



Congress Abstract

Comparative Analysis of The Dynamics of Urolithiasis Morbidity in Republic of Kazakhstan (2015–2024)

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ABSTRACT

Relevance: Urolithiasis is a widespread urological disease worldwide, characterized by the formation of stones in any part of the urinary tract, including the kidneys, ureters, bladder, and urethra. In CIS countries, the proportion of urolithiasis among urological diseases ranges from 33.9% in Russia to 58.2% in Kyrgyzstan, while in Tajikistan, Uzbekistan, and Kazakhstan it is at the level of 42.2–56.1%, showing an increasing trend in incidence. Globally, the prevalence of urolithiasis varies from 1% to 20%, with higher risk observed in regions with hot climates and high environmental pollution, which is associated with increased fluid loss and higher salt concentration in urine. Within the framework of this study, a retrospective analysis of 162,538 hospitalizations among 132,915 patients with urolithiasis in the Republic of Kazakhstan was conducted for the period 2014–2021. The overall hospitalization rate was 1.31 cases per 1,000 population. The highest rates were observed in the Turkestan region and Almaty city, corresponding to the geographical concept of the “stone belt.” The majority of hospitalizations were recorded among patients aged 50 years and older. A comparison of urban and rural populations showed a higher disease burden in urban areas, likely associated with lifestyle factors and better access to medical care. In conclusion, urolithiasis remains a significant medical and social problem in Kazakhstan. In 2021, approximately 106 million new cases were reported worldwide; despite the increase in absolute incidence, standardized rates and DALYs have decreased, and mortality remains consistently low (<0.5 per 100,000 population), indicating improvements in diagnosis, prevention, and treatment.

Aim of the study: To analyze the dynamics and regional characteristics of urolithiasis morbidity among the population of the Republic of Kazakhstan.

Study materials and objectives: A retrospective analysis was conducted using data from annual official health reports (National Bureau of Statistics of the Republic of Kazakhstan) for the period 2015–2024. To assess national trends in urolithiasis morbidity over the period 2015–2024. To compare urolithiasis incidence rates between urban and rural populations. To develop practical recommendations for the prevention, early detection, and management of urolithiasis.

Results: In Kazakhstan, the incidence of urolithiasis demonstrated a wave-like pattern: an increase during 2015–2018, a decrease in 2019–2021, and a renewed upward trend from 2022 onwards. By 2024, the indicators exceeded the average level of the studied period. Urban areas showed relatively stable dynamics, whereas rural areas demonstrated more pronounced fluctuations.

In 2024, the incidence rate among the urban population reached 85.9 cases per 100,000 population, showing a renewed increase after the decline observed in 2020–2021. A

similar post-decline increase was observed in rural areas, with marked regional variability. The highest rural incidence was recorded in the Almaty region, exceeding 150 cases per 100,000 population in 2023–2024. In urban areas, the highest rate was observed in Atyrau city, reaching up to 198 cases per 100,000 population in 2024, while in Aktobe city it reached 153.5 cases per 100,000 population.

Conclusion: In recent years, an increase in the incidence of urolithiasis and pronounced regional differences have been observed. Therefore, it is necessary to strengthen preventive measures, improve early diagnosis, and enhance the control of risk factors in regions with high incidence rates.

Keywords: Urolithiasis; Kidney Stones; Incidence Trends; Regional Epidemiology; Kazakhstan; Public Health