

## Assessment of Nurses Knowledge about Transmission and Prevention for Hepatitis B Virus Infection by instruments in Operating Room at Wasit Teaching Hospital

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### الخلاصة:

**خلفية البحث:** يتسبب فيروس التهاب الكبد (ب) في حدوث عدوى كبدية قاتلة تسمى التهاب الكبد (ب). إنها مشكلة صحية عالمية كبيرة. يمكن أن يؤدي إلى أمراض الكبد المزمنة والعدوى، فضلاً عن زيادة خطر الوفاة من تليف الكبد وسرطان الكبد.

**الهدف:** تقييم معارف الممرضين حول انتقال العدوى بفيروس التهاب الكبد (ب) والوقاية منه عن طريق الأدوات الموجودة في غرفة العمليات. ومعرفة العلاقة بين الخصائص الديموغرافية والمتغيرات.

**المهنية:** أجريت دراسة وصفية في مستشفى الزهراء التعليمي ومستشفى الكرامة التعليمي بمدينة واسط. في الفترة من 28 / ايلول / 2020 حتى 6 / شباط / 2021، تم استخدام عينة غير احتمالية (ملائمة) قوامها (60) ممرضاً يعملون في غرفة العمليات في مستشفى الزهراء التعليمي ومستشفى الكرامة التعليمي. كانت الأداة المستخدمة في الدراسة عبارة عن استبيان منظم ذاتياً. تم جمع البيانات عن طريق تقنية الإبلاغ الذاتي. تم تحليل البيانات باستخدام تحليل البيانات الإحصائية الوصفي والاستنتاجي.

**النتائج:** أظهرت نتائج الدراسة أن الممرضين تتراوح أعمارهم بين 29-34 سنة (31-6 سنوات)، وأظهرت النسب العالية للممرضات (83.3%). وان الغالبية العظمى من الموظفين تخرجوا من اعدادية التمريض، ويظهر أن سنة الخبرة في مجال التمريض تشير إلى 6-10 سنوات (56.7%).

**الاستنتاجات:** أن معارف الممرضات كانت ضعيفة؛ كما لا توجد علاقة بين المعرفة الخاصة بالوقاية من فيروس التهاب الكبد (ب) في غرفة العمليات والعمر والمستوى التعليمي. وخلصت الدراسة انه في المعرفة الكاملة لا توجد علاقة إلا في مجالين (معرفة الممرضين حول الوقاية من فيروس التهاب الكبد ب) و (معرفة الممرضين حول دور التمريض في غرفة العمليات للوقاية من فيروس التهاب الكبد ب).

**التوصيات:** الدورات تدريبية ضرورية لزيادة معارف الممرضين نحو منع التهاب الكبد الفيروسي (ب) في غرفة العمليات، وتنظيم مناهج التعليم المستمر لجميع الممرضين في غرفة العمليات.

**الكلمات المفتاحية:** معارف الممرضين، وانتقال ومنع عدوى فيروس التهاب الكبد الوبائي (ب).

### ABSTRACT

**Background:** The hepatitis B virus causes a potentially fatal liver infection called hepatitis B (HBV). It is a significant global health problem. It can lead to chronic liver disease and infection, as well as an increased risk of death from cirrhosis and liver cancer.

**Objectives:** To assess Nurses Knowledge about transmission and prevention of hepatitis B virus infection by instruments in operating room. And find out the relationship between demographic characteristics and the variables.

**Methodology:** A descriptive study was carried out at Al-Zahraa Teaching Hospital and Al-Karama Teaching Hospital in Wasit City, from the period 28 \

September \ 2020 until 6 \ February \ 2021. A non-probability (convenience) sample of (60) nurses working Operating Room in Al-Zahraa Teaching Hospital and Al-Karama Teaching Hospital was used. The tool used in the study was a self-administered structured questionnaire. The data was collected by self-reporting technique. Data was analyzed by using descriptive and inferential statistical data analysis.

**Results:** the study results shows that nurses are with age group of 29-34 year ( $31\pm 6$  years), shows the high percentages were refer to female nurses (83.3%). the majority of the staff are nursing school graduated, shows the year of experience in nursing field is referring to 6-10 year (56.7%).

**Conclusion:** the study concluded that the Knowledge of Nurses' was Poor knowledge; also there is no

relationship between Knowledge Regarding prevention of hepatitis B virus in operating room and age and educational level. There was poor knowledge and in total knowledge there is non-significant deferential except in two domain (nurses knowledge about prevention of hepatitis B virus) and (nurses knowledge about Nursing role in operating room to prevent Hepatitis B virus).

**Recommendations:** Training course is necessary to increase nurses' knowledge toward preventing of HBV in operating room, and regulate continuing education curriculum for all nurses and operating room-specific.

**Keyword:** Nurses Knowledge, Transmission, prevention and Hepatitis B Virus Infection.

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## INTRODUCTION

Hepatitis B virus is a DNA virus that replicates in hepatocytes and causes liver damage as a result of the immune system's reaction to the virus. Vertically at birth, horizontally by unprotected intercourse, sharing injecting supplies, and near contact between infants and neonates, the virus is transmitted. Another route of transmission is by unscreened blood products, as blood remains contagious for several weeks after it has been dried. Patients infected with the human immunodeficiency virus (HIV) are often co-infected with HBV due to similar modes of transmission. About two to four million HIV patients are expected to be infected with HBV globally (1).

Vaccination, the use of protective procedures when handling infectious materials, proper sterilization of medical supplies, and proper waste management will also help to break the chain of infection transmission for hepatitis B. However, studies have shown that there is a significant awareness gap among health professions trainees about the risks of HBV infection in the workplace (2).

The operating room is a fast-paced, technological environment wherein the perioperative

registered nurse must be able to think quickly and accurately, as well as advocate for the patient while the patient is under anesthesia. Working in the operating room is a privilege, and it should always be looked upon as an honor to be the nurse providing optimal care to the surgical patient. This requires the nurse to use not only his or her basic nursing skills, but additional skills, such as aseptic technique, knowledge of surgical procedures, and understanding of specialized equipment that are many times learned on the job (3).

## AIMS OF THE STUDY

To assess Nurses Knowledge about transmission and prevention of hepatitis B virus infection by instruments in operating room. And find out the relationship between demographic characteristics and the variables.

## METHODOLOGY

A quantitative design (descriptive study) of the current study was carried out to assess knowledge of Nurses' regarding prevention of hepatitis B virus in

operating room from the period September 28th 2020 until of February 6th, 2021 at Al-Zahraa Teaching Hospital and Al-Karama Teaching Hospital in Wasit City. A non-probability sample of (60) working in Operating Room in Al-Zahraa Teaching Hospital and Al-Karama Teaching Hospital. The tool used in the study was a self-report structured questionnaire. The correct answer of knowledge was given a score (1) and the incorrect answer was scored (0). The test related to

nurses' knowledge was carried out during the morning and evening shifts. About (20-30) Minutes were given to each nurse for test completion. It consisted of two parts: Demographic data (5) items. Knowledge of HBV (31) items, which consist of general knowledge about of HBV, strategy for controlling and preventive measures of HBV. The results were analyzed through the application of statistical Package of Social Sciences analysis (SPSS).

## RESULTS

**Table (1): Distribution of the Sample According to their Socio-demographic Characteristics**

L.	Characteristics	f	%	X <sup>2</sup>	d.f	P-value	Sig.
1	Age M± SD=	31 ± 7	31 ± 6	234.37	6	.034	S
	23 – 28 year	24	40				
	29 – 34 year	28	46.7				
	35 – 40 year	2	3.3				
	41 ≤ year	6	10				
	<b>Total</b>	<b>60</b>	<b>100</b>				
2	Gender			19.200	2	.258	N.S
	Male	10	16.7				
	Female	50	83.3				
	<b>Total</b>	<b>30</b>	<b>100</b>				

F: Frequency, %: Percentage, X<sup>2</sup>: Chi-square, d.f: degree of freedom, p: Probability, Sig: Significance, S: Significant, N.S: Not significant.

The analysis of this table shows that nurses are with age group of 29-34 year (31±6 years) (47.7%). Regarding gender variable, high percentages were refer to female nurses (83.3%).

**Table (2): Distribution of the Sample According to their Professional Characteristics**

L.	Characteristics			X <sup>2</sup>	df	P-value	Sig.
		f	%				
1	Qualification in nursing			31.735	8	.408	N.S
	Nursing school	0	0				
	Secondary school	34	56.7				
	Nursing institute	20	33.3				
	Nursing college	6	10				
	Postgraduate	0	0				
	<b>Total</b>	<b>60</b>	<b>100</b>				
2	Years of experience in nursing						

	1 – 5 year	12	20	248.33	8	.027	S
	6 – 10 year	34	56.7				
	11 – 15 year	6	10				
	16 – 20 year	6	10				
	21 ≤ year	2	3.3				
	<b>Total</b>	<b>60</b>	<b>100</b>				
<b>3</b>	<b>Years of experience in operation room</b>						
	1 – 5 year	36	60	166.40	8	.355	N.S
	6 – 10 year	18	30				
	11 – 15 year	4	6.7				
	16 – 20 year	2	3.3				
	21 ≤ year	0	0				
	<b>Total</b>	<b>60</b>	<b>100</b>				
<b>4</b>	<b>Participation in courses about infection control</b>						
	No	48	80	12.813	2	.686	N.S
	Yes	12	20				
	<b>Total</b>	<b>60</b>	<b>100</b>				

F: Frequency, %: Percentage, X<sup>2</sup>: Chi-square, d.f: degree of freedom, p: Probability, Sig: Significance, S: Significant, N.S: Not significant.

The study indicates in this table that 56.7% are graduated from nursing secondary school, and shows the year of experience in nursing field is referring to 6-10 year (56.7%). Participation in training courses about prevention of viral hepatitis B, only 20% is participated.

**Table (3): Assessment of Nurses' Knowledge about Prevention Measures for Viral Hepatitis B in the Operating Room**

L.	Items	(N=60)		
		M.S	R.S	Ass
1	The workers should in good health and are not infected with the virus, and this is done through periodic examination for them	0.27	13.5	Poor
2	When vaccinating workers in the operations room against hepatitis B prevents infection with the Hepatitis B virus	0.23	11.5	Poor
3	When one of the workers injured in the operations room of hepatitis B viral, prevents the work from inside the operating room until his/her recovery as instructed by the Ministry of Health	0.200	10	Poor
4	While preparing the patient for surgery, staff are required to collect accurate information about the patient's health status and ensure his safety from viral hepatitis B before entering the operating room	0.27	13.5	Poor

5	Commitment of workers in the operating room to follow sterilization techniques accurately and wear clothes and equipment for each operation	0.33	16.5	Poor
6	Should workers in the operations room when dealing with non-working people in the lounge are not allowed to enter the operating room to prevent pollution	0.33	16.5	Poor
7	To ensure the safety of sterilization of surgical instruments and tools increase the duration and number of times of sterilization	0.31	15.5	Poor
8	Involving operating theater officials and other workers in continuing education courses in the control of viral hepatitis B has an essential role in preventing hepatitis B virus	0.30	15	Poor

This table presents the assessment of nurses' knowledge about prevention measures for preventing viral hepatitis B; the table shows that nurses showing Poor level of knowledge.

**Table (4): Assessment of Nurses' Knowledge about Taken Measures to prevent Viral Hepatitis B after Exposure to Needle Stick**

L.	Items	(N=60)		
		M.S	R.S	Ass
1	After exposure to a needle stick while working in the operating theater there is a possibility of infection with viral hepatitis B	0.20	10	Poor
2	In case of injury by sticking the needle during the operation in the operating room, the official is informed and stopped working to complete the post-needle-stick procedures	0.23	11.5	Poor
3	When exposed to a needle stick and first aid avoid applying pressure to the site of injury and allowing blood to escape	0.17	8.5	Poor
4	When exposed to a needle stick and first aid to clean the wound, the water, continuous at a normal temperature, is used with soap to wash the sites of infection	0.30	15	Poor
5	The use of sterilizers and disinfectants for the operating room after exposure to contaminated needles it has a great effect in reducing the incidence of hepatitis B virus after needle stick	0.27	18.5	Poor
6	Increase the depth of the needle-stick wound during the procedure increases the chances of transmitting hepatitis B virus	0.33	16.5	Poor
7	Superficial puncture without blood coming out of the person who was stacked while working in the operating room it creates risks but has fewer chances of transmitting hepatitis B virus	0.20	10	Poor
8	Post Exposure Prophylaxis (PEP) protocol is available in the operating room	0.20	10	Poor

This table shown the study findings of this study presents the assessment of nurses knowledge measures taken to prevent infection after exposure to needle stick, are showing poor level of knowledge.

**Table (5): Correlation between Nurses' Knowledge with regard to their Age among Study and Control Group**

Age	Knowledge	(N=30)		
		N	Mean	SD
23 – 28 year		12	30.08	9.784
29 – 34 year		14	32.21	10.222
35 – 40 year		1	26.00	-
41 ≤ year		3	31.33	6.658
<b>Total</b>		<b>30</b>	<b>31.07</b>	<b>9.388</b>
<b>Correlation</b>		<b>r = 0.079</b>	<b>p-value = 0.680</b>	<b>Sig.= N.S</b>

N: Number, SD: Standard deviation, r: Pearson correlation, p-value: Probability value, Sig: Significant, N.S: Not significant, S: Significant, H.S: High significant.

This table depicts that there is no significant relationship between nurses' knowledge and their age.

## DISCUSSION

The analysis of table (1) shows that nurses are with age group of 29-34 year (31±6 years) (47.7%). This study is consistent with a study conducted (4), they found in their study that 36.7% of the study at age 30-39 years old.

Regarding gender variable, high percentages were refer to female nurses (83.3%).this study agreement with study (5), they found in their study The participation group consisted of 179 female students (77%) and 54 male students (23%).

Table (2) shows that regarding Qualification: The study indicates that 56.7% are graduated from nursing secondary school. This study agree with the study (6), show the level of basic education of health workers in White Nile hospitals was significantly associated with the knowledge about HBV prevention. Regarding Years of experience in nursing: The study results show the year of experience in nursing field is referring to 6-10 year (56.7%), The finding of this study disagree with that of the study done (7) shows that high proportion (58%) of nurses had experience of 1-5 years, and only 4% of the sample had experience of 20-25 years. Regarding Participation in courses about infection control, the study show participation in training courses about

prevention of viral hepatitis B, only 20% is participated. This result is incompatible with (8) which indicated that more than half of nurses (55%) take (1-5) training course.

Table (3) presents the assessment of nurses' knowledge about prevention measures for preventing viral hepatitis B; the table shows that nurses showing Poor level of knowledge. (9) Show that the correct response rate about taking procedures, wearing gloves during sampling from a patient, approach to a blood spot on a white coat, shedding patients' blood on the nurse body, and approach to discard of needles and cutter instruments was 57.1%, 95.7%, 18.1%, 57%, and 37.7%, respectively. Also results of the study showed satisfactory knowledge & preventive practice towards HB. The mean knowledge score was 8.28±2.9, where 80.7% respondents categorized as having good knowledge. The study about prevention and precautions of hepatitis (10), shows the knowledge of nurses regarding nature transmission of hepatitis, (74%) and (70%) had moderate knowledge. As well as, the knowledge regarding prevention, giving an injection, and treatment hepatitis (59%), (61%), or (41%) them respectively had a high level of knowledge. The

overall represented (69%) nurses had a moderate knowledge towards Prevention and Precautions of Patients with Hepatitis in AL-Diwaniya Teaching Hospital.

Table (4) shown the study findings of this study presents the assessment of nurses knowledge measures taken to prevent infection after exposure to needle stick, are showing poor level of knowledge. <sup>(11)</sup> Indicated that about half of the respondents (50.6%) knew they should not recap the needle with two hands to prevent needle stick injury, and they should dispose of the used needle and syringe into a sharp container immediately without recapping the needle (47.1%).

Also study <sup>(12)</sup> shows that nurses have poor knowledge and practices regarding needle stick injury, only few nurses (17.1%) applied preventive measures after getting needle stick Injury.

Table (5) depicts that there is no significant relationship between nurses' knowledge and their age. This study consistent with study done <sup>(13)</sup> that shows no significant statistical differences were found

between mean knowledge scores towards age. Also the findings of the study done <sup>(14)</sup> posited that the level of knowledge was not significantly associated with age.

## CONCLUSION

The study concluded that the Knowledge of Nurses' was Poor knowledge; also there is no relationship between Knowledge Regarding prevention of hepatitis B virus in operating room and age and educational level. There was poor knowledge and in total knowledge there is non-significant deferential except in two domain (nurses knowledge about prevention of hepatitis B virus) and (nurses knowledge about Nursing role in operating room to prevent Hepatitis B virus.

## RECOMMENDATIONS

Training course is necessary to increase nurses' knowledge toward preventing of HBV in operating room <sup>(15)</sup>, and regulate continuing education curriculum for all nurses and operating room-specific.

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