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PREVALENCE OF EXTENSIVELY DRUG-RESISTANT TUBERCULOSIS

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Abstract. *Globally, the incidence of extensively drug-resistant tuberculosis poses a serious threat to public health. The article presents the results of assessing the prevalence of extensively drug-resistant tuberculosis (XDR-TB) in the Bukhara region. The prevalence of XDR-TB was 6.3 per 100 thousand population. Among patients with XDR-TB, the majority were young people of working age 25–44 years (63.2%), men (80.9%), people without official employment (75.6%), with a disease duration of more than 3 years (57.0%), suffering from infiltrative pulmonary tuberculosis (69.2). In 10.1% of XDR-TB patients, simultaneous resistance to seven main and reserve anti-tuberculosis drugs was detected. It was concluded that it is necessary to optimize approaches to organizing additional activities for the prevention of drug-resistant tuberculosis.*

Key words: *tuberculosis, prevalence, multidrug resistance, extensive drug resistance.*

РАСПРОСТРАНЕННОСТЬ ТУБЕРКУЛЕЗА С ШИРОКОЙ ЛЕКАРСТВЕННОЙ УСТОЙЧИВОСТЬЮ

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Аннотация. *Во всем мире заболеваемость туберкулезом с широкой лекарственной устойчивостью представляет серьезную угрозу общественному здоровью. В статье представлены результаты оценки распространенности туберкулеза с широкой лекарственной устойчивостью (ШЛУ-ТБ) в Бухарской области. Распространенность ШЛУ-ТБ составила 6,3 на 100 тыс. населения. Среди больных ШЛУ-ТБ большинство составляли молодые люди трудоспособного возраста 25–44 лет (63,2%), мужчины (80,9%), лица без официальной занятости (75,6%), с длительностью заболевания более 3 лет (57,0%), страдающие инфильтративным туберкулезом легких (69,2%). У 10,1% больных ШЛУ-ТБ выявлена одновременная устойчивость к семи основным и резервным противотуберкулезным препаратам. Сделан вывод о необходимости оптимизации подходов к организации дополнительных мероприятий по профилактике лекарственно-устойчивого туберкулеза.*

Ключевые слова: *туберкулез, распространенность, множественная лекарственная устойчивость, широкая лекарственная устойчивость.*

DORI VOSITALARIGA CHIDAMLI TUBERKULYOZ TARQALISH HOLATLARI

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Izoh. *Global miqyosda keng tarqalgan dori-darmonlarga chidamli sil kasalligi aholi salomatligi uchun jiddiy xavf tug'diradi. Maqolada Buxoro viloyatida keng tarqalgan dori vositalariga chidamli sil kasalligi (XDR-TB) tarqalishini baholash natijalari keltirilgan. XDR-TBning tarqalishi 100 ming aholiga 6,3 ni tashkil etdi. XDR-TB bilan kasallanganlar orasida mehnatga layoqatli yoshdagi 25-44 yoshdagi yoshlar (63,2%), erkaklar (80,9%), rasmiy ish bilan band bo'lmaganlar (75,6%), kasallik davomiyligi 3 yildan ortiq (57%) ko'pchilikni tashkil etdi..0%), infiltrativ o'pka sili bilan og'rigan (69,2). XDR-TB bilan og'rigan bemorlarning 10,1 foizida bir vaqtning o'zida ettita asosiy va zaxira silga qarshi dori-darmonlarga qarshilik aniqlangan. Dorilarga chidamli sil kasalligining oldini olish bo'yicha qo'shimcha tadbirlarni tashkil etishga yondashuvlarni optimallashtirish zarur, degan xulosaga keldi.*

Kalit so'zlar: *sil, tarqalish, ko'p dori-darmonlarga chidamlilik, keng tarqalgan dori-darmonlarga chidamlilik.*

The emergence of MDR-TB is influenced by many factors, such as unsatisfactory treatment regimens, interruptions in drug supply, non-compliance by patients with the prescribed regimen and, as a consequence, in most cases, interruption of treatment, as well as the use of low-quality drugs. To treat the disease, anti-tuberculosis drugs (ATDs), which are divided into groups, are used. Each type of tuberculosis corresponds to a specific regimen with a different combination of drugs and duration of treatment. Among PTPs, there are first-line drugs (isoniazid, rifampicin, ethambutol, pyrazinamide), injection drugs (amikacin, capreomycin, kanamycin, streptomycin), fluoroquinolones (ofloxacin, levofloxacin, moxifloxacin), second-line drugs (ethionamide,

prothionamide, cycloserine, terizidone, PAS) and drugs with unclear anti-tuberculosis effectiveness (amoxiclav, clarithromycin, imipenem, linezolid).

The prevalence of extensively drug-resistant tuberculosis varies, and is especially high across countries.

Eastern Europe and Asia, in Korea it was 7.4%, India - 5.6%, Romania - 10.9%, Ukraine - 15.2%, the Republic of Belarus - 29.2%, Lithuania -

27.9% of MDR-TB cases [1]. In regions of South Africa, the number of XDR-TB cases has increased 10-fold over the past decade [5].

According to WHO, the main factors contributing to the prevalence of extensively drug-resistant tuberculosis are ineffective treatment of tuberculosis in conditions of high prevalence of HIV infection, lack of adequate testing to determine drug resistance, and weak infection control measures for transmission of the tuberculosis pathogen [1, 9].

Improving approaches to early diagnosis of drug resistance of MBT using molecular genetic methods, as well as methods

Treatment using 3rd generation reserve drugs and surgical treatment methods (valvular bronchial blockade) can not only increase the effectiveness of treatment for patients with XDRTB, but also reduce the reservoir of drug-resistant tuberculosis [10–12].

The Bukhara region, like most regions of the Republic of Uzbekistan, was characterized by a moderate downward trend in the incidence and prevalence of tuberculosis useful infection.

Although the problem of tuberculosis with wide treatment natural resistance is attracting increasing attention due to the low effectiveness of treatment, as well as the high mortality of patients.

The purpose of the study is to assess the prevalence of extensively drug-resistant tuberculosis in the Bukhara region.

Materials and methods. A retrospective descriptive epidemiological study of the incidence of tuberculosis in the population of the Bukhara region over a 5-year period (2019–2023) was conducted.

To provide medical and social characteristics of tuberculosis patients with extensively drug-resistant pathogens, a cross-sectional epidemiological study was conducted. The objects of the study were 315 patients who were under dispensary observation in pathobiological institutions of the Bukhara region from January 2017 to January 2018. Biological (gender, age), social (place of residence, place of work, history of stay in penitentiary institutions) and medical characteristics of patients (structure of clinical forms of tuberculosis infection, presence of combined infectious and concomitant pathologies, spectrum of resistance to anti-tuberculosis drugs). The work used observational methods of epidemiological research. Intensive (prevalence, prevalence) and extensive (proportions) indicators were calculated. Data processing was carried out using Microsoft Excel capabilities.

Results and discussion. In the Bukhara region in 2017, the prevalence of tuberculosis infection was 5.8 per 100 thousand population; 678 patients with active forms of the disease were registered at the dispensary.

In 2021–2023 The dynamics of the prevalence of tuberculosis was characterized by a moderate downward trend with an annual decline rate of 3.9% with an average long-term prevalence rate of 49.5 per 100 thousand population. In the contingent of tuberculosis patients, the proportion of patients with respiratory tuberculosis was 93.2%.

Table 1.

Clinical and epidemiological characteristics of the population of tuberculosis patients in the Bukhara region, 2021-2023

Characteristics	Abs.	%
Infiltrative pulmonary tuberculosis	240	76.2
Fibrous-cavernous tuberculosis	8	2.5
Disseminated pulmonary tuberculosis	12	3.8
Focal pulmonary tuberculosis	5	1.6
Others	50	15.9
Total	**315**	**100%**

The proportion of patients with fibrous-cavernous tuberculosis, which has the greatest clinical and epidemiological significance, was 2.5%, and the prevalence of this form of tuberculosis in the Bukhara region. The prevalence of extrapulmonary tuberculosis was 6.8 per 100 thousand population (n = 183). Among patients with tuberculosis, 83% were bacterial excretors (113.5 per 100 thousand population) (Fig. 1). Among the bacterial isolates of 713 patients, multidrug-resistant mycobacteria were isolated (36.4 per 100 thousand population), of which 17.4% were HIV-infected (6.3 per 100 thousand population). In contrast to all forms of tuberculosis, the long-term prevalence rate of multidrug-resistant tuberculosis in the Bukhara region was generally relatively stable with a long-term average rate of 35.6 per 100 thousand population. Against the background of the annual decrease in the number of patients with active tuberculosis, an accumulation of

diseased excretors of multidrug-resistant mycobacteria was observed.

The proportion of bacteria-isolating strains with multidrug resistance among TB patients increased from 10.8 (2017) to 26.6% in (2023), and among the population of patients who were bacteria-isolating - from 30.7 to 58.1%.

During the analyzed period, 1,903 patients with primary multidrug-resistant tuberculosis were identified in the Bukhara region, the long-term average incidence rate was 7.9 per 100 thousand population, the incidence rate of increase was 1.6%. In the structure of bacterial excerptors, an increase in the proportion of patients issuing mycobacteria was noted with extensive drug resistance.

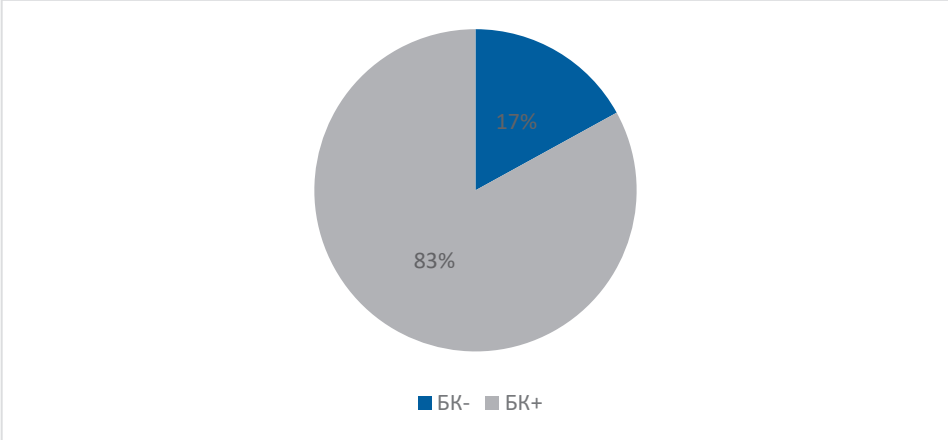


Fig. 1 **Proportion of bacterial isolates in drug-resistant tuberculosis.**

From 2017 to 2023, the proportion of such patients increased from 5.0 to 21.8%. By the end of the study period, the prevalence of XDR-TB in the Bukhara region was 13.6 per 100 thousand population (n = 267)

In this epidemiological situation, the study of the epidemiological, medical and social characteristics of patients who are sources of mycobacteria with extensive drug resistance and form the epidemic process of drug-resistant tuberculosis is of great importance.

The results of this study indicate the presence of global trends in the Bukhara region associated with the increasing prevalence of drug-resistant forms of tuberculosis. In our study, the prevalence of MDR-TB was 36.4 per 100 thousand population, including XDR-TB – 13.6 per 100 thousand population. XDR-TB is a growing public health threat and has been identified in more than 100 countries worldwide [1]. XDR-TB significantly limits treatment options, leading to low effectiveness, a long period of bacterial excretion in patients, and transmission of drug-resistant MTB strains.

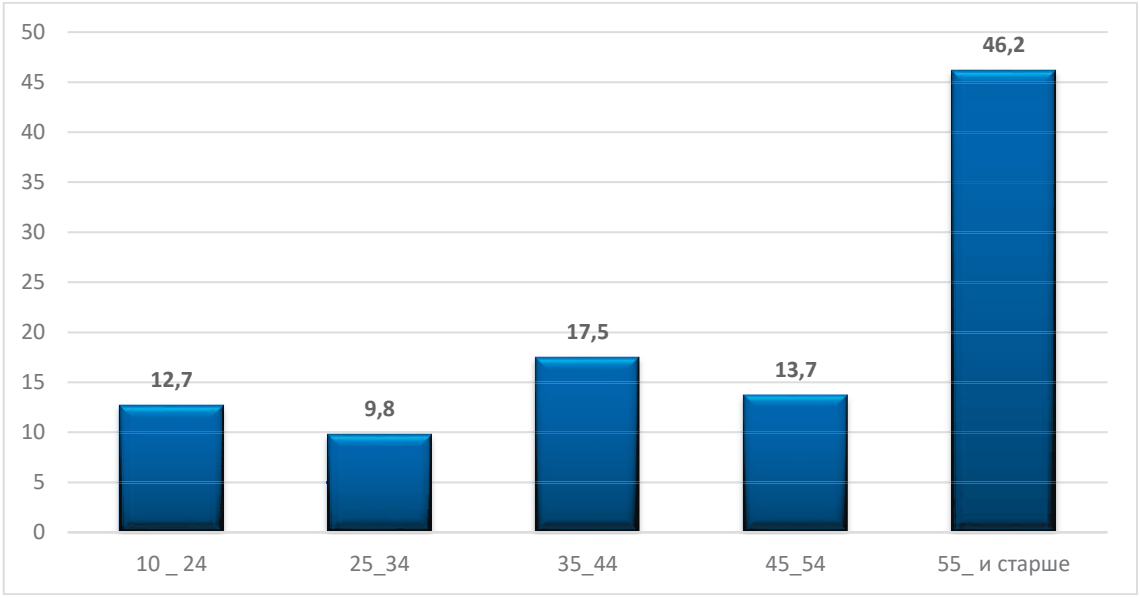


Fig. 2 **Incidence of tuberculosis patients by age groups**

Table 2.

Incidence of tuberculosis patients by age groups

Characteristics	Abs.	%
Age		
10-24	6	1.9%
25–34	32	10.2%
35–44	29	9.2%
45–54	42	13.3%
55 and older	206	65.4%
Total	**315**	**100%**
Gender		
Men	195	61.9
Women	120	38.1
Total	**315**	**100%**

Among the study population of patients with extensively drug-resistant tuberculosis, men predominated 61.9 %, women accounted for 38.1%. In the age structure, the largest share was occupied by 25-34 years (10.4%), and 45-54 (13.3), 55 and older (65, 4%)

Most of the patients had signs of social maladaptation - 32 patients of working age did not have an official employment Only 4% of tuberculosis patients had permanent work. (Table 3)

Table 3.

Clinical, epidemiological and social characteristics of tuberculosis patients with extensively drug-resistant pathogens

Social and professional group		
Working	12	4%
Pensioners	185	59%
Not working	102	32%
Disabled people	16	5%
Total	**315**	**100%**

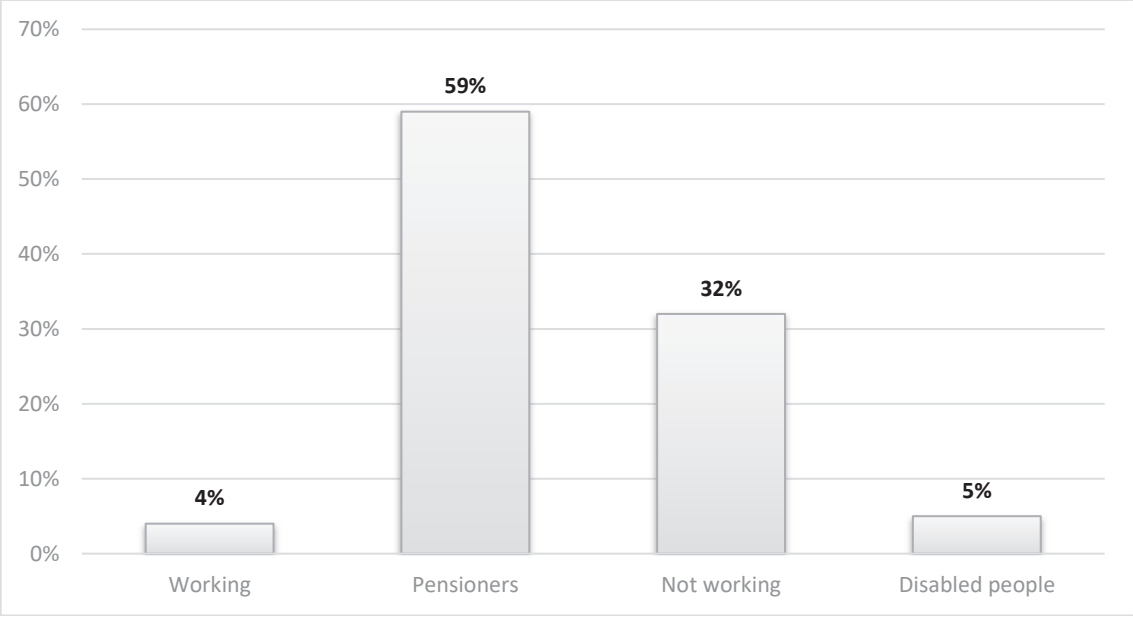


Fig. 3. **Social and professional group.**

The prevalence of drug-resistant tuberculosis varies, mono drug resistance/ multi drug resistance TB without rifampicin is 11 (3.5%), drug-resistant - 10 (3.2%), XDR-12 (3.8%), MDR-36 (11.4%) susceptible to antibiotics rifampicin and isoniazid is -246 (78%)

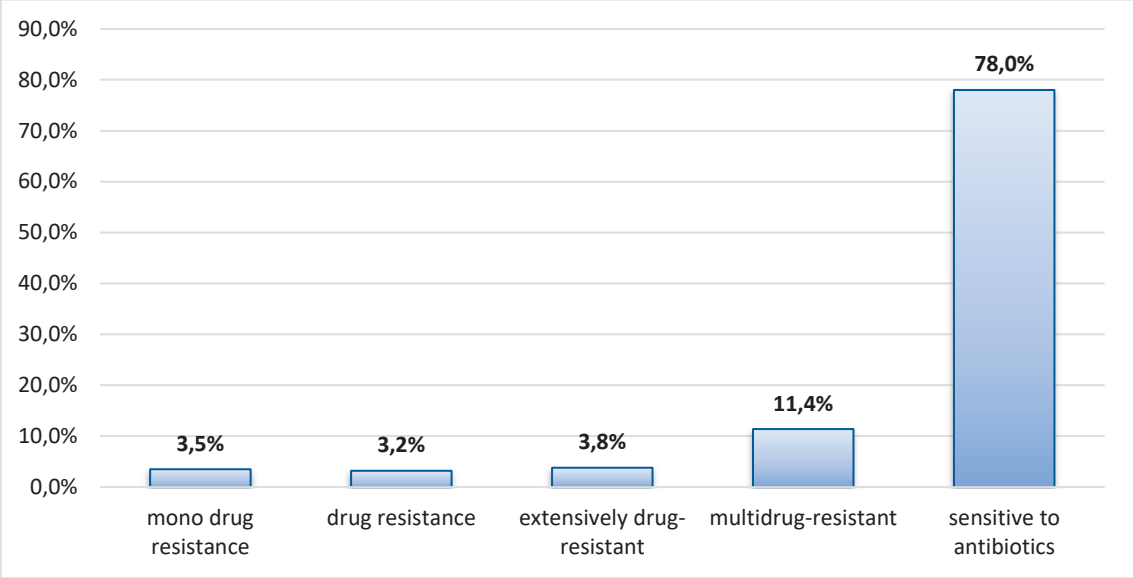


Fig. 4. **Prevalence level of drug-resistant tuberculosis.**

Improving approaches to early diagnosis of drug resistance in MTB using molecular genetic methods, as well as treatment methods using reserve 3rd generation drugs, can not only increase the effectiveness of treatment for patients with XDR-TB, but also reduce the reservoir of drug-resistant tuberculosis.

Conclusions

1. On the territory of the Bukhara region there is a moderate trend towards a decrease in the prevalence of tuberculosis infection, including those with established bacterial excretion.

In 2017, the prevalence of bacterial tuberculosis was 62.6 per 100 thousand population.

2. The prevalence of multidrug-resistant tuberculosis remained stable throughout the entire study period with a long-term average rate of 35.7 per 100 thousand population.

3. Among patients with extensively drug-resistant tuberculosis, the majority were young people of working age 25–44 years old (63.2%), men (80.9%), people without official employment (75.6%), with a disease duration of more than 3 years (57.0%), suffering from infiltrative pulmonary tuberculosis (69.2%),

4. The results obtained determine the need to optimize approaches to organizing additional measures for the prevention of drug-resistant tuberculosis - early detection of drug resistance of MTB, increasing the effectiveness of treatment of patients with MDR/XDR-TB, improving infection control measures, medical and social support for patients.

LITERATURE

1. Ershova ES, Pavlova MV, Vladimirov AV, Revyakin EA Epidemiological situation and prospects for the treatment of multidrug-resistant tuberculosis in the Khanty-Manti Autonomous Okrug. Tuberculosis and Lung Diseases.2018,6(4):5-11 [Ershova E. WITH, Pavlova M. IN., Vladimirov A. IN., Revyakin E. A. Epidemiological situation And perespictives treatment multidrug-resistant tuberculosis V Khanty Mantiysky autonomous district Tuberculosis And illnesses lungs.2018,6(4):5-11] [in Russian]

2. Martinez L., Shen Y., Mupere E., Kizza A., Hill PC, Whalen CC Transmission of Micobacterium tuberculosis in Households fnd the Community: A Systematic Review and Meta-Analysis, Am.J. Epidemiol. 2017; 207 (1): 9-17

3. Mansurova M.Kh. Epidemic Situation of Tuberculosis. Amtrican journal of Pediatric Medicine and Heaith Sciences volume 01. Issue 08,2023 ISSN (E): 2993-2149

5. Rakhmatovna T.D. Monitoring of the Dynamics of the Quality and Coverage Indicators of the Application of Microbiological Research Methods on Tuberculosis //Research Journal of Trauma and Disability Studies. – 2024. – Т. 3. – №. 2. – С. 165-170.

6. Tosheva Dilnoza Rakhmatovna, Features of Drug Resistance of the Causative Agent of Tuberculosis in Modern Conditions, // Амалий ва тиббиёт фанларининг илмий журнали, 2023; 2(4): 59-63.

7. Tosheva Dilnoza Rakhmatovna,Causal Relationship of Immuno-Microbiological Parameters in Tuberculosis With Multiple and Broad Drug Resistance, // International Journal of Health System and Medical Science, 2020; 2(5).

8. Tosheva Dilnoza Rakhmatovna, Особенности лекарственной устойчивости возбудителя туберкулеза в современных условиях, // Амалий ва тиббиёт фанларининг илмий журнали, 2023; 2(2): 52-58.