

Hepatitis B Virus Occupational Hazards Awareness among Preclinical Health Professional Students in Faculty of Medical Technical Sciences in Sudan 2019

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Abstract. Hepatitis B is an occupational health hazard to health-care workers. The complete knowledge of hepatitis B virus (HBV) transmission and prevention is indispensable for health professional student. A descriptive cross sectional study was conducted to explore awareness of preclinical health professional students regarding Hepatitis B virus and to assess their knowledge about mode of transmission, signs and symptoms and prevention measures for Hepatitis B infection. The data were gathered from first year Bachelor studied nursing, anesthesia, midwifery, physiotherapy and nutrition and diet therapy students (n=212) from faculty of medical technical sciences at Alzaiem Alazhari university. Convenience sampling technique was done, using self administered questionnaire developed by the researchers. Data were analyzed by statistical package for social sciences (SPSS) version 22 and the results were expressed in frequency, percentage and chi square test. The level of statistical significance was set at $p < 0.05$. The finding regarding basic knowledge of students revealed that 163 (76.9%) was infectious, 192(90.6%) aware that hepatitis B consider risk for health personnel dealing with infectious patients and 127(59.9%) cause by virus. Most of them 188(88.7%) said that it transmitted through blood transfusion. According to signs and symptoms 142(67.0%) fever, 130(61.3%) loss of appetite, 114(53.8%) nausea, vomiting and jaundice and only 52(24.3%) of them think patients was a symptomatic. Regarding prevention of HBV by wearing protective personal equipments two third 138(65.1%) was lacking knowledge. Availability of vaccine is fact appreciated by 187 (88.2%) of them and 169(79.7%) can be through screening blood donor. Majority of them 188 (88.7%) were not vaccinated with P. value (0.000). the study concluded that awareness and knowledge of the health professionals students regarding hepatitis B virus was good in general but inadequate and incomplete in many aspects, so health professionals Students should complete an infection control training before they start their clinical education.

Keywords: Hepatitis B virus, awareness, preclinical health professional's student

Introduction

Hepatitis is an inflammation of the liver, most commonly caused by a viral infection; there are five main hepatitis viruses, referred to as types A, B, C, D and E. Hepatitis B is a potentially life threatening liver infection caused by the hepatitis B virus. It is a major global health problem affecting large number of people every year. It can cause chronic infection and puts people at high risk of death from cirrhosis and liver cancer (Al Asmari *et al.*, 2018). The World Health Organization (WHO) estimated that about 240 million people have been infected with HBV world widely. It is found that 1.5 million people were killed by hepatitis B globally. Hepatitis B infection is common in the Middle East countries compared to the United States and Europe, the prevalence varies from 0.6 in Iraq to 8% in Sudan (Sannathimmappa *et al.*

2019). HBV is transmitted by body fluids, such as blood and serum, and can exhibit vertical transmission from mother to child. Sexual transmission, vertical transmission, and unsafe injections, including intravenous drug use, are the most common routes of infection for HBV. The clinical manifestations and natural history of HBV infection vary with age. Clinical acute hepatitis B is more frequent in adults than children, and the probability of becoming a chronic carrier of hepatitis B is greater in children than adults: 80–90% of people perinatally infected compared to <5% of infections occurring in adults. People with chronic hepatitis B have a 15% to 25% risk of dying prematurely from HBV related complications. Acute hepatitis B infection is an illness that begins with prodromal symptoms like anorexia, chills, headache, nausea, vomiting, and malaise. Development of jaundice may then occur but is noted in only 30% of all patients with acute infection. Acute hepatitis B is often unrecognized in children younger than five years old. Chronic infection with the HBV may be either asymptomatic or associated with chronic inflammation of the liver. After 10 years of chronic infection, about 20% of the patients with hepatitis B have progressed to cirrhosis and about 5% have developed Hepato cellular carcinoma (Ibrahim & Idris, 2014). An effective vaccine against hepatitis B has been available since 1982. However, it was only introduced into Senegal's Expanded Program of Immunization (EPI) in 2005, and rendered mandatory for newborns in 2016. Viral hepatitis B is part of the group of occupational infectious diseases. Health professionals and students in the health sciences are among those most at risk due to the possibility of transmission through the bloodstream during health care. In the event of accidental exposure to blood fluids, the risk of HBV transmission is 30% which is 300 times higher than the risk of HIV transmission (Fortes *et al*, 2019). Vaccination and the use of personal protective equipment are the two major weapons for the prevention of hepatitis B infection (Centers for Disease Control and Prevention (CDC) 2017). Recombinant hepatitis B vaccine, which is licensed for use, is advised for all health-care workers and health professions students (da Silva Sacchetto *et al*, 2013; Papagiannis *et al*, 2016). Three doses of vaccine at 0, 1, and 6–12 months are recommended for optimum protection (Saini *et al*, 2010; Mesfin & Kibret, 2013).

Health professional students are an essential sector of the community, they are acting practional role in various specialties at the near future so they were at risk of having blood-borne infections including hepatitis B, they should be provided with the appropriate knowledge, and high awareness to prevent and manage hepatitis B virus in the community. The proper knowledge helps them to take necessary precautions during patient care in their clinical years and also to disseminate knowledge and spread awareness about hepatitis B among other health-care workers and general public. Thus, this research was conducted to explore the awareness regarding hepatitis B among preclinical first year health professional students in faculty of medical technical sciences at Alzaiem Alazhari University.

Materials and Methods

A descriptive cross-sectional study conducted at Alzaiem Alazhari University in faculty of medical technical sciences which was established on 2003, it composed of five departments nursing, anesthesia, midwifery, physiotherapy and nutrition and diet therapy, the total number of students in the faculty was 1320. The present study was carried during the academic year 2019–2020. The study sample was selected by Convenience sampling technique among the preclinical first year students and the sample size was 212 students. Study was approved by the faculty Research and Ethics Committee and informed consent from the students was obtained. A notice regarding the study was circulated to all the preclinical first year students in all specialties through proper channels of the basic sciences coordinators and all efforts were made to make them participate in the study voluntarily.

Data were collected by using self administered questionnaire which was prepared in a Microsoft Word document and distributed in a lecture hall to all the participants on a pre

notified date and time and filled by students themselves on 10minutes. The questionnaire consisted of two parts, part one composed of socio-demographic variables of students such as (age, gender, and specialty) and part two contained knowledge of students regarding hepatitis B virus in relation to modes of transmission and prevention, and their vaccination status.

The collected data was coded, entered and analyzed using statistical package for social science (SPSS) version 22. Significance for data analysis was considered as $P \leq 0.05$. Frequencies, percents and Chi-square test analysis were being calculated for socio-demographic characteristics of students and knowledge regarding hepatitis B virus.

Results and Discussion

Our results displays that a total of 212 students responded voluntary to the questionnaire, the demographic characteristics of the study sample are shown in Figure (1) that 9% males and 91% females.

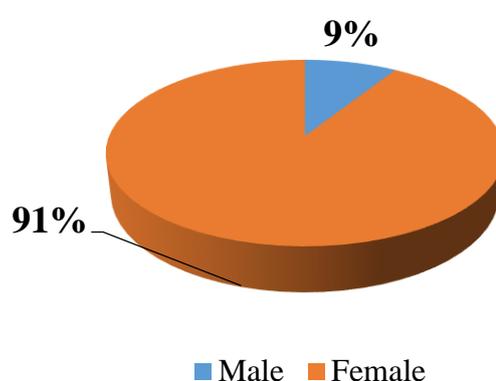


Figure 1. Distribution of study sample according to gender (n=212)

Table 1. Distribution of study sample according to Specialty (n=212)

Specialty	Frequency	Percent
Nursing	82	38.7%
Anesthesia	60	28.3%
Midwifery	20	9.4%
Physiotherapy	13	6.1%
Diet therapy	37	17.5%
Total	212	100%

Regarding study sample specialties Table 1 revealed 82 (38.7%) from nursing, 60(28.3%) anesthesia, 37 (17.5%) diet therapy, 20 (9.4%) midwifery and 13(6.1) physiotherapy.

Table 2. Study sample basic knowledge regarding HBV (n=212)

No	Basic knowledge about hepatitis B	Yes	No	Don't know	P value
1	Have you heard about hepatitis B?	175 (82.5%)	26 (12.3%)	11 (5.2%)	0.000
2	Is hepatitis B an infectious disease?	163 (76.9%)	2 (0.9%)	47 (22.2%)	0.000
3	Do you think nursing and medical students are at risk of acquiring hepatitis b infection from the patient?	192 (90.6%)	2 (0.9%)	18 (8.5%)	0.000

Table 3. Study sample basic knowledge regarding HBV (n=212)

No	Statements regarding basic knowledge about Hepatitis B	Virus	Bacteria	Parasite	Don't know	P value
4	What is the causative agent of hepatitis B?	127 (59.9%)	36 (17%)	9 (4.2%)	40 (18.9%)	0.000

The study revealed fairly good of general knowledge about hepatitis B. As documented in Table 2 and 3, the survey showed that, around 175 (82.5%) of participants are heard about hepatitis B, 169 (76.9%) said hepatitis B is infectious and 192 (90.6%) think that hepatitis B can transmitted to health professionals students from patients. While 127 (59.5%) answered that causative agent is a virus ($P = 0.000$).

Table 4. Study sample awareness regarding mode of transmission of HBV (n=212)

No	Mode of transmission of hepatitis B	Yes	No	P value
1	Blood transmission	188 (88.7%)	24 (11.3%)	0.000
2	Use of contaminated syringes and needles	178 (84.0%)	34 (16%)	0.000
3	Sexual contact with infected person	173 (81.6%)	39 (18.4%)	0.000
4	Vertical transmission from mother to fetus	98 (46.2%)	114 (53.8%)	0.000
5	Piercing and tattooing	99 (46.7%)	113 (53.3%)	0.000

Their knowledge about all modes of HBV transmission almost students are aware with different modes of transmission. The study showed that in Table 4 188(88.7%) of students answered blood transmission, 178 (84.0%) through use of contaminated syringes and needles, 173 (81.6%) via sexual contact with infected person, while 99(46.7%) and 98 (46.2%) piercing and tattooing vertical transmission from mother to fetus respectively ($P = 0.000$).

Table 5. Study sample awareness regarding signs and symptoms of HBV (n=212)

No	Statements regarding awareness of signs and symptoms of hepatitis B	Yes	No	Don't know	P value
1	Fever	142 (67%)	24 (11.3%)	46 (21.7%)	0.000
2	Loss of appetite	130 (61.3%)	34 (16%)	48 (22.6%)	0.000
3	Nausea and vomiting	114 (53.8%)	39 (18.4%)	59 (27.8%)	0.000
4	Jaundice	114 (53.8%)	56 (26.4%)	42 (19.8%)	0.000
5	Most of the patient with hepatitis infection are a symptomatic	52 (24.5%)	113 (53.3%)	47 (22.2%)	0.000

Table 6. Study sample awareness regarding complications of HBV (n=212)

No	Statements regarding complications of hepatitis B	Yes	No	Don't know	P value
1	Do you think chronic hepatitis B infection can lead to liver cirrhosis	189 (89.2%)	6 (2.8%)	17 (8%)	0.000

2	Do you think chronic hepatitis B infection can lead to liver cancer	152 (71.7%)	37 (17.5%)	23 (10.8%)	0.000
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Table 5 and 6 show that the symptoms were well understood by 142 (67%) 130(61.3%) 114 (53.8%) fever, loss of appetite, nausea, vomiting, and jaundice respectively. In addition, only 52 (24.5%) of the students said a symptomatic. About 189(89.2%) and 152 (71.7%) of all the students knew that chronic HBV infection confers a high risk of cirrhosis, liver cancer and its consequences. Understanding of the symptoms and the disease consequences is significantly associated with the knowledge of the students ($P = 0.000$).

Table 7. Study sample awareness regarding prevention and vaccination of HBV (n=212)

No	Statements regarding prevention of hepatitis B and vaccination status	Yes	No	Don't know	P value
1	Wearing gloves, caps, masks, gowns, and goggles	138 (65.1%)	48 (22.6%)	26 (12.3%)	0.000
2	Proper cooking of food	156 (73.6%)	28 (13.2%)	28 (13.2%)	0.000
3	Vaccination	187 (88.2%)	3 (1.4%)	22 (10.4%)	0.000
4	Use of sterile needle and syringes	128 (60%)	7 (3.3%)	77 (36.7%)	0.000
5	Screening blood donor	169 (79.7%)	4 (1.9%)	39 (18.4%)	0.000
6	Have you ever been vaccinated against hepatitis B	15 (7.1%)	124 (58.5%)	73 (34.5%)	0.000

Table 8. Study sample knowledge regarding numbers of hepatitis B vaccine doses (n=212)

How many doses of vaccine do you have	Frequency	Percent	P value
No dose	188	88.7%	0.000
One dose	17	8.0%	
Two doses	3	1.4%	
Three doses	4	1.9%	
Total	212	100%	

Regarding prevention of HBV by wearing protective personal equipments showed in Table 7 and 8 most of them 138(65.1%) were lacking knowledge, 187(88.2%) via vaccination while only 15(7.1%) of the students had taken the hepatitis B vaccine, and 188 (88.7%) do not know their vaccination status. Furthermore 169(79.7%) 156(73.6%) screening blood donor and cooked food properly respectively ($P = 0.000$). In the present study, the student's knowledge in general and regarding causative agent, modes of transmission, signs and symptoms and complications was good but not adequate for their future role in the hospitals in country like Sudan with high HBV endemicity. This finding similar to study conducted by Al Asmari et al (2018) in Tabuk university Saudi Arabia showed that the excellent knowledge of students⁽¹⁾. Also contradicted with the study done by Ibrahim Nazir and Idris Amr (2014) in Syrian private university the study showed that the first-year medical students have poor knowledge and lack of awareness about

hepatitis B, its routes of transmission, risk factors, and modes of preventions compared to the fifth-year medical students.

The current study revealed the surprising results with significant percentage of Health professional students who are not vaccinated 15(7.1%) and 188 (88.7%) not aware about their vaccination status. This result similar to study done by Sannathimmappa et al. (2019) in Oman showed that significant percentage of medical students who are not vaccinated (14.4%) or not sure about their vaccination status (45.5%), which makes them vulnerable to hepatitis B. this study have many limitations firstly, only the first year Health professional students were studied. Thus, the results of this research may not apply to other classes, Secondly; we recruited participants only from faculty of medical technical sciences at Alzaiem Alazhari University so generalization cannot be insured.

Conclusion

The current study concluded that awareness of the Health professional students regarding hepatitis B virus in general was fairly good but incompetent in some aspects like their knowledge regarding causative agent and some of mode of transmission that practice in community (Piercing and tattooing). The study based on the present results recommended the following to faculty of medical technical sciences:

- There is the necessity of health education programs for students in the first year itself to improve their knowledge and awareness of this infectious disease.
- Designing and implementing educational and training programs into undergraduate curriculum to promote Hepatitis awareness among the students.
- Providing free HBV vaccines to all the non vaccinated students attending the faculty to encourage universal vaccinations for all students upon their entry.

Conflict of interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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