

Knowledge, attitudes and practices toward prevention of hepatitis B virus infection among medical students at Northern Border University, Arar, Kingdom of Saudi Arabia

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Abstract

Background and aim: Health care workers' risk of occupational exposure to HBV is a chief concern, particularly with young students in the health profession.

This study was carried out to assess the knowledge regarding symptoms, risk factors and prevention of hepatitis B virus infection among medical students.

Methods: A cross-sectional study was carried out from November 01, 2016 to May 30, 2017 on medical students at the Northern Border University (Arar, Kingdom of Saudi Arabia). Data were collected from 200 students from all academic years using pre-designed questionnaire which included questions designed to fulfill the study objectives.

Results: Regarding students' knowledge about hepatitis B infection, 81% of them knew that carriers could transmit infection, 89.5% of them knew that it could not be spread by casual contact, 80% by contact with open wound, 96.5% by contaminated blood and body fluids, 92.5% by unsterilized syringe, needle and surgical instruments and 79.5% by unsafe sex. In total, 86.5% of students knew that a vaccine could prevent HBV infection, 95% knew it had been laboratory tested, 64% knew HBV had post exposure prophylaxis and only 55% knew that it could be cured. In all, 75.5% of students knew that HBV caused liver cancer. Regarding attitude, 23% of students said they had no concern of being infected with HBV, 86.5% agreed that HBV vaccine was safe and effective and 90% believed that following infection, control guidelines would protect them from being infected by HBV at work. Regarding practice, only 56.5% of students had screened for HBV infection 22% had had a needle prick injury but 68% would report that injury. Furthermore, 69.5% have received HBV vaccine but only 38% of them had received 3 doses.

Conclusion: The students' knowledge of the hepatitis B virus was found to be good. We recommend improving knowledge, attitude and practice of the public as well as students, through health education campaigns and settings.

Keywords: Knowledge; Hepatitis B; Medical student; Northern Border University; Arar; Saudi Arabia

1. Introduction

Hepatitis B virus (HBV) infection is a worldwide healthcare problem, especially in developing areas. Globally, over 2 billion people have been infected with HBV, and there are over 350 million carriers (1, 2). The spread of HBV is usually through body fluids such as blood, semen, and vaginal secretions (3). Consequently, the likely channels for infection of HBV are sexual activity, needle-sharing or an unintentional needle-stick, blood transfusions, and organ

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transplantation (4-6). Infected mothers can also pass the infection to their newborns during the delivery period (3). HBV cannot be transmitted by holding hands, sharing food, kissing, hugging, coughing, sneezing, or breastfeeding. Acute infection of HBV can cause nonspecific symptoms or fulminant hepatitis that may cause death or require urgent liver transplantation. Chronic infection can be the cause of death associated with liver failure, cirrhosis, or hepatocellular carcinoma. Furthermore, after cigarette smoking, HBV ranks second on the list of known carcinogenic agents that affect humans (1, 2, 7, 8). By adhering to universal precautions which include using protective barriers such as gloves, vaccination, appropriate sterilization of medical equipment, and a suitable hospital waste management system, the spread of HBV infection can be prevented (9-12). The overall prevalence of HBV in Saudi Arabia of 1.7% and 8.7% was found among health college students and health care workers, respectively (13). Another study in KSA reported that prevalence of HBsAg in males and females was 0.17% and 0.78% respectively in the 18 to 21-year-olds and 0.39% and 0.90% in the 22 to 30-year-olds (14). Prevalence of the hepatitis B virus infection among health care workers in Tanzania was 7.0% (15). A previous study was conducted in Ha'il region in Saudi Arabia found that most of the students had enough knowledge about HBV infection and its mode of transmission. Regarding knowledge about vaccination, 81.4% of students were aware of HBV vaccine and that it provides protection against HBV infection. However, a relatively 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%) (16). The aims of this study were to assess the knowledge regarding symptoms, risk factors and prevention of hepatitis B virus infection among medical students and to determine their attitudes towards HBV, at Northern Border University, Arar, Kingdom of Saudi Arabia.

2. Material and Methods

2.1. Study design and setting:

A cross-sectional study was carried out on medical students at Northern Border University, Arar, Kingdom of Saudi Arabia. This study was conducted during the period from November 01, 2016 to May 30, 2017, on medical students at Northern Border University using a pre-designed questionnaire for data collection.

2.2. Sampling

The sample size was calculated using the sample size equation: $n = z^2 p (1-p) / e^2$. Data was collected from 200 students from all academic years. Systematic random sampling technique was followed. The first year in medical school in KSA is a preparatory year, so they were not included in the study. In total, 40 students were randomly chosen from each academic year from the 2nd to the 6th year (20 male and 20 female).

2.3. Measurement tool and data collection

Data was collected by using a pre-designed questionnaire which included questions designed to fulfill the study objectives (17). Data were collected by means of personal interview with the sampled population. Data collectors gave a brief introduction to students before filling the questionnaire. We tested the reliability of the study by conducting a pilot study. Initially, 20 students were interviewed and asked to fill the questionnaire to test it and to ensure clarity of questions. The 20 students in the pilot study were not included in the study sample. The questionnaire items were the following:

- 1) Questions covering socio-demographic characteristics of students including sex, marital status and academic year.
- 2) Questions to discuss knowledge about hepatitis B infection as to whether HBV causes liver cancer, mode of infection, if HBV carriers can transmit infection, if vaccine can prevent HBV infection, if HBV had been laboratory tested and if HBV has post exposure prophylaxis.
- 3) Questions to discuss the attitude of those students towards hepatitis B infection as to whether HBV vaccine is safe and effective, if all patients should be tested for HBV before they receive health care, if they do not feel comfortable in taking care of people with HBV and if following infection control guidelines will protect from being infected by HBV at work or not.
- 4) Questions to discuss the practice of those students to protect their patients and themselves from hepatitis B infection as to whether they ever screened for HBV, if they change gloves for each patient during blood taking, if they ever had a needle prick injury and would they report for it, if they were vaccinated against HBV, and the doses of HBV vaccine they had received.

2.4. Statistical Analysis

All the data were analyzed using IBM© SPSS© Statistics version 20 (IBM© Corp., Armonk, NY, USA). Descriptive statistics for the prevalence and quantitative variables were used.

2.5. Ethical considerations

Permission to conduct the study was obtained from the Research and Ethics Committee at the College of Medicine, Northern Border University, Arar, Saudi Arabia. The questionnaire had a brief introduction explaining the aims and significance of the study.

3. Results

Table 1 shows the socio-demographic characteristics of the participants, Northern Saudi Arabia. The majority of the participants were females (68.5%), the most common age group was (18-25) years old, (57.6%) were single and (74.5%) were highly educated. About (61.9%) of them were in employment. Table 2 illustrates frequency distribution of student knowledge about hepatitis B infection. Of the students 75.5% knew that HBV caused liver cancer, 81% of them knew that carriers could transmit infection (89.5% of them said that it could not be spread by casual contact, 80% said it could be spread by contact with open wound, 96.5% knew it could be transmitted by contaminated blood and body fluids, 92.5% knew that HBV could be transmitted by unsterilized syringe, needle and surgical instruments and 79.5% said it could be transmitted by unsafe sex). Additionally, 86.5% of students knew that vaccine could prevent HBV infection, 95% knew it had been laboratory tested, 64% knew HBV had post exposure prophylaxis and only 55% knew that it could be cured. Table 3 presents the frequency distribution of student attitude towards hepatitis B infection. A total of 23% of students said they have no concern of being infected with HBV, 86.5% agreed that HBV vaccine was safe and effective, 90% believed that following infection, control guidelines would protect them from being infected by HBV at work. Table 4 illustrates frequency distribution of students practice about hepatitis B infection. Only 56.5% of students have screened for HBV infection. 22% had sustained a needle prick injury but 68% would report that injury, 69.5% had received HBV vaccine (38% of them had received 3 doses).

Table 1. Frequency distribution of medical student characteristics, NBU, 2017

Variables		n	%
Gender	Female	125	62.5
	Male	75	37.5
Marital status	Divorced	1	.5
	Married	34	17.0
	Single	165	82.5
Student's academic year	2 nd	7	3.5
	3 rd	30	15.0
	4 th	36	18.0
	5 th	25	12.5
	6 th	22	11.0
	Intern	80	40.0

Table 2. Frequency distribution of student knowledge about hepatitis B infection, NBU, 2017

Knowledge items		n	%
HBV causes liver cancer	Don't know	16	8.0
	No	33	16.5
	Yes	151	75.5
HBV carriers can transmit infection	Don't know	16	8.0
	No	22	11.0
	Yes	162	81.0
HBV is spread by casual contact like hand shaking	Don't know	12	6.0
	No	179	89.5
	Yes	9	4.5
HBV is spread by contact with open wound / cut	Don't know	12	6.0
	No	27	13.5
	Yes	161	80.5
HBV can be transmitted by contaminated blood and body fluids	Don't know	4	2.0
	No	3	1.5
	Yes	193	96.5
HBV be transmitted by unsterilized syringe, needle and surgical instruments	Don't know	8	4.0
	No	7	3.5
	Yes	185	92.5

HBV can be transmitted by unsafe sex	Don't know	11	5.5
	No	30	15
	Yes	159	79.5
Vaccine can prevent HBV infection	Don't know	6	3.0
	No	21	10.5
	Yes	173	86.5
HBV has been laboratory tested	Don't know	9	4.5
	No	1	.5
	Yes	190	95.0
HBV has post exposure prophylaxis	Don't know	54	27.0
	No	18	9.0
	Yes	128	64.0
HBV can be cured / treated	Don't know	37	18.5
	No	53	26.5
	Yes	110	55.0

Table 3. Frequency distribution of student attitude towards hepatitis B infection, NBU, 2017

Questions		n	%
I have no concern of being infected with HBV	Agree	46	23.0
	Disagree	125	62.5
	don't know	29	14.5
HBV vaccine is safe and effective	Agree	173	86.5
	Disagree	12	6.0
	don't know	15	7.5
Change of the gloves during blood collection is a waste of time	Agree	23	11.5
	Disagree	168	84.0
	don't know	9	4.5
All patients should be tested for HBV before they receive health care	Agree	115	57.5
	Disagree	57	28.5
	don't know	28	14.0
I do not feel comfortable to take care of people with HBV	Agree	84	42.0
	Disagree	100	50.0
	don't know	16	8.0
Following infection control guidelines will protect me from being infected by HBV at work	Agree	180	90.0
	Disagree	7	3.5
	don't know	13	6.5

Table 4. Frequency distribution of students practice about hepatitis B infection, NBU, 2017

Questions		n	%
Have you ever screened for HBV	No	87	43.5
	Yes	113	56.5
I always change gloves for each patient during blood taking	No	29	14.5
	Yes	171	85.5
Have you ever had a needle prick injury	No	156	78.0
	Yes	44	22.0
I always report for needle prick injury	No	64	32.0
	Yes	136	68.0
Have you been vaccinated against HBV?	No	61	30.5
	Yes	139	69.5
How many doses of HBV vaccine did you receive	Not received before	57	28.5
	One dose	33	16.5
	Three doses	76	38.0
	Two doses	34	17.0

4. Discussion

Hepatitis B virus (HBV) infection in the health setting is a global public health problem. The risk of occupational exposure to HBV among health care workers is a major concern, especially among students in health professions (17). This study was carried out to assess the knowledge regarding symptoms, risk factors and prevention of hepatitis B virus infection among medical students at Northern Border University, Arar, Kingdom of Saudi Arabia. Despite participants of the study having varied professional backgrounds, our results showed a high overall knowledge regarding HBV, its mode of transmission and its prevention. In all, 81% of students knew that carriers could transmit infection (89.5% of them said that it could not be spread by casual contact, 80% said it could be spread by contact with open wound, 96.5% knew it could be transmitted by contaminated blood and body fluids, 92.5% knew that HBV could be transmitted by unsterilized syringe, needle or surgical instruments and 79.5% said it could be transmitted by unsafe sex). The findings were in accordance with a previous study from Cameroon, which reported that its participants had a good knowledge of the study on HBV infection (16). Another study on medical students in Northwest Ethiopia found that; most respondents knew that exposure to infected blood or body fluid, contaminated needles, contact with non-intact skin or unsafe sexual contacts were risk factors for HBV infection (17). These findings were in line with a study on nursing students attending tertiary care hospitals in Agartala city (18) who found that; the mean knowledge score of 16.2, majority (92.7%) knew that Hepatitis B was transmissible and 63.1% of them were aware that Hepatitis B transmission was possible through unsafe sex, infected blood/body fluid, contaminated syringe, needle or scalpel. A study among secondary school students in Côte d'Ivoire (19) found that; the causative agent of the disease was known by 74.1% of students, sexual transmission by 39.3%, and blood-borne transmission by 57.2%. Another study in Ethiopia reported that the knowledge regarding transmission of Hepatitis B through sexual route (65.5%) by used needles and syringes (71.7%) by blood transfusion (89.8%) was high, but through vertical transmission (55.9%) and contaminated water/food prepared by a person suffering with these infections (22%) was low among overall medical and health science students (17). In our study, 86.5% of students knew that vaccine could prevent HBV infection. Furthermore, 95% knew it had been laboratory tested, 64% knew HBV had post exposure prophylaxis and only 55% knew that it could be cured. Those findings were in accordance with a study by Abdela, Abdnur et al. (17) which found that (52.4 %) of students knew that HBV had treatments and (67.1 %) knew post-exposure prophylaxis. The findings are in accordance with a study in Pakistan, which discovered that knowledge regarding vaccine for hepatitis B was not satisfactory among the study groups (20). This indicates that there is a need to alleviate the gaps as these might affect seeking medical attention. A study among health care professionals in Pakistan (21) found that 75.3% of total participants knew it was preventable and 74.5% knew about vaccination. In the current study; 69.5% of students have received HBV vaccine (38% of them received 3 doses). A study in Al-Jouf University (22) found only 52.1% medical students had been vaccinated and 37% were not sure, whereas 10.9% reported that they had never received an HBV vaccine. This was less than a study done in Brazil (59.3%) (23) but higher than the study done in Sweden 40% (24), Bangladesh (40.7%) (25), Faculty of Medicine in Belgrade 24.1% (26), Nigeria 2.6% (27). A study in Agartala city, India (18) reported that (84.7%) respondents were vaccinated with three doses of Hepatitis B vaccine. On the other hand, a study by Abdela A et al. reported that only 5 (2 %) students had completed the three doses schedule of HBV vaccination (17). Ali A et al. (20) found that more than 50% of the students had received a Hepatitis B vaccination, but a large number of them did not have enough knowledge about the vaccine itself. In a study in Ethiopia, it was reported that 13.4% of its participants received one or more doses of the hepatitis B vaccine, among whom 4.7% of the students were completely vaccinated against HBV (27). This figure was lower than the vaccination status of 87.8% from a study carried out at the Muhammad Medical College in Mirpur Khas, Pakistan (26), the 29.3% which was reported among medical students in a study at the B.J. Medical College in Pune, India (29) together with the 35% reported in a study at a civil hospital of 60 laboratory technicians (30), the 63% reported in a study of medical students from India and the 42% which was reported in a study among medical students of Lahore (31). In this study; about 22% had a needle prick injury but 68% would report that injury. This finding suggests that there is an obligation to address the inconsistency by establishing better health education on universal safety precautions for the prevention of infections. Our results were in line with the Ethiopian study (17) which found that 28.6 % of participants had been exposed to blood accidentally; and 46.3 % had no intention to report the accident. The finding of a 28.6 % rate of accidental exposure to blood was lower than the 55.9 % rate reported from Cameroon (16), the 40 % from Palestine (32) and the 48 % rate from Nigeria (33).

5. Conclusions

The students' knowledge of the hepatitis B virus was found to be good. Based on that; the percentage of infected students is predicted to be as low as the knowledge of modes of transmission. We recommend improving knowledge, attitude and practice of the public as well as students through the health education campaigns and

settings. Prevention programs about HBV should be instituted and the existing ones must be strengthened, and health education settings should be more specific and clear for the public and students. Adequate commitment from the Ministry of Health is also advocated.

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Conflict of Interest:

There is no conflict of interest to be declared.

Authors' contributions:

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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