KNOWLEDGE ABOUT HEPATITIS B INFECTION AMONG MEDICAL STUDENTS IN ERBIL CITY, IRAQ

Samir M Othman, ***MBChB, MSc, PhD***
Abubakir M Saleh, ***MBChB, MSc, PhD***
Nazar P Shabila, ***MBChB, MSc, PhD***
College of Medicine, Hawler Medical University, Erbil, Iraq

Abstract

Background: Health care personnel especially medical student represent high risk population for hepatitis B virus infection. **Objective**: This study sought to assess the knowledge of medical students regarding hepatitis B infection and its transmission and prevention. **Methods**: A cross-sectional study was conducted on 200 medical students in Erbil, the main city of Iraqi Kurdistan region. A self-administered questionnaire was used for data collection. In addition to basic demographic characteristics, the questionnaire included 18 questions about routes and modes of transmission, sequel and prevention of HBV. The students were also asked about their vaccination status. Statistical package for social sciences was used for data analysis. **Results**: A high proportion of the study participants (41%) had poor knowledge about HBV while 45% had acceptable knowledge and 14% had good knowledge. Good knowledge score was significantly higher among older students and students in clinical year study, $p < 0.001$. Only 45% of them were vaccinated against HBV. The vaccination rate was higher among clinical year study students (68%) in comparison to pre-clinical year students (22%), $p < 0.001$. The vaccination rate was highest among those who had good knowledge (100%), in comparison to those with acceptable knowledge (53.3%) and poor knowledge (17.1%), $p < 0.001$. **Conclusions**: Knowledge about HBV among the medical students in Hawler Medical University is relatively poor, with important gaps which need to be strengthened. A critical level of public awareness and vaccination coverage, particularly among young students, are essential to decrease burden of the disease in Erbil in the future.

Keywords: HBV, medical students, knowledge, vaccination, transmission

Introduction

Hepatitis B virus (HBV) is one of the most common viruses in the modern world and ranked by the WHO as one of the top ten killers. The virus is responsible for approximately 1.5 million deaths worldwide each year, two thirds of which are attributable to primary hepatic carcinoma following HBV infection (Martin, 2003; Heymann, 2004). About 360 million people are chronically infected with HBV. These chronically infected persons are at higher risk of death from HBV-related liver cancer or cirrhosis by approximately 25% and over 4 million new acute clinical cases occur (World Health Organization, 2002; Centers for Disease Control and Prevention, 2007). HBV is preventable with a safe and effective vaccine, the first vaccine against cancer due to HBV infection (Centers for Disease Control and Prevention 2003).

HBV is a well-known occupational hazard of health care workers and they are considered to be at substantial risk for acquiring or transmitting the virus because of the occupational contact with blood, blood products and other body fluids (Kohn et al., 2003). The occupational risk for HBV acquisition varies according to the work place in the health care setting and time of exposure to the agent (Ciorlia and Zanetta, 2005).

The practice of modern medicine has widely contributed to increasing the cases and spreading the disease in the society. HBV infection is common due to lapse in the sterilization technique of instruments or due to the improper hospital waste management as 10 to 20% health care waste is regarded hazardous and it may create variety of health risk (Taneja and Biswal, 2006). Among the health care personnel, HBV is transmitted by skin prick with infected, contaminated needles and syringes or through accidental inoculation of minute quantities of blood during surgical and dental procedures. Knowledge regarding HBV and safety precautions is needed to minimize the health care settings acquired infections among health personnel. Health care personnel should have complete knowledge of HBV infections, importance of vaccinations and practice of simple hygienic measures apart from that of specific protective measures. Medical students being part of the health care delivery system are exposed to the same risk as other health care workers when they come in contact with patients and contaminated instruments. They are the first level of contact between patients and medical care. They are expected to undertake activities related to patient care with the beginning of their clinical years. Therefore, this study was conducted to assess the knowledge of medical students regarding hepatitis B infection and its transmission and prevention.

Subject and methods

This cross sectional study was conducted among undergraduate medical students at the College of Medicine of Hawler Medical University from April to May 2012. Hawler Medical University is located in Erbil, the main city of Iraqi Kurdistan region. A total of 200 randomly selected students, from both preclinical (first, second and third year) and clinical (fourth, fifth and sixth year) study years, were invited to participate in the study. A specially designed questionnaire was used for data collection. In addition to basic demographic characteristics, the questionnaire included 18 questions about routes of transmission (7 questions), modes of transmission (6 questions) and sequel and prevention of HBV (5 questions). The students were also asked about their vaccination status. The 18 questions included both correct and wrong statements on general routes and modes of transmission. One of the questions assessed students' knowledge about which virus, HBV or HIV, is more easily spread from person to person. The students were asked to answer each question with 'yes' or 'no'. Each correct answer was given a score of '1' while a wrong answer was given a score of '0'. Students' knowledge was classified to three levels according to the total score obtained; a total score of 0-6 was regarded as poor knowledge, 7-12 as acceptable knowledge and 13 and above as good knowledge.

The questionnaire was reviewed by two other experts from the Department of Community Medicine for validity. It was also pre-tested on ten students from both preclinical and clinical years to assess the reliability. All questions were clearly understood by students. The anonymity of respondents was assured and their verbal consent was obtained. The Research Ethics Committee at Hawler Medical University approved the study.

The statistical package for social sciences version 18 was used for data en try and analysis. Two approaches (descriptive and analytical) were used for data analysis. The first approach was used for demining frequencies, percentages, mean and standard deviation and the second approach used for determination of associations between categorical variables. A p value of ≤ 0.05 was regarded as statistically significant.

Results

Of 200 students participated in the study, 55.5% were females and 57% were in age group 20-22 year. Detail of demographic characteristic of participant shown in Table 1.

Table 1. Demographic characteristics of study sample

Characteristic	No.	(%)
Sex		
Male	111	55.5
Female	89	44.5
Age (years)		
<20	33	(16.5)
20-22	114	(57.0)
23+	53	(26.5)
Study year		
Preclinical	100	(50.0)
Clinical	100	(50.0)

A high proportion of the study participants (41%) had poor knowledge about HBV while 45% had acceptable knowledge and 14% had good knowledge. Majority of respondents knew that HBV can be contracted from blood transfusion (80%) and infected needles (71.5%) while (56.5%) said that the disease can be transmitted through sexual contact. The proportions of respondents who had knowledge about household transmission through non-sexual routes like sharing razors, sharing toothbrushes and sharing towels were 47.5%, 60% and 32.5%, respectively. A relatively high proportion of the participants incorrectly identified routes of transmission such as faeco-oral route (38.5%), cough (37%) and holding hands (28%). More than half (51%) of respondents knew that HBV is more easily spread from person to person than HIV, while about 65% of respondents knew that healthy carriers can infect others. Over 45% of participants thought that people with HBV can be infected for life and 64.5% mentioned that HBV can cause liver cancer while 72% considered it a curable disease. In terms of knowledge about preventive measures, 64% of respondents correctly identified vaccination as a way of preventing HBV infection, and only 45% of students were vaccinated against HBV infection. Details of students' knowledge about HBV are shown in Table 2.

Table 2: Distribution of sample by general knowledge about HBV (n=200)

Questions	Response			
	Yes		No	
	No.	(%)	No.	(%)
Knowledge about route of transmission				
Sexual contacts	113	(56.5)	87	(43.5)
Infected needles	143	(71.5)	57	(28.5)
Blood transfusion	160	(80.0)	40	(20.0)
Sharing sharps	95	(47.5)	105	(52.5)
Sharing toothbrush	100	(50.0)	100	(50.0)
Sharing towels	65	(32.5)	135	(67.5)
Feco-oral route	77	(38.5)	123	(61.5)
Knowledge about mode of transmission				
HBV is more easily spread from person to person than AIDS	102	(51.0)	98	(49.0)
HBV carriers (although they look healthy) can easily infect others	131	(65.5)	69	(34.5)
HBV can be spread by eating food prepared by an infected person	67	(33.5)	133	(66.5)
HBV can be spread by eating food that has been pre-chewed by an infected person	84	(42.0)	116	(58.0)
HBV can be spread by being coughed on by an infected person	74	(37.0)	126	(63.0)
HBV can be spread by holding hands with an infected person	56	(28.0)	144	(72.0)
Knowledge about sequel and prevention				
People with HBV can be infected for life	91	(45.5)	109	(54.5)
Do you think HBV can cause liver cancer	129	(64.5)	131	(35.5)
HBV disease can cause death	144	(72.0)	156	(28.0)
HBV disease can be cured	130	(65.0)	170	(35.5)
HBV vaccine prevent the infection	128	(64.0)	172	(36.0)

Received HBV vaccine	**90**	**(45.0)**	**110**	**(55.0)**

There was no statistically significant association between gender of students and their knowledge scores, while good knowledge score was significantly higher among students aged 23 year and above and students in clinical year study, p <0.001 (Table 3).

Table 3: Association between knowledge score and demographic characteristics of study sample (n=200)

Variable	N	Knowledge						P value
		Poor (0-6)		Acceptable (7-12)		Good (≥13)		
		No.	(%)	No.	(%)	No.	(%)	
Gender								
Female	111	53	(47.7)	45	(40.5)	13	(11.8)	0.094
Male	89	29	(32.6)	45	(50.6)	15	(16.8)	
Age								
<20	33	23	(69.7)	11	(33,3)	0	(0.00)	<0.001
20-22	114	47	(41.2)	58	(50.9)	9	(7.90)	
23+	53	12	(22.6)	21	(39.6)	19	(35.5)	
Study year								
Preclinical	100	47	(47.0)	53	(53.0)	0	(0.00)	<0.001
Clinical	100	25	(25.0)	47	(47.0)	28	(28.0)	

Only 45% students were vaccinated against HBV. The vaccination rate was higher among clinical year study students (68%) in comparison to pre-clinical year students (22%), p value <0.001. The vaccination rate was highest among those who had good knowledge (100%), in comparison to those with acceptable knowledge (53.3%) and poor knowledge (17.1%), p <0.001 (Table 4).

Table 4: Association of vaccination status with the study year and knowledge score

Variable	Vaccination against HBV				
	Yes		No		
	No.	(%)	No.	(%)	P-value
Study year					
Preclinical	22	(22)	78	(78)	<0.001
Clinical	68	(68)	32	(32)	
Knowledge score					
Poor	14	(17.1)	68	(82.9)	<0.001
Acceptable	48	(53.3)	42	(46.7)	
Good	28	(100)	0	(0.00)	

Discussion

HBV is a major health problem globally casting an enormous burden on health care system and major source of patient's misery (Shepard et al, 2006; Taneja and Biswal, 2006). HBV infection is of intermediate level of endemicity in Middle East and the HBsAg sero-prevalence is estimated to be 2.9% in Erbil city (Othman, 2010). Health care related transmissions have long been recognized as a source of HBV infection. Transmission of infection from patients to health care providers was common before widespread HBV vaccination of health care workers (Shepard et al., 2006). Health care workers, especially physicians and medical students are always in direct contact with patients and are vulnerable to the acquisition of these infectious diseases. They are involved in blood transfusion, injections and surgical operations in their practices. They should be aware of the risk involved in the treatment procedures and should take appropriate precautions in dealing with patients (Shepard et al, 2006; Taneja and Biswal, 2006). Assessing people's knowledge is a useful step to assess the extent to which an individual or community is in a position to adopt a disease risk-free behavior for this disease (El-Nasser and El Baset, 2013).

Only a low proportion of study participants (14%) had good knowledge about HBV. In contrary, two other studies from Ahmedabad, India and Erbil, Iraq reported a high

proportion of medical students and health care workers having good knowledge about HBV, 86.7% and 49.3%, respectively (Singh and Jain, 2011; Wadi, 2012). The poor knowledge in this study is alarming and efforts are to be made to explore the reasons behind such poor knowledge and understand whether the actual problem is in the medical curriculum or external factors in the society.

Majority of the medical students in this study identified blood transfusion and contaminated needles as the most important route of HBV transmission. However, a relatively low proportion of them identified sexual contact and sharing of household tools as import routes of transmission. In two other studies from Pakistan and India, an even higher proportion of medical students identified the most common modes of transmission of HBV correctly (Raza et al., 2008; Singh and Jain, 2011). Research from different settings has shown that blood and its products followed by infected needles are usually mentioned by most study participants as the most important route of transmission of HBV particularly by health care workers and medical students (Raza et al., 2008; Samuel et al., 2009). However, sexual contact is usually less commonly mentioned as a route of transmission (Samuel et al., 2009). Interestingly, many study participants wrongly identified feco-oral route and its attributes like eating food prepared by an infected person and cough as modes of transmission. Such wrong perception might be related to their confusion between HBV and Hepatitis A virus infection which is common among people.

In this study, around half of students recognized that HBV is more easily transmitted than HIV. The wrong understanding of HIV being easier transmissible than HBV is common in many societies where HIV is a source of panic and stigma. For example a study from Puerto Rica showed that less than one-third of adults agreed that HBV is more easily spread than HIV (Soto-Salgado et al., 2011). However, it is striking to have such wrong understanding among medical students too.

There was no statistically significant association between gender of students and their knowledge scores, while good knowledge score was significantly higher among older students and clinical year study students. A similar study from Egypt showed no statistically significant association between knowledge and age and gender of the students (El-Nasser and El Baset, 2013). The level of knowledge regarding HBV was fairly good among clinical year students as compared to pre-clinical students. There is no formal school based health education regarding communicable diseases for pre-clinical students in the curriculum of medical college which may be the important reason of lower knowledge about HBV among them. Higher level of knowledge about HBV among clinical students compared to preclinical students has been also reported from other settings (Singh and Jain 2011). The higher knowledge among students aged 23 year and above compared to younger students in this study could simply be due to having these students at clinical study years.

Students' knowledge about HBV vaccine was not satisfactory, in which 64% of students had knowledge about vaccination against HBV infection as one way of prevention of the disease. A low proportion of the students (45%) had received HBV vaccination. The reason for such low vaccination rate could be attributed to two main factors. Firstly, vaccination against HBV was not introduced to the expanded program of immunization program in Iraq until 2003. Secondly, HBV vaccination is also not routinely provided to medical students in Iraq.

HBV vaccination rate was significantly higher among clinical year students (68%) than pre-clinical students (22%). This finding was in disagreement with another study from India where 84 % of the medical students in the second year were completely vaccinated for HBV as compared to 50-60% of the third year students (Singh and Jain, 2011). The lower vaccination rate among pre-clinical year students might be attributed to fact that clinical year students have more knowledge about the disease and the fact that lack of awareness is the commonest reason for not having vaccination against HBV (Younis et al., 2001). Therefore,

the vaccination rate was significantly higher among those who had good knowledge (100%), in comparison to those with acceptable knowledge (53.3%) and poor knowledge (17.1%).

People particularly health care workers who lack adequate knowledge about HBV might ignore the importance of vaccination. Another study from Erbil, Iraq also showed a high vaccination rate (64.6%) among the health workers who scored significantly higher on HBV knowledge-based questions; while only small percent (28.8%) of those with poor knowledge score were vaccinated against HBV (Wadi, 2012).

This study has a number of limitations. It covered a relatively small sample of medical students from one city of Iraqi Kurdistan region. It does not cover nursing and dentistry students that are also frequently exposed to the risk of HBV infection. The findings are limited to the medical students in Erbil city only while there are medical schools in the other two cities of Iraqi Kurdistan region. The relatively small sample makes it difficult to detect factors that have statistically significant association with students' knowledge and vaccination status. The findings particularly in terms of vaccination status are liable to information bias as it merely based on students' report without cross-checking with their vaccination records.

Conclusion

Medical students' knowledge about HBV in Hawler Medical University is relatively poor, with important gaps which need to be filled. A critical level of public awareness and vaccination coverage, particularly among young students, are essential to decrease burden of the disease in Erbil in the future. Further research needs to explore the reasons behind such poor knowledge in a more in-depth manner.

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