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EPIDEMIOLOGICAL PATTERNS OF LUNG CANCER IN KHOREZM REGION

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Abstract. This study provides a retrospective epidemiological assessment of lung cancer cases registered in the Khorezm region. The main objective of the research was to examine long-term patterns of morbidity, evaluate incidence trends, and analyze age-, gender-, and territory-related characteristics of disease distribution. The results of the study may serve as an important scientific basis for improving preventive strategies, strengthening epidemiological surveillance, and enhancing public health interventions aimed at controlling lung cancer in the region.

Key words: Lung cancer, Epidemiology, Incidence, Mortality, Khorezm region, Risk factors, Public health, Uzbekistan

Introduction. Lung cancer is one of the most significant oncological diseases worldwide and remains a leading cause of mortality from malignant neoplasms among the adult population. According to the World Health Organization and national cancer registries, the incidence of lung cancer shows a steady increase in both developing and developed countries, which is associated with exposure to risk factors such as smoking, air pollution, and occupational carcinogens.

In Uzbekistan, lung cancer also ranks high among all types of malignant neoplasms, posing a serious threat to public health. In the Khorezm region, considering the demographic structure and socio-economic factors, there is a tendency toward increased incidence among adults, particularly men over 50 years of age.

Epidemiological characterization of lung cancer distribution allows identification of high-risk groups, assessment of trends in incidence and mortality, and evaluation of the effectiveness of existing preventive and diagnostic measures. Conducting such studies at the regional level is essential for improving early detection systems, organizing screening programs, and developing strategies to reduce the incidence and mortality of lung cancer in the Khorezm region [1].

Materials and methods. The study used official reports and morbidity data for 2015–2024 provided by the Department of Public Health and Sanitary-Epidemiological Surveillance of the Khorezm region. A retrospective epidemiological method was applied to assess long-term dynamics of lung cancer incidence and to analyze incidence rates across different districts, age groups, and gender categories. Data analysis included calculation of incidence and mortality rates per 100,000 population, as well as assessment of temporal trends and demographic patterns.

Results and Discussion. The epidemiological analysis showed that lung cancer cases were registered among the population of the Khorezm region during 2015–2024. The incidence rate during this period demonstrated noticeable fluctuations (Figure 1).

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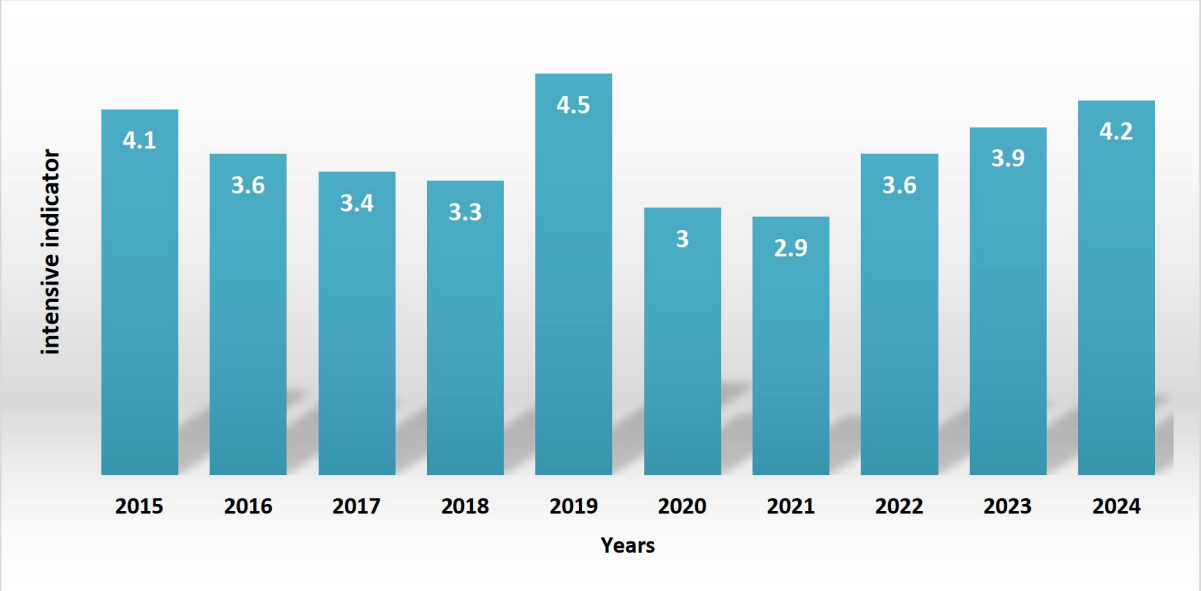

Figure 1. Incidence rates of lung cancer in the Khorezm region 2015–2024 (per 100,000 population)

The analysis of lung cancer incidence in the Khorezm region revealed several regional characteristics. Overall, incidence rates were lower than the national average; however, a gradual upward trend was observed over the study period, indicating the continued relevance of this issue for the region.

An increase in the proportion of cases among the rural population has been noted in recent years. This trend may be associated with limited access to preventive medical examinations, low awareness of early symptoms, as well as exposure to adverse environmental and occupational factors typical for rural areas.

As shown in Figure 3.1, the incidence dynamics in 2015–2024 were uneven, with alternating periods of decline and growth. The rate was relatively high at the beginning of the period (4.1 per 100,000 in 2015), followed by a decrease to 3.3 in 2018. A sharp increase was observed in 2019 (4.5 per 100,000), likely due to improved diagnostics and increased cancer awareness.

In 2020–2021, incidence declined to 3.0 and 2.9 per 100,000, respectively, reaching the lowest level in 2021, which may be attributed to the impact of the COVID-19 pandemic and reduced screening activities. Since 2022, a steady increase has been observed, reaching 4.2 per 100,000 in 2024, possibly due to healthcare system recovery and the cumulative effect of risk factors, particularly smoking.

Overall, the long-term analysis indicates the absence of a stable decline and the emergence of a recent upward trend, highlighting the need to strengthen early detection, prevention, and epidemiological surveillance.

The analysis of lung cancer incidence in the Khorezm region over the period 2015–2024 revealed notable fluctuations in the intensive indicator. The incidence rates ranged from 5.3 to 8.2 per 100,000 population, with an overall increasing trend observed in recent years (Figure 2).

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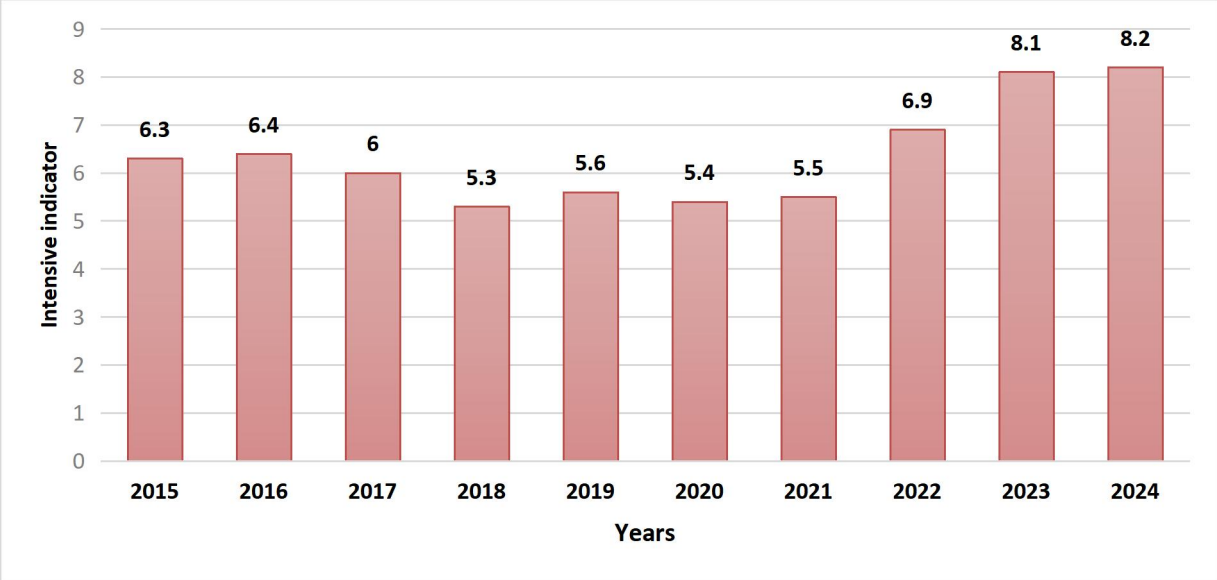

Figure 2. Prevalence rate of lung cancer in the Khorezm region 2015–2024 (per 100,000 population)

As shown in Figure 2, the incidence of lung cancer in the Khorezm region during 2015–2024 was characterized by an uneven pattern with alternating periods of decrease and increase. At the beginning of the study period, the incidence remained relatively stable: 6.3 per 100,000 population in 2015, 6.4 in 2016, and 6.0 in 2017.

In 2018, a decrease to 5.3 per 100,000 population was observed, which may reflect either a temporary reduction in case detection or fluctuations related to organizational aspects of oncology services. In 2019–2021, incidence rates remained relatively low and stable, ranging from 5.4 to 5.6 per 100,000 population. The lowest value was recorded in 2020 (5.4 per 100,000), likely due to the impact of the COVID-19 pandemic, which reduced the volume of preventive examinations and diagnostic activities.

Since 2022, a marked increase in lung cancer incidence has been observed. The rate rose to 6.9 per 100,000 in 2022 and reached 8.1 in 2023. The highest value over the entire study period was recorded in 2024, at 8.2 per 100,000 population, indicating a significant increase in case detection in recent years.

The long-term analysis of incidence dynamics (2014–2024) showed an overall unstable pattern with alternating periods of increase and decrease. For most of the study period, incidence remained relatively stable, with a minimum in 2020, likely associated with the impact of the COVID-19 pandemic on screening and diagnostic services. Since 2022, a pronounced upward trend has been observed, reaching its peak in 2024, reflecting improved detection, delayed diagnosis effects, and the continued influence of risk factors.

Thus, the epidemiological situation of lung cancer incidence in the Khorezm region is characterized by high public health significance, the absence of a stable downward trend, and pronounced year-to-year fluctuations. The findings highlight the need for:

1. improvement of early detection systems for lung cancer;

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2. increased accessibility of specialized oncological care;

3. strengthening of preventive measures among high-risk groups;

4. continuous epidemiological monitoring to assess the effectiveness of interventions and timely adjustment of prevention strategies.

The analysis of lung cancer mortality in the Khorezm region over the period 2015–2024 showed significant fluctuations in the mortality rate. The rates varied from 2.1 to 3.9 per 100,000 population, with a general upward trend observed in recent years (Figure 3).

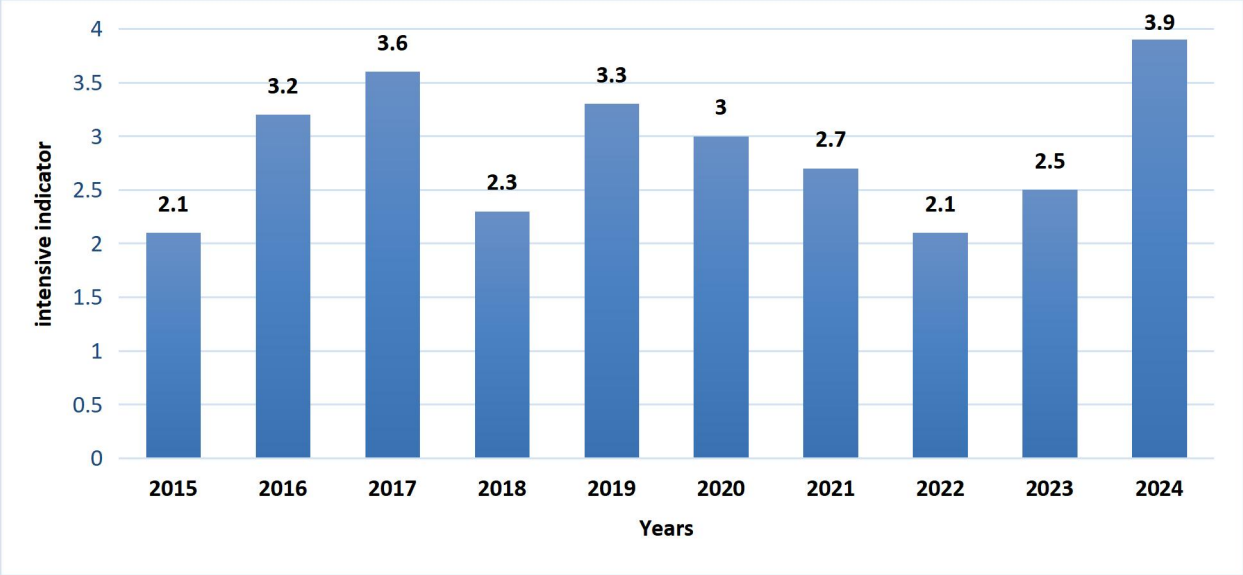

Figure 3. Mortality rate of lung cancer in the Khorezm region 2015–2024 (per 100,000 population)

As shown in Figure 3, the mortality rate from lung cancer in the Khorezm region during 2015–2024 was characterized by pronounced fluctuations, reflecting the complex and heterogeneous nature of the disease course and its outcomes. In 2015, the mortality rate was 2.1 per 100,000 population. In subsequent years, an increase was observed: to 3.2 in 2016 and 3.6 in 2017, which may indicate a high proportion of late-stage diagnoses and limited opportunities for early detection during this period.

In 2018, mortality decreased to 2.3 per 100,000 population, likely due to temporary improvements in diagnosis and treatment, as well as variations in the patient cohort. However, in 2019, the rate increased again to 3.3 per 100,000 population, confirming the instability of the epidemiological situation.

In 2020–2021, a gradual decline in mortality was observed, from 3.0 in 2020 to 2.7 per 100,000 population in 2021. This decrease may be associated with changes in the structure of detected cases, as well as the impact of the COVID-19 pandemic, which could have affected cause-of-death registration and access to specialized oncological care.

The lowest mortality rate during the study period was recorded in 2022 (2.1 per 100,000 population). However, in 2023, mortality increased to 2.5, and in 2024 it reached the maximum

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value of 3.9 per 100,000 population. This rise may be associated with the accumulated effect of delayed diagnosis in previous years, progression of previously identified cases, and the continued influence of risk factors.

Overall, the analysis of lung cancer mortality trends in the Khorezm region for 2015–2024 indicates the absence of a stable downward trend. The pronounced fluctuations highlight the need for further improvement of early detection systems, increased accessibility of specialized oncological care, and strengthening of preventive measures, particularly among high-risk groups.

References

1. Ahmedov B.A., Karimova D.R., Ismoilov U.K. Study of some risk factors for lung cancer development among urban population of the Republic of Uzbekistan. *Journal of Theoretical and Clinical Medicine.* 2011;1:15–20.
2. Mihin I.V., Golub V.A. *Lung Diseases.* Volgograd: Volgograd State Medical University; 2017. (Monograph)
3. World Health Organization. *Global Cancer Observatory: Cancer Today.* Lyon: WHO; 2023. Available from: https://gco.iarc.fr/today
4. Ministry of Health of the Republic of Uzbekistan. *Statistical Bulletin on Cancer Incidence in Uzbekistan.* Tashkent: Ministry of Health; 2024.
5. International Agency for Research on Cancer. *Lung Cancer Fact Sheet.* Lyon: IARC; 2022.