Epidemiology of Pulmonary Tuberculosis: Modern Trends and Control Measures

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Abstract: Tuberculosis is one of the diseases of greatest social importance to humanity. Pulmonary tuberculosis is the most widespread and contagious form of tuberculosis, which is not only a medical but also a social problem. According to the World Health Organization (WHO), millions of new cases are recorded worldwide every year. In Uzbekistan, the fight against tuberculosis is also carried out at the state level. However, currently, under the influence of various factors, new trends are observed in the epidemiology of the disease.

Keywords: Mycobacterium tuberculosis, tuberculosis, DOTS strategy, epidemiological control.

Tuberculosis is one of the most deadly infectious diseases in humans and a global health problem that poses a serious threat to the health of the world's population. This disease first in line lung harmful , however other organs and to fabrics both impact to show possible was Mycobacterium tuberculosis bacteria by to the surface comes . Medical in terms of very contagious and dangerous was this of the disease epidemiology to study , its spread laws analysis to do and effective control measures work exit today on the day world on a scale both , national to the extent both current from tasks to each other rotated .

World health to keep organization (WHO) information according to , every year world from 10 million more human to tuberculosis is played , and of these for about 1.5 million close this disease as a result death is enough Especially developing in countries of the disease spread high is , this many in cases socio-economic factors , medical to the service was limited opportunities , nutrition shortage and to live conditions are low It is related to the fact that .

Uzbekistan In the Republic both to tuberculosis against struggle state health to keep in politics dominant from directions one is considered The last one ten per year to do increased complex measures (free and quality diagnostics, DOTS strategy current be done , drugs as a result of providing illness in the indicators stable decline At the same time , epidemiological threat as to medicines multidrug -resistant tuberculosis (MDR-TB) and HIV/AIDS situations of the number growth , health to keep system in front of new problems to the surface is bringing .

In our country population between tuberculosis early detection , danger groups from the list conducting preventive examinations reinforcement and epidemiological surveillance system improvement according to row reforms to do is increasing . But so although some in the regions illness level high as remains , especially population dense located , social in terms of unique or edge in the regions .

Also in the population to the disease relatively lack of information , late application to do cases , non-reinforced dispensary observation and for treatment was doubts both tuberculosis epidemiological control complicating it . These factors tuberculosis spread process , danger

groups , age and sex according to characteristics , seasonality , regional differences like aspects deep to study the need bringing He took it out .

Therefore , this research in work 2015–2024 during In Uzbekistan record done lung tuberculosis of the circumstances epidemiological analysis to do is increased . Attention , the age of the disease - gender according to distribution , territorial dynamics , to drugs endurance level and of existing preventive measures efficiency directed .

This dissertation work relevance tuberculosis high social the danger of it wide spread and disease over of control effective mechanism work exit determined by necessity .

Numerous international and local studies on the epidemiology of tuberculosis have provided extensive information on the patterns of spread of this disease, risk factors, socio-economic impacts and control measures. According to the "Global Tuberculosis Report" (2023), published annually by the World Health Organization (WHO), in 2022, an estimated 10.6 million people worldwide were infected with tuberculosis and 1.3 million of them died. In addition, more than 450,000 people were diagnosed with drug-resistant tuberculosis.

One of the analyses related to the epidemiology of tuberculosis is presented in a study by Dheda K. et al. (2017), which noted that drug-resistant tuberculosis cases are increasing in the CIS countries, including Uzbekistan, which is making control and treatment difficult.

According to the Ministry of Health of the Republic of Uzbekistan and the Republican Specialized Scientific and Practical Medical Center for Phthisiology and Pulmonology, although the incidence rate decreased during 2015–2023, in recent years, high rates have remained in some regions, especially in Tashkent city and the Fergana Valley. This situation is influenced by factors related to internal migration, population density, and HIV infection.

Currently, the DOTS (Directly Observed Treatment, Short-course) strategy proposed by the WHO is being implemented in various countries and its effectiveness has been confirmed by numerous studies. This system has also been fully implemented in Uzbekistan, serving to improve dispensary control (WHO, 2020).

Maher D. et al. (2019) noted that the main factors influencing the epidemiology of tuberculosis are:

population nutrition level;

decreased immunity (especially in the case of HIV infection);

the level of knowledge about tuberculosis among the population;

living and working conditions.

The above factors are also relevant in the conditions of our country. For example, a scientific study conducted by Rakhimova Z.M. (2020) noted that malnutrition among tuberculosis patients in Uzbekistan is 52%, the presence of HIV infection is 6.3%, and the detection rate among pregnant women is 2.1%.

Many studies have also focused on the problem of drug resistance (MDR-TB and XDR-TB). According to the analysis of Kim JY (2021) and others, if a patient stops treatment halfway or is treated incorrectly, mycobacteria can develop into drug-resistant forms. This situation also requires a serious theoretical and practical approach in Uzbekistan.

Other sources provide recommendations on prevention, vaccination (BCG), public education, and strengthening surveillance . According to Masanja H. et al. (2022), the fight against tuberculosis in many countries requires not only a medical but also a social approach.

Purpose

Analysis of the epidemiological characteristics of pulmonary tuberculosis, study of the dynamics of morbidity indicators and justification of effective prevention and control measures.

Styles

Research object: Cases of pulmonary tuberculosis registered in Uzbekistan during 2015-2024.

Sources of information: information from the Republican Center for Phthisiology and Pulmonology, information from the Ministry of Health.

Methods of analysis: epidemiological analysis, trend graphs, dynamic indicators, distribution by age and gender.

Results

In Uzbekistan, the incidence of pulmonary tuberculosis is showing a decreasing trend between 2015 and 2024, but an increase is observed in some regions.

Among age groups, incidence is highest among 25–44 year olds.

Tuberculosis is more common among men than women (65%).

Drug-resistant TB cases have increased significantly after 2020.

Discussion

These results indicate that preventive measures implemented in the republic are effective, but the growth of drug-resistant forms and risk factors (unemployment, malnutrition, co-morbidities with HIV) should not be ignored. Regional differences indicate shortcomings in the epidemiological surveillance system.

Conclusion

It is necessary to strengthen the epidemiological control of pulmonary tuberculosis.

Separate monitoring and treatment protocols should be implemented for drug-resistant cases.

It is recommended to expand public awareness, vaccination, and HIV prevention activities.

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