VOL. 5, No. 1 **Journal of Osh State University. Medicine** 2026

Journal of Osh State University **Journal homepage:** https://medicine-oshsu.com/en

e-ISSN 1694-8831
UDC 616.36-002:578.891]-036.22:614.47(575.2)
DOI: 10.52754/16948645_2026_5(1)_08

Dynamics of chronic viral hepatitis B and vaccination coverage of the population in Osh region

Kanykei Kalybekova*
Senior Lecturer
Osh State University
723500, 74 Lenin Str., Osh, Kyrgyz Republic
https://orcid.org/0000-0002-4496-0180

Zuridin Nurmatov
Doctor of Medical Sciences, Head
National Institute of Public Health of the Ministry of Health of the Kyrgyz Republic
720005, 34 Baitik Baatyr Str., Bishkek, Kyrgyz Republic
https://orcid.org/0000-0003-3481-227X

Begimai Abdimomunova
PhD in Medical Sciences, Senior Lecturer
Osh State University
723500, 74 Lenin Str., Osh, Kyrgyz Republic
https://orcid.org/0000-0001-9360-7095

Aizharkyn Akzholtoeva
PhD, Lecturer
Osh State University
723500, 74 Lenin Str., Osh, Kyrgyz Republic
https://orcid.org/0000-0001-9334-5347

Abstract. This study aimed to investigate long term epidemiological trends of viral hepatitis B in the Kyrgyz Republic and Osh region, assessing the role of population vaccination coverage. The study materials included data from state statistical reports, information databases of sanitary epidemiological surveillance authorities, and official reports of medical preventive institutions for the period 2014-2024. The work employed methods of retrospective epidemiological analysis, comparative assessment of morbidity rates, territorial distribution of cases, and comparison of vaccination coverage levels. The results showed that the long term dynamics of viral hepatitis B incidence exhibit pronounced fluctuations: the highest total incidence rates were recorded in 2016 (14,615 cases), while the lowest were in 2021 (2,090 cases). During the COVID19 pandemic, case detection declined, after which a marked increase has been observed since 2022, reaching 18,081 cases in 2024 – a rise associated with the restoration of diagnostic volumes and strengthened epidemiological surveillance. In Osh region, a substantial increase in registered chronic viral hepatitis B cases was found: from 519 cases in 2022 to 2,289 cases in 2023, with a persistently high level in 2024 (2,148 cases). Marked territorial heterogeneity of morbidity was identified: in 2023, the highest rates were recorded in Kara Suu district (652 cases), Osh city (419), Uzgen district (420) and Aravan district (308). In 2024, incidence rates remained high in the same territories, reaching 611 cases in Kara Suu district, 373 in Osh city, 308 in Uzgen district and 324 in Aravan district. It was established that, despite the overall supply of vaccines to the region amounting to 274,550 doses, a significant remainder persists (98,178 doses), including in Kara Suu district (30,883 doses) and Uzgen district (20,335 doses). This indicates insufficient coverage of preventive immunisation, especially in areas with a high epidemiological burden

Keywords: population; immunisation; morbidity dynamics; vaccination coverage; immunoprophylaxis; epidemiological dynamics; epidemiological surveillance

Suggested Citation:
Kalybekova K, Nurmatov Z, Abdimomunova B, Akzholtoeva A. Dynamics of chronic viral hepatitis B and vaccination coverage of the population in Osh region. J Osh State Univ Med. 2026;5(1)8-16. DOI: 10.52754/16948645_2026_5(1)_08

*Corresponding author

Introduction

Viral hepatitis B remains a pressing public health issue due to its high prevalence, risk of chronicity and development of severe complications. The relevance of the study is determined by the continuing burden of chronic viral hepatitis B as one of the leading causes of liver cirrhosis and hepatocellular carcinoma, as well as by the insufficient effectiveness of vaccination coverage among certain age and social groups of the population. In the context of Osh region, characterised by active migration processes, unequal access to medical services and the presence of adult population cohorts not covered by routine immunisation, the analysis of longterm morbidity dynamics and vaccination indicators becomes particularly important. Assessing the relationship between the epidemiological trends of chronic HBV and vaccination coverage levels makes it possible to identify existing gaps in the prevention system, justify the need to strengthen immunisation programmes and improve epidemiological surveillance at the regional level. Additional relevance is provided by the need to evaluate the effectiveness of ongoing immunoprophylaxis programmes in the context of achieving global goals for the elimination of viral hepatitis B as a public health threat. Despite the introduction of newborn vaccination and a decrease in incidence among child cohorts, a significant reservoir of infection persists among the adult population, formed before the introduction of mass immunisation.

Hepatitis B, being one of the most significant bloodborne viral infections, continues to pose a serious threat to global health. When transitioning to a chronic form, the disease becomes a leading cause of severe complications, including liver cirrhosis and hepatocellular carcinoma, which results in high mortality rates among those infected. According to WHO estimates, more than 2 billion people have serological markers of current or past HBV infection, underscoring the global scale of the problem [1,2]. Viral hepatitis B remains one of the leading public health problems due to its widespread prevalence and high risk of adverse outcomes. According to data from the GBD 2019 Hepatitis B Collaborators [3] and H. Devarbhavi *et al*. [4], there are more than 296 million people worldwide with chronic HBV infection, and about 820,000 deaths are registered annually, mainly due to liver cirrhosis and hepatocellular carcinoma. The infection is characterised by a prolonged asymptomatic course, which complicates timely diagnosis and contributes to the development of chronic forms of the disease [5]. Viral hepatitis B has a significant medicosocial impact, being one of the main causes of liverrelated mortality and disability among the workingage population [4,6]. Despite the successes achieved in prevention, including vaccination, the global burden of infection remains high, especially in regions with elevated endemicity and limited healthcare resources [3,5].

Scientific research demonstrates that the epidemiology of viral hepatitis B is undergoing changes: against the background of expanding immunisation programmes, a decrease in acute forms of the disease is observed, but the prevalence of chronic forms remains at a significant level. According to M. Akmatov *et al*. [2], in postSoviet countries this trend is due to the accumulation of nonimmunised adult populations formed before the introduction of mass vaccination. This leads to the maintenance of virus circulation and the formation of a chronic pool of infected individuals. The results of national studies confirm the identified patterns. S Temirbekova & Z. Nurmatov [1] showed that the introduction of hepatitis B vaccination in the Kyrgyz Republic was accompanied by a significant decrease in incidence among the child population, whereas among adults the level of immunisation coverage remains insufficient. In turn, R. Kenenbaeva *et al*. [6], analysing the prevalence of bloodborne viral hepatitis among persons aged 18-49 years, noted a high proportion of infection among the workingage population, indicating continuing virus circulation. The level of infection detectability is also of considerable importance. S. Aung *et al*. [7], investigating the level of awareness of the population of the Kyrgyz Republic regarding viral hepatitis B and C, identified low rates of knowledge, testing and vaccination among adults. The authors also noted widespread misconceptions about the routes of transmission and lower levels of knowledge among persons with low educational attainment, which may contribute to late detection of the disease and insufficient prevention effectiveness. This problem is also reflected in mortality rates: K. Nogoibaeva & S. Tobokalova [8] demonstrated that high case fatality rates from viral hepatitis in Kyrgyzstan are associated with late diagnosis and the development of severe complications.

The problem becomes particularly acute at the regional level, where the epidemiological situation can vary significantly. R. Toichuev *et al*. [9] showed that in Osh region, viral hepatitis B remains one of the key causes of chronic liver disease. The authors also note a significant prevalence of HBV among the population of the region, indicating the continuing epidemiological relevance of the infection. According to the World Health Organization [10], despite the expansion of immunisation programmes, vaccination coverage of the adult population in many countries remains insufficient, which hinders the achievement of the global goal of eliminating viral hepatitis B by 2030. Particular attention is paid to the need to strengthen epidemiological surveillance, expand screening programmes and increase population adherence to vaccination.

Thus, an analysis of scientific publications indicates that, despite the successes achieved in reducing the incidence of acute forms of hepatitis B, significant problems remain associated with insufficient vaccination coverage, late diagnosis and a high prevalence of chronic forms of the disease. At the same time, regional features of the epidemiological situation, including territorial heterogeneity and differences in vaccination levels, remain insufficiently studied. In this regard, a comprehensive analysis of the dynamics of chronic viral hepatitis B in individual regions with an assessment of the impact of vaccination coverage on morbidity formation is relevant. The aim of the study was to investigate the dynamics of epidemiological indicators of hepatitis B in Osh region and to determine the role of vaccination coverage in the formation of morbidity.

Materials and Methods

The study used data from the state statistical reporting of the Department of Disease Prevention and State Sanitary and Epidemiological Surveillance (DDP and SSES) of the Kyrgyz Republic for 2014-2024, as well as official reports (Form No. 18, Form No. 5) of the Osh City Centre for Disease Prevention and State Sanitary and Epidemiological Surveillance (CCDP and SSES) with the functions of coordinating the activities of the public health service (FCDSOO) for the period 2017-2024. The analysis included information on registered cases of viral hepatitis B, including chronic forms, as well as indicators of population coverage with preventive vaccination. The study used data from the state statistical reporting of the Department of Disease Prevention and State Sanitary and Epidemiological Surveillance of the Kyrgyz Republic, as well as official reports (Forms No. 18, No. 5) of the Osh City Centre for Disease Prevention and State Sanitary and Epidemiological Surveillance for the period 2014-2024.

The study design was a retrospective observational descriptiveanalytical study aimed at examining the longterm dynamics of chronic viral hepatitis B incidence and assessing the impact of vaccination coverage on the formation of the epidemiological situation. The dependent variables were chronic viral hepatitis B incidence indicators, expressed as: the absolute number of registered cases by year; and relative rates (per 100,000 population), calculated using the formula: I = (number of registered cases / population size) × 100,000. The independent variable was the level of population vaccination coverage against viral hepatitis B, which was defined as: the proportion of persons who received a full course of vaccination (doses 1, 2 and 3), as a percentage of the target group; and the vaccine utilisation rate (ratio of doses actually administered to doses received, %). Additionally, vaccine supply indicators (absolute number of doses received and their remainder) were analysed, which made it possible to indirectly assess the organisational effectiveness of immunisation activities.

The study included: all registered cases of chronic viral hepatitis B confirmed in accordance with established procedures; and data that had undergone official registration in the state epidemiological surveillance system. To ensure data comparability, uniform case registration criteria adopted in the DDP and SSES system were used. Data verification was performed to eliminate duplication and inconsistencies between sources. Uniformity of time series was ensured by using standardised reporting forms for all years of observation. Statistical analysis methods. Statistical data processing was carried out using Microsoft Excel and IBM SPSS Statistics 26.0 software packages. The following analytical methods were applied: descriptive statistics (means, standard deviation, median, range); time series analysis (assessment of trends, growth and decline rates); comparative analysis between administrative territories.

To assess the relationship between vaccination coverage levels and incidence rates, correlation analysis was used with calculation of the Pearson correlation coefficient (r). The interpretation of the strength of the association followed a conventional scale (weak: $r < 0.3$; moderate: 0.30.7; strong: >0.7). In addition, linear regression analysis was used to assess the effect of vaccination level on incidence rates, constructing a model of the form: $Y = \beta 0 + \beta 1X + \varepsilon$, where Y is the incidence rate and X is vaccination coverage. Statistical significance was set at $p < 0.05$. Additional analytical approaches included analysis of territorial variability of indicators, the relationship between vaccine supply and their actual use, and the influence of external factors (including the COVID19 pandemic) on infection detectability. The use of a comprehensive approach – combining epidemiological, statistical and comparative analysis – made it possible to objectively assess the dynamics of chronic viral hepatitis B and to determine the role of vaccination in shaping the epidemiological situation.

Results and Discussion

Dynamics of viral hepatitis B incidence in the Kyrgyz Republic and Osh region

An analysis was conducted of the longterm dynamics of viral hepatitis B incidence in the Kyrgyz Republic for the period 2014-2024. The results obtained are presented in Figure 1 and reflect the main trends in the changing epidemiological situation in the country. Time series analysis revealed an oscillatory pattern of incidence, with alternating periods of increase and decrease – a pattern that may be due both to changes in the epidemiological surveillance system and to the influence of socioeconomic and organisational factors (Fig. 1).

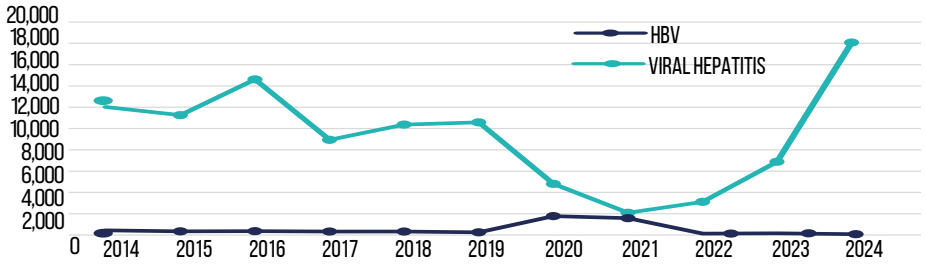

Figure 1. Dynamics of viral hepatitis B incidence in the Kyrgyz Republic, 20142024

Note: the blue line reflects total viral hepatitis incidence; the orange line reflects viral hepatitis B incidence (in absolute numbers of cases)

Source: developed by the authors based on Department of Disease Prevention and State Sanitary and Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic [11]

As can be seen from Figure 1, the analysis of longterm viral hepatitis dynamics in the Kyrgyz Republic revealed pronounced fluctuations in total incidence. The highest rates were recorded in 2016 (14,615 cases), while the lowest levels were observed in 2021 (2,090 cases), reflecting the influence of epidemiological, social and pandemic factors on infection detectability. Starting from 2022, a substantial increase in incidence has been observed, reaching a maximum by 2024 (18,081 cases) – a trend that may indicate postpandemic restoration of diagnostic services and strengthened surveillance. The results demonstrate that the epidemiological situation in Osh region is developing in line with the general trends but is characterised by greater fluctuations and pronounced local tension, underscoring the need for an indepth districtlevel analysis of vaccination coverage in the most disadvantaged areas of the region. An analysis was also conducted of the dynamics of registered chronic viral hepatitis B cases in Osh region for 2017-2024. The results obtained are presented in Figure 2.

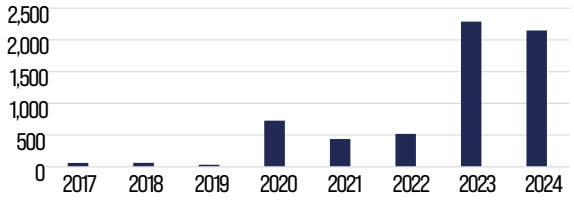

Figure 2. Dynamics of registered chronic viral hepatitis B cases in Osh region, 20172024

Source: developed by the authors based on data from Form No. 18 of the Osh City centre for disease prevention and state sanitary and epidemiological surveillance with FCDSOO [12]

The results of longterm observation of viral hepatitis B in Osh region (Fig. 2) reflect a significant transformation of the epidemiological situation regarding chronic viral hepatitis B during 2017-2024. During 2017-2019, extremely low rates were recorded (4,070 cases), indicating a stable epidemiological situation. A substantial increase in 2020 (800 cases) points to changes in the diagnostic system and expansion of laboratory testing. Subsequently, fluctuating dynamics are observed: a moderate decrease to 450 cases in 2021, followed by a gradual increase in 2022 (520). The most significant rise was recorded in 2023 (2,300 cases), which is more than four times higher than the levels of previous years. In 2024, the rate remains high (around 2,150), indicating the continuing relevance of the chronic viral hepatitis B problem and the possible influence of largescale screening programmes or improved registration processes. Overall, the dynamics demonstrate a transition from a long period of low recorded incidence to a sharp increase, which requires analysis of diagnostic factors, screening coverage and the quality of epidemiological surveillance.

An analysis of the dynamics of chronic viral hepatitis B across Osh region as a whole – where a sharp increase in registered cases has been observed since 2020 and especially in 2023-2024 – is also confirmed by data from individual districts (Table 1), demonstrating marked territorial heterogeneity of the epidemiological situation. In 2017-2019, incidence remained low in all districts (0-40 cases), which is consistent with the previously identified general trend of minimal registration levels during this period. However, as early as 2020, a significant increase was observed in several territories: particularly in KaraSuu (437 cases), Osh city (135 cases), as well as notable growth in Alai, KaraKulja and Nookat districts.

Table 1. Chronic hepatitis B among adults (by district, 2017-2024)

District	2017	2018	2019	2020	2021	2022	2023	2024
Osh City	30	11	0	135	40	75	419	373
Aravan	10	5	0	18	18	26	308	324
Kara-Suu	4	1	0	437	437	334	652	611
Nookat	11	37	0	29	29	4	259	330
Uzgen	0	0	0	27	27	46	420	308
Kara-Kulja	2	1	0	15	15	8	110	87

Table 1. Continued

District	2017	2018	2019	2020	2021	2022	2023	2024
Alay	3	7	0	65	65	25	91	85
Chon-Alay	1	1	0	1	1	1	30	30

Source: developed by the authors based on data fromData from form No. 18 of the Osh City centre for disease prevention and state sanitary and epidemiological surveillance with FCDS00 [12]

In 2021, indicators remained stable compared to 2020 in KaraSuu, Nookat, Alai and KaraKulja districts, reflecting the persistence of the epidemiological burden related to COVID19. Starting from 2023, a sharp increase in incidence is again observed in almost all districts, which is fully consistent with the overall regional increase: particularly high rates were identified in KaraSuu (652 cases), Osh city (419), Uzgen (420), Aravan (308) and Nookat (259) districts. In 2024, the level remains persistently high: KaraSuu (611), Osh city (373) and Aravan (324) continue to account for the majority of cases, indicating ongoing epidemiological tension in these territories. Thus, a comprehensive analysis of district data confirms the general trend of a sharp increase in the detectability of chronic viral hepatitis B in 2023-2024, identifies the most disadvantaged districts (KaraSuu, Osh city, Aravan, Uzgen) and highlights pronounced spatial variability requiring further study of risk factors, diagnostic levels and vaccination coverage.

Analysis of the relationship between chronic hepatitis B incidence and vaccination coverage

The relationship between incidence dynamics and vaccination indicators becomes important when the two are analysed together, allowing the effectiveness of ongoing immunoprophylaxis measures to be assessed. The sharp increase in the number of chronic hepatitis B cases in 2023-2024 underscores the need to compare the epidemiological burden with the level of actual vaccination coverage in individual districts. The data presented on the implementation of the hepatitis B vaccination plan by district of Osh region demonstrate significant differences both in the level of vaccine supply and in actual vaccination coverage, as shown in Table 2.

Table 2. Indicators of hepatitis B vaccine supply and administration by district of Osh Region as of 05 December 2025 (cumulative total)

District	Number of vaccine doses received	Number of vaccine doses administered – 1st dose	2nd dose	3rd dose	Revaccination	Remaining vaccine stock
Alay	28,044	4,966	4,443	3,776	42	14,817
Aravan	16,272	6,292	4,219	2,743	-	3,018
Kara-Suu	72,710	17,444	14,552	9,827	4	30,883
Kara-Kulja	15,600	6,233	4,434	3,692	39	1,202
Nookat	55,011	12,400	10,114	9,954	17	22,526
Uzgen	73,113	21,208	16,905	14,662	3	20,335
Chon-Alay	13,800	3,042	2,848	2,512	1	5,397
Region total	274,550	71,585	57,515	47,166	106	98,178

Source: developed by the authors based on data from Form No. 18 of the Osh City Centre for Disease Prevention and State Sanitary and Epidemiological Surveillance with FCDS00 [12]

The districts best supplied with vaccines are KaraSuu (72,710 doses) and Uzgen (73,113 doses); however, the remaining stocks in these districts also remain high (30,883 and 20,335 respectively). This indicates not so much a vaccine deficit as insufficient vaccination coverage of the population. The high hepatitis B incidence rates in these territories, together with the presence of considerable vaccine leftovers, point to organisational, informational or motivational barriers that impede timely immunisation. A similar situation is observed in Aravan district, where, with a moderate quantity of vaccines (16,272 doses), firstdose coverage is 6,292 persons. Against the background of a sharp increase in chronic viral hepatitis B (308-324 cases in 2023-2024), this indicates the need to step up preventive measures.

In contrast, in KaraKulja and ChonAlai districts, despite a more limited vaccine supply, the proportion of doses used is significantly higher and leftovers are minimal. This may reflect a more organised vaccination system and better outreach to the population. At the same time, the incidence of chronic hepatitis B in these districts remains relatively low, confirming the importance of timely and complete immunisation as an effective preventive measure. The study results show that, despite the region being sufficiently supplied with vaccines, vaccination coverage remains insufficient – especially in districts with high recorded incidence. The existence of large vaccine leftovers alongside continuing epidemiological growth underscores the need to strengthen explanatory work, improve vaccine accessibility, enhance monitoring of population adherence, and optimise organisational processes within immunoprophylaxis. These data confirm a key strategic task: increasing vaccination coverage is a critical tool for stabilising and reducing the incidence of chronic hepatitis B in Osh region.

The obtained results demonstrate that the epidemiological situation regarding chronic viral hepatitis B in Osh region is characterised by complex and heterogeneous dynamics, reflecting both global and regional trends. The observed oscillatory pattern of incidence, with a temporary decline during the COVID19 pandemic followed by a subsequent increase, is consistent with data from international studies. For instance, the World Health Organization [13] notes that, during the COVID19 pandemic, many countries experienced a decrease in chronic infection detectability due to restrictions on diagnostic and screening programmes. Similar conclusions are presented in the work of J. Liu *et al*. [14], where it is emphasised that the decline in case registration does not reflect the true infection dynamics but is rather linked to disruptions in healthcare system functioning. The postpandemic rise in incidence found in the study corresponds to the data of the Polaris Observatory Collaborators [15], who report a recovery in chronic viral hepatitis B detectability after the pandemic and a persistent global disease burden.

An important finding is the increase in chronic forms of infection. According to M. Akmatov *et al*. [2], a significant pool of chronically infected individuals – formed before the introduction of mass vaccination – persists in postSoviet countries. This supports current study's conclusions regarding the accumulation of chronic disease forms. Similar points are reflected in the work of the Polaris Observatory Collaborators [16], which examines the problem of chronic HBV pool formation, emphasising that even with the expansion of vaccination programmes, the decline in disease prevalence is slow due to the long natural history of the infection. Studies by H. Wang *et al*. [17] and F. Cui [18] show that the accumulation of chronic forms is associated with historically established cohorts of nonimmunised populations, which is fully consistent with this analysis. According to S.A. AlBusafi & A. Alwassief [19], a comprehensive approach to HBV control is proposed, including expanded screening, improved diagnostic accessibility and strengthened prevention programmes – which opens up opportunities for further analysis and interpretation of the obtained data. Similar findings are presented in the study by S. Nayagam & M. Thursz [20], where it is emphasised that achieving global HBV elimination is impossible without increasing vaccination coverage, especially among adult population groups. Furthermore, P. Palla *et al*. [21] note that vaccination remains the most effective preventive measure, but its impact is limited by the presence of a significant pool of previously infected individuals – a finding that aligns with the research.

Particular attention is deserved by the identified territorial heterogeneity of incidence. R. Toichuev *et al*. [9] showed that in Osh region, viral hepatitis B is one of the leading causes of liver cirrhosis, confirming the importance of regional differences in the epidemiological situation. The results also agree with the data of C. Spearman *et al*. [22], who emphasise that HBV epidemiology is characterised by pronounced geographical heterogeneity driven by socioeconomic and organisational factors. A key aspect of the study is the analysis of the relationship between vaccination coverage and incidence. Despite adequate vaccine availability, coverage remains insufficient. This result is corroborated by S.A. AlBusafi & A. Alwassief [19], who demonstrated that even when vaccines are available, significant barriers to their use persist. Thus, the results of this study confirm the conclusions of both international and regional scientific works that the epidemiological situation regarding viral hepatitis B is shaped by a combination of factors, including vaccination coverage, diagnostic accessibility and the organisation of the healthcare system.

Conclusions

The conducted study made it possible to identify the key features of the epidemiological situation regarding chronic viral hepatitis B in Osh region and to assess the impact of vaccination coverage on morbidity formation. It was established that the dynamics of viral hepatitis B incidence in the Kyrgyz Republic for 2014-2024 are characterised by pronounced fluctuations: the highest rates were recorded in 2016 (14,615 cases), the lowest in 2021 (2,090 cases), followed by a significant increase to 18,081 cases in 2024 – reflecting the restoration of detectability and the strengthening of epidemiological surveillance.

An analysis of chronic viral hepatitis B in Osh region for 2017-2024 showed a sharp increase in the number of registered cases: from 519 cases in 2022 to 2,289 cases in 2023, with a persistently high level in 2024 (2,148 cases). The data indicate the formation of a significant pool of chronically infected individuals and continued epidemiological tension in the region. Marked territorial heterogeneity of morbidity was identified. The highest rates were recorded in KaraSuu district (652 cases in 2023; 611 in 2024), Osh city (419 and 373 respectively), Uzgen district (420 and 308) and Aravan district (308 and 324) – pointing to local differences in the level of epidemiological burden and the effectiveness of preventive measures. It was found that, despite the overall supply of vaccines to the region amounting to 274,550 doses, a significant remainder persists (98,178 doses), including in KaraSuu district (30,883 doses) and Uzgen district (20,335 doses), which indicates insufficient vaccination coverage of the population. The presence of large vaccine leftovers alongside rising incidence points to organisational and behavioural barriers that impede the effective implementation of immunisation programmes.

Thus, the epidemiological situation regarding chronic viral hepatitis B in Osh region remains tense and is determined by a combination of factors: the accumulation of chronic forms of infection, insufficient vaccination coverage and pronounced territorial variability. The results obtained justify the need to

improve preventive measures, including increasing the accessibility of vaccination, strengthening epidemiological surveillance and introducing a comprehensive approach to infection control. Promising directions for further research include an indepth study of factors affecting population adherence to vaccination, an analysis of sociodemographic and behavioural determinants of immunisation, and an evaluation of the effectiveness of implementing digital systems for vaccination monitoring and screening for chronic forms of viral hepatitis B.

Acknowledgements

The authors would like to thank the staff of the Osh City Centre for Disease Prevention and State Sanitary and Epidemiological Surveillance for providing statistical data and offering advice during the course of the study.

Funding

None.

Conflict of Interest

None.

References

[1] Temirbekova SN, Nurmatov ZS. Evaluation of hepatitis B vaccination effectiveness in the Kyrgyz Republic. Healthc Kyrgyz. 2025;1:32–8. DOI: 10.51350/zdravkg2025.1.3.4.32.38

[2] Akmatov MK, Beisheeva NJ, Nurmatov AZ, Gulsunai SJ, Saikal KN, Derkenbaeva AA, et al. The changing epidemiology of viral hepatitis in a post-soviet country-the case of Kyrgyzstan. Pathogens. 2023;12(8):989. DOI: 10.3390/pathogens12080989

[3] GBD 2019 Hepatitis B Collaborators. Global, regional, and national burden of hepatitis B, 1990-2019: A systematic analysis for the Global Burden of Disease Study 2019. Lancet Gastroenterol Hepatol. 2022;7(9):796–829. DOI: 10.1016/S2468-1253(22)00124-8

[4] Devarbhavi H, Asrani SK, Arab JP, Nartey YA, Pose E, Kamath PS. Global burden of liver disease: 2023 update. J Hepatol. 2023;79(2):516–37. DOI: 10.1016/j.jhep.2023.03.017

[5] Hsu YC, Huang DQ, Nguyen MH. Global burden of hepatitis B virus: Current status, missed opportunities and a call for action. Nat Rev Gastroenterol Hepatol. 2023;20:524–37. DOI: 10.1038/s41575-023-00760-9

[6] Kenenbaeva RM, Baizbekova DA, Sattarova GD. Retrospective analysis of prevalence of viral hepatitis B and C transmitted through blood in the Kyrgyz Republic. Healthc Kyrgyz. 2023;1:110–4. DOI: 10.51350/zdravkg2023.1.2.15.110.114

[7] Aung S, Bekbolotov A, Usmanova N, Maitieva V, Chokmurova U, Solpueva A, et al. Hepatitis B and Hepatitis C awareness, knowledge, and practices among adults in the Kyrgyz Republic – results from a nationally representative survey, 2024. Res Sq [Preprint]. 2024. DOI: 10.21203/rs.3.rs-8912681/v1

[8] Nogoibaeva KA, Tobokalova ST. Etiological and epidemiological characteristics of mortality from acute viral hepatitis in Kyrgyzstan in 2009-2018. J Microbiol Epidemiol Immunobiol. 2020;97(1):40–6. DOI: 10.36233/0372-9311-2020-97-1-40-46

[9] Toichuev R, Leybman E, Omorbekova C, Rakhimova G, Zhumabek Kyzy B, Nikolaeva L. Childhood hepatitis in Osh province of Southern Kyrgyzstan. Euroasian J Hepatogastroenterol. 2014;4(2):117–8. DOI: 10.5005/jp-journals-10018-1116

[10] World Health Organization. Global health sector strategy on viral hepatitis 2022-2030. Geneva: WHO; 2022. 134 P.

[11] Department of disease prevention and state sanitary and epidemiological surveillance of the Ministry of Health of the Kyrgyz Republic [Internet]. [cited 2026 May 8]. Available from: https://dgsen.kg/category/deyatelnost/upravlenie-profilaktiki-infekcionnY/ezhemesYachnYj-bjulleten-sjesizn

[12] Data from form no. 18 of the Osh City centre for disease prevention and state sanitary and epidemiological surveillance with FCDSOO [Internet]. [cited 2026 May 8]. Available from: https://surl.li/ssjkol.

[13] World Health Organization. Global hepatitis report 2024: Action for access in low- and middle-income countries. Geneva: WHO; 2023. 242 P.

[14] Liu J, Liang W, Jing W, Liu M. Countdown to 2030: Eliminating hepatitis B disease, China. Bull World Health Organ. 2019;97(3):230–8. DOI: 10.2471/BLT.18.219469

[15] Polaris Observatory Collaborators. Global prevalence, treatment, and prevention of hepatitis B virus infection in 2022: A modelling study. Lancet Gastroenterol Hepatol. 2018;3(6):383–403. DOI: 10.1016/S2468-1253(18)30056-6

[16] Polaris Observatory Collaborators. Global prevalence, cascade of care, and prophylaxis coverage of hepatitis B in 2022: A modelling study. Lancet Gastroenterol Hepatol. 2023;8(10):879–907. DOI: 10.1016/S2468-1253(23)00197-8

[17] Wang H, Chen W, Gao P, Ma Q, Yuan Q, Cao Z, et al. Retrospective cohort study of hepatitis B immunization strategy effects in Beijing across 30 years. Nat Commun. 2026;17(1):1523. DOI: 10.1038/s41467-025-68243-w

[18] Cui F, Blach S, Manzengo Mingiedi C, Gonzalez MA, Sabry Alaama A, Mozalevskis A, et al. Global reporting of progress towards elimination of hepatitis B and hepatitis C. Lancet Gastroenterol Hepatol. 2023;8(4):332–42. DOI: 10.1016/S2468-1253(22)00386-7
[19] Al-Busafi SA, Alwassief A. Global perspectives on the hepatitis B vaccination: Challenges, achievements, and the road to elimination by 2030. Vaccines. 2024;12(3):288. DOI: 10.3390/vaccines12030288
[20] Nayagam, S., Thursz, M. Strategies for Global Elimination of Chronic HBV Infection: 2019 Update. Curr Hepatology Rep. 2019;18:300–9. DOI: 10.1007/s11901-019-00478-w
[21] Palla P, Vergadis C, Sakellariou S, Androutsakos T. Letter to the editor: autoimmune hepatitis after COVID-19 vaccination: A rare adverse effect? Hepatology. 2022;75(2):489–90. DOI: 10.1002/hep.32156
[22] Spearman CW, Andersson MI, Bright B, Davwar PM, Desalegn H, Guingane AN, et al. A new approach to prevent, diagnose, and treat hepatitis B in Africa. BMC Glob Public Health. 2023;1:24. DOI: 10.1186/s44263-023-00026-1

Динамика хронического вирусного гепатита В и охват вакцинацией населения Ошской области

Канykей Калыбекова
Старший преподаватель
Ошский государственный университет
723500, ул. Ленина, 74, г. Ош, Кыргызская Республика
https://orcid.org/0000-0002-4496-0180

Зуридин Нурматов
Доктор медицинских наук, руководитель
Национальный институт общественного здоровья Министерства здравоохранения Кыргызской Республики
720005, ул. Байтик Баатыра, 34, г. Бишкек, Кыргызская Республика
https://orcid.org/0000-0003-3481-227X

Бегимай Абдимомунова
Кандидат медицинских наук, старший преподаватель
Ошский государственный университет
723500, ул. Ленина, 74, г. Ош, Кыргызская Республика
https://orcid.org/0000-0001-9360-7095

Айжаркын Акжолтоева
PhD, преподаватель
Ошский государственный университет
723500, ул. Ленина, 74, г. Ош, Кыргызская Республика
https://orcid.org/0000-0001-9334-5347

Аннотация. Целью настоящего исследования являлось изучение многолетних эпидемиологических тенденций вирусного гепатита В в Кыргызской Республике и Ошской области с оценкой роли охвата вакцинацией населения. Материалами исследования послужили данные государственной статистической отчётности, информационные базы органов санитарно-эпидемиологического надзора и официальные отчёты лечебно-профилактических учреждений за период 2014-2024 гг. В работе использованы методы ретроспективного эпидемиологического анализа, сравнительной оценки показателей заболеваемости, территориального распределения случаев и сопоставления уровней охвата вакцинацией. Результаты исследования показали, что многолетняя динамика заболеваемости вирусным гепатитом В характеризуется выраженными колебаниями: максимальные показатели общей заболеваемости зарегистрированы в 2016 году (14 615 случаев), тогда как минимальные – в 2021 году (2 090 случаев). В период пандемии COVID-19 наблюдалось снижение выявляемости, после чего с 2022 года отмечен выраженный рост, достигший 18 081 случая в 2024 году, что связано с восстановлением объёмов диагностики и усилением эпидемиологического надзора. В Ошской области выявлено значительное увеличение числа зарегистрированных случаев хронического вирусного гепатита В: от 519 случаев в 2022 году до 2 289 случаев в 2023 году с сохранением высокого уровня в 2024 году (2 148 случаев). Выявлена выраженная территориальная неоднородность заболеваемости: в 2023 году наибольшие показатели зарегистрированы в Кара-Суйском районе (652 случая), г. Ош (419), Узгенском (420) и Араванском районах (308). В 2024 году уровень заболеваемости остаётся высоким в тех же территориях и составляет соответственно 611 случаев в Кара-Суйском районе, 373 – в г. Ош, 308 – в Узгенском и 324 – в Араванском районах.

Установлено, что при общем обеспечении вакцинами по области в объёме 274 550 доз сохраняется значительный остаток (98 178 доз), включая Кара-Суйский район (30 883 доз) и Узгенский район (20 335 доз), что свидетельствует о недостаточном охвате профилактической иммунизацией, особенно в территориях с высокой эпидемиологической нагрузкой

Ключевые слова: население; иммунизация; динамика заболеваемости; охват вакцинацией; иммунопрофилактика; эпидемиологическая динамика; эпидемиологический надзор

Ош облусундагы өнөкөт вирустук гепатиттин В динамикасы жана эмдөө менен камсыздоо

Каныкей Калыбекова
Улук окутуучу
Ош мамлекеттик университети
723500, Ленин көч., 74, Ош ш., Кыргыз Республикасы
https://orcid.org/0000-0002-4496-0180

Зуридин Нурматов
Медицина илимдеринин доктору, жетекчи
Кыргыз Республикасынын Саламаттык сактоо министрлигинин Коомдук саламаттык сактоо улуттук институту
720005, Байтик Баатыр көч., 34, Бишкек ш., Кыргыз Республикасы
https://orcid.org/0000-0003-3481-227X

Бегимай Абдимомунова
Медицина илимдеринин кандидаты, улук окутуучу
Ош мамлекеттик университети
723500, Ленин көч., 74, Ош ш., Кыргыз Республикасы
https://orcid.org/0000-0001-9360-7095

Айжаркын Акжолтоева
PhD, окутуучу
Ош мамлекеттик университети
723500, Ленин көч., 74, Ош ш., Кыргыз Республикасы
https://orcid.org/0000-0001-9334-5347

Аннотация. Бул изилдөөнүн максаты Кыргыз Республикасында жана Ош облусунда вирустук гепатит Внин узак мөөнөттүү эпидемиологиялык тенденцияларын изилдөө, эмдөө менен камтуунун ролун баалоо болгон. Изилдөө мамлекеттик статистикалык отчеттордун, санитардык-эпидемиологиялык көзөмөл органдарынын маалымат базаларынын жана саламаттыкты сактоо мекемелеринин 2014-2024-жылдар аралыгындагы расмий отчетторунун маалыматтарына негизделген. Изилдөөдө ретроспективдүү эпидемиологиялык талдоо, ооруга чалдыгуу көрсөткүчтөрүн салыштырмалуу баалоо, учурлардын аймактык бөлүштүрүлүшү жана эмдөө менен камтуунун деңгээлин салыштыруу ыкмалары колдонулган. Изилдөөнүн жыйынтыктары көрсөткөндөй, вирустук гепатит Внин узак мөөнөттүү динамикасы олуттуу өзгөрүүлөр менен мүнөздөлөт: жалпы ооруга чалдыгуу көрсөткүчтөрүнүн максималдуу көрсөткүчтөрү 2016-жылы (14 615 учур) катталган, ал эми минималдуу көрсөткүчтөрү 2021-жылы (2090 учур) катталган. COVID-19 пандемиясы учурунда аныктоонун төмөндөшү, андан кийин 2022-жылдан баштап олуттуу өсүш байкалып, 2024-жылы 18 081 учурга жеткен, бул диагностикалык көлөмдөрдү калыбына келтирүү жана эпидемиологиялык көзөмөлдү күчөтүү менен байланыштуу. Ош облусунда өнөкөт вирустук гепатит В катталган учурлардын санынын олуттуу өсүшү аныкталды: 2022-жылы 519 учурдан 2023-жылы 2289 учурга чейин, ал эми жогорку деңгээл 2024-жылы сакталып калган (2148 учур). Оорулардын аймактык жактан гетерогендүүлүгү байкалды: 2023-жылы эң жогорку көрсөткүчтөр Кара-Суу районунда (652 учур), Ош шаарында (419), Өзгөндө (420) жана Араван райондорунда (308) катталган. 2024-жылы оорунун көрсөткүчү ошол эле аймактарда жогору бойдон калууда, тиешелүүлүгүнө жараша Кара-Суу районунда 611, Ош шаарында 373, Өзгөн районунда 308 жана Араван районунда 324 учур катталган. Жалпысынан 274 550 доза вакцина менен камсыздалгандыктан, калган бөлүгү (98 178 доза) калганы, анын ичинде Кара-Суу районунда (30 883 доза) жана Өзгөн районунда (20 335 доза) калганы аныкталды, бул, айрыкча эпидемиологиялык жүк жогору болгон аймактарда, алдын алуучу иммундаштыруунун жетишсиздигин көрсөтүп турат

Негизги сөздөр: калк; иммунизация; ооруга чалдыгуу динамикасы; эмдөө менен камтуу; иммунопрофилактика; эпидемиологиялык динамика; эпидемиологиялык көзөмөл