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# Urogenital disease morbidity among the adult and child population of the Osh Region for the period from 2010 to 2019

## Morbilidad por enfermedad urogenital en la población adulta e infantil de la región de Osh durante el período de 2010 a 2019

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**SUMMARY**

*It is presented the results of a study on the prevalence, structure, and trends in urogenital diseases in the adult population of the Osh Region of Kyrgyzstan for the period between 2010 and 2019. Official statistics on morbidity provided by the National Statistical Committee of the Kyrgyz Republic are used as materials for the study. Information on the main indices characterizing adult morbidity is selected and summarized, and dynamic statistical analysis of the data is performed. The data analysis demonstrates that the highest morbidity of urogenital diseases in the Osh Region was registered in 2017, and the lowest – in 2019. A similar trend is observed among women, with the highest incidence seen in 2017 and the lowest in 2019, while the lowest morbidity among men falls in 2019. The incidence rate was highest in 2011 and 2015 at 22 501 and 22 899 per 100 in this population, respectively, while the lowest was recorded in 2019 at 1 591 per 100 in the population. Renal and urinary system diseases (N00-N39) account for 21.05 % of the incidence structure, with chronic pyelonephritis (N11) being the most frequently reported pathology throughout the period. The Osh Region shows a positive trend in morbidity and incidence, with a decrease between 2010 and 2019, reaching the lowest point in 2019 (31 722 per 100 ths population and 11,591 per 100 ths population, respectively). Renal and urinary system diseases (N00-N39) account for 65.58 % of the morbidity structure.*

**Keywords:** *Urogenital system, morbidity, incidence, chronic pyelonephritis, kidney disease.*

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**RESUMEN**

*Se presentan los resultados de un estudio sobre la prevalencia, estructura y tendencias de las enfermedades urogenitales en la población adulta de la región de Osh de Kirguistán para el período comprendido entre 2010 y 2019. Las estadísticas oficiales sobre morbilidad proporcionadas por el Comité Nacional de Estadística de la República Kirguisa se utilizan como materiales para el estudio. Se selecciona y resume la información sobre los principales índices que caracterizan la morbilidad en adultos, y se realiza un análisis estadístico dinámico de los datos. El análisis de datos demuestra que la mayor morbilidad de enfermedades urogenitales en la región de la Osh se registró en 2017 y la más baja, en 2019. Una tendencia similar se observa entre las mujeres, con la mayor incidencia observada en 2017 y la más baja en 2019, mientras que la menor morbilidad entre los hombres cae en 2019. La tasa de incidencia fue más alta en 2011 y 2015 con 22 501 y 22 899 por 100 mls de población, respectivamente, mientras que la más baja se registró en 2019 con 1 591 por 100 mls de población. Las enfermedades renales y del sistema urinario (N00-N39) representan el 21,05 % de la estructura de incidencia, siendo la pielonefritis crónica (N11) la patología más frecuentemente reportada a lo largo del período. La Región de Osh muestra una tendencia positiva en morbilidad e incidencia, con una disminución entre 2010 y 2019, alcanzando el punto más bajo en 2019 (31 722 por 100 mls de población y 11 591 por 100 mls de población, respectivamente). Las enfermedades renales y del sistema urinario (N00-N39) representan el 65,58 % de la estructura de morbilidad.*

**Palabras clave:** *Sistema urogenital, morbilidad, incidencia, pielonefritis crónica, enfermedad renal.*

## INTRODUCTION

Diseases of the genitourinary system are the main reason behind increasing morbidity and mortality, reduced working ability, reproductive dysfunction, and poor quality of life (1-3). Many authors cite this category of diseases as one of those characterized by an unprecedented increase in prevalence and a decrease in quality of life (4-6).

The high social and economic significance of this pathology is due to several reasons, among which the high prevalence rate and impact on working-age people are paramount (7-9). Urological diseases account for 5-6 % of morbidity in developed countries, and rank 7th in the mortality rate (10). For example, urolithiasis in European countries affects up to 9 % of the population, in Asian countries – 1-5 %, in North American countries – up to 13 %, and in the Middle East – up to 20 %. About 150 million cases of urinary tract infections, including acute cystitis, occur annually worldwide (11). According to some estimates, more than 200 million men on the planet have benign prostatic hyperplasia (12).

Identification of the reasons behind the uneven distribution of urogenital system morbidity and incidence in individual regions allows one to conduct an expert evaluation, identify the main factors contributing to the rising rates, and improve the effectiveness of regional preventive measures against the spread of the pathology. In particular, it is of interest to examine data on urogenital nosologies in one of the large settlements of the Kyrgyz Republic, located in the south of the Osh Region.

The study aims to determine the incidence and trends in the development of urinary diseases among the adult population of the Osh Region of the Kyrgyz Republic for the period 2010-2019. The paper offers valuable information about the burden of the diseases, the effectiveness of existing preventive measures, and the need for additional healthcare resources in the region. Referring to adult urogenital disease rates, healthcare providers and policymakers can identify areas where improvements in healthcare services and interventions are needed and where resources should be allocated to improve population health outcomes.

## METHODS

In this paper, we collected and summarized information on the main indicators characterizing urogenital disease morbidity in the adult population of the Osh Region for the period from 2010 to 2019 according to official statistics (13).

Dynamic analysis was conducted for morbidity and incidence of the adult population of Osh Region for urogenital diseases (ICD

10 code – N00-N99), including glomerular, tubulointerstitial renal diseases, other renal and ureteral diseases (N00-N15, N25-N28), urolithiasis (N20-N21, N23), prostate diseases (N40-N42), male infertility (N46), and other diseases of the urinary system (N30-N39).

When comparing two data series by their mean values, Student's t-test was used to correlate the values. The differences were considered significant at $p<0.05$.

## RESULTS AND DISCUSSION

The dynamics of the morbidity of urogenital diseases for the period from 2010 to 2019 in the Osh Region (per 100 ths adult population) is shown in Figure 1.

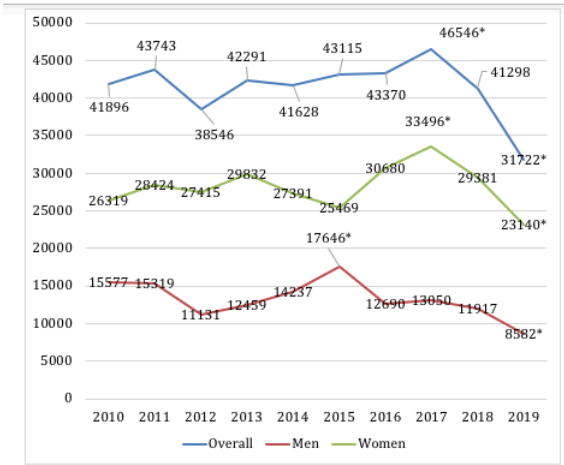


Figure 1. Characteristics of the dynamics of the morbidity of urogenital diseases for the period from 2010 to 2019 in the Osh region (per 100 ths adult population).
Note: *p<0.05 – statistically significant differences between values within groups.

Analyzing the obtained data, we can note that the highest value of morbidity of the urogenital system was recorded in 2017 (46-546 people per 100 ths population), the lowest – in 2019 (31-722 people per 100 ths population) ($p<0.05$). A similar trend is observed among women: the maximum value of the morbidity rate was detected in 2017 (33-496 per 100 ths population), and the minimum – was in 2019 (23-140 per 100 ths population). The lowest value of this parameter among men is in 2019 (8-582 per 100 ths population).

The structure of ICD-10 nosologies is shown in Figure 2.

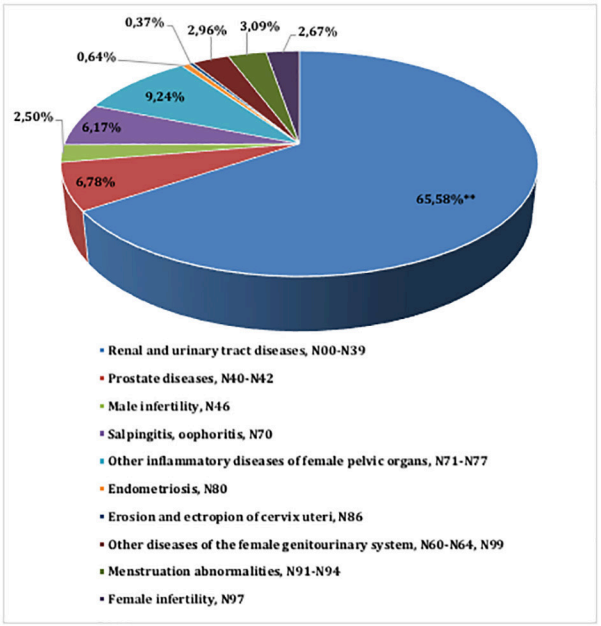


Figure 2. Structure of ICD-10 nosologies (in %).
Note: **p<0.01 – statistically significant differences between values within groups.

The results indicate that most cases ($p<0.01$) are represented by renal and urinary tract diseases (N00-N39) – 65.58 %.

Analysis of the incidence of urogenital system diseases overall and by gender for the period from 2010 to 2019 in Osh Region (per 100 ths adult population) is given in Figure 3.

It is found that most cases ($p<0.01$) are attributed to renal and urinary tract diseases

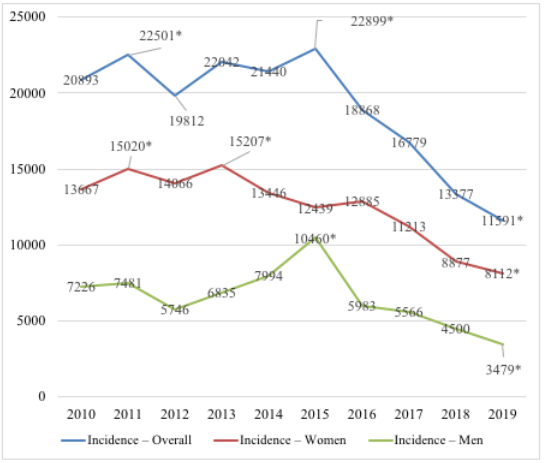


Figure 3. Comparative characteristics of overall urogenital disease incidence, the incidence in men and women for 2010-2019 in Osh Region (per 100 ths adult population).
Note: *p<0.05 – statistically significant differences between values within groups.

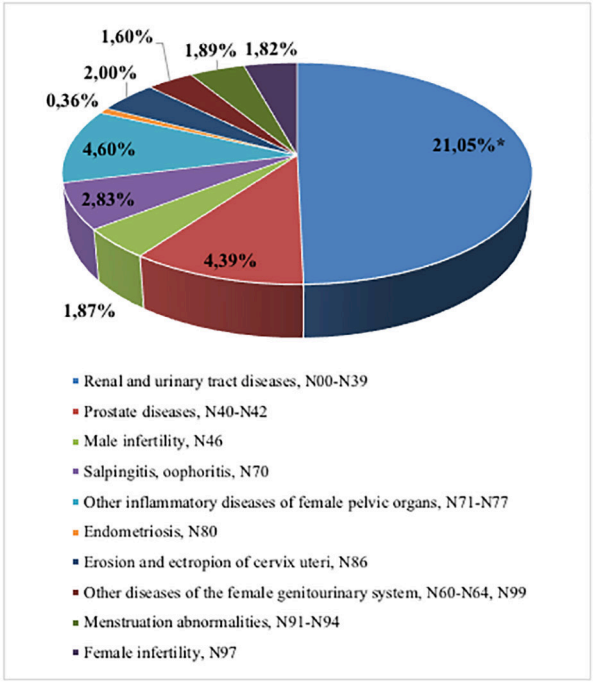


Figure 4. Structure of incidence nosologies according to ICD-10 (in %).
Note: **p<0.01 – statistically significant differences between values within groups.

(N00-N39) – 65.58 %. The highest incidence is observed in 2011 – 22 501 per 100 ths population, and in 2015 – 22 899 per 100 ths population, while the lowest morbidity is registered in 2019 – 11 591 per 100 ths population.

Among women, the maximum values of incidence rate are recorded in 2013 (15 207 per 100 ths population), the minimum -- in 2019 (8 112 per 100 ths population); among men – in 2015 (10 460 per 100 ths population) and in 2019 (3 479 per 100 ths population), respectively.

The structure of incidence nosologies according to ICD-10 is illustrated in Figure 4.

The structure of nosologies of incidence is dominated by renal and urinary tract diseases (N00-N39) – 21.05 %. Among them, chronic pyelonephritis (N11) has the greatest specific weight throughout the observation period (Figure 5). The dynamics of morbidity are presented in Figure 6.

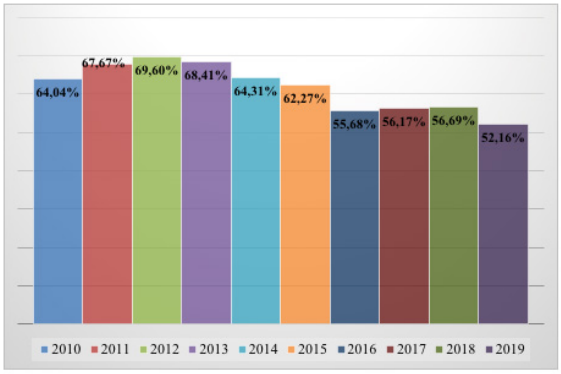


Figure 5. Comparative characteristics of the incidence of chronic pyelonephritis (N11) in the structure of Incidence of renal and urinary tract diseases (N00-N39).

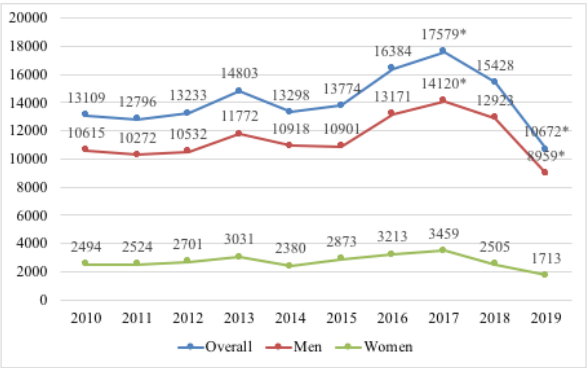


Figure 6. Characteristics of the dynamics of the morbidity of chronic pyelonephritis from 2010 to 2019 in Osh Region (per 100 ths adult population). Note: *p<0.05 – statistically significant differences between values within groups.

Analysis of the data suggests that the highest morbidity rates for chronic pyelonephritis are recorded in 2017 (morbidity – 17 579 per 100 ths population, for men – 14 120 per 100 ths population, for women – 3 459 per 100 ths population), the lowest – in 2019 (morbidity – 10 672 per 100 ths population; for men – 8 959 per 100 ths population, for women – 1 715 per 100 ths population).

The study of the incidence of urogenital diseases is important for analyzing their structure and morbidity in terms of identifying risk factors (14,15), the quality of medical services (16), accessibility of medical care (17), the nature of the material and technical equipment of medical institutions, and staffing (18).

Studies compare the incidence of urogenital system diseases between the regions of the Kyrgyz Republic and repeatedly highlight the need for dynamic monitoring (19,20). Our work also reflects the dynamics of morbidity and incidence of the urogenital system in the Osh Region for the period between 2010 and 2019. The structure of the nosologies that make up both morbidity and incidence is considered, and chronic pyelonephritis is found to account for the highest share.

## CONCLUSION

The study reveals positive dynamics of disease incidence and morbidity in the Osh Region, characterized by a decrease in their rates (for 2010-2019) with the lowest value in 2019 (31 722 per 100 ths population and 11 591 per 100 ths population, respectively). In the structure of morbidity and incidence of urogenital tract pathology, renal and urinary tract diseases (N00-N39) prevail with statistical significance at 65.58 and 21.05 %, respectively. The most frequently registered pathology throughout the whole period of observation is chronic pyelonephritis, the dynamics of morbidity of which had a downward trend with a minimal rate in 2019 – 10 672 per 100 ths population.

The findings can be used to develop and improve strategies for the prevention and treatment of urogenital diseases in the Osh Region. Morbidity statistics should be considered when planning budget expenditures on health care and allocating resources to provide effective measures for the prevention and treatment of genitourinary diseases.

Despite the reported downward trend in the statistics of the most common disease, which is chronic pyelonephritis, measures need to be taken to further ensure quality diagnosis and treatment of the disease. It can be recommended to verify the effectiveness and, if necessary, refine the program of education and community outreach regarding the main causes of urogenital diseases, how to reduce the risks of their development, and how to maintain the health of the genitourinary system.

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