30.3
	1.01 - 6.00	39	39.4
	6.01 - 11.00	14	14.1
	11.01 - 16.00	8	8.1

	16.01 - 21.00	3	3.0
	21.01 - 26.00	3	3.0
	26.01+	2	2.0
Sex	Male	48	48.5
	Female	51	51.5
	Married	53	53.5
Marital status	Single	45	45.5
	Widow	1	1.0
	Nursing Preparatory	14	14.1
Level of Education	Nursing Institute	38	38.4
	College of Nursing	47	47.5
Training session	Yes	30	30.3
	No	69	69.7
	0	68	68.7
	1	15	15.2
No. of training	2	10	10.1
	3	4	4.0
	7	2	2.0
Total		99	100.0

Table 1 provides an overview of socio-demographic characteristics of a sample population, totaling 100 nurses , with a focus on age, years of experience, sex, marital status, level of education, and participation in training sessions.The majority of the respondents (47.5%) fall within the age group of 21-26 years, followed by 31.3% in the 27-32 age range, indicating a relatively young population. Only 2% are aged 20 or below, while 6.1% are 45 years or older. In terms of professional experience, 39.4% have between 1.01 to 6.00 years of experience, and 30.3% have less than or equal to 1 year of experience. A smaller proportion (14.1%) have 6.01 to 11 years of experience, and only 2% have more than 26 years of experience, suggesting that the sample is skewed towards individuals with less experience.

The gender distribution is nearly equal, with 51.5% female and 48.5% male respondents. Regarding marital status, 53.5% are married, 45.5% are single, and only 1% are widowed. Educationally, 47.5% have attended a College of Nursing, 38.4% have studied at a Nursing Institute, and 14.1% have completed Nursing Preparatory education, reflecting a well-educated sample with a strong focus on nursing.

In terms of training, 69.7% of respondents reported not attending any training sessions, while 30.3% indicated they had participated in training. Among those who attended training, 15.2% participated in one session, 10.1% in two sessions, and only 2% attended seven sessions. This suggests that while a significant portion of the population has not engaged in training, there is a subset that has pursued multiple training opportunities.

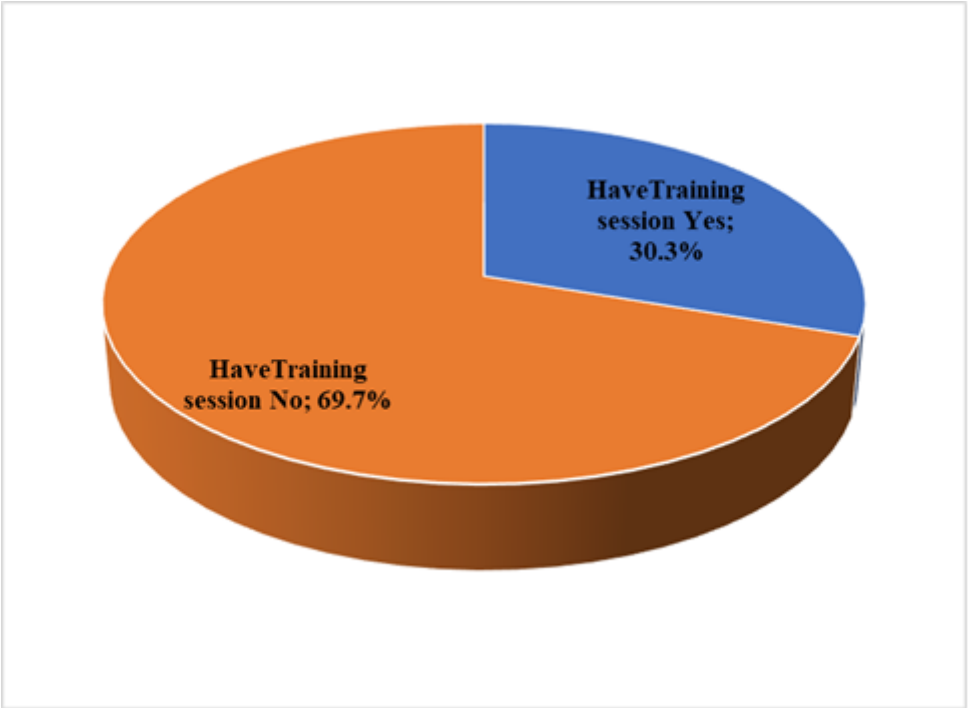

Figure 1. The pie chart above shows training session among nurses.

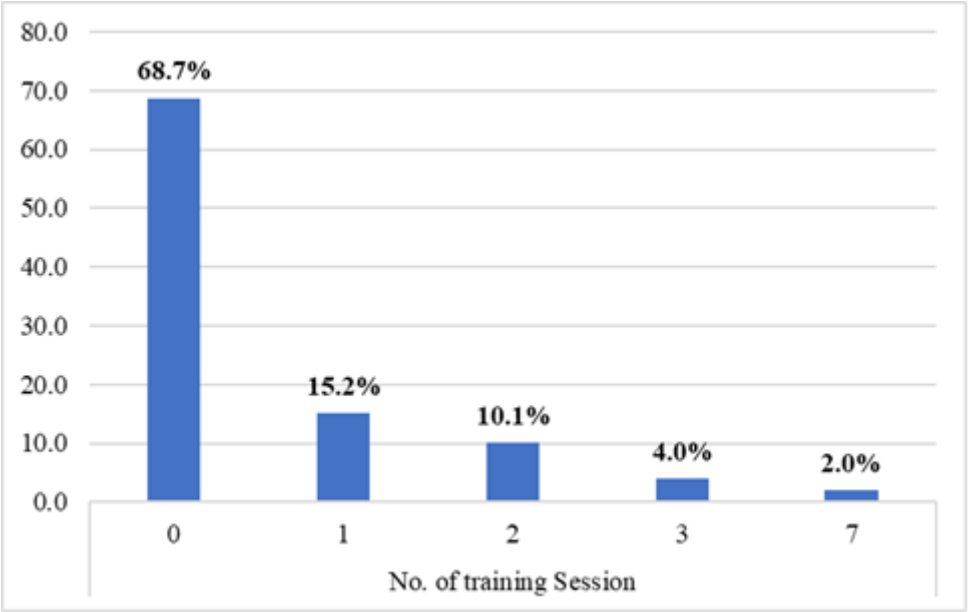

Figure 2. Show number of training session among nurses

Table 2. Distribution of the studied Nurses according to Clinical Data.

Clinical Data	Categories	Frequency	Percent
Injury by Injection	Yes	68	68.7
	No	31	31.3
Hepatitis Vaccine	Yes	74	74.7
	No	25	25.3
Dose of Vaccine	Zero dose	25	25.3
	Single dose	2	2.0
	Two doses	11	11.1
	Three doses	61	61.6
Total		99	100.0

This table 2 provides insights into the clinical data of the studied nurses, focusing on injuries by injection, hepatitis vaccination status, and the number of vaccine doses received. A significant majority of the nurses (68.7%) reported experiencing an injury by injection, while 31.3% stated they had not encountered such injuries. This highlights a concerning occupational hazard prevalent among the nursing population, emphasizing the need for improved safety measures and protocols to prevent needlestick injuries.

Regarding hepatitis vaccination, 74.7% of the nurses reported having received the vaccine, while 25.3% had not. Among those vaccinated, the majority (61.6%) had completed the full three-dose regimen, which is crucial for effective immunity. However, 25.3% had not received any doses, and a small proportion had received only one (2.0%) or two doses (11.1%). This indicates that while most nurses are protected against hepatitis, a notable portion remains unvaccinated or partially vaccinated, which could pose a risk to both their health and patient safety.

Table 3. Statistics Distribution of Nurses responses about knowledge of Hepatitis B virus and clinical manifestations.

Questions	Responses	Frequency	Percent	M.S	Assessment
Hepatitis B infection is caused by a virus that contains (type of genetic material) in its genetic composition.	Incorrect	74	74.7	1.25	Poor
	Correct	25	25.3		
The viral family to which the Hepatitis B virus belongs is called (family name).	Incorrect	51	51.5	1.48	Fair
	Correct	48	48.5		
Which of the following age groups, if infected with Hepatitis B , is mostly asymptomatic?	Incorrect	66	66.7	1.33	Poor
	Correct	33	33.3		
which of the following age groups ,Hepatitis B tends to be more severe ?	Incorrect	75	75.8	1.24	Poor
	Correct	24	24.2		
After infection, the incubation period for hepatitis B virus ranges as follows:	Incorrect	74	74.7	1.25	Poor
	Correct	25	25.3		
The hepatitis B virus remains active and contagious on surfaces for:	Incorrect	68	68.7	1.31	Poor
	Correct	31	31.3		
Total		99	100.0		

Source: Chyad, 2022

Table 3 show nurses' knowledge toward hepatitis B virus and clinical manifestation is poor in all items except in item number 2 is fair.

Table 4. Overall assessment for Nurses knowledge related to Hepatitis B virus and clinical manifestations.

Questions No. = 6	M.S	Assessment
Total Score	1.31	Poor

Table 4 shows that the overall assessment of Nurses knowledge about Hepatitis B virus and clinical manifestations: However, this table shows that the nurses' response as a whole is close to pass (MS. 1.31), meaning that the nurses' knowledge as a whole is considered poor.

Table 5. Overall assessment of Nurses responses about transmission, diagnosis and treatment of Hepatitis B Virus.

Questions No. = 6	M.S	Assessment
Total Score	1.55	Fair

Table 6. Overall assessment of Nurses responses about knowledge of Prevention Hepatitis B Virus.

Questions No. = 10	M.S	Assessment
Total Score	1.71	Good

The table 6 provides an overall assessment of nurses' knowledge regarding the prevention of Hepatitis B Virus (HBV) based on their responses to 10 questions. The mean score (M.S) of 1.71 indicates that, on average, the nurses demonstrated a good level of knowledge about HBV prevention and The overall response to this question was very positive.

Table 7. Statistics Distribution of Nurses' attitudes about viral hepatitis infection and its prevention.

Questions	Responses	Frequency	Percent	M.S	Assessment
Hepatitis B virus infection does not spread if there is no visible blood on surfaces.	Strongly Disagree	14	14.1	2.92	Not Sure
	Disagree	31	31.3		
	not sure	14	14.1		
	Agree	29	29.3		
	Strongly Agree	11	11.1		
Following infection control procedures is not that easy.	Strongly Disagree	9	9.1	2.61	Disagree
	Disagree	46	46.5		
	not sure	22	22.2		
	Agree	18	18.2		
	Strongly Agree	4	4.0		
should hand wash/use hand-sanitizer before wearing gloves..	Strongly Disagree	5	5.1	3.02	Not Sure
	Disagree	31	31.3		
	not sure	26	26.3		
	Agree	31	31.3		
	Strongly Agree	6	6.1		
Hepatitis B has a specific treatment that completely cures it.	Strongly Disagree	6	6.1	2.84	Not Sure
	Disagree	36	36.4		
	not sure	29	29.3		
	Agree	24	24.2		
	Strongly Agree	4	4.0		
The hepatitis B vaccine should not be given more than three times.	Strongly Disagree	5	5.1	3.58	Agree
	Disagree	10	10.1		
	not sure	27	27.3		
	Agree	37	37.4		
	Strongly Agree	20	20.2		
The level of antibodies in the body (anti-HBs) does not decrease over time after receiving the hepatitis B vaccine.	Strongly Disagree	2	2.0	2.98	Not Sure
	Disagree	25	25.3		
	not sure	50	50.5		
	Agree	17	17.2		
	Strongly Agree	5	5.1		
When performing procedures that are	Strongly Disagree	5	5.1	3.42	Not Sure

likely to generate splashes of blood, body fluids, secretions, or exudates, masks must be worn..	Disagree	7	7.1		
	not sure	37	37.4		
	Agree	41	41.4		
	Strongly Agree	9	9.1		
Direct contact with the blood or body fluids of an infected child does not necessarily lead to infection with the hepatitis B virus and is not dangerous.	Strongly Disagree	41	41.4	2.15	Disagree
	Disagree	24	24.2		
	not sure	18	18.2		
	Agree	10	10.1		
	Strongly Agree	6	6.1		
It is not necessary to confirm the response to the hepatitis B vaccine after completing the vaccination series.	Strongly Disagree	14	14.1	2.8	Not Sure
	Disagree	29	29.3		
	not sure	26	26.3		
	Agree	23	23.2		
	Strongly Agree	7	7.1		
To ensure I am properly following infection control protocols, I will be taking extra time.	Strongly Disagree	19	19.2	2.51	Disagree
	Disagree	35	35.4		
	not sure	25	25.3		
	Agree	16	16.2		
	Strongly Agree	4	4.0		
Total		99	100.0		

Table 8. Overall assessment of Nurses responses about attitudes of viral hepatitis infection and its prevention.

Questions No. = 10	M.S	Assessment
Total Score	2.88	Not Sure

The table 8 presents the overall assessment of nurses' attitudes toward viral hepatitis infection and its prevention based on their responses to 10 questions. The mean score (M.S) of 2.88, categorized as "Not Sure," indicates that the nurses' attitudes are generally uncertain or neutral regarding viral hepatitis and its prevention measures.

Table 9. Relationship between Nurses Knowledge about transmission, diagnosis and treatment of Hepatitis B Virus and their Socio-demographic Characteristic and clinical data.

	df	Mean Square	F	Sig.
Age	6	4.053	3.593	0.003
Years of experience	6	4.280	2.378	0.035
Education	6	0.791	1.608	0.154
Training	6	0.314	1.518	0.181
No. of training	6	2.152	2.012	0.072
Injury by injection	6	0.420	2.057	0.066
Hepatitis vaccine	6	0.106	0.539	0.777

Table 9 reveals that there is a significant relationship between nurses' knowledge about transmission, diagnosis and treatment of Hepatitis B Virus and their demographic data such as age and years of experience at P-value 0.05.

Table 10. Relationship between Nurses Knowledge about Prevention Hepatitis B Virus and their Socio-demographic Characteristic and clinical data.

	df	Mean Square	F	Sig.
Age	8	1.953	1.563	0.147
Years of experience	8	5.279	3.187	0.003
Education	8	0.369	0.706	0.686
Training	8	0.116	0.522	0.837
No. of training	8	0.924	0.800	0.604
Injury by injection	8	0.270	1.268	0.270
Hepatitis vaccine	8	0.066	0.325	0.955

Table 10 reveals that there is a significant relationship between nurses' knowledge about Prevention Hepatitis B Virus and years of experience at P-value 0.05.

Table 11. Relationship between Nurses' attitudes about viral hepatitis infection and its prevention and their Socio-demographic Characteristic and clinical data.

	df	Mean Square	F	Sig.
Age	20	1.553	1.248	0.240
Years of experience	20	2.380	1.292	0.210
Education	20	0.505	0.986	0.487
Training	20	0.203	0.941	0.539
No. of training	20	2.626	3.504	0.000
Injury by injection	20	0.278	1.380	0.158
Hepatitis vaccine	20	0.139	0.683	0.831

Table 11 reveals that there is a significant relationship between nurses' attitudes about viral hepatitis infection and its prevention and number of training at P-value 0.05.

4. Discussion

This chapter represents a thoroughly arranged analysis and a rationally resulting discussion of the tables in the results supported with related available literature and studies.

Part-I: Socio-demographic characteristics of nurses

Table 1 Through the course of present study, it has been noticed that the age show that the (47.5) among nurses of sample study are within (21-26 years), this result agrees with the results done by (Amina Mohamed Ali , 2023).

The majority of samples 39.4% had between 1.01 to 6.00 years of experience. Most participants (47.5%) had a College of Nursing degree, reflecting a well-educated workforce. However, only 30.3% had attended training sessions related to HBV, and with percentage of (68.7%) replies that they had zero number of training before . which may influence their knowledge and awareness levels about Hepatitis.

Regarding gender the majority of nurses (51.5%) of the study sample were females and remaining were male. Because the staff in the pediatric wards is more female than male. This outcome is reinforced by a study done by (Dr. Rawaa kamel abd 2023.Concerning the Martial status, the majority of subjects (53.5%) are married This result agrees with the study done with (Jabbar, 2016).

In regarding to level of education, the study shows that the majority of participating Nurses have attended a college of nursing (47.5%),this result agree with result of sheikh, et all.(2023) they pointed in their studies that majority of education level a bachelor's degree.

Table 2 the current study indicated that both groups had a percentage, 68.7% of the study have been exposed previously to needle-stick injury. This outcome is in line with analytic cross-sectional study, done by Albeladi et al.,(2021) in order to determining the injuries that workers in health institutions are exposed to by needle stick injury, the study was conducted in Saudi Arabia,who stated that most of the study sample exposed previously to needle-stick injury .

Regarding in table 4 Overall assessment for Nurses knowledge shows that nurses have are Poor knowledge about Hepatitis B virus and clinical manifestations. This result agrees with the study done with (Al Reda , 2017).

Table 5 The assessment of overall nurses' knowledge related to transmission, diagnosis and treatment of Hepatitis B Virus: based on the total score shows that the knowledge level is fair (1.55). This result aligns with the findings of (Author, Year), which also reported a fair level of knowledge among nurses regarding the transmission, diagnosis, and treatment of Hepatitis B.

Table 6 the study shows that the Nurses demonstrated a good level of knowledge about HBV prevention, This results is found to be consistent with the study of of Mohammed Abdelmoniem, et al. 2024.

According to 8 the study shows that the nurses' attitudes are generally uncertain or neutral regarding viral hepatitis and its prevention measures. this result Agree with result of Adadow Yidana, et al, (2020). While not Agree with result of Yahye sheikh, et al,(2023) and result of _elbager, et al, (2019) whose results showed that nurses had a favorable attitude towards HBV preventive measures.

Tables 9 The study found significant relationships between Nurses' knowledge of HBV transmission, diagnosis, and treatment with age and years of experience ($p = 0.05$). This outcome is reinforced by a study done by Chyad,2022.

In Tables 10 reveals that there is a significant relationship between nurses' knowledge about Prevention Hepatitis B Virus and years of experience at P-value 0.05. This results is found to be consistent with the study of (Chyad, 2022).

It's shows that there is a significant relationship between nurses attitudes about viral Hepatitis infection and its prevention and number of training at P-value = 0.05. This results is found to be consistent with the study of (Chyad, 2022).

Comparison with Previous Studies Similar findings were reported by Rahman et al. (2020), showing that experience and training play key roles in shaping healthcare workers' knowledge and attitudes towards HBV. The lack of training in our study sample (69.7% had no prior training) likely contributed to lower knowledge and uncertain attitudes, reinforcing the need for targeted educational interventions

5. Conclusion

Conclusions based on the study results of data analysis, and according the aims of the current study:

a. Most of the nurses participating in the current study are within the age group (21-26) years.
b. Years of experience for most nurses participating in the current study ranged from (1 - 6) years.
c. The educational level of most nurses participating in this study is a College of Nursing.

d. The largest proportion of the nurses (69.7%) participating in the current study had not participated in previous education courses on hepatitis B and its prevention while 30.3% indicated they had participated in training.
e. Nurses knowledge related to Hepatitis B virus and clinical manifestations were poor while Nurses responses about transmission, diagnosis and treatment of Hepatitis B Virus was Fair.
f. Overall assessment of Nurses responses about knowledge of Prevention Hepatitis B Virus is Good while Nurses responses about attitudes of viral hepatitis infection and its prevention was Not Sure.
g. The results showed there is a significant relationship between nurses' knowledge about transmission, diagnosis and treatment of Hepatitis B Virus, Prevention and their demographic data such as age and years of experience.
h. There is a significant relationship between nurses' attitudes about viral hepatitis infection and its prevention and number of training.

Recommendations

Based on the study conclusion, the investigator recommends the following:

Intensively strengthen continuing education and training programs in health directorates, particularly in areas where nurses have demonstrated weaknesses, such as clinical signs, transmission, treatment and improve their attitudes about viral hepatitis B.

Encourage nurses to obtain higher academic degrees to advance their educational level.

Develop educational strategies tailored to nurses' ages and years of experience to improve learning outcomes. Encourage participation in training through incentives such as certificates or professional credentials.

Emphasize the importance of vaccinating all healthcare workers, especially nurses, and then conduct the necessary tests to determine their response to the vaccine by the Public Health Department.

Prepare posters about hepatitis B virus and post them near nurses' workplaces to remind them of the risks of the disease, its transmission methods, and how the Public Health Department can prevent it.

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