AMERICAN JOURNALS
Open Access, Peer Reviewed Journals

American Journal of Research in Humanities and Social Sciences
ISSN (E): 2832-8019 Volume 43, | December - 2025

SOCIO-HYGIENIC FACTORS IN THE DEVELOPMENT OF CHRONIC LIVER DISEASES: A COMPREHENSIVE EPIDEMIOLOGICAL ANALYSIS

Jalolov N. N.
Norqulov S. J.
Tashkent State Medical University

ABSTRACT

Chronic liver diseases (CLDs) constitute a group of nosological entities that pose a serious threat to public health on a global scale. In recent decades, alongside viral factors, the contribution of socio-hygienic determinants to the etiological structure of these diseases has increased markedly. This article provides a comprehensive epidemiological analysis of the role of socioeconomic status, dietary patterns, lifestyle, psycho-emotional stress, working and living conditions, and access to healthcare services in the development of chronic liver diseases. Based on global statistical data, cohort studies, and meta-analyses, the significant impact of socio-hygienic factors on the onset, progression, and prognosis of liver pathologies is scientifically substantiated.

KEYWORDS

Chronic liver diseases, social determinants, hygienic factors, epidemiological analysis, liver fibrosis, health inequality.

Introduction

Chronic liver diseases (CLDs) represent one of the most pressing challenges facing the modern global healthcare system, with their medical, social, and economic burden increasing year by year. According to data from the World Health Organization (WHO), liver diseases account for more than 2 million deaths annually worldwide, nearly half of which are associated with chronic liver diseases, including liver cirrhosis and hepatocellular carcinoma.

The Global Burden of Disease (GBD) assessments indicate that liver disease–related mortality increased by 35–40% between 1990 and 2019, confirming the persistent and deepening nature of this problem.

Traditionally, viral hepatitis (B and C), alcohol consumption, and metabolic disorders have been considered the main etiological factors of chronic liver diseases. However, epidemiological studies conducted over the past decades demonstrate that socio-hygienic factors act as independent and powerful determinants in the development of CLDs. In particular, low socioeconomic status, limited educational attainment, unhealthy dietary patterns, insufficient physical activity, chronic psycho-emotional stress, and unfavorable working and living conditions significantly influence the onset and course of liver diseases.

Large cohort studies have shown that the prevalence of chronic liver diseases is higher among low-income and socially vulnerable populations, in whom the disease is often diagnosed at advanced stages. This is explained by low health literacy, limited access to preventive screening programs, and inequalities in the utilization of primary healthcare services.

Studies conducted in Europe and North America indicate that individuals with lower educational levels have a 1.5–2-fold higher risk of developing liver cirrhosis.

Nutritional factors also play an important role in the epidemiology of CLDs. Under conditions of urbanization and industrialization, the widespread consumption of high-calorie diets rich in saturated fats and simple carbohydrates but low in biological value contributes to the development of metabolic syndrome, insulin resistance, and fatty liver disease.

Currently, fatty liver disease affects 25–30% of the adult population worldwide, and this prevalence is closely linked to lifestyle and social conditions. Social stress and psycho-emotional strain have been shown to accelerate liver fibrosis through activation of the hypothalamic–pituitary–adrenal axis and increased production of inflammatory mediators.

Occupational hygiene and environmental conditions should not be overlooked. Harmful occupational exposures, heavy physical labor, and disrupted work–rest schedules directly and indirectly impair liver metabolism. Several studies have reported higher liver enzyme activity and more frequent signs of fibrosis among populations living and working in industrial areas.

In this context, assessing chronic liver diseases solely from a clinical and biochemical perspective is insufficient. A comprehensive epidemiological evaluation of the complex influence of the socio-hygienic environment on their development is of particular scientific and practical importance, especially in regions with specific climatic, geographical, and social characteristics such as Uzbekistan. Such an approach provides a solid scientific basis for developing effective preventive strategies and optimizing healthcare policy.

Aim of the Study

To determine the role of socio-hygienic factors in the development and course of chronic liver diseases, to assess their epidemiological significance, and to provide a scientific basis for preventive strategies.

Materials and Methods

A retrospective analysis of scientific sources published between 2005 and 2024 was conducted. Data from meta-analyses, large cohort studies, and cross-sectional studies were reviewed. Epidemiological indicators (incidence, prevalence, mortality), socioeconomic indicators (income level, education, employment), and hygienic factors (diet, living conditions, occupational environment) were compared. Descriptive and comparative epidemiological methods were applied in the analysis.

Results

The analysis of the reviewed literature demonstrated that socio-hygienic factors act as independent epidemiological determinants in the development of chronic liver diseases, and their impact is often comparable to that of traditional clinical risk factors. Findings from large-scale epidemiological studies worldwide confirm a close association between the prevalence of CLDs and indicators of socioeconomic status, living environment, and lifestyle.

According to the Global Burden of Disease (GBD) assessments for 2019 and 2021, the overall disease burden (DALYs) attributable to chronic liver diseases is significantly higher in low- and middle-income countries than in high-income countries. In particular, regions with a low socioeconomic index exhibit liver cirrhosis– and fibrosis-related mortality rates that are 1.6–2.1 times higher. This pattern is explained by limited access to healthcare services, insufficient preventive screening programs, and delayed diagnosis.

Table 1. Association between socioeconomic status and the prevalence of chronic liver diseases (based on GBD and cohort studies)

Socioeconomic status	CLD prevalence (%)	Liver cirrhosis–related mortality (per 100,000 population)
High income	7–10	8–12
Middle income	12–18	18–25
Low income	18–25	25–40

As shown in Table 1, deterioration in socioeconomic status is accompanied by a consistent increase in both the prevalence of chronic liver diseases and mortality rates. These findings are consistent with multicenter cohort studies conducted in Europe, Asia, and Latin America.

Analysis of dietary and lifestyle factors revealed that socially disadvantaged populations predominantly consume energy-dense diets with low biological value, which markedly increases the risk of fatty liver disease. Meta-analyses indicate that the global prevalence of fatty liver disease is 25–30%; however, in low-income urban areas this figure reaches up to 35%. When combined with insufficient physical activity and excess body weight, this condition substantially increases the likelihood of progression from hepatic steatosis to the fibrotic stage.

Table 2. Prevalence of fatty liver disease according to socio-hygienic factors

Factor	Fatty liver disease prevalence (%)
High physical activity	15–18
Moderate physical activity	22–25
Low physical activity	30–35
Low socioeconomic status	32–38

Results related to psycho-emotional stress and working conditions were also of considerable importance. Individuals exposed to prolonged stress exhibited persistently elevated liver enzyme levels (ALT, AST) and increased activation of inflammatory markers. Groups characterized by disrupted work–rest schedules and heavy physical labor showed statistically significantly higher rates of chronic hepatitis and fibrosis. In certain industrial areas, liver disease incidence among residents was 1.3–1.5 times higher than in environmentally cleaner regions.

Findings concerning access to healthcare services indicate that in areas where screening and dispensary follow-up at the primary care level are inadequately implemented, more than 60% of patients seek medical attention at the stage of liver cirrhosis or decompensation. This adversely affects disease prognosis and substantially increases treatment costs. According to data from the World Health

Organization, strengthening early detection and preventive measures in chronic liver diseases can reduce mortality by at least 30–40%.

Discussion

The obtained results clearly demonstrate that socio-hygienic factors in the development of chronic liver diseases are not secondary or background conditions, but rather independent and systemic epidemiological determinants. Analysis of the available studies confirms that the spread of liver diseases and their progression to severe clinical forms are not limited to viral or metabolic mechanisms alone, but are continuously modulated by the social environment.

The higher prevalence of chronic liver diseases identified among low- and middle-income populations is fully consistent with global epidemiological observations. Comparison with data from the Global Burden of Disease project indicates that socioeconomic inequalities increase liver cirrhosis– and fibrosis-related mortality by 1.6–2 times. Clinically, this implies that individuals with identical biological risk factors may have markedly different prognoses depending on their social conditions. In low-income groups, delayed diagnosis, insufficient screening, and late presentation for medical care emerge as key mechanisms contributing to disease severity.

Findings related to diet and lifestyle indicate that the contemporary epidemiology of nonalcoholic fatty liver disease cannot be understood outside a social context. High-calorie diets with low biological value, insufficient physical activity, and excess body weight constitute the central pathogenic chain in the development of fatty liver disease. Importantly, this dietary pattern is often not an individual choice but rather a product of the social environment. The predominance of inexpensive, rapidly prepared foods and the underdevelopment of healthy nutrition infrastructure in residential areas transform metabolic liver diseases into socially “determined” pathologies.

Results associated with psycho-emotional stress and working conditions also merit special attention. Prolonged stress increases cortisol secretion through activation of the hypothalamic–pituitary–adrenal axis, thereby enhancing insulin resistance and inflammatory mediators. These mechanisms accelerate steatosis and fibrosis processes in hepatocytes. The persistently elevated liver enzyme levels and more frequent signs of fibrosis observed in groups with poor occupational hygiene epidemiologically confirm this pathophysiological cascade.

Findings related to access to healthcare services reveal the existence of a “hidden epidemiology” of chronic liver diseases. In regions where primary healthcare services and screening programs are insufficiently implemented, a large proportion of patients are diagnosed at the stage of decompensation. This reduces treatment effectiveness and sharply increases the economic burden on healthcare systems. As emphasized by the World Health Organization, strengthening early detection and socially oriented preventive measures in chronic liver diseases can reduce mortality by at least one third.

Overall, the discussed results indicate that strategies aimed at controlling chronic liver diseases solely through clinical diagnosis and pharmacological treatment are strategically insufficient. The roots of the disease often lie within the social environment, while clinical outcomes represent the cumulative result of years of accumulated hygienic and social burden. Therefore, effective control models require the integration of medical interventions with social policies, the creation of a healthy nutrition environment, improvement of occupational hygiene, and the assurance of equitable access to healthcare services.

In general, these findings underscore the need to reconceptualize chronic liver diseases as socially and hygienically determined conditions. Such an approach is not only scientifically grounded but also of critical strategic importance for long-term prevention and the optimization of healthcare policy.

Conclusion

The results of this analytical study convincingly confirm that socio-hygienic factors are important and independent epidemiological determinants in the development and progression of chronic liver diseases. The obtained data indicate that liver pathologies are not solely the result of biological and clinical mechanisms, but rather the cumulative outcome of long-term hygienic and lifestyle factors shaped within the social environment.

1. Low socioeconomic status, insufficient health literacy, and limited access to healthcare services hinder early detection of chronic liver diseases and lead to their manifestation in severe clinical forms. This is evidenced by the high proportion of patients diagnosed at the stage of liver cirrhosis and decompensation.
2. Unhealthy dietary patterns, insufficient physical activity, and chronic psycho-emotional stress accelerate the development of hepatic steatosis and fibrosis through metabolic disturbances. These factors are more often determined by social conditions than by individual choice, highlighting the need to consider chronic liver diseases as socially determined pathologies.
3. Unfavorable working conditions and living environments act as important background determinants in the epidemiology of liver diseases, reducing the effectiveness of clinical treatment and increasing the economic burden on healthcare systems. This confirms that disease prevention requires not only medical interventions but also comprehensive socio-hygienic measures.

An effective strategy for combating chronic liver diseases should therefore not be limited to clinical treatment alone, but should be based on an integrated approach that includes social policy measures, the formation of a healthy nutrition environment, improvement of working and living conditions, and strengthening of primary healthcare and screening programs. Only such an approach can ensure a sustainable reduction in morbidity and mortality associated with chronic liver diseases.

References

1. Abdukadirova, L. K., Jalolov, N. N., Nozimjonova, M. N., & Narzullayeva, U. S. (2022). Evaluation of practical nutrition of patients with chronic hepatitis.
2. Allen, Luke N et al. Reframing non-communicable diseases as socially transmitted conditions. The Lancet Global Health, Volume 5, Issue 7, e644 - e646. doi: 10.1016/S2214-109X(17)30200-0
3. Fan, J. G., Kim, S. U., & Wong, V. W. S. (2017). New trends on obesity and JIGARNING YOG'LI GEPATOZI in Asia. Journal of Hepatology, 67(4), 862–873. https://doi.org/10.1016/j.jhep.2017.06.003
4. Global Burden of Disease Results Tool. (2021). Global burden of liver diseases. Institute for Health Metrics and Evaluation. https://vizhub.healthdata.org/gbd-results/
5. Hyde, Ashley M. R.N., Ph.D(c).1; Carbonneau, Michelle N.P., M.N.2; Abraldes, Juan G. M.D.3; Tandon, Puneeta M.D.3. Advanced Practice Providers: Raising Our Defenses Against the Rising Tide of Cirrhosis. Hepatology 71(1):p 11-13, January 2020. | DOI: 10.1002/hep.30987

6. Jalolov, N., & Parpiboeva, D. A. (2017). Лечебное питание при хронических заболеваниях печени.
7. Jalolov, N., & Solihov, M. (2017). Сурункали жигар касалликларида хаққоний овқатланиш холатини ўрганиш.
8. Kriss, Michael M.D.*,1; Burchill, Matthew Ph.D.1. HCV and nonhepatic malignancy: Is pre-emptive direct-acting antiviral therapy indicated prior to treatment?. Hepatology 67(1):p 4-6, January 2018. | DOI: 10.1002/hep.29414
9. Marmot, M., Friel, S., Bell, R., Houweling, T. A. J., & Taylor, S. (2008). Closing the gap in a generation: Health equity through action on the social determinants of health. The Lancet, 372(9650), 1661–1669. https://doi.org/10.1016/S0140-6736(08)61690-6
10. Moon, Andrew M. et al. Contemporary Epidemiology of Chronic Liver Disease and Cirrhosis. Clinical Gastroenterology and Hepatology, Volume 18, Issue 12, 2650 – 2666. doi: 10.1016/j.cgh.2019.07.06
11. Scaglione, S., Kliethermes, S., Cao, G., Shoham, D., Durazo, R., Luke, A., & Volk, M. L. (2015). The epidemiology of cirrhosis in the United States: A population-based study. Journal of Clinical Gastroenterology, 49(8), 690–696. https://doi.org/10.1097/MCG.0000000000000208
12. Stepanova, M., & Younossi, Z. M. (2019). Independent association between socioeconomic status and nonalcoholic fatty liver disease. Hepatology, 69(3), 1074–1085. https://doi.org/10.1002/hep.30490
13. Tapper E B, Parikh N D. Mortality due to cirrhosis and liver cancer in the United States, 1999-2016: observational study BMJ 2018; 362 :k2817 doi:10.1136/bmj.k2817
14. World Health Organization. (2023). Global health estimates: Mortality from liver diseases and cirrhosis. https://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates
15. Ya, Z. S., Jalolov, N. N., Kh, P. M., & Rakhimov, B. B. (2023). Features of diet therapy for chronic liver diseases. Science Promotion, 1(2), 5-7.
16. Younossi, Z. M., Koenig, A. B., Abdelatif, D., Fazel, Y., Henry, L., & Wymer, M. (2016). Global epidemiology of nonalcoholic fatty liver disease—Meta-analytic assessment of prevalence, incidence, and outcomes. Hepatology, 64(1), 73–84. https://doi.org/10.1002/hep.28431
17. Zakirkhodjaev, S. Y., Sadirova, M. K., Niyazova, O. A., & Abdirova, A. M. (2024). Nutritional Needs in Chronic Liver Disease.
18. Zokirkhodjayev, S. Y., Jalolov, N. N., Ibragimova, M. M., & Makhmudova, I. A. (2019). THE USE OF LOCAL LEGUMES IN THE DIET THERAPY OF CHRONIC HEPATITIS. Toshkent tibbiyot akademiyasi axborotnomasi, (1), 64-68.
19. Жалолов, Н. Н., Тоҳирова, М. А., & Михлбаева, М. А. (2025, May). ВЛИЯНИЕ НЕПРАВИЛЬНОГО ПИТАНИЯ НА РАЗВИТИЕ ХРОНИЧЕСКОГО ГЕПАТИТА. In The Conference Hub (pp. 26-28).
20. Закирходжаев, Ш., & Паттахова, М. (2021). Особенности гуморальных факторов у больных с заболеваниями печени.
21. Зокирходжаев, Ш. Я., Жалолов, Н. Н., Ибрагимова, М. М., & Махмудова, И. А. (2019). Сурункали гепатитлар парҳезтерапиясида маҳаллий дуккакли махсулотларни қўллаш.
22. Зокирхўжаев, Ш. Я., Рустамова, М. Т., Паттахова, М. Х., Жалолов, Н. Н., & Муталов, С. Б. (2023). Сурункали жигар касалликларида соғлом овқатланишнинг аҳамияти.
23. Тошматова, Г. А. (2023). Использование среднеазиатского гороха в диетотерапии хронических заболеваний печени.