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## Viral Hepatitis B among Medical Technical Students in Mosul City/Iraq

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### Abstract

The high incidence and mortality rates are associated with complications of viral hepatitis B, including cancer, cirrhosis, and other infections, so this disease remains a health problem throughout the world. This study aims to assess the levels of knowledge regarding Hepatitis B among medical technical students at the Mosul Medical Technical Institute in Mosul City/ Iraq. A total of (300) students aged (18-41) years participated in the study. A structured questionnaire, validated by a panel of experts, was employed to evaluate participants' knowledge about HBV transmission, symptoms, and preventive measures. The results indicated that 89% of students possessed acceptable knowledge about Hepatitis B, 7% demonstrated good knowledge, and 4% had poor knowledge. Key findings revealed that the highest awareness was related to the necessity of conducting HBV tests before surgical procedures (79%) and the importance of vaccination (68%). However, knowledge regarding the avoidance of contaminated water was notably low (5%). The study underscores the critical need for enhanced educational interventions to improve awareness and understanding of Hepatitis B among future healthcare professionals, thereby contributing to better prevention and control of this infectious disease.

**Keywords:** Hepatitis B, knowledge assessment, medical students, public health, infection control.

### Introduction

Hepatitis B virus, caused by the HBV virus, is a contagious disease. This disease often leads to certain complications, such as liver cancer, cirrhosis, and liver failure, and may lead to death. Viral hepatitis B is considered a serious global health problem that causes death and serious illness. The most common way of transmitting this infection is through blood, as well as through sexual contact, and from the infected mother through the placenta to the fetus [1,2].

Viral hepatitis is considered one of the important health problems in the world, as one-third of the

world's population is infected with hepatitis, according to recent estimates [3,4].

It is estimated that the prevalence of hepatitis surface antigen (HBsAg) among the world population is 3.9%. The number of people suffering from chronic infection with the virus is estimated at 296, with the number of new annual infections estimated at 1.5 million. The number of deaths due to the disease in 2019 reached 820,000 as a result of complications from cirrhosis and liver cancer [5].

Among the people who are at risk of contracting viral hepatitis B are health workers due to the nature of

their work and their direct contact with blood and body fluids that contain the virus. The infection can be transmitted by chance due to contact with blood and fluids containing the virus through the skin and mucous membranes [6].

The infection rate of hepatitis virus is estimated at 35 million among healthcare workers worldwide. Approximately 3 million health workers are exposed to the virus through blood every year, and 5.9% of health workers are infected every year. Depending on the region in which they work, the infection rate with hepatitis B virus ranges from 0.8% to 74.4% [7].

In developing countries, the rate and risk of infection with hepatitis B virus among workers in health centers is the highest due to the rate of spread of the virus among the general public and the poor environment inside health care centers, as well as the lack of awareness about the disease and the lack of measures to control blood-borne diseases [8,9].

The vaccine against hepatitis B is essential in combating infection and reducing the chances of spreading. It is considered a safe and effective vaccine and gives lifelong protection. Other methods of prevention are health education for groups at risk of infection with the virus and other procedures such as personal hygiene, use of gloves and other equipment, as well as disinfection, sterilization, and proper disposal of waste and body fluids in safe ways [10-12].

In the Kingdom of Saudi Arabia, the overall prevalence of hepatitis B virus among care workers and health college students was 1.7% and 8.7%, respectively. In the Kingdom of Saudi Arabia, another study reported that the prevalence of HBsAg in the age group from 18 to 21 years was 0.17% and 0.78% for males and females, and in the age group from 22 to 30 years, it was 0.39% and 0.90% [13,14].

A previous study conducted in the Kingdom of Saudi Arabia in the Hail region found that most students had sufficient knowledge about hepatitis B virus

infection and its transmission methods, and 81.4% of students were found to have sufficient knowledge about the hepatitis B vaccine and that it protects from infection with the virus. While there was a low percentage of participants who knew that hepatitis B can be treated and cured and has preventive treatment, their percentage was (40.4%) [15].

Like other healthcare professionals and healthcare workers, medical students are exposed to being part of a healthcare system, dealing with contaminated instruments and patients, and are expected to carry out patient care activities at the beginning of their clinical years. They are considered the first level of communication between patients and medical care, and given that medical group students express a risk of infection with the hepatitis B virus through handling blood and tools and being exposed to needle pricks, conducting a special study on the level of knowledge and practice among students is considered one of the important matters for intervention to reduce and prevent [16,17]. This study aims to assess the levels of knowledge regarding Hepatitis B among medical technical students at the Mosul Medical Technical Institute in Mosul City/ Iraq.

### Material and Methods:

**The design:** To assess medical technical students' knowledge of hepatitis B in Mosul City, this study used a cross-sectional design from 7 March 2024 to 30 May 2024.

**The Sample:** A convenience sampling method was used to recruit medical students (aged 18-41 years) from Mosul Medical Technical Institute in Mosul City; the number of samples was (300). The research design for this study was simple and randomized.

**Study tool:** The researchers developed the questionnaire and provided it to medical technical students to measure the student's knowledge regarding hepatitis B in Mosul City. The study instruments comprised (2) Parts, including the following.

Part One/Data includes the demographic information (Age, gender, marital status, residence). Part

Two/Students' knowledge regarding hepatitis B: Contains 42 items.

#### Validity:

(15) Experts on the panel determined the validity of the questionnaire instrument by defining the content's sufficiency, relevance, and clarity.

#### Reliability:

To evaluate the reliability of the questionnaire from a statistical standpoint, a pilot study was conducted before starting work to collect data. The experimental sample included (10) samples selected from the Medical Technical Institute of Mosul (this sample was excluded from the original study sample) through direct self-application of the questionnaire to evaluate the internal consistency of the questionnaire that examined the sample. Using

Cronbach's alpha measurement (An indicator of internal consistency, or how closely a collection of objects are connected to one another) which the researcher evaluated, the result of its reliability for an experimental study was that Cronbach's alpha was (0.854).

#### Data collection:

Data were collected by selecting a sample of participants and prompting them to respond with straightforward explanations, avoiding any answers or suggestions that could influence or bias the results. Each takes about 15 to 30 minutes. The researchers conducted face-to-face interviews with the participating students to deliver the questionnaire.

## Results

Table (4-1): Distribution of 300 medical students according to their demographic characteristics.

Demographic characteristics.		No	%
Age groups	Less than 20	82	27
	20 – 24	148	49
	25 – 29	55	18
	30 – 34	10	3
	35 – 39	4	1
	40 and more	1	0.3
Sex	Male	134	45
	Female	166	55
Marital status	Single	245	82
	Married	53	18
	Others	2	1
Residence	Urban	232	77
	Rural	68	23

Table (4-2): Distribution of 300 medical students according to their knowledge of general hepatitis B information.

General information knowledge	Incorrect		Don't Know (DNK)		Correct	
	No	%	No	%	No	%
What is the hepatitis B type?	18	6	0	0	282	94
Causative factor	15	5	23	8	262	87
Do you think the hepatitis B virus can affect organs other than the liver?	170	57	80	27	50	17
Is there a vaccine that works against hepatitis B?	14	5	58	19	228	76
Can the disease affect any age group?	19	6	61	20	220	73
When do symptoms appear after contracting the disease?	110	37	111	37	79	26
Can hepatitis B patients be treated with B medications?	44	15	106	35	150	50
Can dialysis be a source of spreading hepatitis B infection?	44	15	122	41	134	45
Endoscopy can be a source of the spread of hepatitis B infection.	36	12	157	52	107	36
Can community barber shops be a source of spreading hepatitis B infection?	38	13	92	31	170	57

Table (4-3): Distribution of 300 medical students according to their knowledge about the risk group of hepatitis B.

Knowledge risk group	Incorrect		Don't Know (DNK)		Correct	
	No	%	No	%	No	%
Health care workers?	10	3	50	17	240	80
Intravenous drug users?	11	4	87	29	202	67
Dentists?	46	15	85	28	169	56
Are people visiting rural areas?	103	34	107	36	90	30
Laboratory workers?	9	3	50	17	241	80
Miners?	54	18	142	47	104	35
People with homosexuality?	21	7	111	37	168	56
Slaughterhouse workers?	167	56	106	35	27	9
Butchers?	167	56	97	32	36	12
Veterinarians?	194	65	79	26	27	9

Table (4-4): Distribution of 300 medical students according to their knowledge about the transmission mode of hepatitis B.

Knowledge of the mode of transmission	Incorrect		Don't Know (DNK)		Correct	
	No	%	No	%	No	%
Can the disease be transmitted through sexual contact?	40	13	90	30	170	57
Can the disease be transmitted by shaking hands with an infected person?	89	30	55	18	156	52
Can the disease be transmitted by sharing eating utensils with an infected person?	190	63	57	19	53	18
Can the disease be transmitted from mother to child during childbirth?	29	10	79	26	192	64
Can the disease be transmitted through coughing and sneezing?	136	45	75	25	89	30
Can the disease be transmitted through contact with an infected animal?	126	42	106	35	68	23
Can it be transmitted through blood?	3	1	47	16	250	83
Sharing a toothbrush with an infected person?	32	11	75	25	193	64

Table (4-5): Distribution of 300 medical students according to their knowledge about clinical features of hepatitis B.

Knowledge of clinical features	Incorrect		Don't Know (DNK)		Correct	
	No	%	No	%	No	%
Symptoms accompany most cases of chronic hepatitis.	234	78	43	14	23	8
Jaundice?	23	8	88	29	189	63
Nausea and vomiting?	21	7	85	28	194	65
Diarrhea?	67	22	104	35	129	43
Abdominal pain?	16	5	72	24	212	71
Constant hunger and desire to eat?	45	15	138	46	117	39
Anorexia?	17	6	105	35	178	59
cough?	110	37	98	33	92	31
Dark urine?	13	4	96	32	191	64
Anemia?	146	49	113	38	41	14

Table (4-6): Distribution of 300 medical students according to their knowledge about the protection of Hepatitis B.

Knowledge of <b>Preventive measures to prevent Hepatitis B</b>	Incorrect		Don't Know (DNK)		Correct	
	No	%	No	%	No	%
Is the hepatitis B vaccine highly effective?	25	8	70	23	205	68
Giving antibiotic prophylaxis after exposure to hepatitis B virus?	178	59	78	26	44	15
Avoid polluted water?	241	80	43	14	16	5
Avoid improperly cooked food.	227	76	52	17	21	7
Is screening of blood donors for hepatitis B virus mandatory for safe blood transfusion?	8	3	56	19	236	79
Should all patients undergoing major surgery be screened for hepatitis B virus?	12	4	52	17	236	79

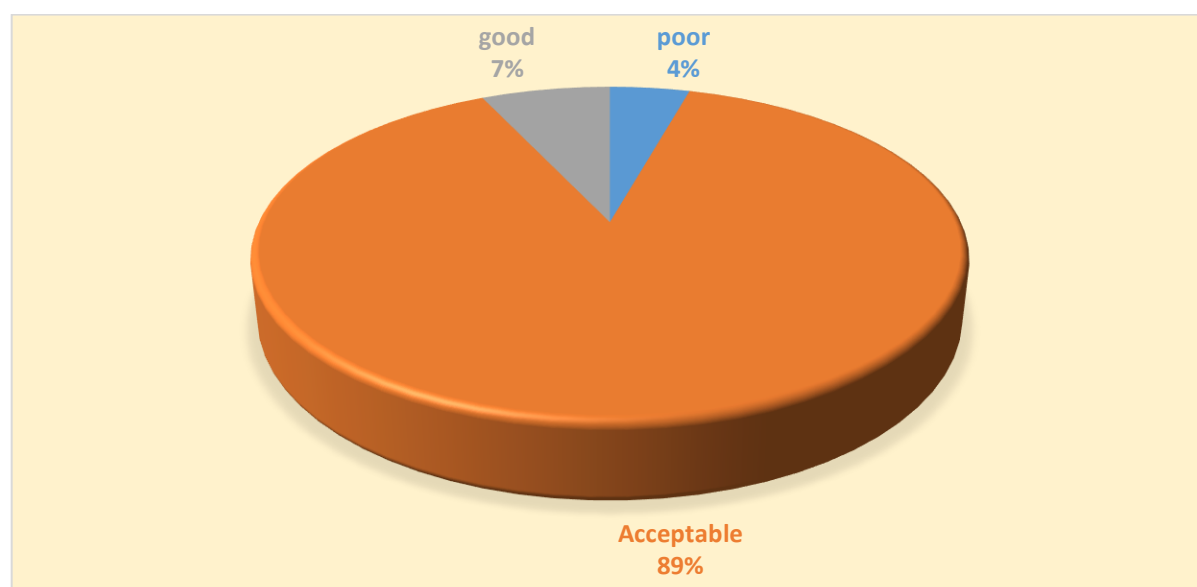


Figure (4-1) Total knowledge score about hepatitis B among medical students.

Figure 4-1 shows the overall knowledge score in which the greatest percentage (89%) had acceptable knowledge, 7 % had good knowledge, and 4% had poor knowledge of hepatitis B.

## Discussion:

About 1 in 12 people (480-520 million people) worldwide live with hepatitis B, while an estimated 78% of liver cancer cases and 57% of liver cirrhosis cases are due to viral hepatitis. Globally, 1 million cases occur. There are deaths due to the virus every year, as hepatitis B is considered one of the main causes of death around the world [18,19].

Hepatitis B (HB) is a severe liver infection caused by the hepatitis B virus (HBV). HB is a significant worldwide public health issue, with health workers being the most vulnerable population. It is infectious and may be easily spread between infected individuals via blood-to-blood contact, from mother to child, unprotected sexual intercourse, and the sharing of dining utensils and equipment in barbershops and beauty salons [20,21].

Table 1 presents the characteristics of the examined cohort of students and their sources of information. The ages of the 300 participants, which varied from 20 to 24 years, had the greatest participation percentage. Females represented the largest proportion, totaling almost 166 in comparison to men. Urban residents constituted 77% of the study cohort (232 students). This research. This study is similar to the research conducted by [22].

Table 2 presents medical students categorized by their understanding of general facts on hepatitis B. Ninety-four percent of the participants (282 pupils) have enough knowledge. Their average age (20-24) was much greater than that of the students with inadequate knowledge (30-39). A greater percentage of female participants (68.0%), urban inhabitants (55%), and those with adequate knowledge was seen compared to men (45%), rural residents (77%), and students at the basic academic level (42.6%). The present investigation indicated that 73 percent of patients afflicted by the hepatitis B virus belong to this age group. This research parallels the study conducted by [23,24].

Table 3 shows the current study showed that healthcare workers are more vulnerable to infection by hepatitis B virus, Health workers are more susceptible to infection with hepatitis B virus than other groups, and at the same time, they have a role in combating and preventing the disease by educating the community, spreading knowledge about the disease, and trying to change community behaviors. [25].

These studies account for about 80%. There are also workers in laboratories with a high infection rate, which constituted 80%. Then, intravenous drug users about 67%, and the last dentists, about 56%. Compared to workers in the slaughterhouse and Veterinarians, the infection rate is less than 9 percent. This study is consistent with the World Kareem study conducted in 2022 [26].

Table 4 presents medical students according to their knowledge about the mode of transmission of hepatitis B. This study showed that the highest degree of spread of hepatitis B virus through blood was approximately 83%, followed by transmission from mother to child, amounting to about 64%, then followed by sexual contact, amounting to about 57%. While the lowest rate of transmission of hepatitis B through food was about 18%. This study is similar to Dehghani et al.2020. and study that [27].

Table 5 presents knowledge about the clinical features of hepatitis B. This study showed that the most common symptom resulting from infection with hepatitis B is abdominal pain, with a percentage of about 71%, which constituted the highest percentage among the other symptoms, followed by nausea and vomiting, which represented a percentage of 65%. Symptoms and signs of jaundice amounted to 64, while the lowest percentage was infection. Anemia reached 14%.

Table 6 This represents the statistics collected by the students of the medical institute regarding how to prevent infection with the Hepatitis B virus through regular testing for the virus. The highest percentage

was approximately 79%, followed by the necessity of conducting a Hepatitis virus test before any surgical procedure, reaching a high percentage of around 79%. Additionally, the importance of receiving the Hepatitis vaccine for prevention was noted, with a percentage of 68%. In contrast, avoiding drinking contaminated water had the lowest percentage at 5%. This study was like a study conducted by a scientist in [28,29].

Figure 1 shows the overall knowledge score in which the greatest percentage (89%) had acceptable knowledge, 7 % had good information, and 4% had poor knowledge of hepatitis B. This study is consistent with [29]. The total knowledge of healthcare workers was 86.58%, with 92.23% of participants demonstrating a proficient understanding of HBV.

**Conflict of interest:** Nil

**Funding:** NIL

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