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EPIDEMIOLOGICAL CHARACTERISTICS OF VIRAL HEPATITIS B IN TASHKENT CITY

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Abstract. This study provides a retrospective epidemiological assessment of hepatitis B cases registered in Tashkent city. The main objective of the research was to examine long-term patterns of morbidity, evaluate incidence trends, and analyze territorial as well as gender-related characteristics of the disease distribution. The results of the study may serve as an important scientific basis for improving preventive strategies, strengthening epidemiological surveillance, and enhancing public health interventions aimed at controlling hepatitis B infection.

Keywords: parenteral transmission, HBV, liver cirrhosis, medical interventions, incidence rate, epidemiological assessment, morbidity.

Introduction. Viral hepatitis B (VHB) remains one of the most significant infectious diseases posing a serious challenge to global public health systems. The infection is particularly dangerous due to its ability to develop into a chronic condition, leading to progressive liver damage, cirrhosis, and hepatocellular carcinoma, which substantially increases the risk of mortality.

According to information presented by the World Health Organization (WHO) at the World Hepatitis Summit, mortality associated with viral hepatitis has shown an increasing tendency in recent years. The number of deaths caused by viral hepatitis rose from approximately 1.1 million in 2019 to nearly 1.3 million in 2022, which corresponds to around 3,500 deaths worldwide every day. Among these fatalities, hepatitis B accounts for approximately 83%, while hepatitis C is responsible for about 17% of cases. Current global estimates indicate that about 254 million individuals are living with chronic hepatitis B infection and nearly 50 million with hepatitis C. Epidemiological data also demonstrate that almost half of all infections occur among people aged 30–54 years, whereas children and adolescents under the age of 18 represent roughly 12% of the affected population. In addition, approximately 58% of infected individuals are men [1,2,6,7].

In Uzbekistan, hepatitis B continues to represent a significant public health issue. According to epidemiological assessments based on WHO data, a considerable proportion of the population remains affected by chronic hepatitis B infection, reflecting the persistence of the disease and the importance of effective prevention and control strategies. The prevalence of hepatitis B infection in the population indicates the need for continuous epidemiological monitoring, early detection programs, and strengthened preventive measures within the healthcare system [1,2,5].



Data from the Global Burden of Disease (GBD) Study 2019 indicate that the prevalence of hepatitis B surface antigen (HBsAg) in Uzbekistan was estimated at approximately 4.3% (95% confidence interval: 3.9–4.9%), while among children under five years of age the prevalence rate was around 0.4%. These findings highlight the ongoing circulation of the virus and emphasize the importance of vaccination programs, epidemiological surveillance, and preventive healthcare measures aimed at reducing the burden of hepatitis B infection [3,7,8].

Materials and methods. The study used official reports and morbidity data for 2015–2024 provided by the Committee for Sanitary and Epidemiological Well-Being and Public Health of the Tashkent city.

A retrospective epidemiological method was used in the study to assess the long-term dynamics of disease incidence and to analyze incidence rates across different regions.

Results and Discussion. The epidemiological analysis showed that 136 cases of viral hepatitis B were registered among the population of Tashkent city during 2015–2024. The incidence rate during this period showed noticeable fluctuations (Figure 1).

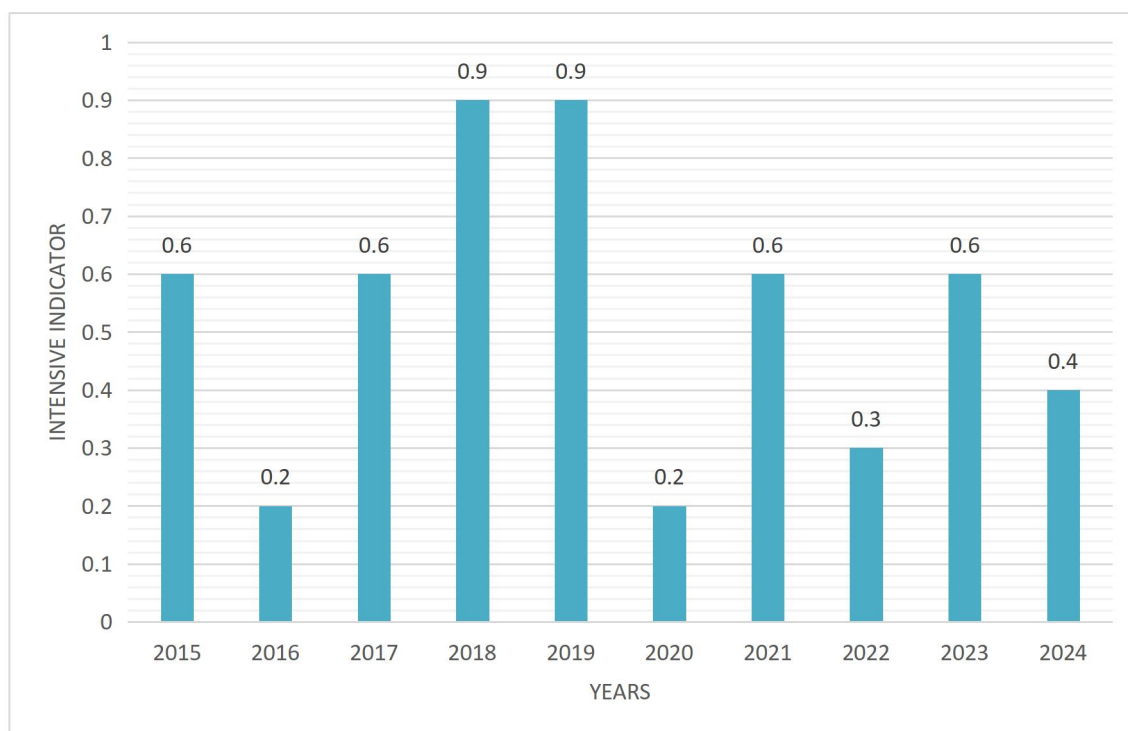


Figure 1. Incidence rates of viral hepatitis B among the population of the Republic of Uzbekistan during 2015–2024 (per 100,000 population)

In 2015, the incidence rate was 0.6 per 100,000 population, which decreased to 0.2 in 2016, then increased again to 0.6 in 2017. These changes may be related to variations in case detection, screening coverage, and reporting practices. The highest incidence rates were observed in 2018 and 2019, reaching 0.9 in both years, possibly due to improved diagnostic capacity and strengthened epidemiological surveillance.



In 2020, the incidence rate declined to 0.2, likely associated with the impact of the COVID-19 pandemic and quarantine measures, which may have reduced healthcare access and case detection.

In the following years, the rate fluctuated: 0.6 in 2021, 0.3 in 2022, 0.6 in 2023, and 0.4 in 2024. Overall, the results indicate that the incidence of viral hepatitis B in Tashkent city remained unstable, with the highest levels recorded in 2018–2019 and the lowest in 2016 and 2020. These findings highlight the influence of external factors, including healthcare system changes and the pandemic, and emphasize the need for continuous epidemiological surveillance and preventive measures.

An analysis of the long-term dynamics of viral hepatitis B incidence across the districts of Tashkent city during 2015–2024 revealed the following results (Figure 2).

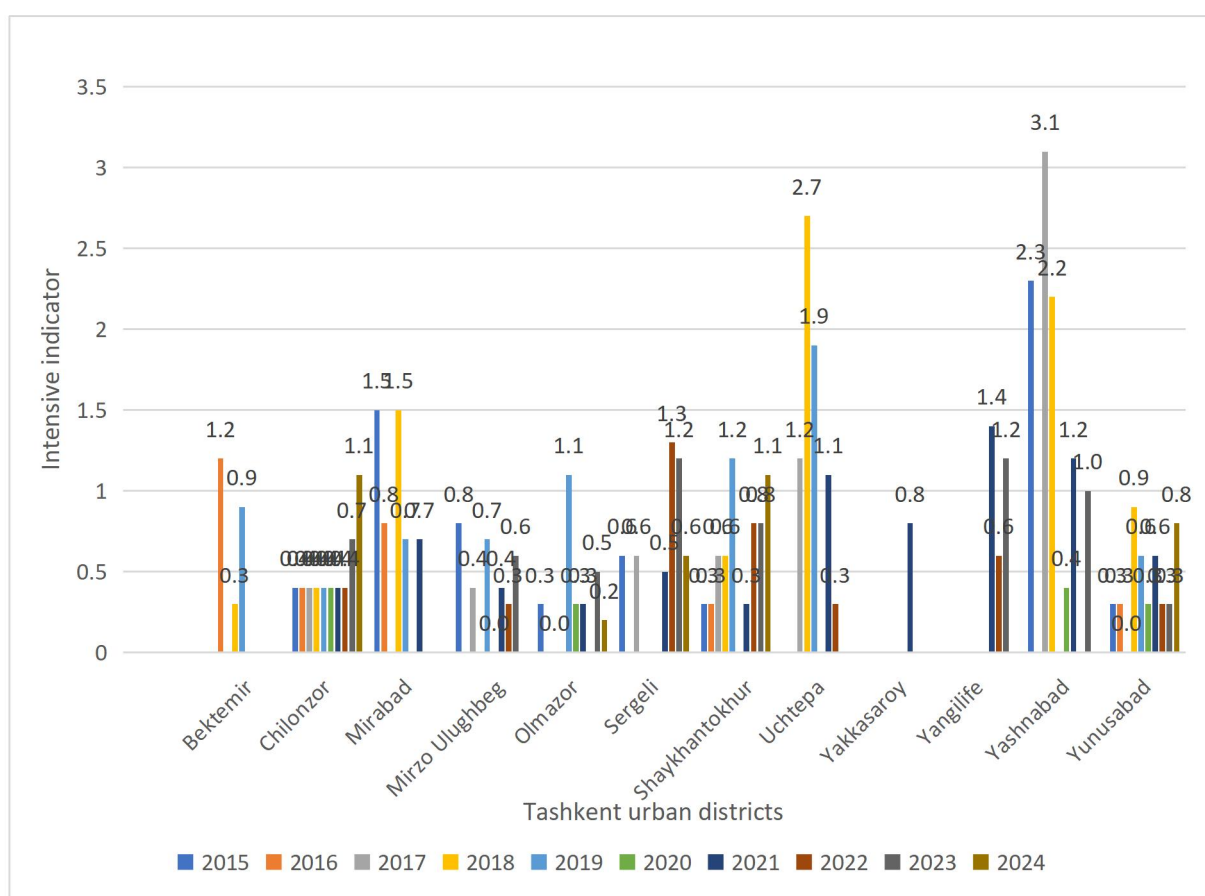


Figure 2. Long-term dynamics of Hepatitis B incidence in Tashkent city by districts for the years 2015–2024 (incidence rate per 100,000 population)

The analysis of viral hepatitis B incidence across the districts of Tashkent city during 2015–2024 revealed uneven distribution and noticeable territorial differences, which may be related to population density, migration, and access to healthcare services.

In 2015, higher incidence rates were recorded in Mirobod (1.5), Shaykhontohur (1.2), and Yashnobod (2.3) districts, while Bektemir and Chilonzor showed lower indicators. In 2018–2019, the highest rates were observed in Mirobod (1.5), Uchtepa (2.7), Yashnobod (2.3), and Sergeli (1.3), possibly associated with population growth, an increasing number of healthcare facilities, and active epidemiological risk factors.



In 2020, incidence rates declined across all districts to approximately 0.2–0.4, likely due to reduced healthcare utilization during the COVID-19 pandemic. In the following years, a gradual increase was observed, particularly in Yakkasaroy, Yashnobod, Yunusobod, Sergeli, Shaykhontohur, and Yangihayot districts.

Overall, the highest average incidence rates during the study period were identified in Yashnobod (10.2), Uchtepa (7.2), and Shaykhontohur (6.0) districts, while the lowest rates were recorded in Yakkasaroy (0.8), Bektemir (2.4), and Olmazor (2.7). These findings highlight the importance of strengthening epidemiological surveillance, improving disease registration systems, expanding screening programs, and increasing public awareness to prevent the spread of viral hepatitis B.

The gender-based analysis of viral hepatitis B incidence in Tashkent city during 2015–2024 showed fluctuations between males and females (Figure 3). Higher proportions among women were observed in 2015 (64.3%), 2017 (53.3%), and 2020 (75%), while men showed higher rates in 2016 (60%), 2018 (52.4%), 2019 (72.7%), 2022 (60%), and 2023 (52.9%). In 2021–2024, the proportion of cases between men and women became nearly equal.

Overall, during the study period 52.2% of cases occurred among men and 46.3% among women, indicating a slightly higher incidence in males. This may be related to risk factors such as unsafe sexual behavior and injection drug use, while among women infection may be associated with medical procedures, including gynecological interventions.

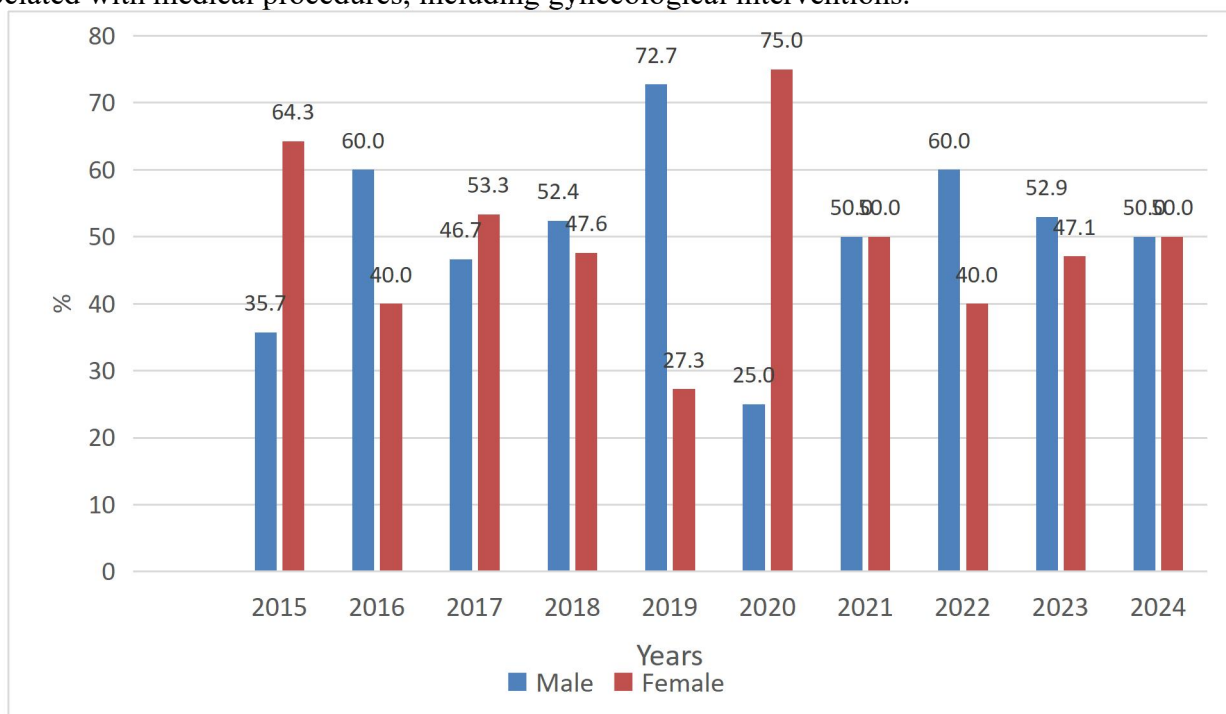


Figure 3. Gender distribution of Hepatitis B incidence in Tashkent city from 2015 to 2024 (in %).

The age-specific analysis revealed that 95.6% of all cases occurred among individuals aged 18 years and older, while children accounted for a small proportion of cases (less than 5%), (Figure 4).

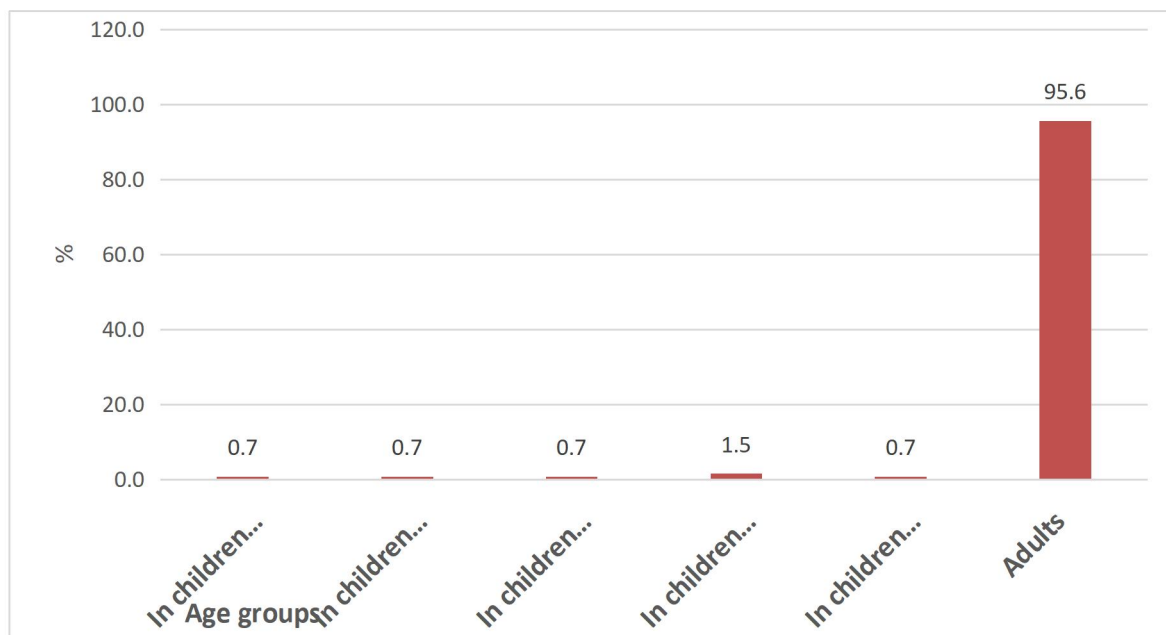


Figure 4. Distribution of Hepatitis B incidence in Tashkent city by different age groups for the period 2015–2024 (in %)

The relatively low incidence among children may be explained by the implementation of hepatitis B vaccination programs. However, occasional cases among children may occur due to delayed or incomplete vaccination. Further analysis of adult cases showed that the highest incidence was observed in the 30–39-year age group (44.6%), followed by the 20–29-year group (28.7%), whereas lower rates were recorded among older age groups (Figure 5).

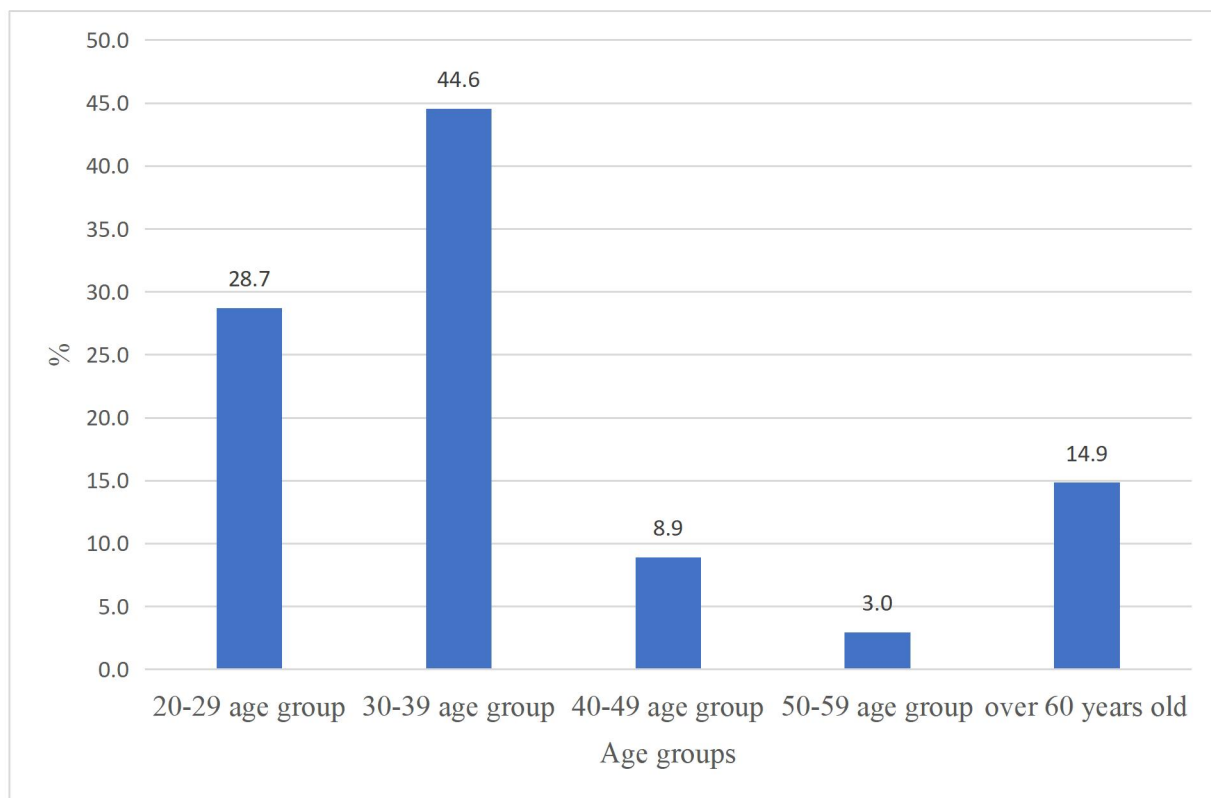


Figure 5. Distribution of Hepatitis B incidence among adult groups in Tashkent city for the period 2015–2024 (in %).

The predominance of cases among young and middle-aged adults may be associated with behavioral and social risk factors, including migration, unsafe sexual practices, and substance use. These findings highlight the importance of strengthening public health education, improving preventive measures, and increasing awareness to reduce the transmission of viral hepatitis B.

Conclusion. The analysis of viral hepatitis B in Tashkent city (2015–2024) showed that incidence fluctuated over time and varied by district, gender, and age. The highest incidence was observed in Yashnobod, Uchtepa, and Shaykhontohur, while the lowest occurred in Yakkasaroy, Bektemir, and Olmazor. Men (52.2%) and adults aged 20–39 years were most affected, whereas children had low incidence due to vaccination programs. Fluctuations were influenced by healthcare access, behavioral risk factors, and the COVID-19 pandemic.

Recommendations. To prevent and control the disease effectively, it is necessary to strengthen epidemiological surveillance, expand vaccination coverage, implement preventive measures in high-risk groups, and raise public awareness about viral hepatitis B.

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