

# Assessment of Knowledge, Attitudes and Practices Toward Prevention of Hepatitis B Virus Infection Among Medical Students in Hail Region, Saudi Arabia

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## ABSTRACT

**Objective:** To assess the knowledge regarding symptoms, risk factors and prevention of hepatitis B virus infection among medical students in Hail, Saudi Arabia.

**Methods:** A cross-sectional study was conducted at the faculty of medicine at University of Hail, Saudi Arabia. A self-administered questionnaire consisted of Four parts included the demographic data of participants, the knowledge, attitude, and practices (KAP) towards transmission and prevention of HBV infection

**Results:** A total of 307 students from 2nd to 6th year were approached for the study. Overall, most of the students had enough knowledge about HBV infection and its mode of transmission. In terms of knowledge on vaccination, 81.4% of the respondents were aware of HBV vaccine and that it provides protection against HBV infection. However, relatively a low quantity (40.4%) of study participants knew that HBV has a post-exposure prophylaxis and that it can be treated/or cured (61.9%).

**Conclusions:** Our data confirmed that students in health career are at a very high risk to infected by HBV during their

training owing to low vaccine against HBV uptake rate and high rate of accidental exposure to blood. Therefore, we recommend that all students in the health care profession should be vaccinated prior to their entry into professional practices.

**Keywords:** Hepatitis B, Knowledge, Attitude, Medical, Occupational Exposure.

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## INTRODUCTION

Hepatitis B is a global healthcare problem, especially in developing countries. An estimated third of the worldwide population has been affected by hepatitis B virus (HBV).<sup>1</sup> About 350-400 million patients have chronic infection for whole lifetime, and 0.5 % of those having the hepatitis B surface antigen (HBsAg) spontaneously seroconverted each year to having the hepatitis B surface antibody (anti-HBs).<sup>2</sup>

HBV is spread through body fluids such as blood, vaginal secretions, and semen.<sup>3,4</sup> Also, routes for HBV infection include sexual interaction<sup>5</sup>, unintentional needle sticks or using of infected needles<sup>6</sup>, organ transplantation and blood transfusions.<sup>7</sup> Infected pregnant women can also transmit the infection to their newborns during the giving birth period.<sup>3,4</sup> The hepatitis B viruses cannot be transmitted by shaking hands, sharing eating tools, breastfeeding, kissing, coughing, hugging, or sneezing. The result of this infection is a complex viral-host interaction that results in either an

acute symptomatic illness or an asymptomatic illness. Patients clear HBV and develop anti-HBs; however, if the patient has antibody to hepatitis B core antigen (HBcAg), he or she is vulnerable for active disease again, because HBV infection stills an untreatable disease, similar to other infections as Epstein-Barr virus (EBV), cytomegalovirus (CMV), and Herpes simplex virus (HSV). Otherwise, the patient with hepatitis B surface antigen (HBsAg) positive may develop a chronic infection condition. In 15-30% of patients with chronic hepatitis B virus develop late consequences as cirrhosis and the development of Hepatocellular Carcinoma.<sup>8-11</sup> In immunocompetent patients, less than about 4% of HBV infections become chronic, while up to 90% of perinatally infected newborns develop chronic disease.<sup>12</sup> Vaccines for the prevention of hepatitis B have been routinely recommended for infants since October 01, 1989 in the Kingdom of Saudi Arabia regardless of the mother's HBV status.<sup>13</sup>

Significant decline in the prevalence of HBsAg in Saudi Arabia to negligible numbers, demonstrating that the HBV vaccine was extremely effective.<sup>14,15</sup> Most of infants are vaccinated in three shots over a sequence of months. The vaccine is effective in infants and 95% have protective levels of antibody of those vaccinated.<sup>16</sup> A combination of hepatitis B immune globulin and an accelerated course of HBV vaccine protect against transmission of HBV around the time of delivery in 86% to 99% of infants.<sup>16</sup> Individuals with a risk of contact to body fluids such as blood should be vaccinated, if not already.<sup>13</sup> Testing to confirm effective immunization is suggested and further doses of vaccine are given to those who are not adequately immunized.<sup>13</sup> The aim of this study to assess the knowledge regarding symptoms, risk factors and prevention of hepatitis B virus infection among medical students in Hail, Saudi Arabia.

**METHODS**

**Study Site, Population, Study Design and Period**

A cross-sectional study was conducted at the faculty of medicine at University of Hail, Saudi Arabia. The randomization was insured by direct contact to the participants whose serial numbers were obtained from a web-based program at <https://www.randomizer.org>. The study was included of 320 students of medicine. The population consisted of medical students from the 2nd year to the 6th year, 306 of the total participants completed the questionnaire, male were 156 (50.8%) and female 151(49.2%), ages from 19 to 25 years old. The period of study started from March to April 2015.

**Definitions for Scoring Knowledge, Attitude And Practices**

The definitions were used in this study for the following operational. Good knowledge: if 70 % or more of the answers of the participants were correctly. Poor knowledge: if the participants answered below than 70 % of knowledge questions. Positive attitude: if the participants were able to answer the correct items for 70 % or more of attitude questions. Negative attitude: if answers of the participants were below than 70 % of attitude items. Good practice: if the survey participants were able to answer correctly at least 70 % or more of practice questions. Malpractice: if the correct answers of the participants were less than 70 % of practice items.

**Data Collection**

A self-administered questionnaire consisted of four parts included demographic data of participants, knowledge, attitude, and practices (KAP) towards transmission and prevention of HBV infection.

**Statistical Analysis**

Data were entered and analyzed by using SPSS version 16 statistical package software (SPSS Inc., Chicago, IL). Descriptive statistics such as proportions and frequencies were used to summarize the data. Bivariate and multivariate analyses were used to show the relationship between the variables (mean knowledge, attitude, and practice) and selected socio-demographic factors. Statistical significance was set at P values of less than 0.05.

**RESULTS**

**Characteristics of The Study Participants**

A total of 307 students from 2nd to 6th year were approached for the study. All of them were contributed in the study making a response rate of 100 %. Out of the 307 students, 188 (61.2%) of the students were in the age group of 19–22 years and 119 (38.3%) were in the age group of 23–25 years. 156 (50.8%) of the students were male and 151 (40.2%) were female. (Table 1)

**Table 1: Baseline characteristics of the study participants at the college of medicine at University of Hail, 2017**

Variables	N (%)	N (%)
Gender	Male	156 (50.8)
	Female	151(49.2)
Age	19-22	188(61.2)
	23-25	119(38.3)
Academic year	2 <sup>nd</sup>	62((20.2)
	3 <sup>rd</sup>	62((20.2)
	4 <sup>th</sup>	62((20.2)
	5 <sup>th</sup>	60(19.5)
	6 <sup>th</sup>	61(19.9)

**Table 2: Knowledge level of the students at the college of medicine at University of Hail, 2017**

Hepatitis B knowledge questions	Yes n (%)	No n (%)	Not sure n (%)
▪ HBV causes liver cancer	226(73.6)	49(16.0)	32(10.4)
▪ HBV carriers can transmit the infection	263(85.7)	31(10.1)	13(4.2)
▪ HBV spread by casual contact such as hand shaking	26(8.5)	271(88.3)	10(3.3)
▪ HBV spread by contact with open wounds/cut?	295(84.4)	33(10.7)	15(4.9)
▪ HBV can be transmitted by contaminated blood and body fluids	295(96.1)	7(2.3)	5(1.6)
▪ HBV can be transmitted by unsterilized syringes, needles and surgical instruments	282(91.9)	14(4.6)	11(3.6)
▪ Hepatitis B transmitted by unsafe sex	254(82.7)	29(9.4)	24(7.8)
▪ Vaccine can prevent hepatitis B infection	250(81.4)	37(12.1)	20(6.5)
▪ Do you think HBV has laboratory test?	278(90.6)	7(2.3)	22(7.2)
▪ HBV has post exposure prophylaxis	124(40.4)	40(13.0)	143(46.6)
▪ Hepatitis B can be cured/treated	190(61.9)	64(20.8)	53(17.3)

**Table 3: Attitudes of the students of medicine towards hepatitis B prevention at University of Hail, 2017**

Attitude questions	Agree N (%)	Disagree N (%)	Not sure N (%)
▪ I have no concern of being infected with HBV	92(30.0)	148(48.2)	67(21.8)
▪ Hepatitis B vaccine is safe and effective	244(79.5)	19(6.2)	44(14.3)
▪ Changing of gloves during blood collection and tests is waste of time	63(20.5)	223(72.6)	21(6.8)
▪ All patients should be tested for HBV before they receive health care	205(66.8)	62(20.2)	40(13.0)
▪ I do not feel comfortable to take care of people with HBV	109(35.5)	154(50.2)	44(14.3)
▪ Following infection control guidelines will protect from being infected with HBV at work?	253(82.4)	7(2.3)	47(15.3)

**Knowledge Level of The Respondents on HBV**

Overall, most of the study participants had adequate knowledge on HBV infection and its mode of transmission. Of the students participated, 226 (73.6%) knew that HBV infection associated with liver cancer. Regarding the mode of transmission, 295 (96.1%) reported contact with blood or body fluid of HBV carriers, 282 (91.9%) mentioned unsterilized medical equipment such as needle and syringes, and 254 (82.7%) answered unsafe sexual contact. (Table 2) In terms of knowledge on vaccination, 81.4% of the respondents were aware of HBV vaccine and that it provides protection against HBV infection. However, relatively a low quantity (40.4%) of study participants knew that HBV has a post-exposure prophylaxis and that it can be treated/or cured (61.9%).

**Attitudes Towards HBV Infection and Risk Perception**

The attitudes of students of medicine towards HBV infection are summarized in Table 3.

About 48 % of the students were attentive that they are vulnerable to getting HBV infection, and 82.4 % approved that following infection control measures would defend them from being infected at work. Further, 79.5% of the students agreed that vaccine against HBV prevents getting the infection. To measure their

attitudes toward discrimination and stigma on HBV carriers, we asked whether they are pleased in treating HBV patients. About 50% (154/307) of the students had answered in agreement to the inquiry. On the other hand, 66.8 % of the students think that all patients should be tested before getting any health care services. Multivariate analysis of the knowledge of students revealed that both pre-clinical and clinical students had a good knowledge on HBV. Further, students of pre-clinical years showed unfavorable attitude towards HBV prevention compared to the clinical year's students. (Table 4)

**Practical Measures for HBV Prevention and Health Seeking Behaviour**

Of the 307 participants, 182 (59.3%) had screened for HBV, 174 (56.7%) students had vaccinated against HBV, and only 104 (33.9%) of vaccinated students had completed the recommended three doses.

About 23% of the respondents had a needle stick injury, and 64.2% of the participants had responded that they would report if they had needle stick injury. (Table 5)

Overall, there were good practical measures on prevention of HBV infection among the study subjects.

**Table 4: Multivariate analysis of factors associated with poor knowledge and attitudes towards hepatitis B prevention.**

Variables	Knowledge		P value	Attitude		P value	
	Good	Poor		Favorable	Not		
Sex	Male	147	4	0.533	91	65	0.110
	Female	141	15		74	77	
Age	19-22	176	12	0.016	96	92	0.243
	23-25	112	7		69	50	
Academic year	Pre-clinical	113	11	0.001	56	68	0.001
	Clinical	175	8		109	74	
		288 (93.8)					

**Table 5: Practices of medicine students towards hepatitis B prevention at the University of Hail, 2017**

HBV practice questions	Yes number (%)	No number (%)
▪ Have you ever screened for hepatitis B?	182(59.3)	125(40.7)
▪ Have you got vaccinated against HBV?	174(56.7)	133(43.3)
▪ How many doses of HBV vaccine did you receive?	One Dose	-
	Two Doses	-
	Three Doses	-
▪ Always change gloves for each patient during blood taking	275(89.6)	32(10.4)
▪ Have you ever had a needle prick injury?	70(22.8)	237(77.2)
▪ I always report for needle stick injury	197(64.2)	110(35.8)

## DISCUSSION

One of the important occupational risk that face HCWs is being exposed to blood-borne pathogens such as hepatitis B virus. Public health policies and health intervention methods in KSA depend on KAP surveys. We found that there is no much data about the knowledge and practices toward occupational risk of HBV among medical student. This study describes the KAP towards HBV infection among medical students at the University of Hail.

Even with the good background diversity of the participants, the results of this study showed that the knowledge regarding HBV, its ways of transmission and prevention were high (93.8%). Most participants knew the risk factors for HBV infection which are unsafe sexual intercourse, direct contact with infected body fluid, infected blood and contaminated needles.

Our results were higher than the study from Cameroon that reported 86.2% have a good knowledge of the study respondents on HBV infection.<sup>17</sup> Also our knowledge levels were higher compare with other studies as at Haramaya University 56.2 %, Ethiopia<sup>18</sup>, 59 % from Iraq<sup>19</sup> and 14.5 % from Lao DPR.<sup>20</sup> Nevertheless, we found that (61.9 %) of the students knew that HBV has treatments and (40.4 %) knew there is a post-exposure prophylaxis. This point out to the need for alleviating the gaps because they may impact on medical attention seeking. The overall attitude in our study towards HBV prevention among the medical students was adequate.

Around 53% of the medical students knew the risk of being infected with HBV and believe that HBV vaccine is important and safe. This result agrees with the study from Saudi Arabia among dentists.<sup>21</sup> Our study shows that majority of the participants had malpractice towards HBV prevention, even although they have a good knowledge and accepted attitude toward the disease and its prevention. Practices at risk among the participants were greatly prevalent, we found that 22.8% of them had exposed to blood accidentally; and 35.8% had no intention to report the accident. Because of that we suggest to increase health education session on universal safety precaution for prevention of infections. Regardless of that, by comparing our result with reports from other countries. We find 22.8 % proportion of accidental exposure to blood was lower than the 55.9 % proportion reported from Cameroon<sup>17</sup>, 48 % from Nigeria<sup>22</sup>, and 40 % from Palestine.<sup>23</sup>

Regarding HBV vaccine, WHO recommendations was to give preventive vaccine for all HCWs in countries with high HBV endemicity. Despite of, in this study showed the vaccine acceptance proportion (56%) among the study participants compared to other studies.<sup>17,20,24</sup>

Our limitation in this study is that we could not confirm the information regarding HBV vaccination because of the participants came from multiple areas and background. We used questionnaire in our study, and because of that, there might be a recall bias of the participants. Regardless the limitations, our findings in this study highlighted that there is a need for immunizing for medical students and health workers against this highly contagious pathogen.

## CONCLUSIONS

Our data confirmed that students in health career are at a very high risk to infection by HBV during their training owing to low vaccine against HBV uptake rate and high rate of accidental

exposure to blood. Therefore, we recommend that all students in the health care profession should be vaccinated prior to their entry into professional practices.

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