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INCIDENCE OF HEPATITIS VIRUS AND TRANSMISSION RISK FACTORS IN HEMODIALYSIS CENTERS

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Abstract
Background: One of the main risk factors for an outbreak of viral hepatitis is hemodialysis (HD). Among various risk categories, individuals receiving dialysis therapy had one of the highest prevalence of antibodies to viral hepatitis. Individuals with end-stage renal disease, in particular, are more likely to pass away from chronic kidney disease (CKD). Remarkably, half of these deaths are attributable to cardiovascular disease; this high death rate pushes us to find other risk factors that we may change to increase survival for dialysis patients. Chronic hepatitis virus infection has been linked to other comorbidities outside of liver disease, including kidney failure.
Objective: To estimate the hepatitis incidence in hemodialysis units and assess the risk factors contributing to viral hepatitis infection among hemodialysis adult patients.
Materials and Methods: cross-sectional study design conducted in the Iraqi city of Najaf, dialysis centers, March 2023. Information was collected through an interview questionnaire to measure the incidence of viral hepatitis among adult dialysis patients and risk factors for viral hepatitis in dialysis centers.
Results: 100 patients undergoing dialysis treatment participated in the current study. Their ages ranged from 20-78 years. The group of participants (50-59 years old) constituted approximately one-third of the total sample, and the percentage of females was the largest. The incidence of viral hepatitis was 10%. Among adult patients undergoing dialysis treatment, hepatitis C virus infection is the majority, so nurses working in dialysis centers can identify and control factors that favor the transmission of hepatitis C virus.
KEYWORDS: Hepatitis virus, Hemodialysis, Chronic kidney disease, Incidence, Risk factors

Introduction
Hemodialysis patients are more likely to have viral hepatitis due to many related variables. Viral hepatitis is a major health issue that can cause liver damage and even death. These variables include anything from the way patients behave to the specifics of the hemodialysis procedure. The purpose of this article is to investigate the risk factors for viral hepatitis in hemodialysis patients [1]. In 2015, 3.5% of people and 1% of people, respectively, were estimated to have chronic HBV infections, according to the World Health Organization's (WHO) World Hepatitis Report. The paper states that since 2000, the fatality rate from viral hepatitis has risen by 22%, accounting for an estimated 1.34 million fatalities. Ninety-six percent of these fatalities were related to complications from chronic HBV (66%) and HCV (30%) infections [2]. In 1990, US second urban hemodialysis facility reported a 12% prevalence rate of HCV infection, following the discovery that the virus may cause hepatitis contracted through blood transfusions. According to data from a selection of hemodialysis facilities in Europe, Japan, and the US between 1998 and 2001, the Dialysis Outcomes and Practice Patterns Study (DOPPS) estimated that the mean prevalence rate of HCV infection in hemodialysis facilities was 13.5% (with a range of 2.5% to 23%). Furthermore, a seroprevalence rate of 9.5% was documented among hemodialysis patients in 12 different countries between 1996 and 2011 [3]. A persistent infection that can cause major liver problems is hepatitis B. These consequences can be avoided or their severity reduced by early identification, treatment, and behavioral modifications. Hepatitis B vaccination is advised for both adults and children. Hepatitis C, unlike Hepatitis B, has no vaccination, although antiviral drugs can be used to treat it [4]. HD is thought to be one of the primary risk factors for the spread of viral hepatitis, according to a Saudi Arabian study. There is significant heterogeneity in the incidence of viral hepatitis infection among various dialysis units and nations. Patients receiving dialysis therapy have been reported to have one of the highest prevalence of antibodies to viral hepatitis among different risk categories. Therefore, based on clinical measures and questionnaires, the total prevalence of anti-HCV among HD patients was 49.9% [5]. Individuals with end-stage renal disease, in particular, are more likely to die from chronic kidney disease (CKD). Remarkably, cardiovascular disease (CVD) accounts for over half of all deaths. This high death rate encourages researchers to find new risk variables that may be altered to increase survival for hemodialysis patients. Several comorbidities, including renal disease, cardiovascular disease, insulin resistance, diabetes mellitus, and lymphoproliferative disease, have been linked to chronic hepatitis infection in addition to liver disease [6]. According to a recent study, 3% of people worldwide have hepatitis, including over 30% of hemodialysis patients who are exposed to the virus, which raises their risk of morbidity and death [7].

Material and Methods:
A cross-sectional study design Samples were taken from two main centers in Najaf Governorate, as they contain hemodialysis: Kidney Disease and Dialysis Center in Sadr Medical City: The center contains several departments,

including the kidney transplantation department, the peritoneal dialysis department, and the hemodialysis department, which consists of three halls isolated from each other, which are negative, positive for hepatitis B, and positive for hepatitis C. The average number of visitors is 250 patients; and Kidney Diseases and Dialysis Center at Al-Hakim General Hospital: It contains a peritoneal dialysis department and a hemodialysis department only, which consists of three halls isolated from each other, which are for negative patients, positive for hepatitis B, and positive for hepatitis C. The average number of visitors is 200 patients.: The sampling collection method was non-probability (convenience). The sample was selected from the two previously mentioned centers, patients undergoing hemodialysis, numbering 100 patients 20% of the target population, 59 males and 41 females. The study tool is a questionnaire, through an extensive review of relevant literature; an instrument was developed and constructed for the current study (concerning patients) consists of three parts:

Part I: Sociodemographic Data of Patients, which includes (age, sex, level of education, marital status, employment status, monthly income, and place of residence).

Part II: Hemodialysis Factors

Part III: Hepatitis Factors

Ethical Approval: After getting the validity of the study questionnaire, the objectives and the checklist were submitted to gain the approval of the scientific committee college, which reviewed the study tool (questionnaire) and therefore agreed to conduct the study. Approval letter on 4th June 2023 to conduct the study. Official approval was obtained from the Health Department in Najaf Governorate on 18th June 2023.

Results

The results of the data analysis are systematically presented in tables that correspond with certain research goals.

Table1: Distribution of the sample based on patients' demographic characteristics among 100 hemodialysis adult patients.

Sociodemographic Data of Patients	Interval	f	%
Age	20-29 years	12	12.0
	30-39 years	22	22.0
	40-49 years	21	21.0
	50-59 years	27	27.0
	60 years and more	18	18.0
	Total	100	100.0
Sex	Male	59	59.0
	Female	41	41.0
	Total	100	100.0
Educational level	Illiterate	21	21.0
	Educated	1	1.0
	Elementary	47	47.0
	Intermediate	16	16.0
	Secondary	8	8.0
	Diploma	5	5.0
	Bachelor	1	1.0
	Higher Diploma	1	1.0
	Master	0	0.0
	Doctorate	0	0.0
	Total	100	100.0
Marital status	Single	15	15.0
	Married	75	75.0
	Separate	2	2.0
	Widowed	4	4.0
	Divorced	4	4.0
	Total	100	100.0
Occupation status	Employee	6	6.0
	Working man/woman	25	25.0
	Housewife	34	34.0
	Student	2	2.0
	Leisurely	24	24.0
	Retired	9	9.0
	Total	100	100.0
Monthly Income	Less than 500,000 IQD	77	77.0
	500,000 to 999,999 IQD	16	16.0
	1,000,000 to 1,999,999 IQD	7	7.0
	2,000,000 to 3,000,000 IQD	0	0.0
	More than 3,000,000 IQD	0	0.0
	Total	100	100.0
Residency	Urban	66	66.0
	Rural	34	34.0
	Total	100	100.0

The frequency distribution of the demographic traits of hemodialysis patients is displayed in this table. Twenty-nine percent of the sample (or around one-third) are in the 50–59 age range. 59% of the sample consisted of women. 47 % of the sample had only completed elementary school. Married individuals made up 75% of the sample, which was the majority in terms of marital status. In the case of professionals, housewives made up the greatest portion of the sample—roughly 34%. However, 77% of the sample had monthly incomes of less than 500,000 IQD or less. Finally yet importantly, 66% of the sample was urban.

Table 2: Distribution of factors related to viral hepatitis transmission among 100 patients in relation to hemodialysis.

Hemodialysis Factors	Interval	f	%
Access type	temporary	13	13.0
	permanent	87	87.0
	Total	100	100.0
Vascular Access	Arteriovenous Fistula/graft	83	83.0
	Central Venous Catheter	17	17.0
	Total	100	100.0
Dialysis number per week	2	82	82.0
	3	18	18.0
	Total	100	100.0
Duration of dialysis\ hr.	3	5	5.0
	4	95	95.0
	Total	100	100.0
	less than 1 year	24	24.0
	1 -5 years	55	55.0

Duration of treatment with hemodialysis	more than 5 years	21	21.0
	Total	100	100.0
Dialysis in multiple centers	yes	36	36.0
	no	64	64.0
	Total	100	100.0

Shows the parameters in this table that are associated with the transmission of viral hepatitis among 100 hemodialysis patients. 87% of patients used permanent access methods, 83% had an arteriovenous fistula or graft in a blood vessel, 82% underwent hemodialysis twice a week, 95% underwent hemodialysis for four hours a day, 55% underwent treatment for one to five years, and 64% of patients received their dialysis at the same facility.

Table 3: Distribution of the incidence of hepatitis B and C virus within 100 patients

Hepatitis Factors	Interval	F	%
Type of hepatitis	Uninfected	64	64.0
	HBV	8	8.0
	HCV	28	28.0
	Total	100	100.0
Disease diagnosis of H.	There is no	64	64.0
	Before HD	1	1.0
	After HD	35	35.0
	Total	100	100.0
Duration of H.	There is no	64	64.0
	less than 1 year	10	10.0
	1 - 5 years	17	17.0
	more than 5 year	9	9.0
	Total	100	100.0
Hepatitis B vaccine	Did not take vaccine	39	39.0
	Take vaccine before dialysis	8	8.0
	Take vaccine after dialysis	53	53.0
	Total	100	100.0
Checking virology test every month	yes	99	99.0
	no	1	1.0
	Total	100	100.0

Displays the incidence of the hepatitis B and C viruses in 100 individuals along with the risk factors for viral hepatitis infection. Hemodialysis patients had a prevalence rate of 36% and an incidence rate of 10% for hepatitis C, of which 28% was present. Following hemodialysis, 35% of patients had a viral hepatitis diagnosis, while after hemodialysis, 53% received the hepatitis B vaccination.

Discussion

Current study, the sample consisted of 100 patients, there were more females than men, and this study is consistent with a study conducted in Kerman, Iran. The sample number was 100 for a target population of 500 patients undergoing hemodialysis [8]. In terms of gender, more than half of the sample was female, marital status was the majority of married people, and primary school was the majority in the current study sample. Likewise, the occupational status of housewives was the majority, and monthly income was consistent with a study conducted in the Iraqi province of Najaf [9].

The current study showed that the majority of the sample had permanent access, especially those with arteriovenous fistula/graft, and the majority of patients receive hemodialysis treatment twice a week for 4 hours a day, as more than half of the sample continued this treatment for 1-5 years, and the majority of patients received hemodialysis. In the same center, a study conducted in the Iraqi province of Hilla is consistent with the case study with all the results mentioned above [10].

Table 3 showed that the current study confirms the incidence rate of infection with viral hepatitis B and C at 10% and the rate of infection with hepatitis B is lower than that of hepatitis C, and the study conducted in Al-Muthanna Governorate is consistent with the current study [11].

Conclusions

The current study indicates that incidence 10% of patients getting hemodialysis have the potential to develop viral hepatitis, particularly type C, following their hemodialysis therapy. In order to prevent the hepatitis virus from spreading from positive to negative patients, health care professionals—especially nurses—must guarantee the integrity of laboratory investigations for every patient before beginning the hemodialysis process.

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Conflicts of interest

There are no conflicts of interest

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