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Research Article

Prevalence of Viral Hepatitis and HIV among Dental Patients in Babylon City: Emphasis on Screening in first dental specialized Center

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Abstract
This study aimed to investigate the prevalence of HBV, HCV, and HIV among dental patients attending the First Specialized Dental Center in Babylon City and to highlight the importance of routine viral screening in dental practice. The prevalence of HBV and HCV among dental patients in Babylon City was low, and no HIV infections were identified. HCV infection showed a significant association with age group and travel history.

INTRODUCTION

Viral hepatitis and human immunodeficiency virus (HIV) remain major public health concerns worldwide due to their high prevalence, chronic nature, and potential complications. Hepatitis, defined as liver inflammation, is most commonly caused by viral infections, among which hepatitis B virus (HBV) and hepatitis C virus (HCV) are of particular concern because of their global distribution and risk of chronic disease[1-3]. HBV infection can progress to cirrhosis and hepatocellular carcinoma, while HCV is often asymptomatic, earning it the label of a "silent epidemic"[4,5].

HIV affects the immune system and is frequently associated with co-infections with viral hepatitis, which can exacerbate disease progression[6]. In dental settings, exposure to blood and saliva during routine procedures places dental professionals at risk, making the identification of infected patients through screening essential for both patient and staff safety[7,8].

In Iraq, recent studies have investigated the prevalence of viral hepatitis among various populations, including dental patients, clinical patients, and blood donors, highlighting the need for continued vigilance and preventive measures[9-11]. These findings underscore the importance of incorporating routine viral screening and strict infection control protocols in dental practice to reduce occupational exposure and ensure patient safety.

MATERIALS AND METHODS

Study Design: A descriptive cross-sectional study was conducted from August 2024 to August 2025 at the First Specialized Dental Center in Babylon City.

Study Population and Sample Size: A total of 208 dental patients, both male and female, undergoing various dental treatments were included. Participants were recruited from diverse geographic areas and socioeconomic backgrounds.

Inclusion Criteria:

- Attendance at the Specialized Dental Center in Babylon City
- Completion of HBV, HCV, and HIV screening during the study period
- Availability of demographic information

Exclusion Criteria:

- Missing test results for any viral infection
- Incomplete demographic data

Sample Collection and Laboratory Procedures: Venous blood samples were collected following informed consent. Most samples were tested using a triple rapid test cassette for HBV, HCV, and HIV, with a subset confirmed via enzyme-linked immunosorbent assay (ELISA) at Hilla Teaching Hospital laboratory. ELISA testing involved antigen-antibody binding, enzyme conjugation, and colorimetric detection, ensuring both speed and accuracy in prevalence assessment.

Data Management: Results were recorded in Microsoft Excel 365. Prevalence was calculated as the proportion of positive cases to the total sample size, with gender-specific prevalence also determined.

RESULTS AND DISCUSSIONS

A total of 208 dental patients attending the Specialized Dental Center in Babylon City were included in this study. The majority of participants were female (55.8%), while males accounted for 44.2% (Figure 1).

Age Distribution: Most participants (61.4%) were aged 20-39 years, followed by 18.8% aged 40-59 years. Only 12.1% were under 20 years, and 7.7% were aged 60 years or older (Table 1).

Geographic Distribution: The highest number of participants were from Al-Hilla 1 district, whereas the fewest were from Al-Musayyib (Figure 2).

Occupational Distribution: Housewives formed the largest group (34.6%), followed by students (23.1%) and self-employed individuals (22.6%). Smaller proportions included healthcare workers (4.8%), military personnel (3.4%), retired persons (3.4%), other occupations (6.7%), and prisoners (1.4%) (Figure 3).

Risk Factors: One-third of participants (33.2%) had traveled outside Iraq, 45.7% had been hospitalized, 24.2% had donated blood or received transfusions, and 16.4% had visited a beauty or tattoo center (Table 2).

Serological Results: The majority of participants (96.2%) were seronegative, while 3.8% tested positive for viral infections (Figure 4). Among the seropositive individuals, 5 participants (2.4%) were HCV-positive, 3 (1.4%) were HBV-positive, and no HIV-positive cases were detected as in (figure 5)

Figure 4 show that 96.2% of participants were seronegative, while 3.8% seropositive.

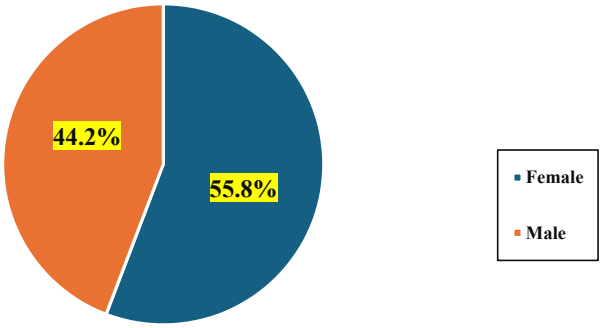

Fig. 1: Distribution of study participants by Sex (N=208)

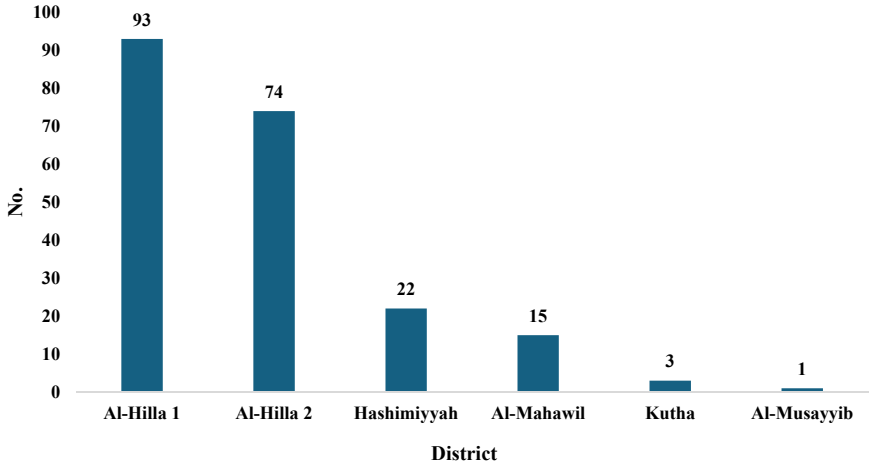

Fig. 2: Distribution of study participants by districts (N=208)

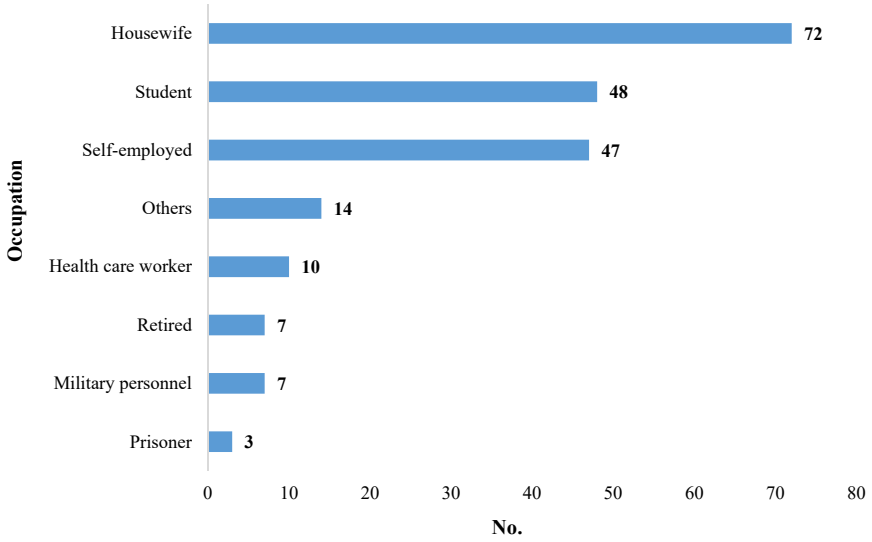

Fig. 3: Distribution of study participants by districts (N=208)

Referral Units: Most participants were referred to the Oral Surgery unit (141), followed by the Examination unit (24), Endodontics unit (22), Operative clinic (13), and Periodontal clinic (8) (Figure 6).

Associations with Demographics and Risk Factors: A statistically significant association was found between HCV infection and age group ($p = 0.01$) as well as travel outside Iraq ($p = 0.02$).

No significant associations were observed between HBV or HCV infection and sex, district, occupation, hospitalization, blood donation/transfusion, tattooing, or injury outside medical institutions ($p > 0.05$).

No HIV-positive cases were detected (Tables 3 and 4).

This study provides insight into the prevalence of HBV, HCV, and HIV among dental patients in Babylon city.

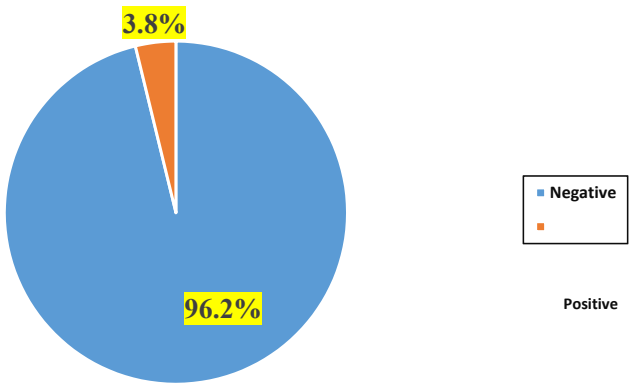

Fig. 4: Distribution of study participants by serological results (N=208)

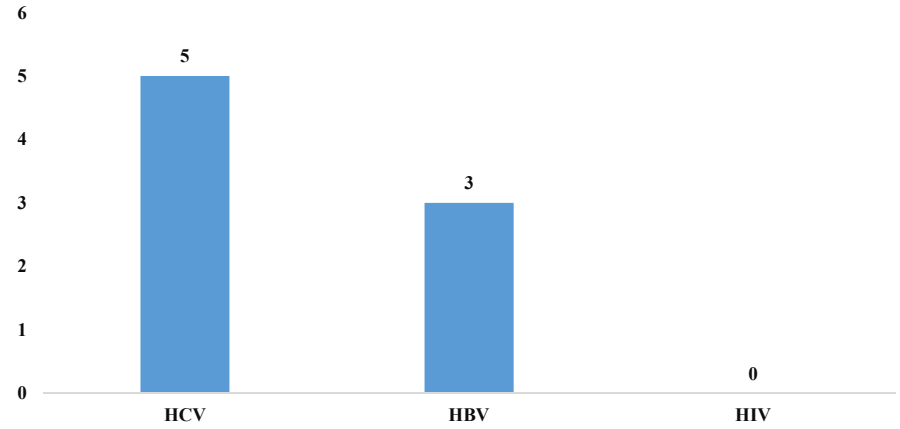

Fig. 5: Distribution of study participants by positive serological results (N=8)

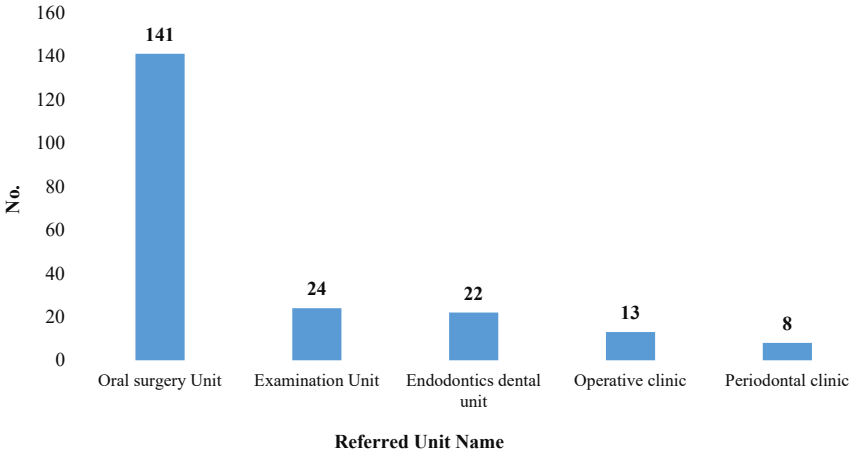

Fig. 6: Distribution of participants by referred unit name (N= 208)

The overall seropositivity was low, with HCV being more prevalent than HBV and no HIV infections detected. The findings highlight the importance of routine viral screening in dental practice, even when overall prevalence appears low, as undiagnosed carriers may pose a risk to both patients and dental professionals[9-11].

The statistically significant association between HCV infection and age group, as well as travel outside Iraq, emphasizes the need for targeted

These results align with previous studies conducted in Iraq, even in populations with low prevalence, dental professionals remain at risk of exposure to blood-borne pathogens. Maintaining strict infection control measures, including sterilization, the use of personal protective equipment (PPE), and patient education, is essential to minimize occupational hazards[6-8].

Table 1: Distribution of study participants by Age group (N=208)

Age group	No.	%
>20	25	12
20-39	127	61.1
40-59	40	19.2
= 60	16	7.7
Total	208	100

Table 2: Distribution of study participants by risk factor

Question	Response	No.	%
Have you traveled outside of Iraq?	Yes	69	33.2
	No	139	66.8
	Total	208	100
Have you ever been hospitalized?	Yes	95	45.7
	No	113	54.3
	Total	208	100
Have you donated blood or had a blood transfusion?	Yes	50	24.0
	No	158	76.0
	Total	208	100
Have you visited a beauty or tattoo center?	Yes	35	16.8
	No	173	83.2
	Total	208	100
Have you ever been injured and hospitalized outside of a medical institution?	Yes	35	16.8
	No	173	83.2
	Total	208	100

Table 3: Distribution of HBV and HCV results according to participants' demographic (N=208)

Variable	Class	Negative No. (%)	HBV No. (%)	HCV No. (%)	P-Value
Sex	Male	87 (94.6)	2 (2.2)	3 (3.3)	0.63
	Female	113 (97.4)	1 (0.9)	2 (1.7)	
	Total	N= 208 (100%)			
Age group (years)	< 20	25 (100.0)	0 (0.0)	0 (0.0)	0.005*
	20–39	124 (97.6)	3 (2.4)	0 (0.0)	
	40–59	35 (89.5)	0 (0.0)	5 (12.5)	
	= 60	16 (100.0)	0 (0.0)	0 (0.0)	
	Total	N= 208 (100%)			
District	Al-Hilla 1	90 (96.8%)	2 (2.2%)	1 (1.1%)	0.93
	Al-Hilla 2	70 (94.6%)	1 (1.4%)	3 (4.1%)	
	Hashimiyyah	22 (100.0%)	0 (0.0%)	0 (0.0%)	
	Al-Mahawil	14 (93.3%)	0 (0.0%)	1 (6.7%)	
	Al-Musayyib	1 (100.0%)	0 (0.0%)	0 (0.0%)	
	Kutha	3 (100%)	0 (0.0%)	0 (0.0%)	
	Total	N= 208 (100%)			
Occupation	Health care worker	10 (100.0%)	0 (0.0%)	0 (0.0%)	0.27
	Housewife	69 (95.8%)	1 (1.4%)	2 (2.8%)	
	Military personnel	5 (71.4%)	1 (14.3%)	1 (14.3%)	
	Others	14 (100.0%)	0 (0.0%)	0 (0.0%)	
	Prisoner	3 (100.0%)	0 (0.0%)	0 (0.0%)	
	Retired	7 (100.0%)	0 (0.0%)	0 (0.0%)	
	Self-employed	44 (93.6%)	1 (2.1%)	2 (4.3%)	
	Student	48 (100.0%)	0 (0.0%)	0 (0.0%)	
	Total	N= 208 (100%)			

**Significant difference between percentages using Pearson Chi-square test (χ^2-test) at P -value = 0.05.*
Fisher's exact test at 0.05 level used for cells have expected count less than 5.

Table 4: Distribution of HBV and HCV results according to risk factors characteristics (208)

Variable	Class	Negative No. (%)	HBV No. (%)	HCV No. (%)	P-Value
Travel outside Iraq	Yes	63 (91.3)	2 (2.9)	4 (5.8)	0.02*
	No	137 (98.6)	1 (0.7)	1 (0.7)	
	Total	N= 208 (100%)			
Hospitalized	Yes	90 (94.7)	2 (2.1)	3 (3.2)	0.6
	No	110 (97.3)	1 (0.9)	2 (1.8)	
	Total	N= 208 (100%)			
Blood donation/transfusion	Yes	47 (94.0)	1 (2.0)	2 (4.0)	0.81
	No	153 (96.8)	2 (1.3)	3 (1.9)	
	Total	N= 208 (100%)			
Beauty or tattoo center	Yes	35 (100.0)	0 (0.0)	0 (0.0)	0.48
	No	165 (95.4)	3 (1.7)	5 (2.9)	
	Total	N= 208 (100%)			
Injury outside medical institution	Yes	33 (94.3)	1 (2.9)	1 (2.9)	0.73
	No	167 (96.5)	2 (1.2)	4 (2.3)	
	Total	N= 208 (100%)			

**Significant difference between percentages using Pearson Chi-square test (χ^2-test) at P -value = 0.05.*
Fisher's exact test at 0.05 level used for cells have expected count less than 5.

preventive measures and patient education regarding potential exposure risks. Other demographic and clinical variables did not show significant associations, suggesting that screening should remain a universal precaution for all patients undergoing invasive dental procedures.

Which emphasize the ongoing need for vigilance, early detection, and strict infection control protocols[9-11]. Incorporating regular viral screening, alongside proper sterilization, use of personal protective equipment, and patient awareness programs, is crucial to safeguard both patients and dental healthcare workers[6-8].

The study also demonstrates that most patients attended the Oral Surgery unit, indicating that invasive procedures increase the potential risk of exposure, further underscoring the need for screening and preventive measures.

CONCLUSION

The prevalence of HBV and HCV among dental patients in Babylon City was low, and no HIV infections were identified. HCV infection showed a significant association with age group and travel history. These findings underscore the importance of routine viral screening, adherence to infection control protocols, and awareness programs in dental settings. Maintaining these preventive measures is essential to protect both patients and dental professionals from potential blood-borne infections.

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