


# Knowledge, Attitude and Practice Towards Hepatitis B Infection and HBV Vaccine Among the Healthy Population in Makkah, Saudi Arabia

Fahd Almalki , Yousef M Alraffah, Rehab A Alasiri, Mohammed W Dhafar, Fay Matar Albogami, Mohammed N Alhazmi, Abdulaziz Musnnif Alyazidi, Laila A Alharbi, Manal E Alotaibi

Department of Medicine, College of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia

Correspondence: Fahd Almalki, Department of Medicine, UQU College of Medicine, Umm Al Qura University, Makkah, Saudi Arabia, Email [Fmamalki@uqu.edu.sa](mailto:Fmamalki@uqu.edu.sa)

**Background:** The hepatitis B virus (HBV) is one of the main causes of end-stage liver disease. The study aims to assess knowledge, attitude and practice (KAP) regarding HBV infection and its vaccine in Makkah to help improve and refine preventive strategies.

**Methods:** A cross-sectional study using an electronic questionnaire distributed through social media platforms to assess KAP related to HBV infection and its vaccine among 400 healthy adults living in Makkah, Saudi Arabia.

**Results:** The study assessed KAP with regard to HBV infection among 413 participants, predominantly male (55.0%) with a high educational level (69.0% holding university degrees). Participants displayed strong knowledge, achieving a 74.35% correct response rate, with 85.7% recognising it as a viral infection and 91.3% acknowledging its preventability. Attitudes towards vaccination were positive, with 84.62% supporting its necessity and 90.8% affirming its effectiveness. Practice patterns showed proactive prevention, with 64.2% of them being vaccinated and 87.4% valuing early immunisation for children. Higher education correlated with better knowledge and attitude, indicating a high level of awareness and positive behaviour towards hepatitis B and its vaccination among participants.

**Conclusion:** The study found that a high percentage of respondents in Makkah, Saudi Arabia (90.3%) recognised the importance of hepatitis B vaccination, with 80.4% willing to avoid high-risk contact with infected individuals. Despite this awareness, misconceptions and stigma persist, especially among certain demographic groups.

**Keywords:** knowledge, attitude, practice, hepatitis B, vaccination, Saudi Arabia

## Introduction

The hepatitis B virus (HBV) is a DNA hepatotropic virus that has the potential to progress to hepatocellular carcinoma or liver cirrhosis.<sup>1</sup> According to reports from the World Health Organization (WHO), 257 million individuals were infected with HBV in 2015, and 887,000 of those cases resulted in death from end-stage liver disease complications. It is an infectious disease that ranks tenth globally in terms of the causes of mortality.<sup>2</sup>

In the Kingdom of Saudi Arabia, the primary modes of transmission of HBV are through haemodialysis, intravenous or percutaneous methods and blood and its derivatives. Furthermore, foetal and neonatal hepatitis might occur due to the high probability of vertical transmission.<sup>2,3</sup> The Kingdom of Saudi Arabia initiated significant hepatitis B vaccination campaigns for infants starting in October 1989 with a series of shots administered at birth, then at 3 and 6 months after birth. Further initiatives were launched in 1990 and 1996 to ensure that children who had not been previously vaccinated received immunisation upon starting school. These widespread vaccination programmes were highly successful, achieving a protection rate of almost 99%.<sup>4</sup>

A variety of studies at both the national and regional levels in Saudi Arabia have assessed the prevalence of HBV infection, with more than half of all the studies being conducted in the western region, which encompasses cities such as

Makkah, Jeddah, Taif, Medinah, Tabuk and Qunfudah. However, the most significant infection rates were observed in the southern region.<sup>5</sup>

This study aimed to assess the KAP of the population in Makkah, Saudi Arabia with regards to hepatitis B infection and its management and prevention to inform and enhance effective preventive strategies.

## Methods

### Study Design

A cross-sectional study was conducted in Makkah, Saudi Arabia, during the period from March 2024 to April 2024 using an electronic questionnaire. The study protocol was approved by the institutional review board of the College of Medicine at Umm Al-Qura (UQU) University prior to conducting the study. Informed consent was obtained from all participants prior to the commencement of the study. Survey responses were collected anonymously, and the confidentiality of the participants and their responses was maintained. The study was conducted in accordance with the Declaration of Helsinki.

### Sample Size and Population

The minimal sample size needed for the study was determined using the Raosoft calculator. The following were considered: Makkah's population size of about 2 million, keeping the confidence interval (CI) level at 95% and considering the anticipated percentage of frequency as 50% and taking the design effect as 1. The sample size was calculated to be 385 participants. In the case of any possible data loss, the total sample size required was 400 participants. Data were collected from Saudi and non-Saudi (Arabic-speaking) people, including men and women 18 years of age and older.

### Exclusion Criteria

1. Adolescents younger than 18.
2. People with medical backgrounds.

### Measurement and Data Collection Tool

Data were collected using an electronic questionnaire created on Google Forms, which included questions designed to fulfil the study objectives. The questionnaire had a brief introduction explaining the aims of the study, the target population and a request to participate voluntarily. Data were collected by distributing a link to the questionnaire through social media platforms. Minor adjustments were made to a previously validated questionnaire from prior studies, which was then reviewed by the supervisors of the research and translated into Arabic. The questionnaire contains four sections: The first part includes questions about the demographics of the included subjects, such as age, gender, nationality, marital status, level of education, occupation and income; part two involves questions about the knowledge about HBV; the third part focuses on the attitude towards HBV vaccination; and the fourth part addresses the practice and behaviour among respondents with regard to HBV infection and management of high-risk exposure.

### Statistical Analysis

After obtaining the data, the next step was to edit the raw data. The incomplete responses were excluded, and the corrected data were finalised for scoring. After cleaning the data, the next step was to import and code the data in SPSS; the data were fed very carefully into SPSS for appropriate results. The finalised data were labelled. Numerical values were given to the variables for identification in the analysis using the Statistical Package for the Social Sciences (SPSS). Descriptive analysis included frequency and percentages. Inferential analysis was applied using chi-square and Fisher's exact tests. Differences were considered significant at  $P < 0.05$ . The reliability of the study scale, which included 26 items measuring KAP patterns, was assessed using Cronbach's alpha. The obtained alpha value was 0.567, indicating that the scale had acceptable internal consistency reliability.

## Results

### Demographic Characteristics

Table 1 shows that out of 413 participants, the majority were male (55.0%), while 45.0% were female. The largest age group was 18–25 years old. Among the participants, 51.6% were married, 45.3% were single, and 3.1% belonged to other social categories. Regarding education, most participants held a university degree (69.0%), while 19.1% had a secondary school education, and 7.7% were postgraduates. Employment status varied, with 35.3% being self-employed and 31.7% identified as students. Regarding income, 25.7% of participants earned between SAR 0–5,000, 20.6% had an income of SAR 5,001–10,000, while 19.4% fell within the SAR 10,000–15,000 and SAR 15,001–20,000 ranges.

### Assessment of the Knowledge Level on Hepatitis B Infection Among the Respondents

Table 2 shows that the knowledge of the included participants regarding hepatitis B infection was very good (74.35%); 85.7% understood that hepatitis B is a viral infection. Of the participants, 87.4% had good knowledge about symptoms of hepatitis B, which was significantly associated with educational level ( $P = 0.029$ ), and a higher proportion of university-level participants answered “yes” to this question. Furthermore, 71.9% recognised that hepatitis B can be transmitted from a mother to her child; again, this had a significant association with the educational level of participants ( $P = 0.019$ ). In addition, 79.4% knew that vaccinations for hepatitis B were available. This was significantly associated with marital status ( $P = 0.044$ ), where a higher proportion of married participants indicated that a vaccination for hepatitis B was available. Of the participants, 92.0% knew that hepatitis B affects the liver and its function and had a significant association with the educational level of the subjects ( $P = 0.029$ ). Further, 78.2% of participants recognised that hepatitis B was treatable; 57.9% reported that hepatitis can be transmitted through unprotected sex and 91.3% answered “yes” to the question of whether hepatitis B could be prevented. Of the participants, 81.8% recognised that hepatitis B could result in liver cancer or cirrhosis B, which again had a significant association with educational level ( $P = 0.021$ ), where a higher proportion of university-level participants answered “yes” to this statement. Knowledge of hepatitis B disease has no statistically significant association with gender and age ( $P > 0.05$ ).

### Assessment of the Attitude of Respondents Towards HBV Vaccination

Table 3 shows the attitude of the participants towards hepatitis B. The results show a very positive attitude towards hepatitis B vaccination (84.62%), and 90.3% of participants strongly agreed that the hepatitis B vaccine is necessary. Of the participants, 90.8% strongly agreed that the vaccine was effective in preventing the transmission of hepatitis B infection. This statement was significantly associated with marital status ( $P = 0.014$ ), where a higher proportion of married people agreed with the statement. Of the participants, 80.4% strongly agreed that direct high-risk contact with infected patients should be avoided. Additionally, 91.8% agreed or strongly agreed that if they had experienced high-risk exposure to someone infected, they needed to inform their doctor. Regarding vaccination, 92.5% of participants strongly agreed or agreed that they recommended early vaccination against hepatitis B at birth. This was significantly associated with age ( $P = 0.046$ ), where a higher proportion of 18–25-year-old participants answered this question with “strongly agreed.” Regarding blood donation, 80.4% of participants strongly disagreed or disagreed that a person with hepatitis B should be allowed to donate blood, while 73.4% strongly agreed or agreed that they were willing to pay a screening fee if necessary. This was significantly associated with gender ( $P = 0.026$ ), where a higher proportion of females answered this question with “agreed”. Of the participants, 83.3% strongly disagreed or disagreed that being infected with hepatitis B was stigmatising and considered a disgrace. This was significantly associated with age ( $P = 0.015$ ) and marital status ( $P = 0.034$ ), where a higher proportion of participants answered this question with “strongly disagreed”.

### Assessment of the Practice Patterns of Respondents Towards Hepatitis B Infection and Exposure Management

Table 4 shows the practice patterns of the respondents towards hepatitis B exposure. The results show a high level of positive behaviour with regard to hepatitis B prevention (65.11%). Of the respondents, 96.1% reported that they were not infected with the HBV; 64.2% of subjects had received vaccination against hepatitis B; and 87.4% of respondents

**Table 1** Socio-Demographic Characteristics of the Study Cohort (n = 413)

<b>Gender</b>		
Male	227	55.0
Female	186	45.0
<b>Age</b>		
18–25	176	42.6
26–35	56	13.6
36–45	64	15.5
46–55	80	19.4
56–65	31	7.5
66 or above	6	1.5
<b>Marital Status</b>		
Single	187	45.3
Married	213	51.6
Others	13	3.1
<b>Educational Level</b>		
Primary	8	1.9
Intermediate	9	2.2
Secondary	79	19.1
University	285	69.0
Post Graduate	32	7.7
<b>Occupation</b>		
Student	131	31.7
Self Employed	146	35.3
Professional	26	6.3
Unemployed	24	5.8
House wife	49	11.9
Retired	37	9.0
<b>Monthly Income</b>		
0–5,000	106	25.7
5,001–10,000	85	20.6
10,001–15,000	80	19.4
15,001–20,000	80	19.4
More than 20,000	62	15.0

**Table 2** Assessment of the Knowledge Level About Hepatitis B Among the Study Cohort

Questions	Responses N (%)		P value			
	Frequency	Percent	Gender	Age	Education	Marital status
<b>Hepatitis B is caused by a viral infection.</b>			0.397	0.160	0.155	0.518
Yes	354	85.7				
No	59	14.3				
<b>Jaundice (yellowing of the sclera and skin), nausea, vomiting and loss of appetite are some of the symptoms of hepatitis B.</b>			0.766	0.090	0.029*	0.397
Yes	361	87.4				
No	52	12.6				
<b>Hepatitis B may be transmitted from mother to child.</b>			0.826	0.659	0.019*	0.208
Yes	297	71.9				
No	116	28.1				
<b>Is there a vaccine for hepatitis B?</b>			0.903	0.133	0.537	0.044*
Yes	328	79.4				
No	85	20.6				
<b>Hepatitis B affects the liver and its function.</b>			0.856	0.136	0.029*	0.943
Yes	380	92.0				
No	33	8.0				
<b>Hepatitis B virus is treatable</b>			0.632	0.885	0.420	0.537
Yes	323	78.2				
No	90	21.8				
<b>Hepatitis B may be transmitted through unprotected sex.</b>			0.230	0.589	0.490	0.486
Yes	239	57.9				
No	174	42.1				
<b>Hepatitis B can be prevented.</b>			0.861	0.079	0.080	0.641
Yes	377	91.3				
No	36	8.7				
<b>Hepatitis B could result in liver cancer or cirrhosis.</b>			0.370	0.346	0.021*	0.174
Yes	338	81.8				
No	75	18.2				
<b>Overall correct answer average.</b>	<b>74.35%</b>					

**Note:** The (\*) denotes a statistically significant association between the variables.

acknowledged that hepatitis B in children can be prevented by early immunisation. Of the subjects, 89.6% wished to educate their family about the HBV, and 76.3% believed that tools should be sterilised before use. This statement was significantly associated with age ( $P = 0.022$ ) and marital status ( $P = 0.048$ ), where a higher proportion of participants

**Table 3** Assessment of the Attitude of Respondents Towards HBV Vaccination

Questions	Responses N (%)		P value			
	Frequency	Percent	Gender	Age	Education	Marital status
<b>It is necessary to take the hepatitis B vaccine.</b>			0.313	0.350	0.231	0.151
Strongly Disagree	19	4.6				
Disagree	21	5.1				
Agree	178	43.1				
Strongly Agree	195	47.2				
<b>The vaccine is effective in preventing transmission of hepatitis B.</b>			0.470	0.504	0.091	0.014*
Strongly Disagree	12	2.9				
Disagree	26	6.3				
Agree	241	58.4				
Strongly Agree	134	32.4				
<b>You have to avoid high-risk contact with people infected with HBV infection.</b>			0.659	0.062	0.135	0.232
Strongly Disagree	25	6.1				
Disagree	56	13.6				
Agree	149	36.1				
Strongly Agree	183	43.3				
<b>I need to tell my doctor if I have been exposed to someone infected with hepatitis B virus. (Using tools that may result in the patient's blood and fluids getting into my blood and mucous membranes.)</b>			0.456	0.747	0.379	0.448
Strongly Disagree	12	2.9				
Disagree	22	5.3				
Agree	162	39.2				
Strongly Agree	217	52.5				
<b>A healthy lifestyle prevents hepatitis B.</b>			0.390	0.205	0.017*	0.059
Strongly Disagree	19	4.6				
Disagree	69	16.7				
Agree	193	46.7				
Strongly Agree	132	32.0				
<b>I recommend early vaccination against hepatitis B virus at birth.</b>			0.238	0.046*	0.409	0.097
Strongly Disagree	11	2.7				
Disagree	20	4.8				

(Continued)

**Table 3** (Continued).

Questions	Responses N (%)		P value			
	Frequency	Percent	Gender	Age	Education	Marital status
Agree	172	41.6				
Strongly Agree	210	50.8				
<b>A person with hepatitis B infection should be allowed to donate blood.</b>			0.834	0.153	0.108	0.098
Strongly Disagree	243	58.8				
Disagree	89	21.5				
Agree	50	12.1				
Strongly Agree	31	7.5				
<b>I am willing to pay the screening fee if indicated.</b>			0.026*	0.491	0.446	0.927
Strongly Disagree	35	8.5				
Disagree	75	18.2				
Agree	195	47.2				
Strongly Agree	108	26.2				
<b>Being infected with hepatitis B virus is stigmatising and considered a disgrace.</b>			0.726	0.015*	0.063	0.034*
Strongly Disagree	244	59.1				
Disagree	100	24.2				
Agree	43	10.4				
Strongly Agree	26	6.3				
<b>Overall correct Answer Average</b>		<b>84.62%</b>				

**Note:** The (\*) denotes a statistically significant association between the variables.

aged 18–25 and single answered this question with “Yes”. Of the participants, 64.6% thought that if they were exposed to the HBV, they would isolate themselves and avoid high-risk contact with other people. Meanwhile, 81.1% of participants answered that they would request a new syringe. Practice pattern in the hepatitis B disease has no statistically significant association with gender and educational level ( $P > 0.05$ ).

## Correlation Coefficient Between Study Variables

Table 5 shows the relationship between the KAP patterns. Knowledge had a negative relationship with attitude ( $r = -0.002$ ) and a significant positive relationship with practice pattern ( $r = 0.237$ ). Attitude had a significant negative relationship with practice pattern ( $r = -0.119$ ).

## Discussion

The study indicated a high level of awareness and knowledge about hepatitis B among the participants. Notably, 74.35% demonstrated very good knowledge, with 85.7% correctly identifying it as a viral infection. Awareness of symptoms was impressive at 87.4%, particularly among those with a university education. Approximately 71.9% recognised the potential for mother-to-child transmission, which correlated with a higher educational background. A significant

**Table 4** Assessment of the Practice Patterns of Respondents Towards Hepatitis B

Questions	Responses N (%)		P value			
	Frequency	Percent	Gender	Age	Education	Marital status
<b>You have previously had hepatitis B.</b>			0.916	0.164	0.284	0.445
Yes	16	3.9				
No	397	96.1				
<b>You have received a vaccine against hepatitis B virus.</b>			0.271	0.814	0.144	0.727
Yes	148	35.8				
No	256	64.2				
<b>Hepatitis B in children can be prevented by early immunisation.</b>			0.185	0.398	0.313	0.836
Yes	361	87.4				
No	52	12.6				
<b>I would like to educate my family about the hepatitis B virus.</b>			0.442	0.296	0.134	0.134
Yes	370	89.6				
No	43	10.4				
<b>Do you require that tools be sterilised before use?</b>			0.057	0.022*	0.432	0.048*
Yes	315	76.3				
No	98	23.7				
<b>I will self-isolate if I have been exposed to the hepatitis B virus.</b>			0.233	0.213	0.140	0.068
Yes	267	64.6				
No	146	35.4				
<b>Would you request a new syringe in medical procedures?</b>			0.193	0.013*	0.248	0.041*
Yes	335	81.1				
No	78	18.9				
<b>I avoid blood transfusions and dental procedures because I am afraid of hepatitis B virus.</b>			0.180	0.167	0.417	0.037*
Always	121	29.3				
Usually	38	9.2				
Sometimes	78	18.9				
Rarely	79	19.1				
Never	97	23.5				
<b>Overall correct answer average</b>		<b>65.11%</b>				

**Note:** The (\*) denotes a statistically significant association between the variables.



**Table 5** Correlation Coefficient Between Study Variables

Variables	1	2	3
Knowledge	–		
Attitude	–0.002	–	
Practice pattern	0.237	–0.119	–

**Note:** 0.05, 0.01.

79.4% were aware of the vaccine, with married participants showing higher levels of knowledge. Furthermore, 92.0% understood that hepatitis B affects the liver. A majority (78.2%) believed the disease was treatable, and 91.3% recognised its preventability. While 57.9% acknowledged transmission via unprotected sex, 81.8% were aware of its potential to cause severe liver injury, with educational attainment significantly influencing these insights. Interestingly, knowledge levels did not vary significantly by gender or age, indicating a consistent understanding across these demographics. Overall, the findings reflect strong awareness, particularly regarding the viral nature, symptoms and preventive measures related to hepatitis B infection, with education playing a crucial role in enhancing the population's understanding.

In a 2017 study conducted in Saudi Arabia,<sup>6</sup> the participants exhibited very good knowledge about hepatitis, with 91% demonstrating awareness. However, only 54% had good knowledge of hepatitis B infection. A further 64.5% recognised hepatitis B infection as a viral disease. Conversely, a study in Taif<sup>7</sup> revealed that 361 participants (80.4%) had heard of hepatitis B, with multivariable analysis indicating that university education, medical employment and a monthly income exceeding 5000 SR were significant predictors of knowledge about HBV infection.

Internationally, a study in Pakistan<sup>8</sup> involving 780 participants found that 588 (75.4%) fell into the poor knowledge category, while only 192 (24.6%) demonstrated an adequate understanding of hepatitis B. This deficiency was particularly evident in their knowledge of the symptoms and transmission of the infection.

In a study among 612 participants from rural communities in Anglophone regions of Cameroon,<sup>9</sup> findings were similarly concerning, with 354 (57.9%) displaying poor knowledge, 221 (36.1%) showing good knowledge and only 37 (6.0%) exhibiting a very good understanding of hepatitis B infection and transmission. Poor knowledge was notably prevalent regarding the causative microbe, transmission, symptoms and treatment options.

This study's findings underscore important implications for public health initiatives in Makkah, particularly in addressing knowledge gaps among specific demographic groups concerning hepatitis B infection. With 42.6% of participants aged 18–25, educational programmes tailored to younger audiences, including school-based initiatives and social media outreach, could significantly boost awareness. Additionally, as 45.3% of participants were single, campaigns should focus on sexual health education, highlighting the risks associated with unprotected sex and the importance of vaccination. The presence of individuals with lower educational backgrounds, particularly the 19.1% with only secondary education, indicates a need for easily understandable educational materials that use straightforward language and visual charts. Outreach efforts targeting 35.3% of self-employed individuals can be effectively implemented in community centres and workplaces, while addressing economic barriers for those earning between 0–10,000 SR through free or subsidised vaccinations can improve access. By utilising media, fostering community involvement and creating culturally relevant resources, public health authorities can enhance awareness and understanding of hepatitis B infection in Makkah, leading to improved health outcomes.

The current study's findings reveal that the majority of respondents in Saudi Arabia have a very positive attitude towards vaccination against hepatitis B and its preventive measures. About 90.3% of the participants strongly recognised the importance of vaccination, and 90.8% acknowledged its effectiveness in reducing the spread of the virus. These results indicate a firmly established understanding of the vaccine's value to public health.

The study also highlighted a strong association between marital status and perceived vaccine effectiveness, suggesting that responsibilities towards oneself and family enhance knowledge about the benefits of vaccination.<sup>10</sup> The level of proactive health behaviour was remarkable, with 80.4% of participants expressing a willingness to avoid direct high-risk

contact with infected individuals and 91.8% showing readiness to report any potential exposure. These trends demonstrate a strong commitment to reducing the spread of hepatitis B infection in the community, particularly among better-educated individuals, where an effective relationship between education and the belief that a healthy lifestyle can be an effective means of prevention was observed.<sup>10</sup>

However, there are still aspects that indicate the persistence of misconceptions or stigmas. While 83.3% of participants dismissed the idea that hepatitis B infection carries a social stigma, a notable minority (16.7%) still held such perceptions, with significant disparities related to age and marital status. This suggests a necessity for focused educational initiatives to mitigate stigma and foster a better understanding of hepatitis B infection.

Comparing studies from other countries, South Kivu's healthcare workers generally had a low degree of understanding about hepatitis B transmission, which could lead to a lack of awareness regarding the need for universal precautions against blood exposure incidents in order to reduce the possibility of patient or medical care contamination. In Pakistan, research found that barbers were aware of hepatitis B and C viruses but did not take adequate preventive measures, indicating that knowledge does not always align with behaviour. In Ghana, while good levels of awareness were reported, vaccination rates remained low, suggesting that positive attitudes do not always translate into preventive behaviour.<sup>11–13</sup>

In contrast, studies from Saudi Arabia indicate a greater community commitment to practising proactive health behaviours, reflecting the role of education and awareness in promoting public health. Based on these findings, it is clear that there is a need for targeted educational strategies to improve knowledge and awareness of hepatitis B across different countries. These strategies should focus on addressing misconceptions and stigmas while promoting positive messages about prevention and vaccination.<sup>10</sup>

The study demonstrates a high level of affinity towards positive behaviour in hepatitis B prevention, namely 65.11%, which is significantly better than a previous study conducted in the KSA in 2017, which showed a good practice magnitude of only 34%.<sup>6</sup> Nationally, this study's findings are lower than those of a 2024 study in Ethiopia, which reported a rate of 95%.<sup>14</sup> However, they are higher than the results from previous studies in Cameroon (2016) and Pakistan (2012), which reported good practice rates of 24.3%<sup>9</sup> and 33.1%,<sup>8</sup> respectively. These comparisons suggest an overall improvement in preventive practices over time.

In terms of vaccination, 64.2% of the participants reported having been vaccinated against the HBV. This aligns with local studies in Taif and Arar, which reported vaccination rates of 42.4% and 55.3%, respectively,<sup>7,15</sup> as well as a prior study in Saudi Arabia indicating a vaccination rate of 57.8%.<sup>6</sup> Additionally, this finding represents a significant increase compared to a study in Cameroon, which reported a vaccination rate of only 2.3%.<sup>9</sup> These results indicate a notable improvement in the proportion of individuals receiving the HBV vaccine.

Practice patterns related to hepatitis B prevention did not show a statistically significant association with gender or educational level. This finding contrasts with a previous study in Ethiopia,<sup>14</sup> which identified significant associations between hepatitis B practices and factors such as gender and income.

The statistical analysis revealed that a significant portion of participants had good knowledge of hepatitis B; however, gaps still exist regarding specific aspects of the disease. It is vital for public health initiatives to prioritise raising awareness about transmission, prevention and treatment, particularly among groups with lower educational attainment. Educational campaigns should emphasise the availability and effectiveness of vaccines to curb the virus's spread.

Additionally, the participants demonstrated a positive attitude towards hepatitis B vaccination. Public health guidelines should advocate for early vaccination, promote healthy lifestyle choices and highlight the importance of disclosing exposure to infected individuals. Strategies must also address the misconceptions and stigma associated with hepatitis B to reduce discrimination and encourage testing and treatment.

## Limitations that May Impact the Study

Potential sampling bias could arise; the sample is not diverse enough to represent the entire population of Makkah, which could limit the generalisability of the findings. As half of the participants in our study were in the 18–25 age range, there were obvious restrictions. Additionally, focusing on a single city may restrict the applicability of the results to other regions in Saudi Arabia, which may have distinct demographics or varying levels of healthcare access.

## Conclusion

There is a clear need for targeted public health interventions aimed at improving KAP related to hepatitis B vaccinations. By addressing existing gaps in understanding and fostering positive attitudes towards vaccination, public health initiatives can help reduce the transmission of hepatitis B and enhance overall community health outcomes.

This study focuses on a critical public health issue, as hepatitis B is a serious concern worldwide. This current study is the first study to evaluate KAP towards hepatitis B among a healthy population in Makkah. Choosing Makkah, a region of significant cultural and religious importance, adds unique value by providing essential insights into the KAP related to hepatitis B in this specific context. Our study, which recognised a healthy population, ensured that baseline habits and awareness were evaluated, which are important for effective prevention efforts. Moreover, the study's extensive scope, addressing KAP, provides a comprehensive understanding of public awareness and behaviour towards the disease.

## Recommendations

It is recommended that future research investigate the relationship between students' HBV testing, immunisation statuses and their corresponding HBV KAP levels and examine the incidence of needle stick injuries caused by HBV among healthcare professionals.

## Disclosure

The authors report no conflicts of interest in this work.

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