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RESEARCH ARTICLE

Knowledge, attitudes, and practices towards hepatitis B infection among pharmacy students: A cross-sectional study in Jordan

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Abstract

Background: Hepatitis B infection is a potentially fatal liver illness caused by the hepatitis B virus (HBV). In recent years, the Centres for Disease Control have recognised pharmacists as immunisation providers and potential educators for patients and their families on the importance of vaccination and the best drug use. This study aimed to evaluate Jordanian pharmacy students' knowledge, attitudes, and practices towards HBV infection. **Methods:** A cross-sectional study was conducted among 626 Jordanian pharmacy students to assess their knowledge, attitudes, and practices. **Results:** Of the 626 respondents, 19.8% were males and 81% were females. Students were mostly knowledgeable about disease transmission, and a substantial percentage were aware of the importance of vaccination in preventing it. Females, fifth-year students, and those who encountered infected patients have shown significantly better knowledge of HBV. **Conclusion:** Knowledge, attitudes, and practices towards HBV infection among pharmacy students in Jordan are unsatisfactory. More effort should be made to raise awareness among future pharmacy students and explore other factors associated with these low levels of awareness.

Introduction

Hepatitis B virus (HBV) infection is a potentially fatal liver disease, affecting about two billion people globally (WHO, 2024). HBV spreads through infected body fluids, including blood, sperm, mucous membranes, and saliva, and through hazardous injections and perinatal transmission (from an infected mother to her child at delivery) (Shepard *et al.,* 2006; WHO, 2024). The infection can lead to various life-threatening conditions, such as liver cirrhosis, hepatic decompensation, and hepatocellular carcinoma, resulting in nearly one million deaths annually (Trépo *et al.,* 2014; Spearman *et al.,* 2017). Most cases worldwide involve infections from mother to child perinatally (WHO, 2024).

The Middle East and India have the highest prevalence of HBV infection after Sub-Saharan Africa and East Asia (Stasi *et al.,* 2017). In Jordan, HBV prevalence has declined from around 9.9% in the pre-vaccination era, between 1985 and 1990, to around 2.4% in 2016 since the HBV vaccination was included in the children's immunisation schedule in 1995 (Nusair *et al.,* 2020).

While acute HBV infection can be treated with immediate intervention, chronic HBV infection can put people at a high risk of death. Symptoms may include

jaundice, loss of appetite, fatigue, nausea, and abdominal pain (Tripathi & Mousa, 2023).

Healthcare workers, including pharmacists and medical college students, are at higher risk of HBV exposure due to direct contact with patients, particularly through needle stick injuries (King & Strony, 2023). Awareness and understanding of HBV aetiology, including its transmission, clinical presentation, treatment, and vaccination outcomes, are crucial to lowering disease incidence and transmission (Lingala & Ghany, 2016; Altamimi *et al.,* 2021).

Previous studies in Jordan have reported low to medium levels of knowledge and awareness of HBV infection among healthcare practitioners (Wahsheh *et al.,* 2011; Nusair *et al.,* 2020). Pharmacists play a pivotal role in public healthcare, contributing to patient and public education, medication management, and vaccination efforts. The Centres for Disease Control (CDC) have recently recognised community pharmacists as immunisation providers, helping to increase HBV vaccination rates (Bach & Goad, 2015; Guerci *et al.,* 2020). Moreover, academic and research pharmacists educate future professionals about HBV infection, its transmission, prevention, and updated treatment. Given the expanding role of pharmacists in chronic disease prevention and management, it is essential to explore pharmacy students' knowledge, attitude, and practices regarding HBV infection. Therefore, this study aimed to analyse these factors among pharmacy students in Jordan.

Methods

Design

A cross-sectional survey conducted between March and August 2022 involved 626 pharmacy students from the University of Jordan and the Jordan University of Science and Technology. In the pharmacy curriculum, the hepatitis B virus topic is covered twice: first in the clinical biochemistry course, which accounts for two credit hours, and again in the fifth year, as part of the pharmacotherapy course, which accounts for three credit hours.

A participant-driven sampling strategy was employed to recruit participants from pharmacy colleges at these two universities. After receiving ethics approval, the authors contacted student representatives at each university to assist in the distribution of the questionnaire to eligible individuals. The questionnaire was disseminated to all students via text message and posted in the main official social media groups. These are private groups overseen by student representatives from the respective universities.

The minimum sample size required for the study was 385, based on a 50% prevalence and 5% marginal error (Pourhoseingholi *et al.,* 2013). This research is part of a larger national study carried out in Jordan to evaluate the knowledge, attitudes, and practices of healthcare students regarding HBV infection (Alaridah *et al.,* 2023).

Procedure

Eligible pharmacy students were invited to participate voluntarily via an online survey link. Informed consent was obtained from all participants, who were made aware that they could withdraw responses at any time without penalty. Participants were requested to submit the necessary information to obtain reliable results, but no personal data were gathered.

Measurement tool

A self-administered, structured English questionnaire was used, based on previously validated methodologies (Hang Pham *et al.,* 2019; Nguyen *et al.,* 2021). The survey was divided into four different sections: practice (three questions), attitudes (eight questions), knowledge (43 questions), and participant demographics. Before the questions were distributed and utilised, a pilot test was conducted to ensure that they were understandable and consistent (Appendix A).

Statistical analysis

The data were entered into Microsoft Excel 2016 and then imported into IBM SPSS version 25 (IBM Corp., Armonk, New York, USA) for analysis. The data were examined and presented as either percentages and frequencies for qualitative variables or means and standard deviations (SD) for quantitative variables. The Chi-square test was used to assess relationships between demographic factors, knowledge, attitudes, and practices. Univariate and multivariate regression analyses were used to evaluate each variable's independent impact after controlling for possible confounders and including significantly linked variables. Each correct response received one point. An exploratory factor analysis was done to identify factors with high internal consistency (i.e., Cronbach's alpha of more than 0.7). Only items with more than 0.5 of loading weight were included in the chosen factors, which were named according to the common theme of the individual factor. The analysis yielded three factors for the knowledge section, two factors for the attitude section, and one for the practice section. A participant's score was deemed good if they successfully answered 70% or more of the questions in each KAP section.

Conversely, a participant's score was considered low if less than 70% of the questions in every part were accurately answered.

Results

Exploratory factor analysis and reliability test

A total of 626 pharmacy students in Jordan participated in the survey. Exploratory factor analysis with varimax rotation using principal axis factoring was conducted for knowledge, attitude, and practices independently (Table I). For the knowledge section, three distinctive factors reflecting knowledge of HBV were identified: Factor 1 (5 items) was conceptualised as "general knowledge"; Factor 2 (4 items) was termed "screening and treatment"; and Factor 3 (3 items) was labelled "management plan." The cumulative Cronbach's alpha for the three factors was 0.85. For the attitude section, two factors reflecting attitudes towards HBV were produced: Factor 4 (6 items), conceptualised as "approaching hepatitis B infected patients, and Factor 5 (2 items), termed "stigma towards hepatitis B infected patients." The cumulative Cronbach's alpha for the attitude factors was 0.83. Lastly, one 3-item factor reflected practices towards HBV, i.e., Factor 6, labelled "testing, screening, and precaution towards hepatitis B patients." Cronbach's alpha for this factor was 0.7.

Table I: Factorial Analysis of knowledge attitude and practice items

	Knowledge Factor 1	Knowledge Factor 2	Knowledge Factor 3	Attitude Factor 1	Attitude Factor 2	Practice Factor 1
Knowledge items						
Factor 1 – General knowledge						
Sequalae of the HBV on the liver	0.600					
Who needs to be vaccinated to prevent hepatitis B infection	0.575					
Improve quality of life and prevent progression to liver cirrhosis and liver cancer	0.742					
Prevent spread of HBV infection in community, including infection from mother to child at birth	0.665					
Prevent outbreak of HBV	0.715					
Factor 2 – Screening and treatment goals						
Pregnant must should undergo in screening for hepatitis even if no symptoms there		0.451				
HIV-infected people should undergo in screening for hepatitis even if no symptoms there		0.477				
Should undergo in screening for hepatitis even if no symptoms there		0.436				
Inhibition of HBV replication is the main goal in treating HBV		0.508				
Factor 3 – Management plan principles						
First line drugs are nucleot(s)ide analogues (NAs)			0.851			
Treatment of chronic HBV with NAs is long term			0.849			
Patients need to follow / obey the treatment process			0.619			
Attitude items						
Factor 4 – Approaching hepatitis B infected patients						
Confident to consult patients about the preventive measures against HBV				0.515		
Hepatitis B vaccine is safe				0.573		
Confident in ordering HBV Vaccination for newborns				0.721		
Confident in ordering the tests to monitor patients with chronic HBV				0.772		
Confident in giving prescriptions to patients with chronic HBV				0.620		
Confident in ordering diagnosis tests for patients with chronic HBV				0.765		

Factor 5 – Stigma toward hepatitis B infected patients							
Concern having casual contact or working together with a chronic HBV patient in the same office						0.855	
Concern eating with (sharing food or utensils) with a chronic HBV patient						0.858	
Practice items							
Factor 6 – Testing, screening, and precaution towards hepatitis patients							
HBV vaccine required prior to internship in the hospital;							0.890
HBV test required prior to internship in the hospital;							0.897
Wear gloves when administering injections to patients							0.553
		Factor 1	**Factor 2**	**Factor 3**	**Factor 4**	**Factor 5**	**Factor 6**
Number of items		5	4	2	6	2	3
KMO and Bartlett's test	Olkin measure of sampling adequacy		0..901		0.739		0.565
	Approx. Chi-Square		4640.1		974.2		536.3
	P-value		0.000		0.000		0.000
Cronbach's alpha			0.85		0.83		0.7

Sociodemographic characteristics

Table II presents the participants' sociodemographic characteristics. Of the total sample, 80.2% (n = 508) were females, and 19.8% (n = 124) were males, with a mean age of 22.3. Also, 50.3% (n = 315) were fifth-year students, 22.4% (n = 140) were fourth-year students, and 27.3% (n = 171) were third-year students. Only 9.3% (n = 58) had taken HBV supplemental courses in addition to their academic lectures. A small proportion, 1.8% (n = 11), stated having hepatitis B, while 5.6% (n = 35) had a family history of HBV. Furthermore, 29.7% (n = 186) of the participants reported previous contact with individuals who had hepatitis B.

Table II: Participants' demographics (n = 626)

Variables		**n**	**%**
Age		Mean: 22.3	
Gender	Male	124	19.8%
	Female	502	80.2%
College year	Level 3	171	27.3%
	Level 4	140	22.4%
	Level 5	315	50.3%
Extra course	Yes	58	9.3%
	No	568	90.7%
History of HBV	Yes	11	1.8%
	No	615	98.2%
Family history of HBV	Yes	35	5.6%
	No	591	94.4%
Have you encountered any HBV patients before?	Yes	186	29.7%
	No	440	70.3%

Knowledge, attitudes, and practices

Table III summarises participants' knowledge status of HBV. The majority (70.4%) were aware that HBV infection might lead to liver cirrhosis, liver failure, liver malignancies, or death, and 73.3% acknowledged who needs the hepatitis B vaccine. Pharmacy students recognised that the aim of HBV treatment is to improve patient quality of life by preventing its complications and HBV spread in the community. More than two-thirds of the sample (70.9%) were aware that pregnant women should be tested for hepatitis B. Most of them knew that HIV-infected patients and family members of patients infected with HBV should be screened for HBV (82.6% and 85.0%, respectively). Regarding HBV management principles, participants showed a high percentage of correct answers, with 85.6% being aware that the HBV treatment mechanism is to inhibit the replication of the HBV virus. Only 55.9% of the sample knew that nucleot(s)ide analogues are the first-line therapy for HBV infection, and 60.4% were aware of their long-term treatment. Also, 75.4% knew that patients should be closely monitored during treatment.

Table III: Knowledge, prevention, and HBV treatment

Questions	Correct answers	
Prevalence and sequelae	**n**	**%**
1. What are the consequences of HBV?	441	70.4%
2. Who needs the hepatitis B vaccine?	459	73.3%
3. Pregnant women should be tested for hepatitis B	444	70.9%
4. HIV-infected people should be tested for hepatitis B	517	82.6%
5. Family members of those who have hepatitis B should be tested for hepatitis B	532	85.0%
6. Inhibit the replication of the HBV	536	85.6%
7. Prevent mother-to-child transmission (MTCT)	549	87.7%
8. Prevent flare of hepatitis B	545	87.1%
9. Is it true that Nucleos(t)ide Analogs (NAs) are a recommended first-line treatment for CHB?	350	55.9%
10. Is the treatment of CHB with NAs long-term, possibly even a lifetime?	378	60.4%
11. Do patients need to strictly adhere to the treatment of CHB?	472	75.4%

Abbreviations: CHB: chronic hepatitis B; HBV: hepatitis B virus; MSM: men who have sex with men; MTCT: mother-to-child transmission; NAs: Nucleos(t)ide Analogs.

Table IV shows attitudes towards HBV infection. The majority of students (75.4%) were confident that the vaccine was safe, and slightly more than half (52.2%) were aware of the importance of infant immunisation. Only 34% felt confident in counselling patients about HBV infection prevention, while 49.5% felt confident in ordering diagnostic tests for patients with chronic hepatitis B infection. Also, 49.5% and 57.3% expressed confidence in ordering laboratory tests to identify and monitor HBV patients, respectively. However, only 27.3% felt proficient in providing drugs to HBV patients. Furthermore, 31.8% were concerned about casual contact or working in the same workplace as someone infected, and the same proportion apprehended eating or sharing food with infected individuals.

Table V presents pharmacy students' practices towards HBV prevention. Before starting their hospital practice, 42.7% of students had received the hepatitis B vaccine, and 44.7% had been tested for HBV. Additionally, 46.2% reported that they wear gloves when performing medical procedures for HBV patients.

Table IV: Attitudes towards HBV

Questions	Correct answers	
	n	**%**
A20. Are you confident in counseling patients about the prevention of HBV?	213	34.0%
A22. Do you think that the hepatitis B vaccine is safe?	472	75.4%
A25. Do you think it is necessary to vaccinate newborns for hepatitis B at birth?	327	52.2%
A53. Are you confident in ordering laboratory tests to monitor CHB patients?	359	57.3%
A54. Are you confident in prescribing treatment for a patient with chronic hepatitis B?	171	27.3%
A58. Are you confident in ordering diagnostic tests for patients with chronic HBV?	310	49.5%
A59. Would you have any concerns about having casual contact or working together with a chronic HBV patient in the same office?	199	31.8%
A60. Would you have any concerns about sharing food or utensils with a CHB?	137	31.9%

Abbreviations: CHB: chronic hepatitis B; HBV: hepatitis B virus.

Table V: HBV preventive practices

Questions	Correct answers	
	n	**%**
A28. Did you get the hepatitis B vaccine before entering practicum at teaching hospitals?	267	42.7
A29. Did you get tested for HBV before entering practicum at teaching hospitals?	280	44.7
A34. Do you consistently wear gloves when administrating injections or performing medical procedures for patients?	289	46.2

Abbreviations: HBV: hepatitis B virus.

Knowledge, attitude, and practices towards HBV infection and associated factors

In the logistic regression analysis, knowledge, attitudes, and practices were treated as dependent variables, while sociodemographic traits were considered independent variables (Tables VI–VIII).

Multivariate logistic regression revealed significant associations only between knowledge and having encountered a hepatitis B patient (Yes: AOR = 1.724, p = 0.003; ref: No). Other sociodemographic data, such as age, gender, self-reported history of HBV, and a family history of HBV infection, were not significantly associated with high knowledge levels (Table V); thus,

they were not included in the analysis. Additionally, significant associations were found only between attitudes and the year of study (fifth year: AOR = 2.366, $p < 0.044$; ref: third year). Other sociodemographic data were not significantly associated with better attitudes (Table VI). Lastly, significant associations were found between practices and having encountered a patient with HBV (Yes: AOR = 5.272, $p < 0.000$; ref: No). Other sociodemographic characteristics were not significantly associated with good practices.

Table VI: Logistic regression between sociodemographics and knowledge

	Knowledge		OR	*P**	AOR	*P†*
	Good	Poor				
Age	22.7	21.8	1.110	0.013	1.046	0.371
Gender						
Male (n= 124)	56	68	1.064	0.758	NA	
Female (n = 502)	219	283	Reference			
Studying year						
Level 3 (n= 171)	60	111	Reference		Reference	
Level 4(n = 140)	66	74	1.650	0.032	1.523	0.079
Level 5(n = 315)	149	166	1.661	0.010	1.350	0.210
History of HBV						
Yes (n = 11)	3	6	2.115	0.272	NA	
No (n = 615)	272	343	Reference			
Family history of HBV						
Yes (n= 35)	11	24	1.761	0.129	NA	
No (n = 591)	264	327	Reference			
Encountered hepatitis B patient						
Yes (n =186)	102	84	1.874	0.000	1.724	0.003
No (n = 440)	173	267	Reference		Reference	

Abbreviations: OR: Odds Ratio; AOR: Adjusted Odds Ratio; CI: Confidence Interval; NA: Not applicable; *Univariate logistic regression; †Multiple logistic regression

Table VII: Logistic regression between sociodemographics and attitudes

	Attitudes		OR	*P**	AOR	*P†*
	Good	Poor				
Age	22.3	22.1	1.103	0.047	0.914	0.394
Gender (n = 626)						
Male (n= 124)	42	82	Reference		NA	
Female (n = 502)	171	331	.512	0.000		
Studying year (n = 626)						
Level 3 (n= 171)	46	125	Reference		Reference	
Level 4 (n = 140)	45	95	1.287	0.313	1.490	0.188
Level 5 (n = 315)	122	193	1.718	0.009	2.366	0.044
History of HBV (n=626)						
Yes (n = 11)	209	7	1.110	0.869	NA	
No (n = 615)	4	406	Reference			
Family history of HBV (n = 626)						
Yes (n= 35)	204	26	.657	0.289	NA	
No (n = 591)	9	387	Reference			
Encountered hepatitis B patient (n = 626)						
Yes (n =186)	65	121	1.060	0.752	NA	
No (n = 440)	148	292	Reference			

Abbreviations: OR: Odds Ratio; AOR: Adjusted Odds Ratio; CI: Confidence Interval; NA: Not applicable; *Univariate logistic regression; †Multiple logistic regression

Table VIII: Logistic regression between sociodemographics and practices

	Practices		OR	*P**	AOR	*P†*
	Good	Poor				
Age	22.7	21.8	1.414	0.000	1.202	0.109
Gender (n = 626)						
Male (n= 124)	55	69	1.184	0.404	NA	
Female (n = 502)	202	300	Reference			
Studying year (n = 626)						
Level 3 (n= 171)	43	128	Reference		Reference	
Level 4 (n = 140)	48	92	1.553	0.079	1.034	0.918
Level 5 (n = 315)	166	149	3.316	0.000	1.520	0.364
History of HBV (n=626)						
Yes (n = 11)	7	4	2.555	0.138	NA	
No (n = 615)	250	365	Reference			
Family history of HBV (n = 626)						
Yes (n= 35)	15	20	1.082	0.823	NA	
No (n = 591)	242	349	Reference			
Encountered hepatitis B patient (n = 626)						
Yes (n =186)	131	55	5.936	0.000	5.272	0.000
No (n = 440)	126	314	Reference		Reference	

Abbreviations: OR: Odds Ratio; AOR: Adjusted Odds Ratio; CI: Confidence Interval; NA: Not applicable; *Univariate logistic regression; †Multiple logistic regression

Discussion

HBV infection remains a serious health concern, causing 1.5 million new cases and 820,000 deaths annually (WH, 2021). This study pioneered the assessment of pharmacy students' knowledge, attitudes, and practices regarding HBV infections in Jordan. It involved 626 pharmacy students with a mean age of 22, with females outnumbering males by a ratio of 4:1 and half of the participants being fifth-year pharmacy students.

The results showed varied aspects of knowledge regarding HBV infection. Published papers assessing pharmacy students' awareness of HBV worldwide are limited. HBV infection can lead to severe complications such as acute hepatic failure, liver cirrhosis, and hepatocellular carcinoma (Kumar *et al.,* 2017). In this study, 70.4% of participants were aware of these complications. In contrast, a study in Laos revealed that only 18% of healthcare students were aware of HBV complications (Pathoumthong *et al.,* 2014). Proper awareness among healthcare professionals, especially pharmacists, is essential. The discrepancy in knowledge levels between students from different health-related majors needs further analysis.

This study found that 73.3% of pharmacy students were aware of the high-risk groups needing HBV vaccination. Importantly, pharmacy students understood that the rationale behind HBV treatment is to prevent outbreaks and reduce mother-to-child transmission. As expected, most participants demonstrated high knowledge about screening and treatment goals for HBV infection, with over 80% believing that pregnant women, HIV-infected patients, and family members of people infected with HBV should undergo screening even if they have no symptoms. Additionally, 55% of students knew that nucleot(s)ide analogues (NAs) are the first-line treatment for HBV, and around 85% acknowledged their mechanism of action. They were also aware that HBV treatment requires a long-term plan and close follow-up.

In China, a study among freshmen found that female students had more positive attitudes and behaviours towards HBV patients than their male counterparts, with students whose parents hold college or bachelor's degrees having more positive behaviours towards HBV patients (Tu *et al.,* 2022). In the present study, fifth-year students exhibited significantly better attitudes towards HBV patients, likely due to their clinical exposure and hospital training. Such reasoning is further supported by the finding that fifth-year pharmacy students were three times more knowledgeable and had better practices towards HBV infection than third-year students. Participants who had met hepatitis B patients were about six times more likely to engage in positive practices for HBV

prevention. However, pharmacy students' appropriate practices were deficient, highlighting the need for improved infection control training courses. A study in Jordan reported that two-thirds of healthcare workers lacked training on hepatitis infections (Hassan *et al.,* 2008). This finding underscores the importance of developing and implementing comprehensive training and awareness programmes for healthcare workers in Jordan on HBV transmission, symptoms, risk factors, prevention, and treatment.

The paucity of research and statistical evidence about HBV infection awareness among the Jordanian general population highlights a substantial gap in public health knowledge, necessitating advocacy for proper public campaigns. Promoting HBV awareness among pharmacy students could be achieved through curricular changes by integrating specific modules on HBV-related attitudes and practices, organising interactive sessions on HBV cases, and exposing pharmacy students to HBV clinics or community health centres where they could interact with patients and learn HBV management. Also, implementing awareness campaigns and leveraging social media platforms can effectively disseminate information about HBV.

Strengths and limitations

This study is the first to assess knowledge, attitudes, and practices among Jordanian pharmacy students. Although it only included students from two governmental universities, the large sample size could allow extrapolation to all governmental universities. However, some data, such as HBV testing and vaccination, were self-reported and could not be verified. Furthermore, the cross-sectional design precludes the establishment of cause-and-effect relationships. Hence, carrying out a qualitative study that includes students from private colleges is recommended to gain insights into students' attitudes and identify other elements that may influence their understanding of HBV.

Conclusion

This study found that over half of the students demonstrated inadequate knowledge, attitudes, and practices regarding hepatitis B infection. Seniority and encounters with HBV-infected patients were related to better knowledge. Interestingly, only advanced education levels were associated with favourable attitudes. Lastly, direct contact with HBV-infected patients could predict better practices among pharmacy students.

Conflict of interest

The authors declare no conflict of interest.

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Ethics approval and informed consent

The protocol and consent form of the study were developed in accordance with the ethical standards of the Helsinki Declaration and were approved and reviewed by the Institutional Review Board (IRB) at the University of Jordan (reference number: 1/2022/2506). All respondents provided written informed consent before completing the questionnaire.

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Appendix A: Questionnaire (English version)

SOCIODEMOGRAPHIC DATA:

1- Age (in year):

2-Gender:
a-male
b-female

3- In which college you are:
a- medicine college
b-nursing college
c- Dentistry college
d- Pharmacy college

4- In which year you are:
a- 3rd year
b- 4th year
c- 5th year
d- 6th year

5-Have you taken any extra HBV courses (beside your university lectures, this includes summer courses, seminars/webinars, ...)?
a-Yes
b-No

6-Have you been infected with HBV
a-Yes
b-No

7-Do you have a family member infected with HBV
a-Yes
b-No

1. In your opinion, approximately how many percent of Jordanian population has hepatitis B? (*Please check ONE*):
A. 2%
B. 5%
C. 10%
D. 25%
E. I don't know

2. In your opinion, how did most people who have hepatitis B in Jordan got infected? (*Please check ONE*):
A. Infected mother to child at birth
B. Unsafe injections
C. Contaminated food or water
D. Unprotected sex
E.I don't know

3. A person is most likely to develop hepatitis B infection after the initial infection at? (*Please check ONE*):
A. Newborns
B. Teenagers
C. Middle-age and seniors
D. Age is not a factor

4. In your opinion, HBV can cause which of the followings? (*Please check ONE*):
A. Liver cirrhosis
B. Liver failure
C. Liver cancer
D. Premature death
E. All of the above
F. I don't know

Question 6-10: How could HBV be transmitted?

5. Shaking hands with a person infected with HBV
A. True
B. False
C. Don't know

6. Having unprotected sex with a person infected with HBV
A. True
B. False
C. Don't know

7. Having blood transfusion
A. True
B. False
C. Don't know

8. Sneezing or coughing
A. True
B. False
C. Don't know

9. From mother to her child at birth
A. True
B. False
C. Don't know

10. Eating with or sharing food and utensils with a person with HBV
A. True
B. False
C. Don't know

Questions 11-15: What can prevent hepatitis B transmission?

11. Clean and cook food thoroughly
A. True
B. False
C. Don't know

12. Provide hepatitis B vaccination to persons with no immunity
A. True
B. False
C. Don't know

13. Do not reuse or share needles/syringes
A. True
B. False

C. Don't know

14. Avoid sharing food and utensils or eating with a person with HBV

A. True
B. False
C. Don't know

15. Use condom

A. True
B. False
C. Don't know

16. What is the best HBV prevention for children whose mother is a hepatitis B carrier or has hepatitis B?

A. Administer HBIG shot
B. Administer HBV Vaccine within first 24 hours of birth
C. Administer the combination of HBIG shot and three doses of VGB Vaccine
D. Don't know

17. Are you confident in consulting patients about preventions for HBV?

A. Yes
B. No
C. Not sure / Don't know

18. In your opinion, who needs to be vaccinated to prevent hepatitis B infection?

A. All healthy and stable newborns
B. Family members of someone who has HBV
C. Sex partner of persons with HBV
D. Healthcare workers without immunity
E. All of the above
F. I don't know

19. Do you think the hepatitis B vaccine is safe (*Please check ONE*):

A. Very safe
B. Maybe safe
C. I don't know

20. When would you give a healthy and stable baby the first dose of hepatitis B vaccine? (*Please check ONE*)

A. Within the first 24 hours of birth
B. 1- 7 days old
C. 1 month old
D. I don't know

21. What should a pregnant woman, who has hepatitis B, do to protect the newborn from becoming infected? (Please check ONE)

A. Administer hepatitis B vaccine to the pregnant woman
B. Administer the first dose of hepatitis B vaccine and the HBIG shot within 12 hours of birth then complete the vaccine series
C. Administer the first dose of hepatitis B vaccine and the HBIG shot after 48 hours of birth then complete the vaccine series
D.I don't know

22. Does the University of Medicine where you are studying require medical students to get vaccinated against HBV prior to to internship at hospital?

A. Yes
B. No
C. Not sure / Don't Know

23. Does the University of Medicine where you are studying require medical students to get tested for HBV prior to internship at the hospital?
A. Yes
B. No
C. Not sure / Don't Know

Question 24-27: As a medical student, which of the followings do you think can help healthcare workers to prevent infection from needlestick injury?

24. Wash hands with soap or disinfectant after each clinical procedure
A. True
B. False
C. Don't know

25. Recap needle with two hands after use and discard immediately in a sharp-proof container
A. True
B. False
C. Don't know

26. Do not recap needle and discard immediately in a sharp-proof container
A. True
B. False
C. Don't know

27. Are there sharp-proof containers at your clinic for disposing needles and sharp objects? (*Please check ONE*):
A. Always
B. At some places
C. Not available
D. I don't know

28. Do you wear gloves when administering injections to patients? (*Please check ONE*):
A. Always
B. At some places
C. Not available
D. I don't know

DIAGNOSIS AND MANAGEMENT OF HBV PATIENTS

Question 29-32: In your opinion, which of the following patient groups would you order hepatitis B screening test even if they have normal level of AST / ALT in liver, or don't have hepatic symptoms?

29. Pregnant women
A. Yes
B. No
C. Don't Know

30. Persons infected with HIV
A. Yes
B. No
C. Not sure / Don't Know

31. Men who have sex with men (MSM)
A. Yes
B. No
C. Not sure / Don't Know

32. Family members of hepatitis B patients
A. Yes
B. No
C. Not sure / Don't Know

33. Which single test would you order to confirm that a patient has hepatitis B? (Please check ONE):
A. HBsAg
B. Anti-HBs
C. Anti-HBc
D. HBeAg

34. Which single test would you order to know if a patient has immunity to hepatitis B? (Please check ONE):
A. HBsAg
B. Anti-HBs
C. Anti-HBc
D. Anti-HBe
E. HBeAg

35. In your opinion, what is the symptom most patients with hepatitis B present? (Please check ONE):
A. Headache and fatigue
B. Nausea or vomiting
C. Loss of appetite
D. Jaundice
E. All of the above
F. None, there are usually no symptoms
G. I don't know

36. Which measurement in people with positive HBsAg show the need to order for treatment? (*Please check all that apply*):
A. ALT level
B. HBV DNA
C. Evaluation of liver cirrhosis
D. The combination of the three above
E. I don't know

37. Which of the following statements is true about HBV treatment? (*Please check all that apply*):
A. HBV is curable
B. There is no cure, but there are medications effective to manage and control the disease
C. There is no treatment available, but there are herbal medicine that can help to slower the disease progression.
D. I don't know

Question 41-44: What are the goals of HBV Treatment?

38. Sustain inhibition of HBV replication
A. True
B. False
C. Don't know

39. Improve quality of life and prevent progression to liver cirrhosis and liver cancer:
A. True
B. False
C. Don't know

40. Prevent spread of HBV infection in community, including infection from mother to child at birth:
A. True

B. False
C. Don't know

41. Prevent outbreak of HBV:
A. True
B. False
C. Don't know

Question 45-47: In your opinion, what are the rules in HBV treatment?

42. First line drugs are nucleot(s)ide analogues (NAs)
A. True
B. False
C. Don't know

43. Treatment of HBV with NAs is long term, or can be for a life time
A. True
B. False
C. Don't know

44. Patients need to follow / obey the treatment process
A. True
B. False
C. Don't know

45. Do you think that all patients with HBV need to be treated? (*Please check ONE*):
A. Yes, all patients with HBV should receive treatment as soon as possible
B. Only patients with active liver damage or cirrhosis need to be treated
C. There is no need to treat HBV because there is no cure yet
D. I don't know

46. Which of the following is correct about monitoring HBV patients? (*Please check ONE*):
A. Only patients with symptoms need to be regularly monitored and screened
B. Only patients who are on HBV treatment need to be regularly monitored and screened
C. All patients with HBV need to be regularly monitored and screened, regardless of treatment indication
E. I don't know

47. Without proper monitoring and treatment, what is the chance a patients would die of complications of hepatitis B? (*Please check ONE*):
A. Less than 5%
B. 5-10%
C. 15-25%
D. >30-40%
E. Over 40%
G. I don't know

48. Are you confident in ordering the tests to monitor patients with HBV?
A. Yes
B. No
C. Don't know / Not sure

49. Are you confident in giving prescriptions to patients with HBV?
A. Yes
B. No
C. Don't know / Not sure

50. In your opinion, when should newborns from mothers who have positive HBsAg be evaluated / screened for their possibility of having HBV infection?
A. Right after birth
B. 6 months
C. 12 months
D. 24 months
E. Don't know

51. Are you confident in ordering diagnosis test for patients with HBV?
A. Yes
B. No
C. Don't know / Not sure

52. Would you have any concern having casual contact or working together with a HBV patients in the same office?
A. Yes
B. No
C. Somewhat concern

53. Would you have any concern eating with (sharing food or utensils) with a HBV patient?
A. Yes
B. No
C. Somewhat concern

54. Do you feel confident in ordering HBV Vaccination for newborns?
A. Yes
B. No
C. Don't know