BG Pulse Journal USA
ISSN:1947-2536 http://www.bgpulseusa.com/index.php/bg
BG PULSE JOURNAL

"EPIDEMIOLOGICAL ANALYSIS OF THE PREVALENCE OF INTESTINAL PARASITOSES IN THE REPUBLIC OF KARAKALPAKSTAN DURING 2019–2023"

Koshkarov Askarbay Jaksilikovich
PhD, Associate Professor,
Department of Infectious Diseases and Dermatovenereology,
Karakalpakstan Medical Institute
Email: askarbaykoshkarov@gmail.com
Phone: +998 90 590 34 71
Bekbergenov Nurbergen Utepbergen uli
Trainee Assistant, Department of Infectious Diseases and Dermatovenereology,
Karakalpakstan Medical Institute
Email: nurik778bekbergenov@icloud.com
Phone: +998 91 394 96 86
https://doi.org/10.5281/zenodo.20322842

Abstract

Intestinal parasitic diseases remain an important medical and social problem in many regions of the world, especially in territories characterized by unfavorable environmental and санитарно-гигиенические conditions. The Republic of Karakalpakstan is one of the regions of Uzbekistan exposed to ecological stress associated with the Aral Sea crisis, water scarcity, soil salinization, and deterioration of sanitary infrastructure. The purpose of this article is to analyze the epidemiological characteristics of intestinal parasitoses in the Republic of Karakalpakstan during 2019–2023 based on available scientific literature, epidemiological reports, and international data. The study used analytical, comparative, and statistical methods. The results demonstrate that enterobiasis, giardiasis, ascariasis, and other intestinal parasitoses remain widespread among children and socially vulnerable population groups. Environmental, social, and hygienic factors significantly influence the persistence of parasitic diseases in the region. The analysis also indicates the importance of preventive measures, sanitary education, regular screening, and improvement of drinking water quality. The study confirms that intestinal parasitoses continue to represent a significant epidemiological burden in Karakalpakstan and require integrated preventive and monitoring programs.

Keywords

intestinal parasitoses, epidemiology, Karakalpakstan, enterobiasis, giardiasis, helminthiasis, public health, Uzbekistan, sanitation, parasitic infections

Introduction

Intestinal parasitic diseases are among the most common infectious pathologies worldwide and remain a major public health concern in developing countries. According to the World Health Organization, billions of people are infected with intestinal parasites, while hundreds of millions suffer from clinical manifestations associated with helminthic and protozoan infections [1]. The spread of parasitic diseases is closely related to sanitation quality, drinking water safety, personal hygiene, environmental conditions, and socioeconomic factors.

The Republic of Karakalpakstan occupies a special epidemiological position within Uzbekistan due to the ecological consequences of the Aral Sea disaster. Environmental degradation, increased salinity, insufficient access to clean water, and climate-related changes create favorable conditions for the circulation of intestinal parasitic infections [2]. The region is characterized by a high prevalence of infectious and parasitic diseases, particularly among children and rural populations.

Studies conducted in Uzbekistan demonstrate that enterobiasis, ascariasis, trichocephalosis, and giardiasis remain among the leading parasitic diseases affecting the population [3]. Research also indicates that Karakalpakstan belongs to the regions with the highest burden of soil-transmitted helminthiases in the country due to inadequate sanitary infrastructure and environmental exposure [4]. Pediatric populations are especially vulnerable because of insufficient hygiene skills, close contact in educational institutions, and reduced immune resistance.

Recent investigations carried out in Karakalpakstan have shown that intestinal parasitoses frequently coexist with bacterial intestinal infections, complicating the clinical course of diseases and prolonging recovery periods [5]. Mixed infections contribute to chronic intoxication, anemia, nutritional deficiencies, and impaired physical development.

The relevance of the present study is determined by the continuing epidemiological importance of intestinal parasitic diseases in the Republic of Karakalpakstan and the necessity for evidence-based preventive strategies.

Methodology

The study was conducted using analytical and comparative epidemiological methods. Scientific publications, international epidemiological databases, WHO materials, regional studies, and peer-reviewed articles published between 2019 and 2025 were analyzed. Special attention was paid to studies devoted to intestinal parasitic diseases in Uzbekistan and the Republic of Karakalpakstan.

The methodological basis included:

- analysis of scientific literature related to intestinal parasitoses;
- comparative analysis of epidemiological trends;
- evaluation of environmental and sanitary factors influencing disease prevalence;
- synthesis of regional epidemiological observations.

Data concerning enterobiasis, giardiasis, ascariasis, trichocephalosis, and mixed parasitic infections were examined. The research particularly considered studies devoted to pediatric populations because children represent the most epidemiologically significant group for intestinal parasitic transmission.

The study also included analysis of environmental determinants such as water quality, sanitation conditions, climatic factors, and ecological stress associated with the Aral Sea region.

Results

The analysis of available scientific and epidemiological data demonstrates that intestinal parasitoses remain widespread in the Republic of Karakalpakstan throughout the period 2019–2023. Among the most commonly reported infections were enterobiasis, giardiasis, and ascariasis.

Research conducted in Karakalpakstan revealed a considerable prevalence of enterobiasis among children under 14 years of age [6]. Pediatric populations were identified as the most vulnerable category because of increased exposure in schools and preschool institutions, inadequate hygiene practices, and close interpersonal contact.

Studies investigating mixed intestinal infections in Karakalpakstan showed that giardiasis accounted for a substantial proportion of parasitic cases associated with bacterial intestinal diseases

[5]. According to the analyzed data, giardiasis was identified in more than half of observed parasitic co-infections, while enterobiasis represented a significant percentage of remaining cases.

The epidemiological structure of intestinal parasitoses in the region reflects the predominance of fecal-oral transmission mechanisms. The spread of parasites is associated with insufficient sanitation, contamination of drinking water, poor hygiene practices, and overcrowded living conditions. Rural areas demonstrate a higher epidemiological burden because of limited access to centralized water supply systems and sewage infrastructure.

Environmental conditions in Karakalpakstan also contribute to disease persistence. The ecological crisis of the Aral Sea region has resulted in deterioration of water quality, soil salinization, and increased atmospheric pollution [2]. These factors negatively affect public health and indirectly facilitate the spread of infectious and parasitic diseases.

Studies from Uzbekistan indicate that soil-transmitted helminthiases are particularly common in Karakalpakstan and the Fergana Valley [4]. The most frequently reported helminth infections include enterobiasis and ascariasis. Children of preschool and school age remain the primary risk group.

Clinical manifestations of intestinal parasitoses observed in regional studies included abdominal pain, nausea, diarrhea, weakness, reduced appetite, irritability, sleep disturbances, and anemia [5]. In mixed infections, symptoms were more severe and prolonged than in isolated bacterial intestinal diseases.

International epidemiological studies also confirm that intestinal parasitic infections are strongly associated with inadequate sanitary conditions and low socioeconomic status [7]. Similar epidemiological patterns are observed in Karakalpakstan.

Analysis and Discussion

The epidemiological situation regarding intestinal parasitoses in the Republic of Karakalpakstan during 2019–2023 reflects the combined influence of environmental, social, and hygienic factors.

One of the major determinants is the ecological condition of the region. The Aral Sea catastrophe remains one of the largest environmental crises in Central Asia and significantly affects population health. Dust storms containing salts and pollutants, poor drinking water quality, and desertification contribute to the deterioration of sanitary conditions [2]. These processes increase susceptibility to infectious and parasitic diseases.

Another important factor is the insufficiency of centralized sanitation systems in rural territories. Lack of access to safe water and sewage disposal facilitates fecal contamination of the environment and supports transmission of intestinal parasites. Similar observations have been reported in other endemic regions worldwide [7].

Children represent the most epidemiologically vulnerable group. Studies demonstrate that enterobiasis spreads rapidly in organized child collectives because of close contact and difficulties maintaining adequate hygiene standards [6]. Chronic parasitic infections negatively affect nutritional status, cognitive development, immune response, and educational performance.

The predominance of enterobiasis and giardiasis corresponds with epidemiological trends observed in other regions of Uzbekistan [3]. Enterobiasis is characterized by high transmissibility and frequent reinfection, while giardiasis is closely associated with contaminated water sources and inadequate sanitation.

The coexistence of parasitic and bacterial intestinal infections is another important epidemiological feature in Karakalpakstan. Research indicates that mixed infections result in more

severe intoxication, prolonged disease duration, and increased hospitalization rates [5]. Such cases require integrated diagnostic and therapeutic approaches.

The persistence of intestinal parasitoses during 2019–2023 also indicates limitations in preventive programs. Effective control of parasitic diseases requires:

- regular screening of children and risk groups;
- improvement of drinking water quality;
- development of sanitation infrastructure;
- health education programs;
- strict hygiene monitoring in schools and preschool institutions;
- periodic deworming measures in endemic territories.

International experience demonstrates that integrated sanitation and hygiene interventions significantly reduce the prevalence of intestinal parasitic infections [8]. Preventive strategies based on community participation and health education are especially effective in rural settings.

The epidemiological burden of parasitic diseases is also associated with socioeconomic factors. Poverty, overcrowding, low awareness of hygiene practices, and limited medical accessibility contribute to continued transmission. Therefore, intestinal parasitoses should be considered not only a medical issue but also a social and environmental problem.

Despite ongoing public health measures in Uzbekistan, the analyzed data indicate the necessity of strengthening regional epidemiological surveillance in Karakalpakstan. Improved laboratory diagnostics, digital monitoring systems, and intersectoral cooperation are essential for effective disease control.

Conclusion

The conducted epidemiological analysis demonstrates that intestinal parasitoses remained a significant public health problem in the Republic of Karakalpakstan during 2019–2023. Enterobiasis, giardiasis, and ascariasis were identified as the predominant parasitic diseases, especially among children and rural populations.

Environmental degradation associated with the Aral Sea crisis, insufficient sanitation infrastructure, poor drinking water quality, and inadequate hygiene conditions contribute substantially to the persistence of parasitic infections in the region.

The analysis also confirms that mixed intestinal infections complicate clinical outcomes and increase epidemiological risks. Children remain the most vulnerable population group and require continuous preventive monitoring.

To reduce the prevalence of intestinal parasitoses in Karakalpakstan, comprehensive preventive measures are necessary, including improvement of sanitary infrastructure, regular screening programs, health education, and strengthening of epidemiological surveillance systems.

References

1. World Health Organization. Soil-Transmitted Helminth Infections. Geneva, 2023. pp. 1–15.
2. Micklin P. The Aral Sea Disaster. Annual Review of Earth and Planetary Sciences, 2007. pp. 47–72.
3. Ismoilov A., Turaev F. Parasitic Diseases in Uzbekistan: Epidemiological Features. Tashkent Medical Journal, 2021. pp. 25–31.
4. Namrata S. Parasitic Infections in Uzbekistan: Patterns and Public Health Challenges. World Science Journal, 2026. pp. 44–52.
5. Akhmedova M.D. Joint Clinical Transmission of Internal Parasitosis with Acute Infection in Karakalpakstan. Medical and Biological Research Journal, 2021. pp. 15–24.

6. Ruzmetova G., Allanazarova D. Study of the Prevalence of Enterobiasis in Children under 14 Years of Age in the Republic of Karakalpakstan between 2022–2024. International Medical Journal of Research and Development, 2025. pp. 33–40.
7. Sobati H. et al. Epidemiological Study of Parasitic Infections. Iranian Journal of Public Health, 2020. pp. 120–129.
8. Centers for Disease Control and Prevention. Parasites and Public Health. Atlanta, 2022. pp. 10–28.
9. Ertürk E.Y. Epidemiology of Intestinal Parasites in Pediatric Patients. Ordu University Journal of Health Sciences, 2021. pp. 67–75.
10. World Health Organization. Water, Sanitation and Hygiene Strategy 2018–2025. Geneva, 2018. pp. 5–39.
11. UNICEF Uzbekistan. Children's Health and Sanitation in Rural Areas of Uzbekistan. Tashkent, 2022. pp. 18–36.
12. Statistics Agency under the President of the Republic of Uzbekistan. Demographic and Health Indicators of Karakalpakstan. Tashkent, 2023. pp. 12–27.