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# Seroprevalence and demographic determinants of hepatitis B and C among outpatients in Babylon, Iraq

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## Abstract

Blood-borne viral hepatitis is a significant public-health problem, and population-level screening is required to understand its distribution and risk. The aim of this study was to estimate the seroprevalence of hepatitis B virus (HBV) and hepatitis C virus (HCV) infection among outpatients in Al-Musayyib city in Babylon Governorate, Iraq and to study the association of infection with sex, age group and area of residence. One hundred and twenty-five (125) consecutive outpatients attending Al-Musayyib General Hospital were serotyped for hepatitis B surface antigen (HBsAg) and anti-hepatitis C virus ( HCV) antibody during 2019 by enzyme-linked immunosorbent assay (ELISA), and associations between seropositivity and demographic variables were assessed by chi-square tests with a significance threshold of $p < 0.05$. Thirty-nine (31.2%) of 125 participants were seropositive for at least one hepatitis marker; disaggregation of the markers showed the prevalence of HBV (25/125, 20.0%) and HCV (15/125, 12.0%), with 24 HBsAg-monoinfected, 14 anti-HCV-monoinfected, and one dual-positive co-infection (0.8%). There were more seropositive males than females (61.5% vs 38.5% of infections), but this was not statistically significant ($p = 0.894$). The highest burden was found in the 21-40 age group (46.3% within-group prevalence; 48.7% of all infections), followed by the 41-60 age group (27.6%) and 61-80 age group (18.9%) (differences across age groups were not significant ($p = 0.064$)). Residence was a strong determinant of infection; 35 of 39 seropositive participants (89.7%) were in rural areas ($p < 0.001$). The prevalence of HBV/HCV seroprevalence in outpatients of Al-Musayyib is high and is mainly confined to rural communities and adults in working-age groups. To support Iraq's hepatitis-elimination goals, targeted screening in rural areas, catch-up vaccination, and confirmation of viraemia by molecular testing are recommended.

***Keyword:*** *Hepatitis B virus, hepatitis C virus, seroprevalence, rural health, Iraq*

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## INTRODUCTION

Hepatitis B virus (HBV) is a major global health problem and one of the leading causes of liver disease; in 2019, it was estimated that 316 million people globally were living with chronic HBV infection [1]. In total, it is estimated that 2 billion people have been infected with HBV at some point in their lives and of these, an estimated 400 million are chronically infected [2]. HBV infection is heterogeneously distributed around the world, with high incidence (≥8%) in sub-Saharan Africa and low incidence (<2%) in northern and western Europe, Australia, and New Zealand and in North America.[3]

HBV is a partially double-stranded DNA virus of about 3200 base pairs which encodes four proteins: core protein, envelope protein, X protein and polymerase protein. The envelope proteins are glycoproteins on the viral surface and are collectively referred to as hepatitis B surface antigen (HBsAg). Most commonly spread through blood and other body fluids such as vaginal secretions and semen [4] (HBV DNA has been found in saliva, nasopharyngeal fluid, tears and urine [5]). Chronic hepatitis B (CHB) is a major cause of hepatocellular carcinoma (HCC).[6]

Only about 1/3 of those infected with HBV are aware of their infection, as symptoms arise only at late stages of the disease. The limited public awareness of the disease, the lack of curative treatment for chronic infection, and the lengthy treatment duration also contribute to delayed diagnosis and family history is a significant diagnostic clue .[7]

The incidence of HCV infection rose two-fold from 2009 to 2014, especially in women of reproductive age who are giving birth [8, 9]. HCV is a small, enveloped, single-stranded RNA virus that is genetically highly heterogeneous, with 7 recognised genotypes, the most common being genotype 1, accounting for ~46% of all HCV infections.[10]

HCV is a blood-borne virus that is endemic worldwide and causes a significant amount of liver disease. The virus is not usually self-limited, and infection can be chronic, leading to cirrhosis and hepatocellular carcinoma in most cases. HCV also causes lipid and glucose metabolic abnormalities and a wide array of extrahepatic manifestations and is capable of replicating in a variety of human cell types other than hepatocytes; chronic HCV infection is more and more viewed as a systemic disease [11]. Transmission is primarily via direct contact with contaminated blood, whether via sharing of needles, unprotected blood transfusion, contact with blood-contaminated items like toothbrushes and razors, tattooing or from mother to child. There are currently no vaccines to prevent HCV. Chronic infection occurs in over 50% of patients, but these can be cured with direct acting antiviral drugs in 8–12 weeks.[12]

Published estimates are highly geographically variable within Iraq, and most existing data are from blood-donor screening or central-laboratory records and not from community or outpatient populations. A study of 2,110 confirmed cases of viral hepatitis from 2014 to 2018 in the Central Public Health Laboratory of Babylon Governorate revealed that HBV was the most common, with 9.7%, and HCV with 1.8%, and HBV cases were most numerous in 2015, and males were predominant [13]. The prevalence rates of both HBsAg and anti-HCV in blood donors in Babylon (0.7% and 0.5%, respectively) were lower than those in Basra (HBV-seromarker prevalence rates >0.7%) and were similar to Baghdad (0.6%). HBV infections in Duhok, northern Iraq, were found mostly in men, and blood transfusion and prior surgery and dental procedures were thought to be important risk factors [15, 16]. However, current sex/age-stratified data on seroprevalence in outpatients in Babylon Governorate, especially in mixed urban–rural areas like Al-Musayyib, are still limited, and this constitutes the gap in the literature that this study aimed to fill.

This study aimed to find out the seroprevalence of HBV and HCV by markers and study its association with sex, age group and area of residence among outpatients of Al-Musayyib General Hospital. The following a priori hypotheses were evaluated: (H1) that there are no significant differences in seropositivity between males and females, (H2) significant variation in seropositivity across age groups, with the highest being in the young adult age group (21-40 years), and (H3) significant difference in seropositivity between rural and urban residents.

## MATERIALS AND METHODS

### Study design and setting

The present study was a cross-sectional screening in 2019 that was based on Al-Musayyib General Hospital which is the main public hospital of Al-Musayyib city and rural districts in Babylon Governorate of Iraq. There are still many challenges in accessing primary healthcare services in Iraq, including the quality of services, the lack of resources and staffing, and access limitations, especially in rural areas [17]. The Institutional Ethics Committee of the University of Al-Hamdaniya reviewed and approved the study protocol (Approval No. UH.2026.016); it is noted that the year of study (2019) and the year of approval (2026) are two different stages in the study timeline, in the sense that the study protocol was approved by the Institutional Ethics Committee of the University of Al-Hamdaniya in 2026, while the data were collected in the field during 2019. The Babylon Health Directorate, Iraq Ministry of Health, also gave official administrative permission to enter the hospital and its serology laboratory.

### Study population and eligibility criteria

All consecutive outpatients aged ≥ 18 years of both sexes attending Al-Musayyib General Hospital at the recruitment period were eligible for enrolment. Inclusion criteria were: attending the hospital during the study window and written informed consent of the participant or parent/legal guardian (in the case of a minor). Exclusion criteria included refusal of consent and clinical severity such that safe blood collection was not possible. Prior HBV vaccination status, immunosuppressive therapy and haemodialysis were not exclusion criteria to maintain a consecutive outpatient sampling frame. The HBV screening focused on HBsAg (a surface antigen of active infection) and not anti-HBs, so there was no possibility of false positive results of HBV as a result of vaccine-induced humoral immunity; this issue is discussed in section3.6.

## Sample collection

A total of 125 venous blood samples were collected from outpatients of different ages and both sexes attending the hospital. The arm was disinfected with antiseptic and a tourniquet was applied; blood was drawn by venepuncture into labelled plain tubes, the tourniquet was released immediately after collection, and the puncture site was covered with antiseptic cotton and a bandage. For infants and young children, capillary blood was collected by lancet. Samples were centrifuged, and the separated sera were labelled and transferred to the serology laboratory for antigen/antibody testing against hepatitis viruses. No behavioural or clinical risk-factor questionnaire (e.g., history of cupping, barbering, dental treatment, surgery or blood transfusion) was administered; the dataset comprised the serological results together with sex, age and area of residence only.

## Detection of hepatitis B surface antigen (HBsAg)

HBsAg was detected by a qualitative enzyme immunoassay (HBsAg EIA Test Kit, Foresight, Cat. No. 3000-1101, Spain) according to the manufacturer's instructions. Briefly, 25× wash buffer (Tris-HCl) was diluted with 950 mL distilled water. Micro-wells of a 96-well plate, pre-coated with monoclonal antibodies against different HBsAg subtypes, were allocated as follows: two wells for positive controls, one blank well, and two wells for negative controls; the remaining wells received test samples. A volume of 100 µL of each control or patient serum was added, and plates were incubated at 37 °C for 45 min. Conjugate (50 µL) was then added and plates were incubated for a further 45 min at 37 °C, followed by washing with an SFRI IW96 microplate washer (France). Substrate A (50 µL) and substrate B (50 µL) were added sequentially, and plates were incubated at 37 °C for 10 min. Absorbance was read at 450 nm (with 630–700 nm reference) using an ELISA reader. Plates were covered with adhesive seals during incubation to prevent evaporation and contamination.

## Detection of hepatitis C virus markers

Anti-HCV antibodies were detected by a third-generation qualitative enzyme immunoassay targeting total anti-HCV antibodies against recombinant Core, NS3, NS4, and NS5 antigens (Anti-HCV ELISA Kit, CTK Biotech, Inc., Cat. No. E0511), with a manufacturer-declared diagnostic sensitivity of 100.0% (95% CI: 98.2%–100.0%) and a declared diagnostic specificity of 99.6%–100.0% (95% CI: 99.1%–100.0%). The assay followed essentially the same format as the HBsAg procedure, with the following modifications: 100 µL of diluent was added to each sample, positive-control, and negative-control well (but not the blank well), followed by 10 µL of the corresponding sample or control. Plates were incubated at 37 °C for 35 min, washed, and 100 µL of conjugate was added with a further 30-min incubation. After a second wash, 50 µL each of chromogen solutions A and B were added and the plate was incubated for 10 min; the reaction was stopped with 50 µL of stop solution, and absorbance was measured at the same wavelengths as for HBsAg.

## Statistical analysis

Categorical variables are summarised as counts and percentages. Associations between HBV/HCV seropositivity and sex, age group, and area of residence were tested using the chi-square test of independence against the predefined hypotheses H1–H3. An exact binomial test was used to evaluate the predominance of rural residence among seropositive participants. Statistical significance was set at $p < 0.05$ (two-tailed).

# RESULTS AND DISCUSSION

## Overall and marker-specific seroprevalence

Of the 125 participants screened, 39 (31.2%) were seropositive for at least one hepatitis marker (HBsAg and/or anti-HCV) and 86 (68.8%) were seronegative for both. Because HBV and HCV have distinct transmission dynamics and risk profiles, the seropositive group was disaggregated by marker (Table 3): 24 participants (19.2% of the cohort) were HBsAg-monoinfected, 14 (11.2%) were anti-HCV-monoinfected, and 1 participant (0.8%) was dual-positive for HBsAg and anti-HCV (HBV/HCV co-infection). The overall marker prevalences were therefore 20.0% for HBV (25/125) and 12.0% for HCV (15/125). Unless stated otherwise, the demographic analyses in section3.2–3.4 refer to the either-marker seropositive group (n = 39).

**Table 3.** Marker-specific seroprevalence among the 125 participants

| Serological marker profile | Positive cases, n | % of total positives | Prevalence in cohort (N = 125) |
|---|---|---|---|
| HBsAg positive only (HBV monoinfection) | 24 | 61.5% | 19.2% |
| Anti-HCV positive only (HCV monoinfection) | 14 | 35.9% | 11.2% |
| Dual positive (HBsAg+ and anti-HCV+ co-infection) | 1 | 2.6% | 0.8% |
| Total seropositive (either marker) | 39 | 100.0% | 31.2% |
| Seronegative for both markers | 86 | – | 68.8% |

## Seropositivity by sex

Among the seropositive participants, 24 (61.5%) were male and 15 (38.5%) female; among seronegative participants, 54 (62.8%) were male and 32 (37.2%) female (Table 1, Figure 1). The within-sex seroprevalence was 30.8% in males (24/78) and 31.9% in females (15/47). The difference was not statistically significant (chi-square = 0.018, p = 0.894); hypothesis H1 was therefore not rejected.

**Table 1.** Seropositivity for HBV/HCV (either marker) according to sex

| Group | Male, n (%) | Female, n (%) | p value |
|---|---|---|---|
| Seropositive | 24 (30.8%) | 15 (31.9%) | 0.894 |
| Seronegative | 54 (69.2%) | 32 (68.1%) | – |

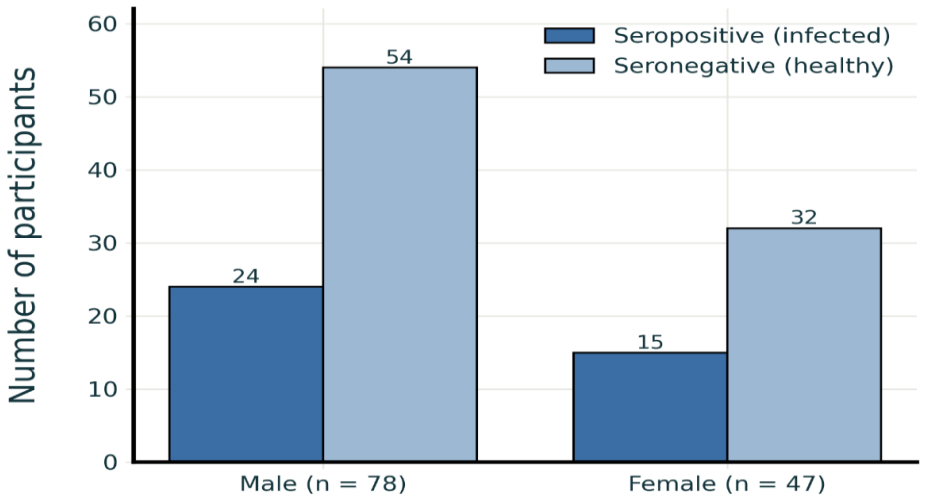



**Figure 1.** Number of seropositive (infected) and seronegative (healthy) participants by sex: 24 of 78 males and 15 of 47 females were seropositive for at least one hepatitis marker.

## Seropositivity by age group

Seropositivity varied across the four age groups (Table 2, Figure 2). Within-group prevalence was lowest in the 61–80-year group (7/37; 18.9%), followed by the 1–20-year (5/18; 27.8%) and 41–60-year (8/29; 27.6%) groups, and was highest in the 21–40-year group (19/41; 46.3%). In terms of the share of all infections, the 21–40-year group also accounted for the largest proportion (19/39; 48.7%). The difference in seropositivity across age groups approached but did not reach statistical significance (chi-square = 7.25, p = 0.064); hypothesis H2 was therefore only partially supported – the directional prediction (highest burden in young adults) was confirmed, but not at the $\alpha = 0.05$ level.

**Table 2.** Seropositivity for HBV/HCV (either marker) according to age group

| Group | 1–20 yrs (n = 18) | 21–40 yrs (n = 41) | 41–60 yrs (n = 29) | 61–80 yrs (n = 37) | p value |
|---|---|---|---|---|---|
| Seropositive, n (%) | 5 (27.8%) | 19 (46.3%) | 8 (27.6%) | 7 (18.9%) | 0.064 |
| Seronegative, n (%) | 13 (72.2%) | 22 (53.7%) | 21 (72.4%) | 30 (81.1%) | – |

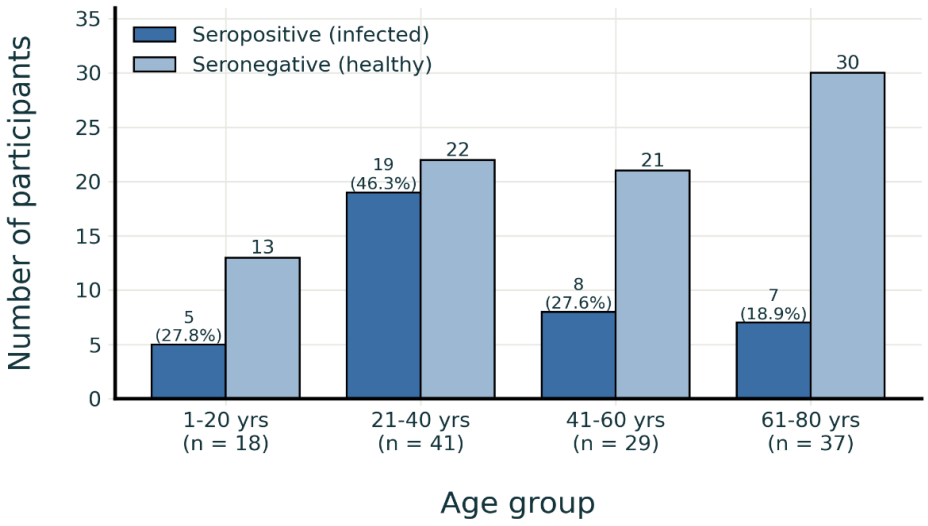



**Figure 2.** Distribution of HBV/HCV seropositivity across age groups. Bars show numbers of seropositive and seronegative participants; percentages above infected bars indicate within-group seroprevalence. The 21–40-year group was most affected (19/41; 46.3%).

## Seropositivity by area of residence

Among the 39 seropositive participants, 35 (89.7%) lived in rural areas and only 4 (10.3%) lived in the urban centre of Al-Musayyib; 20 of the 24 infected males and all 15 infected females were rural residents (Figure 3). This predominance of rural residence was highly significant (exact binomial test, $p < 0.001$); hypothesis H3 was therefore strongly supported. Given the population served by the hospital, the screened cohort nevertheless represents only a very small fraction of the local community.

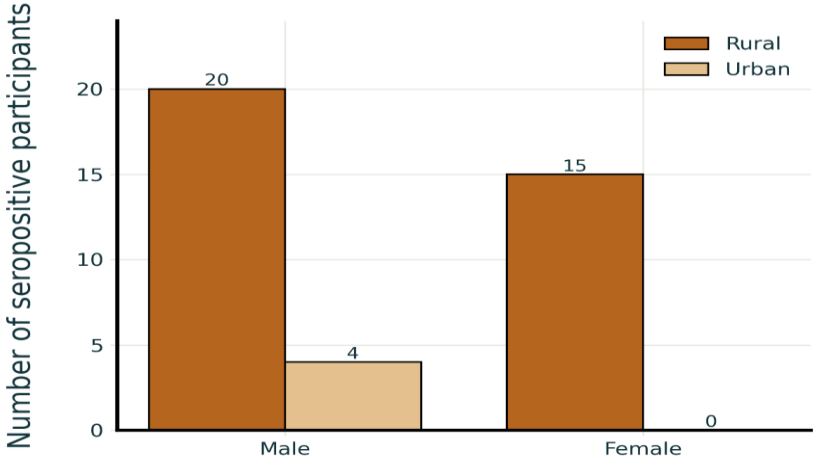



**Figure 3.** Area of residence (rural vs urban) among seropositive participants, stratified by sex. The great majority of infected males and all infected females lived in rural areas.

## DISCUSSION

Viral hepatitis is a type of inflammatory liver disease which can also be caused by autoimmune, drug-induced, toxic or alcoholic causes. It can manifest as acute, self-limited hepatitis, chronic hepatitis, cirrhosis and hepatocellular carcinoma, and early diagnosis is crucial to minimise morbidity and mortality.

The detection of HBsAg has traditionally been used as the standard for HBV screening, even in blood transfusion centres [4, 18]. A systematic review and meta-analysis of 40 studies showed that laboratory-based enzyme immunoassays have higher sensitivity for detection of HBsAg (pooled rapid-test sensitivity ≈90%, with wide variation between brands) [19], which is why we chose to use defined laboratory ELISAs exclusively for both HBV and HCV screening, and explicitly report the characteristics of each assay. However, molecular confirmation of viraemia (HBV DNA or HCV RNA) is required prior to defining the chronic-infection status and treatment eligibility, as suggested in the current international guidelines.[20]

The marker-specific disaggregation (20.0% HBV vs 12.0% HCV) is also epidemiologically informative – the HBV is still the dominant infection in this outpatient cohort, as is observed in the laboratory confirmed case profile in Babylon (9.7% HBV vs 1.8% HCV) over 2014-2018 [13] – but our outpatient estimates are well above historical blood-donor estimates [14] which is to be expected as blood donors are a pre-selected low-risk population. The single positive dual participant attests to the fact that there is a possibility of HBV/HCV co-infection in this context, and the same should be considered in future screening-driven treatment programmes.

The proportion of males infected was higher than females (61.5% vs 38.5%) but not significantly different. This is similar to previous reports. Poynard et al. [21] demonstrated the sex-dissimilarity for fibrosis progression in chronic viral hepatitis and explained this by aetiological and hormonal factors. Butterfield et al. [22] reported that HCV infection was almost twice as prevalent in males compared to females with severe mental illness. Similarly, studies in the Duhok area in northern Iraq found that blood transfusion, previous surgery and dental procedures were important risk factors for most HBV infections and that the majority of infections occurred in males [15, 16]. In Tihamet Aseer (south-western Saudi Arabia), Al-Humayed [23] found no significant sex difference for HBsAg and a significant difference for HCV, which was attributed to the cupping practice, previous surgery, dental extraction, educational level and history of blood transfusion, partly corroborated by the systematic review of cupping therapy and transfusion-transmitted infections [24]. Male predominance has also been explained as a lifestyle factor, as men spend more time out of the home and are exposed to more sources of contamination; a possible explanation in the context, as HBV is infectious for at least 7 days when dried on environmental surfaces [25]. As there was no behavioural risk-factor data gathered in the present study (see section2.3), these explanations, from the literature, are given as context only and cannot be tested on our cohort.

Wang et al. [26] proposed an alternate explanation for the sex difference, namely that it was due to the effects of sex hormones, not behaviour or environment. HBV transcription is regulated in opposite ways by androgen and oestrogen pathways via their action on viral enhancer I, and sex hormones can also influence the immune response to HBV, though the mechanism is not fully understood; other factors such as the route of viral entry, the interaction between sex hormones and viral integration and microRNA profiles may also play a role.

In terms of age, the 21–40 age group had the highest proportion of infections (48.7%) and within-group prevalence (46.3%) but the association was of borderline significance ($p = 0.064$). This is in tandem with Kolou et al. [27] who observed the highest prevalence of HBV in the age group 20–39 years in Lomé, Togo and Ogunfemi et al. [28] who reported a similar age group burden. Guclu et al. [29], on the other hand, observed that HBsAg and HCV prevalence showed a positive correlation with age but a negative correlation with sex, which is opposite to the sex distribution observed in this study. We have noted that in our cohort, there was a greater proportion of infections among individuals aged 21–40 years, possibly due to a higher probability of exposure in this age group as described in the studies cited (increased occupational and social mobility, sexual activity, and health care or cosmetic procedures); we note that this is a hypothesis and not a conclusion of this analysis as behavioural exposures were not measured in our cohort but rather derived from the literature.

Perhaps most surprising was the strong association of seropositivity with rural residence (89.7%, exact binomial $p < 0.001$). This is reported as a descriptive epidemiological observation. The barriers to primary-healthcare services that have been documented in Iraq – including access problems, perceived quality of services, staffing, and resource limitations – are more likely to be a problem in rural districts [17], but due to the lack of a standardised

exposure questionnaire in the present study, we do not take these practices as risk factors for our findings and present them only as possible context for our findings that will need to be empirically tested. What the data do confirm is that the community around Al-Musayyib is a priority population for intervention: strengthening community-level prevalence surveillance [30], linking screening to vaccination catch-up and universal infant immunisation [31] and confirming viraemia molecularly [20] are all key to accelerating progress towards the global hepatitis-elimination targets endorsed for 2030 [32].

## Limitations and future perspectives

This study should be viewed as a preliminary hypothesis-generating outpatient screen and not a definitive prevalence survey. This was a single-centre, cross-sectional study with a small sample (n = 125) of a small proportion of the community served; serological screening was done without molecular confirmation of viraemia; behavioural and clinical exposure factors (such as vaccination, history of immunosuppression, haemodialysis) were not individually recorded; and no risk-factor questionnaire was administered. Instead of being considered as limitations, we consider these as a concrete agenda for follow-up research in Babylon Governorate:

Enhanced community sampling, on a larger scale, in multiple centres. Expansion of screening to community- and primary-care-based recruitment in urban and rural districts of Babylon, with sample size powered for marker-specific and subgroup analyses, would yield reliable prevalence estimates and test the rural predominance reported here at population level.

Molecular confirmation and molecular typing. Confirmatory quantification of HBV DNA and HCV RNA using PCR and genotyping would differentiate resolved from chronic infection, determine treatment eligibility and map circulating strains, following international guidelines.[20]

Standardised risk-factor ascertainment. The contextual explanations discussed in section3.5 could be translated into empirically testable risk estimates for this population by administering a validated questionnaire on wet cupping, informal barbering, dental/surgical history, blood transfusion, tattooing, and family history and analysed using multivariable regression.[24 ,23 ,16]

Collection of immunological and clinical covariates. This would remove the residual confounding recognised in section2.2 and allow for adjusted prevalence modelling by systematically documenting HBV vaccination status, immunosuppressive therapy and haemodialysis history.

Screening-to-care linkage. The current surveillance data would be transformed into actionable outcomes towards the elimination goals by introducing serological screening alongside catch-up HBV vaccination, UII and referral to antiviral treatment, especially through mobile sero-screening units in rural areas [31, 32].

## CONCLUSION

Seropositivity for at least one hepatitis marker was high (31.2%) among outpatients attending Al-Musayyib General Hospital in 2019, with an HBV (HBsAg) prevalence of 20.0%, an anti-HCV prevalence of 12.0%, and a single dual infection. Infection was most frequent in young adults aged 21–40 years (H2 partially supported) and was overwhelmingly concentrated in rural residents (H3 strongly supported), while no significant difference was observed between the sexes (H1 not rejected). Structural and social determinants – including education, residence, economic status, healthcare access, and family history of infection – plausibly shape the distribution of viral hepatitis in this setting, although behavioural pathways were not measured in this study. These findings support prioritising rural, community-based screening, HBV vaccination catch-up, and confirmatory molecular diagnosis in Babylon Governorate, and the future-work agenda set out in section3.6 defines the next phase of this research.

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## Disclosure of conflict of interest

The author declares that there are no conflicts of interest.

## Ethical Statement

This is a cross-sectional study following the ethical principles of the Declaration of Helsinki. The study protocol and procedures were approved by the Institutional Ethics Committee of the University of Al-Hamdaniya (Approval No. UH.2026.016); this approval is the committee's retrospective certification, in 2026, of the archived dataset generated by the fieldwork conducted during 2019.


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## Declaration of generative AI in the writing process

Artificial intelligence–assisted tools were used only to improve the language and readability of this manuscript. The author reviewed and edited the resulting content and takes full responsibility for the integrity and accuracy of the publication.

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## الانتشار المصلي والمحددات الديموغرافية لالتهاب الكبد "بي" و"سي" بين المرضى الخارجيين في محافظة بابل، العراق

**ملخص**

لا يزال التهاب الكبد الفيروسي المنقول عن طريق الدم يشكل عبئاً كبيراً على الصحة العامة، ويُعد إجراء الفحوصات على مستوى السكان أمراً جوهرياً لتحديد نطاق انتشاره ومخاطره. هدفت هذه الدراسة إلى تقييم الانتشار المصلي لفيروس التهاب الكبد "بي" (HBV) وفيروس التهاب الكبد "سي" (HCV) بين المرضى الخارجيين في مدينة المسيب بمحافظة بابل في العراق، مع دراسة ارتباط ذلك بعوامل الجنس، والفئة العمرية، ومكان الإقامة. خلال عام 2019، خضعت عينات مصلية مأخوذة من 125 مريضاً خارجياً -تم اختيارهم بالتتابع- في مستشفى المسيب العام للفحص للكشف عن المستضد السطحي لفيروس التهاب الكبد "بي" (HBsAg) والأجسام المضادة لفيروس التهاب الكبد "سي" (anti-HCV) باستخدام تقنية المقايسة المناعية المرتبطة بالإنزيم (ELISA). كما تم تقييم الارتباط بين النتائج الإيجابية والمتغيرات الديموغرافية باستخدام اختبار "مربع كاي" (مع اعتماد مستوى دلالة إحصائية $p < 0.05$). أظهرت النتائج أن 39 مشاركاً من أصل 125 (أي بنسبة 31.2%) كانوا إيجابيين لواحدة على الأقل من مؤشرات الإصابة بالتهاب الكبد؛ حيث تبين وجود 24 حالة إصابة بفيروس "بي" فقط (19.2%)، و14 حالة إصابة بفيروس "سي" فقط (11.2%)، وحالة واحدة مصابة بكلا الفيروسين معاً (0.8%). وبذلك بلغ معدل الانتشار الإجمالي لفيروس التهاب الكبد "بي" 20.0% (125/25)، ولفيروس التهاب الكبد "سي" 12.0% (125/15). كانت نسبة الإصابة بين الذكور أعلى منها بين الإناث (61.5% مقابل 38.5% من إجمالي الإصابات)، رغم أن هذا الفارق لم يصل إلى مستوى الدلالة الإحصائية ($p = 0.894$). وقد سُجّل العبء الأكبر للإصابات ضمن الفئة العمرية 21–40 عاماً (بمعدل انتشار بلغ 46.3% داخل هذه الفئة، وهو ما يمثل 48.7% من إجمالي الإصابات)، تلتها الفئة العمرية 41–60 عاماً (27.6%)، ثم الفئة العمرية 61–80 عاماً (18.9%)؛ ورغم اقتراب الفروق بين الفئات العمرية من مستوى الدلالة الإحصائية، إلا أنها لم تصل إليه فعلياً ($p = 0.064$). ارتبط مكان الإقامة ارتباطاً وثيقاً بالإصابة؛ إذ تبين أن 35 من أصل 39 مشاركاً ممن أظهرت الفحوصات وجود أجسام مضادة لديهم (أي بنسبة 89.7%) يقيمون في مناطق ريفية ($p < 0.001$). وتُعد معدلات انتشار الأجسام المضادة لفيروسي التهاب الكبد B وC بين المرضى المراجعين للعيادات الخارجية في "المسيب" مرتفعة، وتتركز بشكل خاص بين الشباب في سن العمل وفي المجتمعات الريفية. ولتحقيق أهداف العراق الرامية إلى القضاء على التهاب الكبد، يُوصى بإجراء فحوصات استهدافية في المناطق الريفية، وتكثيف حملات التطعيم، والتأكد من وجود الفيروس في الدم (viremia) باستخدام الاختبارات الجزيئية.

الكلمات المفتاحية: فيروس التهاب الكبد B، فيروس التهاب الكبد C، معدل الانتشار المصلي، الصحة الريفية، العراق