

EPIDEMIOLOGICAL ANALYSIS OF THE PREVALENCE OF CHRONIC LIVER DISEASES AND MAJOR RISK FACTORS

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Abstract

Chronic liver diseases represent one of the most pressing problems of modern public health, with their global prevalence steadily increasing each year. This group of diseases includes chronic viral hepatitis, alcoholic and non-alcoholic fatty liver disease, autoimmune hepatitis, and liver cirrhosis. Worldwide, chronic liver diseases are among the leading causes of mortality and disability, placing a significant economic burden on healthcare systems. This literature review analyzes the epidemiological distribution, regional characteristics, and major risk factors influencing the development of chronic liver diseases based on scientific sources. The results indicate that unhealthy nutrition, viral infections, alcohol consumption, metabolic syndrome, and social-hygienic factors are the main determinants of chronic liver diseases.

Keywords: Chronic liver diseases, epidemiology, risk factors, viral hepatitis, fatty liver disease, liver cirrhosis, public health, prevention.

Introduction

Over the past decades, chronic liver diseases (CLDs) have become one of the most urgent global public health problems. This group includes chronic viral hepatitis, alcoholic liver disease, non-alcoholic fatty liver disease (NAFLD), autoimmune hepatitis, as well as liver cirrhosis and hepatocellular carcinoma developing as their complications. Due to their long-term asymptomatic or minimally symptomatic course, CLDs are often diagnosed at advanced stages, resulting in high mortality and disability rates.

According to data from the World Health Organization, deaths related to liver diseases exceed 2 million cases annually, ranking among the leading causes of mortality after cardiovascular and oncological diseases. A large proportion of this global burden falls on low- and middle-income countries, which is explained by insufficient development of preventive measures and early diagnostic programs.

Epidemiological studies indicate that chronic viral hepatitis—particularly hepatitis B and C—has long been the main etiological factor of CLDs. Globally, approximately 296 million people are chronically infected with hepatitis B virus, while more than 58 million individuals live with chronic hepatitis C infection. At the same time, in recent years, non-alcoholic fatty liver disease associated with metabolic disorders has been rapidly increasing and has become the leading cause of chronic liver diseases in some developed countries.



Modern epidemiological trends demonstrate significant changes in the structure of liver diseases. Whereas infectious factors were previously predominant, today unhealthy nutrition, physical inactivity, obesity, insulin resistance, and metabolic syndrome have become major social-hygienic determinants of liver pathologies. This shift necessitates studying liver diseases not only from a clinical perspective but also through comprehensive epidemiological and preventive approaches.

Scientific literature reports that approximately 25–30% of the world's population shows elevated liver enzyme activity or structural liver changes, indicating a high prevalence of latent chronic liver diseases. In particular, urbanization, changes in dietary habits, and increasing environmental factors directly influence the epidemiology of CLDs.

From this perspective, an in-depth epidemiological analysis of the prevalence of chronic liver diseases and the major risk factors influencing their development is of great scientific importance—not only for disease prevention but also for the development of effective public health-level preventive strategies.

Aim of the Study

The main aim of this literature review is to analyze the global and regional prevalence of chronic liver diseases and to identify the major epidemiological risk factors influencing their development based on scientific sources.

Materials and Methods

Within the scope of the study, scientific articles, meta-analyses, and systematic reviews published over the past 15–20 years were analyzed. Literature was selected from the PubMed, Scopus, and Web of Science databases. Selection criteria included epidemiological studies, population-based observations, analyses based on statistical data, and international recommendations. The collected data were summarized using descriptive and comparative methods.

Results

Global epidemiological burden of chronic liver diseases.

The analysis of the literature shows that chronic liver diseases are among the leading causes of morbidity, disability, and mortality worldwide. According to data from the World Health Organization and the Global Burden of Disease (GBD) project, the number of deaths associated with liver diseases amounts to approximately 2.0–2.2 million cases per year. Nearly 60–65% of these deaths are attributable to chronic liver diseases and their complications.

Based on GBD data from 2019–2023, liver cirrhosis and chronic liver diseases rank among the top ten diseases globally in terms of disability-adjusted life years (DALYs). The epidemiological burden is particularly high in the Asian and African regions, which is associated with the widespread prevalence of viral hepatitis and unfavorable social and hygienic conditions.

Etiological structure of chronic liver diseases. Scientific sources report significant regional differences in the etiological structure of CLDs. Table 1 presents the global proportions of the main causes.



Table 1. Global etiological structure of chronic liver diseases (%)

<i>Etiological factor</i>	<i>Global share (%)</i>
Hepatitis B virus	30–35
Hepatitis C virus	20–25
Alcoholic liver disease	20–22
Non-alcoholic fatty liver disease	18–25
Autoimmune and other causes	5–7

Analysis of sources indicates that over the past decade, the proportion of NAFLD has increased sharply, becoming the leading cause of chronic liver diseases in some developed countries.

Epidemiological indicators of viral hepatitis. According to World Health Organization data: 296 million people are chronically infected with hepatitis B virus; More than 58 million people are infected with hepatitis C virus; Each year, viral hepatitis accounts for approximately 1.1–1.3 million deaths.

Table 2. Global epidemiological indicators of viral hepatitis

<i>Indicator</i>	<i>Hepatitis B</i>	<i>Hepatitis C</i>
Number of chronic patients (million)	296	58
Annual deaths	~820,000	~290,000
Main outcomes	Cirrhosis, HCC	Cirrhosis, HCC

Metabolic factors and non-alcoholic fatty liver disease.

According to the results of the literature review, non-alcoholic fatty liver disease affects 25–30% of the global population. In individuals with obesity, insulin resistance, and type 2 diabetes mellitus, the risk of NAFLD development is 2–3 times higher.

Large meta-analyses demonstrate the following prevalence rates: NAFLD in obesity: 70–90%; In type 2 diabetes mellitus: 55–65%; In metabolic syndrome: up to 75%.

Epidemiological outcomes associated with alcohol consumption.

In regions where per capita consumption of pure alcohol is 8 liters or more per year, mortality related to alcoholic liver disease is significantly higher. Alcohol consumption is identified as the primary cause in 20–22% of chronic liver disease cases.

Discussion

The results of this literature review once again confirm the steadily increasing epidemiological burden of chronic liver diseases on global healthcare systems. The obtained data demonstrate that liver diseases represent not only a clinical problem but also a complex socio-economic and hygienic challenge. In particular, the high levels of mortality and disability associated with CLDs highlight the urgent need for early detection and effective prevention strategies.

The findings indicate that the etiological structure of CLDs has changed markedly over recent decades. Whereas viral hepatitis previously occupied a leading position, metabolic factors—especially non-alcoholic fatty liver disease—are now increasing rapidly. This trend can be explained by global changes in dietary patterns, increased consumption of high-calorie foods, reduced physical



activity, and the growing prevalence of obesity. The fact that NAFLD has become the primary cause of chronic liver diseases in some developed countries clearly illustrates the long-term consequences of these epidemiological shifts.

At the same time, results related to viral hepatitis confirm that this problem remains highly relevant. Among millions of individuals infected with hepatitis B and C, late detection of chronic infection, insufficient screening programs, and delayed access to treatment increase the risk of progression to liver cirrhosis and hepatocellular carcinoma. Despite the strategies developed by the World Health Organization to eliminate viral hepatitis, epidemiological indicators remain high in many countries. Findings associated with alcohol consumption further confirm the close relationship between chronic liver diseases and behavioral risk factors. Alcohol not only exerts a direct toxic effect on hepatocytes but, when combined with viral or metabolic liver diseases, accelerates disease progression and severity. This underscores the necessity of incorporating not only medical interventions but also broad social and hygienic policies into preventive strategies.

Another important aspect is the role of social and hygienic factors in the epidemiology of CLDs. Low socioeconomic status, insufficient knowledge of healthy nutrition, poor sanitary conditions, and limited access to healthcare services contribute to the increasing prevalence of latent and late-diagnosed liver diseases. Against the background of urbanization and growing environmental burden, these factors are further intensified, posing additional risks to public health.

Overall, the results indicate that the fight against chronic liver diseases requires a comprehensive approach. Reliance solely on etiological treatment is insufficient; improving dietary habits, increasing physical activity, reducing alcohol consumption, and expanding population-based screening programs are essential. Strengthening epidemiological monitoring, particularly among high-risk groups, can significantly reduce the incidence of severe complications.

In summary, the discussed findings substantiate the need to reconsider chronic liver diseases from the perspective of modern hygiene and public health, to update preventive strategies, and to harmonize individual-level and population-level interventions.

Conclusion

The conducted review of scientific literature and epidemiological analysis demonstrate that chronic liver diseases remain a significant public health problem on a global scale, and their prevalence is closely associated with infectious, metabolic, and social-hygienic factors. In recent years, notable etiological shifts have been observed in the structure of these diseases.

1. The results indicate that morbidity, disability, and mortality associated with chronic liver diseases remain at a high level. Although viral hepatitis continues to be among the leading causes, over the past decade the proportion of non-alcoholic fatty liver disease has increased sharply and has become the predominant etiological factor in certain regions. This trend is directly related to global changes in lifestyle and dietary patterns.
2. The analysis shows that the development of chronic liver diseases is driven not by a single factor, but by the synergistic effect of multiple risk factors. Viral infections, alcohol consumption, obesity, insulin resistance, and metabolic syndrome jointly contribute to chronic damage of the liver parenchyma and accelerate disease progression. In particular, the combination of these factors significantly increases the risk of liver cirrhosis and hepatocellular carcinoma.



3. The obtained data indicate that chronic liver diseases should be considered not only as a clinical problem but also as a broad social-hygienic issue. Low socioeconomic status, poor dietary culture, insufficient physical activity, and limited access to healthcare services contribute to the latent course and late diagnosis of these diseases. Therefore, preventive measures should be implemented in a comprehensive manner at individual, group, and population levels.

4. In conclusion, the epidemiological analysis of chronic liver diseases substantiates the need to strengthen early screening programs, promote healthy lifestyles, control metabolic risk factors, and enhance effective preventive programs against viral hepatitis. Consistent scientific research and epidemiological monitoring in this field will contribute to improving public health and reducing the global burden associated with liver diseases.

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