Assessment of Knowledge, Attitude and Practice of Health Staff Towards Hepatitis B Prevention in Raparin Independent Administrative Area

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ABSTRACT

Background: Hepatitis B remains a serious global health issue, with healthcare workers at higher risk because of frequent contact with blood and body fluids in their work.

Aim: The assessment of knowledge ,attitude, and practice of health staff in the Raparin independent administration area toward hepatitis B prevention.

Methods: This cross-sectional study involved 513 health care workers from health facilities in Raparin independent administrative area and conducted between October 2024 and July 2025 using a multistage sampling method . Data were gathered through a self-administered questionnaire to assess participants' demographic details and their knowledge, attitudes, and practices regarding hepatitis B. The data were analyzed in SPSS v27 using both descriptive and inferential statistics.

Results: Out of 513 health care workers, 70.8% had good knowledge. Most participants were aware of how the hepatitis B virus spreads; however, only 38.2% knew about the presence of post-exposure prophylaxis, and just 9.2% were knew of the type of vaccine, 88.1% had a positive attitude. While 51.3% demonstrated good practice, only 51% had completed all three vaccine doses. Better knowledge was significantly associated with age, marital status, profession, education level, work unit, and years of experience. Younger, single, doctors, those with higher certification degrees, and dental staff tended to score higher in knowledge.

Conclusion: Overall, healthcare workers demonstrated good knowledge with a median score of 75% (IQR: 15), positive attitudes with a median score of 88.9% (IQR: 22), and good practices with a median score of 70% (IQR: 30).

Keywords: Assessment, Hepatitis B awareness, Knowledge, attitude, Practice.

تقييم المعرفة والمواقف والممارسات لدى العاملين في المجال الصحي تجاه الوقاية من التهاب الكبد الفيروسي ب في منطقة رابرين الإدارية المستقلة

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الخلاصة

الخلفية: لا يزال التهاب الكبد الوبائي "ب" يُمثل مشكلة صحية عالمية خطيرة، حيث يُصبح العاملون في مجال الصحة أكثر عُرضةً للخطر بسبب كثرة ملامستهم للدم وسوائل الجسم أثناء عملهم.

الهدف: تقييم معارف ومواقف وممارسات العاملين الصحيين في منطقة رابرين الإدارية المستقلة تجاه الوقاية من التهاب الكبد الوبائي "ب".

المواد والطرق: شملت هذه الدراسة المقطعية ٥١٣ عاملًا صحيًا من المرافق الصحية في منطقة رابرين الإدارية المستقلة، وأُجريت بين أكتوبر ٢٠٢٤ ويوليو ٢٠٢٥ باستخدام أسلوب أخذ العينات متعدد المراحل. جُمعت البيانات من خلال استبيان ذاتي لتقييم البيانات الديموغرافية للمشاركين ومعارفهم ومواقفهم وممارساتهم المتعلقة بالتهاب الكبد الوبائي "ب". حُللت الإحصاءات الوصفية والاستدلالية.SPSS VERSION 27 البيانات باستخدام برنامج

النتيجة: من بين ٥١٣ عاملًا صحيًا، كان لدى ٧٠.٨% منهم معرفة جيدة. كان معظم المشاركين على دراية بكيفية انتشار فيروس التهاب الكبد الوبائي "ب". ومع ذلك، فإن ٣٨.٢% فقط كانوا على علم بوجود العلاج الوقائي بعد التعرض، و٩.٢% فقط كانوا

على علم بنوع اللقاح، (٨٨.١%) كان لديهم موقف إيجابي. في حين أظهر ٥١.٣% ممارسة جيدة، أكمل ٥١% فقط جميع جرعات اللقاح الثلاث. ارتبطت المعرفة الأفضل بشكل كبير بالعمر والحالة الزوجية والاختصاص ومستوى الشهادة ووحدة العمل وسنوات الخبرة. يميل الأصغر سنًا والعزاب والأطباء والحاصلون على درجات أعلى من الشهادات وموظفو طب الأسنان إلى الحصول على درجات أعلى في المعرفة.

الخلاصة: شكل عام، أظهر العاملون في مجال الرعاية الصحية معرفة جيدة بمتوسط درجة ٧٥% (المجال الربعي: ١٥)، ومواقف إيجابية بمتوسط درجة ٨٨.٩% (المجال الربعي: ٢٢)، وممارسات جيدة بمتوسط درجة ٧٠% (المجال الربعي: ٣٠).

الكلمات المفتاحية: التقييم، التوعية بالتهاب الكبد الفيروسي ب، المعرفة، الموقف، الممارسة.

INTRODUCTION

Hepatitis B is caused by hepatitis B virus (HBV), DNA virus surrounded by an envelope. The infection can manifest in different ways, ranging from no noticeable symptoms or mild illness to more serious conditions, and in rare cases, it can lead to severe, dangerous hepatitis[1].

Across the world, it is estimated that more than 2 billion people have been infected with the virus, highlighting its extensive impact on populations worldwide[2].

Globally, hepatitis B affects approximately 400 million people, with nearly 1 million new cases reported each year. Tragically, this disease is responsible for an estimated 1.45 million deaths annually, underscoring its significant impact on public health[3].

Moreover, Approximately 257 million people worldwide live with chronic HBV infection, and the majority are unaware of their condition[4].

The prevalence of chronic HBV infection varies significantly across countries, with rates ranging from as low as 0.5% in some areas to as high as 20% in others, reflecting the diverse impact of the virus worldwide[5].

Within the Eastern Mediterranean Region, the prevalence rate of HBV infection has been approximated to be 3.3%[6].

In Iraq, hepatitis B is fairly widespread, with a reported prevalence of 1.6% in the years 2005 and 2006. Unfortunately, since then, no extensive studies have been carried out across all 18 governorates, leaving a lack of up-to-date information on the current situation[6].

But, a study was carried out throughout 2012 to assess the prevalence of HBV in Al-Anbar Governorate,the study was retrospective and took place at the Al-Anbar Central Laboratory, the result showed among the blood donors, 1.25% tested positive for HBsAg[7].

The prevalence of HBV infection was 1.37% in the Kurdistan region according to the study, which is done in many centers[8],while the prevalence of HBV infections among people in Sulaimani Governorate is another study that was carried out.

A group of 523 individuals was randomly selected from people who visited the designated health facilities for different reasons across various locations. From October 5 to March 3, 2021.In this study, only 10 participants, were found to be positive for HBsAg[9].

Healthcare professionals are at a significantly higher risk of HBV infection, with rates four times greater than those in the general population, making them a high-risk group for the virus. [10,11]. Screening programs in the United States indicate that approximately 10-15% of healthcare professionals are chronically infected with HBV, compared to just 0.5% of the general population, highlighting the increased risk within the healthcare workforce[12].

In developing countries, the risk of HBV infection is even higher due to a lack of awareness and the absence of effective infection control programs to prevent bloodborne diseases, making healthcare workers more susceptible to the virus[13].

Taking simple precautions can go a long way in preventing HBV infection, using protective gear like gloves, properly sterilizing medical equipment, safely handling hospital waste, screening blood products before transfusion, and getting vaccinated are all essential steps in reducing the risk of the virus[14].

Since the 1980s, safe and effective hepatitis B vaccines have been available, these vaccines are highly successful, with an estimated effectiveness of 95%, and can prevent both acute and chronic infections[15]. In addition, getting the HBV vaccine and / or hepatitis B immune globulin (HBIG) soon after exposure (ideally within 24 hours) can be a very effective way to prevent infection[16].

Understanding the knowledge, attitude, and practice (KAP) of health care workers (HCW) helps identify gaps and guide strategic planning.

While similar studies were done in other area such as in Baghdad (knowledge 68%, attitude 75%, practice 58%) and in Kabul (86.58%, 34.73%, 61.22%) respectively, no such research exists in Rania—highlighting a clear gap in the literature. So, this study is important because it explores their knowledge, attitudes, and practices (KAP), which are key to preventing the spread of the disease in both healthcare settings and the community.

METHODOLOGY

Study Design

A cross-sectional study conducted to assess the knowledge, attitude, and practices of health staff regarding hepatitis B prevention in Raparin independent administrative area/ Sulaimani /Iraq.

Setting of The Study

The study was carried out in the health facilities in Raparin independent administrative area, which is belong the Sulaimani province / Iraq. (which 29 health care facilities were included in the study).

Participants of The Study

All health care workers were involved excluding health staff unwilling to participate or with incomplete questionnaires and medical graduates in administrative roles.

Sample Size

513 health care workers have been selected based on this equation.

$$\mathbf{ni} = \frac{(Z\alpha + Z\beta)^2 * P(1-P)}{d^2}$$

$$\mathbf{ni} = \frac{(1.96 + 0.842)^2 * 0.68(1-0.68)}{(0.05)^2}$$

$$\mathrm{ni} = 683$$

Since the number of source population for the study was 1400, which was less than 10,000, we used the following correction formula **:**

$\mathbf{nf} = \frac{\mathrm{ni}}{(1 + \mathrm{ni}/\mathrm{N})}$ [17].

$\mathbf{nf} = 459$ minimum sample size.

ni = uncorrected sample size.
nf = corrected sample size.
N = Population size = 1400 HCWs in all health care facilities of Raparin independent administrative area.
Zα = 1.96 for the P value of 0.05.
Zβ = 0.842 for the study power of 80%
d = degree of precision (here we put 5%) .
P= proportion of the main variable (staff knowledge=68%)[18].

Sampling Technique

To ensure a representative sample, a probability multi-stage sampling technique was used (stratified → simple random → stratified → convenience).

First Stage

Classified health facilities according to the directorate of health as follows: 7 hospitals, 18 main health centers, 12 specialized health centers, and 66 mini health centers in villages.

- **Hospitals:** These facilities are larger and more advanced than other types and provide a wide variety of health services.
- **Main health centers in districts:** Facilities that provide many services such as vaccination, maternal and child health care, dental services, and laboratory services.
- **Specialized health centers:** Facilities that provide specific health services such as dental care, kidney dialysis, and blood transfusion.
- **Mini health centers:** Facilities located in villages that provide only basic procedures such as injections, patient examination, and dressing. Most probably, only one HCW is present at a time.

Second Stage

From each category, a number of facilities were selected using simple random sampling to ensure fairness and reduce selection bias.

- **Four hospitals:** Rania Teaching Hospital, Hajiawa General Hospital, Shahid Abdulrahim Hospital, and Chwarqurna Hospital.
- **Six main health centers:** Everia Health Center, Zharawa Health Center, Chwarqurna Health Center, Sarkapkan Health Center, Shahid Mala Najm Health Center, and Shkarta Health Center.
- **Four specialized centers:** Rania Artificial Kidney Center for Dialysis, Rania Dental and Oral Health Center, Qaladze Dental and Oral Health Center, and Rania Blood Transfusion Center.
- **Fifteen village health centers:** Rzgary Xwaru Health Center, Girdjan Health Center, Qarani Agha Health Center, Bastatsen Health Center, Sharwet Health Center, Kani Maran Health Center, Swne Health Center, Grtk Health Center, Dugoman Health Center, Twasuran Health Center, Betwata Health Center, Sarashkawtan Health Center, Mergasar Health Center, Cheway Xwaru Health Center, and Zewa Health Center.

Third Stage

Staff were stratified according to different departments in each health facility category. In each category, stratification was based on the types of services available (wards, CCU, emergency, pharmacy, laboratory, etc.).

Fourth Stage

Staff were conveniently selected within each stratum.

Data Collection Time

Data have been collected by using a self-administrated questionnaire from January 15th, 2025, until the April 15th, 2025.

Study Instrument

A well-structured questionnaire that had been used in other studies[19, 20], after required modification and reviewed by the supervisor and 10 experts, the reliability of the questionnaire was (0.824) which is great score and acceptable to be used in this research. Knowledge was assessed using 10 items, attitude with 5 items, and practice with 6 items.

Scoring System

Participants were considered to have good knowledge, a positive attitude, or good practice if their mean score was 70% or higher. Those with a mean score below 70% were categorized as having poor knowledge, a negative attitude, or poor practice[18, 20].

For each domain of Knowledge, Attitude, and Practice (KAP), the total score obtained by each respondent was converted into a percentage using the formula: (Score Obtained ÷ Maximum Possible Score) × 100.

Knowledge was evaluated using 10 questions, with a maximum score of 10, calculated as (Knowledge Score ÷ 10) × 100. Scores of 70% or higher were considered good knowledge, while scores below 70% were considered poor knowledge.

Attitude was assessed using 5 questions (maximum score 5), calculated as (Attitude Score ÷ 5) × 100; scores of 70% or higher indicated a positive attitude, and scores below 70% indicated a negative attitude.

Practice was measured with 6 questions, with a maximum score of 10, calculated as (Practice Score ÷ 10) × 100. Scores of 70% or higher reflected good practice, while scores below 70% indicated poor practice.

Statistical Data Analysis

Data were entered in Excel and analyzed with SPSS version 27. Descriptive statistics (frequencies, percentages, averages) were used to summarize the data. Normality was checked using Shapiro-Wilk and Kolmogorov-Smirnov* these tests were used to assess the normality of numerical data such as age, years of experience, and the scores for knowledge, attitude, and practice, the chi-square test** has used to examine the association between knowledge levels and the characteristics of the participants. P.value < 0.05 considered statistically significant.

RESULTS

Table1: Shows the distribution of sociodemographic characteristic of the 513 HCWs were participated in the study. Gender was nearly balanced (51.5% male). The mean age was 40 ± 8.8 years, median (interquartile range) = 40 (10.5), with the largest age group in their 40s (37.2%). Most were married (78.8%) and lived in urban areas (92.8%).

Table (1): Socio-demographic Characteristics of the participants(n=513)

Variable	Categories	N	(%)
Gender	Male	264	51.5
	Female	249	48.5
Age	20-29 years	83	16.2
	30-39 years	154	30
	40-49 years	191	37.2
	50-59 years	85	16.6
Marital status	Single	105	20.5
	Married	404	78.8
	Separated	3	0.6
	Widow	1	0.2
Residential area	Inside city	476	92.8
	Outside city	37	7.2

Table 2: Shows the distribution of work-related characteristics of the participants. The majority were nurses (41.1%), and 19.7% worked in emergency units. More than half (57.1%) held a diploma. The mean years of experience was 16.86 ± 9.34, with a median (IQR) of 16 (12). The largest group had 11–20 years of experience (44.6%).

Table (2): Work-related characteristics of the participants(n=513).

Variable	Categories	N	(%)
Specialty (profession)	Medicine	30	5.8
	Dentist	39	7.6
	Pharmacist	16	3.1
	Nursing	211	41.1
	Biological science	27	5.3
	Anesthesia	22	4.3
	Laboratory technician	51	9.9
	Radiologist	22	4.3
	Community health	95	18.5
Place(unit) of work, or department	Emergency	101	19.7
	Ward	72	14
	Farmacy	63	12.3
	Radiation	22	4.3
	Laboratory	78	15.2
	Kidney dialysis unit	20	3.9
	Surgery(operation)	41	8
	Vaccination unit	21	4.1
	Maternal and child health monitoring	25	4.9
	Dental unit	41	8
	Health centers in villages	29	5.7
Certification degree	Secondary (6 months nursing training).	20	3.9
	Nursing preparatory (3 years studying).	53	10.3
	Diploma	293	57.1
	Bachelor	132	25.7
	Master	11	2.1
	Doctorate	4	0.8
Years of experiences	1-10 years	119	23.2
	11-20 years	229	44.6
	21-30 years	117	22.8
	31-40 years	48	9.4

Table 3: Shows the knowledge of HCWs towards HBV prevention.65.5% of HCWs were aware that HBV can cause hepatocellular carcinoma, and 71.7% understood that carriers also transmit the disease. About open wound 93.4% knew that have risk to transmission, 97.5% were aware of the risks from unsterilized medical tools. A good percentage 72.3% knew HBV could be sexually transmitted, and 82.1% were aware of mother-to-child transmission (vertical transmission) at birth. On treatment, 69.2% thought HBV is treatable, while only 38.2% knew that HBV has post-exposure prophylaxis (POP) .Unfortunately, only 9.2% knew that HB vaccine is not a live attenuated vaccine.

Table (3): Knowledge of health staff regarding hepatitis B infection.

Variables	Correct responses (N)	Correct responses (%)
Hepatitis B virus can cause liver cancer.	336	65.5
Carriers of hepatitis B can transmit the infection to others	368	71.7
Hepatitis B can transmit through contact with an open wound.	479	93.4
Hepatitis B can be transmitted through blood.	443	86.4
Hepatitis B can be transmitted by unsterilized syringes, needles, and surgical instruments.	500	97.5
Hepatitis B can be transmitted through unsafe sexual contact.	371	72.3
Hepatitis B can be transmitted from mother to child at birth.	421	82.1
Hepatitis B curable/treatable.	355	69.2
Post-exposure prophylaxis is available for hepatitis B.	196	38.2
Hepatitis B vaccine is not alive attenuated vaccine.	47	9.2

Table 4: Shows the attitudes of the participants regarding HB infection .Most participants (91.4%) felt at risk of HBV infection due to their work, and 86.7% believed the vaccine could prevent the disease. Nearly all (93%) disagreed with the idea that changing gloves is unnecessary. About 40.6% reported discomfort in caring for infected patients, while 88.9% supported mandatory vaccination.

Table (4): Attitudes of health staff regarding hepatitis B infection.

Variables	Correct responses (N)	Correct responses (%)
Do you believe that you are at risk of acquiring hepatitis B virus (HBV) infection?.	469	91.4
Do you believe that the hepatitis B vaccine can prevent hepatitis B infection?.	445	86.7
Do you think that changing gloves during blood collection, laboratory tests, or patient care is unnecessary or a waste of time	447	93
Are you comfortable caring for people with hepatitis B infection?.	207	40.4
In your opinion, should hepatitis B vaccination be mandatory for all healthcare personnel?.	456	88.9

Table 5: Shows Practice of health staff regarding HB prevention. Regarding screening, 69.6% of participants reported having been screened themselves for hepatitis B virus (HBV), while 63.7% had received the hepatitis B vaccine. Only 51% completed the full three-dose vaccination series. Merely 64.5% consistently used sterilized gloves or changed them between patients. Needle-stick injuries(NSI) were common, with 77.2% of participants reporting they had experienced one. Encouragingly, 92.4% of participants ensured all invasive equipment was sterile before use.

Table (5): Practices of health staff regarding hepatitis B infection.

Variables	Correct responses (N)	Correct responses (%)
Have you ever been screened themselves for hepatitis B virus (HBV)?.	357	69.6
Have you received the hepatitis B vaccination?.	327	63.7
Have you received all three doses of the hepatitis B vaccine?.	262	51
Do you change gloves or use sterilized gloves for each patient during blood collection or treatment?.	331	64.5
Have you ever experienced a needle-stick injury?.	117	22.8
Do you ensure that all invasive equipment is sterile before using it on a patient?.	474	92.4

Table 6: Shows distribution of the HCWs regarding to the levels of knowledge, attitude, and practice regarding HB infection. Most participants (70.8%) had good knowledge about HBV,A large majority (88.1%) showed a positive attitude and Just over half (51.3%) demonstrated good practice.

Table (6): Distribution of the participants according to the levels of knowledge, attitude, and practice regarding hepatitis B infection.

Variable	Grade	N	%
Knowledge	Good	363	70.8
	Bad	150	29.2
Attitude	Positive	452	88.1
	Negative	61	11.9
Practice	Good	263	51.3
	Bad	250	48.7

Table 7: Shows good knowledge level in males slightly more than females (73.9%) (p=0.112). About the age distribution participants between 20-29 years showed the best knowledge (88%) compared to older groups (p<0.001). Single HCWS also scored highest (81.9%) in marital status (p=0.014). Finally, urban residents showed better knowledge (71.8%) than rural ones, but not significantly (p=0.052).

Table (7):Association between socio-demographic characteristic of the health staff and knowledge level.** (n=513)

Variable	categories	Poor Knowledge n(%)	Good Knowledge n (%)	Total n (%)	P value
Gender	Male	69 (26.1)	195 (73.9)	264 (100)	0.112
	Female	81 (32.5)	168 (67.5)	249 (100)	
Age	20-29 years	10 (12.0)	73 (88.0)	83 (100)	<0.001
	30-39 years	44 (28.6)	110 (71.4)	154 (100)	
	40-49 years	59 (30.9)	132 (69.1)	191 (100)	
	50-59 years	37 (43.5)	48 (56.5)	85 (100)	
Marital Status	Single	19 (18.1)	86 (81.9)	105 (100)	0.014
	Married	129 (31.9)	275 (68.1)	404 (100)	
	Separated	2 (50.0)	2 (50.0)	4 (100)	
Residential Area	Inside City	134 (28.2)	342 (71.8)	476 (100)	0.052
	Outside City	16 (43.2)	21 (56.8)	37 (100)	
Total		**150(29.2)**	**363(70.8)**	**513(100)**	

Table 8: Among health professions, medical doctors had the highest knowledge (96.7%) (p<0.001), and those with a master's degree (90.9%) among educational levels (p=0.002). The dental unit obtained the highest knowledge (90.2%) (p=0.001)among others, and lastly those with 1–10 years of experience had the highest scores (82.4%) (p=0.001).

Table (8):Association between work-related characteristic of the health staff and knowledge level.**(n=513)

Variable	Categories	Poor Knowledge n(%)	Good Knowledge n(%)	Total n(%)	P value
Specialty	Medicine	1 (3.3)	29 (96.7)	30 (100)	<0.001
	Dentist	7 (17.9)	32 (82.1)	39 (100)	
	Pharmacology	6 (37.5)	10 (62.5)	16 (100)	
	Nursing	74 (35.1)	137 (64.9)	211 (100)	
	Biology Science	3 (11.1)	24 (88.9)	27 (100)	
	Anesthesia	11 (50.0)	11 (50.0)	22 (100)	
	Laboratory Technician	11 (21.6)	40 (78.4)	51 (100)	
	Radiologist	10 (45.5)	12 (54.5)	22 (100)	
	Community Health	27 (28.4)	68 (71.6)	95 (100)	
Certification Degree	Secondary	9 (45.0)	11 (55.0)	20 (100)	0.002
	Nursing Preparatory	20 (37.7)	33 (62.3)	53 (100)	
	Diploma	97 (33.1)	196 (66.9)	293 (100)	
	Bachelor	22 (16.7)	110 (83.3)	132 (100)	
	Master	1 (9.1)	10 (90.9)	11 (100)	
	Doctorate	1 (25.0)	3 (75.0)	4 (100)	
Workplace Unit	Emergency	24 (23.8)	77 (76.2)	101 (100)	0.001
	Ward	25 (34.7)	47 (65.3)	72 (100)	
	Pharmacy	28 (44.4)	35 (55.6)	63 (100)	
	Radiation	10 (45.5)	12 (54.5)	22 (100)	
	Laboratory	14 (17.9)	64 (82.1)	78 (100)	
	Dialysis Unit	4 (20.0)	16 (80.0)	20 (100)	
	Surgery	16 (39.0)	25 (61.0)	41 (100)	
	Vaccination Unit	5 (23.8)	16 (76.2)	21 (100)	
	Maternal & Growth Monitoring	10 (40.0)	15 (60.0)	25 (100)	
	Dental Unit	4 (9.8)	37 (90.2)	41 (100)	
	Village Health Centers	10 (34.5)	19 (65.5)	29 (100)	
Experience	1–10 years	21 (17.6)	98 (82.4)	119 (100)	0.001
	11–20 years	65 (28.4)	164 (71.6)	229 (100)	
	21–30 years	43 (36.8)	74 (63.2)	117 (100)	
	31–40 years	21 (43.8)	27 (56.3)	48 (100)	
Total		**150(29.2)**	**363(70.8)**	**513(100)**	

DISCUSSION

The study explored the knowledge, attitudes, and practices of health workers toward hepatitis B infection in the Rania district. The study found that majority (70. 8%) had good knowledge of hepatitis B infection. This finding is close to the study which was done in Lagos state of Nigeria[17], where 70.2% of respondents had good knowledge. Regarding HBV can cause liver cancer, 65.5% responded correctly, which was lower than the study caried out in Kabul, Afghanistan[20], where reported 88.24% indicating that more emphasis on the serious long-term consequences of HBV is needed. 71.7% participants knew that HBV carriers can spread the virus, which is lower than the study done in Wakiso district, Central Uganda, where reported 84%[21]. Most participants 93.4% correctly identified open wounds as a transmission route, closely aligning with the s 94.2% where reported by the study done in Kabul, Afghanistan[20]. 86.4% correctly identified blood as a transmission route which is slightly lower than 88.9% ,which was done among healthcare workers in Northern Vietnam[22], But higher than 80%, which was reported by the study in Benghazi,Libya [23]. Almost all participants 97.5% also recognized the danger of unsterile needles and instruments, a finding well supported by 95.5% reported by the study which was done among the nurses in Bangladesh[24]and 95.26% by the study which done in Mozambique[25]. However, knowledge about sexual transmission was weaker—only 72.3% answered correctly, compared to 78.6% reported by the study in Cameroon [26], and 85.4% reported by the study carried out among health care workers in Northern Vietnam[22].Awareness of mother-to-child transmission was fairly strong at 82.1% higher than 73.4% found by the study which was caried out in Bamenda Health District, NWR, Cameroon[26], but lower than 88.4% which was found by a study in Kabul, Afghanistan[20]. 69.2% knew that HB is treatable which is lower than the 84.2%by the study done in Bangladesh [24],while higher than 64.6% which was done among healthcare workers in Beira City, Mozambique[25].A key concern was that only 38.2% were aware of post-exposure prophylaxis, which is lower when compare to the study done in Afghanistan where reported 56.8%[20] and another study in Uganda reported 48%[21].

A major gap, only 9.2% knew that HBV vaccine is not a live attenuated vaccine, this is likely because vaccine types are rarely covered in detail during training, and many focus more on vaccine schedules than how vaccines work. Also, the scientific details can be confusing or seen as less relevant to daily practice. Regarding the attitude of HCWs, 88.10% had positive attitude of hepatitis B infection, This is higher than the 46.02% of participants who had favorable attitudes in the study have done in Kabul, Afghanistan[20].The majority of participants 91.4% reported feeling at risk of hepatitis B infection due to their work. This perception is higher than findings from the study in Benghazi, Libya[23] and Uganda[27] where reported 73% and 79.9% respectively. Most of our respondents (86.7%) recognized the hepatitis B vaccine prevent the disease. Comparable belief in vaccination was seen(86.5%) in the among healthcare workers in Beira City, Mozambique [25] However, reported lower rate 69.72% in the cross-sectional survey in Wakiso district, Central Uganda[20], possibly reflecting varying levels of trust or access to vaccine information.

A large proportion 93% disagreed with the idea that changing gloves during procedures is unnecessary. This rate is much higher than the 72.7% reported by the study caried out among midwives and nurses in Khartoum, Sudan[28], but close to the 94.7% which was done among healthcare workers in Beira City,Mozambique[25]. Only 40.4% of participants reported discomfort in treating HBV-infected patients, lower than the 55.8% reported by the study which was done in Kabul, Afghanistan[20],While this may reflect increased confidence, it could also indicate a lack of risk awareness or training . Additionally, 88.9% supported mandatory hepatitis B vaccination for HCWs, reflecting a strong support to prevention. this finding higher than the study among HCWs in nepal[27], in Baghdad[18] and in Liberia[29] were reported 84.6%, 69% and 75.8% respectively .

Regarding practice, 51.3% of participants had good practice. This result is higher than the 28.4% reported by the study done in Uganda[27], 15.5% reported by the study caried out in Lagos state, Nigeria[17]. In the present study,69.6% of HCWs reported being screened for hepatitis B, This proportion is higher than that reported in a study among healthcare workers in Beira City, Mozambique where only 45.93% had been screened[25], However, it lower than some studies including Uganda 84.9%[21], Egypt 83.7%[30]. Regarding HB vaccination coverage, 63.7% of the participants in our study reported receiving the vaccine, This rate is lower than that found in the study from Bangladesh 70.8%[24], but higher than those reported in Mozambique 48.11%[25], and Nigeria 54.8%[17]. About the number of doses received, 51% of participants had completed the full three-dose vaccination schedule, This completion rate is higher than these studies in Khartoum, Sudan [28] and Mozambique[25] 41% and 17.3% respectively .but lower than in Uganda, where 57.8% completed the schedule[21]. The variation likely reflects the extent of vaccination campaigns and follow-up systems in each country.

In terms of infection control practices, 64.5% of our participants reported always changing or using sterilized gloves between patients during procedures like blood collection, This practice is comparable to 61.3% reported in Vietnam[22], but lower than what has been observed among nurses and midwifes in Sudan (90.9%)[28]. These differences may reflect varying levels of resource availability and infection control training. About the experience of needle-stick injury (NSI), 22.8% of participants reported no such experience, indicating relatively safe practices, This proportion is similar to findings from Afghanistan 19.3%[20]. 92.4% of participants reported always ensuring that invasive equipment is sterile before use, Similar high adherence was seen in the study caried out Bangladesh 96.7%[24].

Regarding association between knowledge and characteristics of the participants , Participants aged 20–29 had the highest knowledge (88% of them had good level of knowledge, $p < 0.001$), it means with increasing age decrease the knowledge level, this trend differs from a study among healthcare workers in Kampot and Kep Provinces, Cambodia where those aged over 50 had the highest knowledge levels (70.3% of them good level of knowledge)[31].Single healthcare workers had the highest knowledge scores (81.9% of them had good knowledge level, $p = 0.014$), possibly because they are younger and more recently trained, This is contrasts with the study among health workers at the Lagos State accident and emergency Centre, Toll-Gate, Alausa, Lagos State, Nigeria ,where married participants showed better knowledge (74.6% of them had good knowledge , $p = 0.10$). Among health professions, medical doctors had the highest knowledge (96.7%)scored good knowledge level ($p<0.001$)such as in a cross- sectional, hospital-based study in Bamenda Health District, NWR, Cameroon, where reported 76.5%[26] also in another study among healthcare workers in Kampot and Kep Provinces, Cambodia where reported 86.5%[31]. Participants with a master's degree had the highest knowledge levels (90.9% of them had good knowledge, $p = 0.002$),this is agree with the study which was done among nurses and midwives in Khartoum, Sudan, where 60% of those with a bachelor's degree or above demonstrated good knowledge ($p=0.528$)[28]. About years of experiences ,those with 1–10 years of experience had the highest scores (82.4% of them had good knowledge) ($p=0.001$), this is align with another study which was a cross-sectional survey in Wakiso district, Central Uganda, where reported those with lower experience 66.7% of them had good knowledge level[21].

CONCLUSIONS

Overall, HCWs demonstrated good knowledge with a median score of 75% (IQR: 15), positive attitudes with a median score of 88.9% (IQR: 22), and good practices with a median score of 70% (IQR: 30). Also shows that 70.08% of HCWs have good knowledge, 88.1% of HCWs have positive attitude, however, only 51.3% of them had good practice towards HBV prevention. While majority of them knew how the virus is transmitted, but there is a gap in knowledge about details like the availability of POP, where only 38.2% of them aware and only 9.2% of them knew the type of HBV vaccine. Younger, single, and more highly educated staff, doctors and those with master's degrees, have higher knowledge.

Declaration Section

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This study was conducted without any external funding.

Conflict of Interest

There was no conflict of interest related to this study.

Ethical Consideration

The Ethical Committee of the College of Medicine, University of Sulaimani, approved this research project on 17 November 2025, under approval letter number 384.

Author's Contribution

Both authors contributed to this study. Hassan Salih Ahmed conducted the research process in its entirety, including data collection, analysis, and manuscript writing. Bushra Mohammed Ali supervised the work and provided guidance throughout the research. Both authors have reviewed and approved the final version of the manuscript.

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