



# Hepatitis B Knowledge Among Healthy Volunteers in Duhok City, Kurdistan Region, Iraq

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## Abstract

**Background:** Hepatitis B virus (HBV) is a public health problem in Iraq. Healthcare providers have set a plan to eradicate the virus by 2030.

**Objectives:** The current study aimed at evaluating the public knowledge in Duhok city, Iraq, about HBV.

**Methods:** A total of 168 subjects were recruited and the data were collected via a self-reporting questionnaire. The subjects were asked about the modes of transmission, symptomatology of HBV, and vaccination.

**Results:** Totally, 168 persons were recruited in the current study and they were asked 11 questions. In total, 58.6% of the questions were answered correctly; 75% of the participants knew that HBV is transmitted more easily than HIV; 35.2% of the females thought that HIV is transmitted more easily than HBV, which was significantly higher than that of males (20.2%) ( $P = 0.03$ ). The same trend was found among villagers who thought that HIV is more easily transmitted than HBV (29.5% versus 22.4% for urban residents;  $P = 0.02$ ). It was also found that only 33.9% of the subjects knew that HBV can be transmitted by toothbrush. In addition, the majority of illiterate participants (75.9%) thought that HBV can be transmitted by food ( $P = 0.05$ ).

**Conclusions:** The current study results showed the average levels of knowledge about HBV among participants. More studies are needed to evaluate the level of knowledge after implementing educational programs.

**Keywords:** HBV, Duhok, Knowledge

## 1. Background

Hepatitis B virus (HBV) infection is a public health problem, especially in the developing countries. The prevalence of HBV infection varies from one country to another ranging from less than 1% in Western countries to up to 10% in some Asian countries (1). In Iraq, the prevalence of HBV is around 1% (2, 3). It is estimated that 400 million people are currently infected with the virus. The majority of them are asymptomatic and unaware of their disease (1). Chronic infection with HBV may predispose to liver cirrhosis, liver failure, and hepatocellular carcinoma (1). This puts extra burden on the thriving health systems in the developing countries such as Iraq. The risk factors associated with HBV infection are surgical operations and dental surgeries, history of blood and blood product transfusion, undergoing renal hemodialysis, drug abuse, and certain sexual behaviors (4-8). In Duhok city, Iraq, healthcare providers have set a plan to eradicate HBV by 2030. It is

believed that health education programs can play an important role in eradicating the infection through educating the public about the modes of transmission, signs and symptoms, and prevention. Health education programs should be based upon a thorough study on the public's knowledge, beliefs, and practices of HBV (9).

## 2. Objectives

No study has been conducted in Iraq on the public's knowledge of HBV. Therefore, the current survey was conducted to examine the knowledge and beliefs of the people in this region on the modes of HBV transmission, sequelae of infection, and vaccination.

### 3. Methods

#### 3.1. Data Collection

The data were collected by health workers using a questionnaire. The questionnaire was developed in English and translated into Kurdish. First, the questionnaire was explained to the participants, and then, they were asked to fill in the questionnaire. The questionnaire evaluated 3 parts of HBV infection: modes of transmission, symptomatology of HBV, and vaccination. The first part on the modes of transmission included 6 questions. The second part was about the symptomatology of HBV and included 3 questions. Finally, the last part was consisted of 2 questions about vaccination.

#### 3.2. Research Ethics

The healthcare workers explained the aims of the project to the participants. Before data collection, the healthcare workers obtained oral consent from the participants. The project was approved by the ethics committee of the local hospital.

#### 3.3. Data Analysis

All data were transferred into SPSS version 21 and a descriptive data analysis was performed. Simple 2 by 2 tables were created and participants' answers to survey questions were summed and expressed as percentages. The difference between variables was studied by Chi-square test and the difference was considered significant at  $P \geq 0.05$ .

### 4. Results

Totally, 168 persons were recruited in the current study with the age range of 17 to 49 years. Among them, 114 were male. All subjects were asked 11 questions. In total, 58.6% of the questions were answered correctly.

#### 4.1. Knowledge of the Modes of Transmission

About 75% of the participants knew that HBV is transmitted more easily than HIV. About a half (51.2%) of the subjects thought that HBV can be transmitted by food. It was also found that only 33.9% of the subjects knew that HBV can be transmitted by toothbrush, while 72% of them gave the correct answer when they were asked that HBV asymptomatic patients can transmit the disease. The majority of the subjects (57.2%) thought that HBV can be transmitted by cough, whereas 60.7% of them gave the correct answer when they were asked about handshaking as a mode of transmission. Data were stratified according to gender, geographical region, and education levels; 35.2% of females thought that HIV is transmitted more easily than HBV,

which was significantly higher than that of males (20.2%) ( $P = 0.03$ ) (Table 1). The same trend was found among villagers who thought that HIV is transmitted more easily than HBV (29.5% versus 22.4% for urban residents;  $P = 0.02$ ) (Table 2). In addition, the majority of illiterate subjects (75.9%) thought that HBV can be transmitted by food ( $P = 0.05$ ) (Table 3).

#### 4.2. Knowledge of the Symptomatology and Disease Outcome

The majority of the studied participants (57.5%) knew that HBV infection can be asymptomatic and may cause liver cancer (71.4%). However, only a minority (30.9%) knew that acute infection can be resolved spontaneously (Table 1).

#### 4.3. Knowledge of the Prevention

The majority of subjects (86.9%) knew that HBV is a vaccine-preventable disease and 64.2% of the recruited subjects knew that the vaccine was available in the city; 48.3% of the illiterate subjects thought that the vaccine was not available in the city (Table 3).

### 5. Discussion

The prevalence of HBV in Duhok was around 1% (2, 3, 10). Public healthcare providers have set an ambitious plan to eradicate HBV infection by 2030 (11, 12). Authors believed that the first step to achieve this goal should be evaluating the knowledge of the people living in the city. Such a survey may give an insight into the weak area that eradication programs should be emphasized. Therefore, the current survey aimed at testing the knowledge of people about 3 major areas in HBV infection: transmission, symptomatology, and prevention. HBV can be transmitted by sexual contact, receiving blood and blood products, and vertical transmission (1, 3). The transmission of the virus is also associated with certain behaviors such as homosexuality and drug abuse. It is noteworthy that the virus cannot be transmitted by handshaking, food, and cough (1, 3). The majority of the subjects knew that HBV is transmitted more easily than HIV. Also, 72% of the subjects knew that the HBV transmitter can be asymptomatic. However, the majority of the participants did not know that HBV can be transmitted through tooth brushing. Also, the majority thought that HBV can be transmitted by cough; 35.2% of females thought that HIV is transmitted more easily than HBV, which was significantly higher than that of males. The same trend was found among villagers who thought that HIV is transmitted more easily than HBV. In addition, the majority of illiterate subjects (75.9%) thought that HBV can

**Table 1.** The Distribution of Knowledge about HBV According to the Gender<sup>a</sup>

Questions	Male		Female		Total Correct	P Value
	Correct	Wrong	Correct	Wrong		
Easier transmission than HIV	91 (79.8)	23 (20.2)	35 (64.8)	19 (35.2)	126 (75)	0.030
Transmitted by food	57 (50)	57 (50)	25 (46.3)	29 (53.7)	82 (48.8)	0.38
Transmitter may be asymptomatic	82 (71.9)	32 (28.1)	39 (72.2)	15 (27.8)	121 (72)	0.56
Transmission by toothbrush	43 (37.7)	71 (62.3)	14 (25.9)	40 (74.1)	57 (33.9)	0.90
Transmission by air and cough	54 (47.4)	60 (52.6)	18 (33.3)	36 (66.7)	72 (42.8)	0.60
Transmission by handshaking	73 (64)	41 (36)	29 (53.7)	25 (46.3)	102 (60.7)	0.113
Acute HBV may heal spontaneously	37 (32.5)	77 (67.5)	15 (27.8)	39 (72.2)	52 (30.9)	0.335
Patient may be asymptomatic	64 (56.1)	50 (44.9)	33 (61.1)	21 (38.9)	97 (57.7)	0.330
HBV can cause liver cancer	84 (73.7)	30 (26.3)	36 (66.7)	18 (33.3)	120 (71.4)	0.223
HBV is prevented through vaccination	97 (85.1)	17 (14.9)	49 (90.7)	5 (9.3)	146 (86.9)	0.224
Vaccine is not available in Duhok	73 (64)	41 (36)	35 (64.8)	19 (35.2)	108 (64.2)	0.52
<b>Total</b>					1084 (58.6)	

<sup>a</sup>Values are expressed as No. (%).

**Table 2.** The Distribution of Knowledge about HBV According to the Place of Residence<sup>a</sup>

Questions	Urban		Rural		P Value
	Correct	Wrong	Correct	Wrong	
Easier transmission than HIV	83 (77.6)	24 (22.4)	43 (70.5)	18 (29.5)	0.02
Transmitted by food	54 (50.5)	53 (49.5)	28 (45.9)	33 (55.1)	0.34
Transmitter may be asymptomatic	74 (69.2)	33 (30.8)	47 (77)	14 (23)	0.18
Transmission by toothbrush	40 (37.4)	67 (62.6)	17 (26.9)	44 (72.1)	0.13
Transmission by air and cough	49 (45.8)	58 (54.2)	23 (37.7)	38 (62.3)	0.19
Transmission by handshaking	67 (62.6)	40 (37.4)	35 (57.4)	26 (42.6)	0.30
Acute HBV may heal spontaneously	30 (28)	77 (72)	22 (36.1)	39 (63.9)	0.18
Patient may be asymptomatic	62 (57.9)	45 (42.1)	33 (57.4)	26 (42.6)	0.53
HBV can cause liver cancer	73 (68.2)	34 (31.8)	47 (77)	14 (23)	0.14
HBV is prevented through vaccination	94 (87.9)	13 (12.1)	52 (85.2)	9 (14.8)	0.38
Vaccine is not available in Duhok	66 (61.7)	41 (38.3)	42 (68.9)	19 (31.1)	0.22

<sup>a</sup>Values are expressed as No. (%).

be transmitted by food. It can be inferred that any educational programs about the modes of transmission of HBV should target females, illiterates, and villagers.

Approximately, 5% of the world's populations are infected with HBV. This infection is a public health problem, particularly in the developing countries such as Iraq. The majority of the patients with HBV are asymptomatic and unaware of their disease (1, 13). This might represent the major challenge in the eradication of HBV, as asymptomatic carriers can transmit the infection and also it may

predispose to liver cancer or cirrhosis. In the current study, about a half of the subjects knew that HBV may be asymptomatic. Additionally, the majority of the subjects knew that HBV infection can predispose to liver cancer. Also, people should be urged to test for the infection and more efforts are needed to educate the people about the symptomatology of the disease.

HBV is a preventable disease, which can be prevented by receiving 3 doses of the vaccine (1, 13). This vaccine was introduced into the expanded program of vaccination in

**Table 3.** The Distribution of Knowledge About HBV According to the Level of Education

Questions	Illiterate		Primary School		Secondary School		High School Diploma		Higher Education		P Value
	Correct	Wrong	Correct	Wrong	Correct	Wrong	Correct	Wrong	Correct	Wrong	
Easier transmission than HIV	19 (65.5)	10 (34.5)	20 (80)	5 (20)	48 (77.3)	14 (22.6)	8 (88.9)	1 (11.1)	31 (72.1)	21 (27.9)	0.55
Transmitted by food	7 (24.1)	22 (75.9)	15 (60)	10 (40)	33 (53.2)	29 (46.8)	5 (55.6)	4 (44.4)	22 (51.2)	21 (49.8)	0.05
Transmitter may be asymptomatic	20 (69)	9 (31)	18 (72)	7 (28)	49 (79)	13 (21)	6 (66.7)	3 (33.3)	28 (65.1)	15 (34.9)	0.59
Transmission by toothbrush	9 (31)	20 (69)	8 (32)	17 (68)	26 (41.9)	36 (58.1)	2 (22.2)	7 (77.8)	12 (27.9)	3 (72.1)	0.53
Transmission by air and cough	10 (34.5)	19 (65.5)	12 (48)	13 (52)	30 (48.4)	32 (51.6)	2 (22.2)	7 (77.8)	18 (41.9)	25 (58.1)	0.49
Transmission by handshaking	17 (58.6)	12 (41.4)	19 (76)	6 (24)	33 (53.2)	29 (46.8)	4 (44.4)	5 (55.6)	29 (67.4)	14 (32.6)	0.21
Acute HBV may heal spontaneously	9 (31)	20 (69)	9 (36)	16 (64)	19 (30.6)	43 (69.4)	3 (33.3)	6 (66.7)	12 (27.9)	31 (72.1)	0.97
Patient may be asymptomatic	22 (75.9)	7 (24.1)	12 (48)	13 (52)	35 (56.5)	27 (43.5)	7 (77.8)	2 (22.2)	21 (48.8)	22 (51.2)	0.95
HBV can cause liver cancer	18 (62.1)	11 (37.9)	19 (76)	6 (24)	43 (69.4)	19 (30.6)	6 (66.7)	3 (33.3)	34 (79.1)	9 (20.9)	0.57
HBV is prevented through vaccination	23 (79.3)	6 (20.7)	22 (88)	3 (12)	53 (85.5)	9 (14.5)	8 (88.9)	1 (11.1)	40 (93)	3 (7)	0.56
Vaccine is not available in Duhok	15 (51.7)	14 (48.3)	15 (60)	10 (40)	36 (58.1)	26 (41.9)	7 (77.8)	2 (22.2)	35 (81.4)	8 (18.6)	0.04

2001. Since then, all newborn babies receive the vaccine and are regarded as protected. In addition, all at risk people are urged to receive the vaccine. The vaccine is also available for public in most of the primary healthcare centers. The majority of the subjects (86.9%) in the current study knew that HBV is a vaccine preventable disease. More than 40% of the current study participants did not know that the vaccine was available in the city. Data analysis revealed that 48.3% of the illiterate subjects thought that the vaccine was not available in the city. This might represent a failure to the previous educational programs. More efforts are needed to educate the public about HBV.

The current study results documented the average level of knowledge about the HBV modes of transmission. To achieve the eradication plan goals, efforts are needed to educate the public about the modes of transmission. More studies are needed to evaluate the level of knowledge after implementing educational programs.

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