WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 4, Issue 11, November, 2023

FERGANA VALLEY OF UZBEKISTAN FREQUENCY AND CLINICAL-EPIDEMIOLOGY CHARACTERISTICS OF PULMONARY TUBERCULOSIS IN THE POPULATION WITH DIABETES

M. F. Kuchkorova
N. S. Mamasoliev
Z. N. Mamasoliev
M. M. Mirsaydullaev
N. A. Khalikova
Andijan State Medical Institute and the Andijan
Branch of the Republican Scientific Center for Emergency Medical Care

Abstract

At the global level, alarming statistics have been announced, especially regarding DM and Pulmonary Tuberculosis. Currently, 6.1% of the world's population has type 2 diabetes. According to British researchers, this disease will continue to increase, and by 2030, 1.1 billion people will be affected by this disease.

For this reason, the system of active detection of pulmonary tuberculosis is currently being modernized and switched to new effective, first of all, screening prevention technologies. In particular, the most important areas of scientific research are focused on the detection of pulmonary tuberculosis in risk groups.

It is precisely these patients, those with pulmonary tuberculosis in the risk group, who are significantly dangerous from an epidemiological point of view, because among them there is a high rate of complications of the disease (pulmonary erosions and / or drug-resistant tuberculosis). Among those in the risk group, the proportion of one patient infected with tuberculosis increased by 6.6 times among the population.

Material and methods

Clinical-epidemiological description of the populations involved in the study. The research was conducted in the population of 600 patients with diabetes with pulmonary tuberculosis, aged 18 to 90, who were treated in Andijan and Namangan regional phthisiatric hospitals in 2022-2023: the control group was made up of 100 people with tuberculosis and no diabetes. Among them, 328 (55%) of the main group are men and 272 (45%) are women. In the control group, 56 (56%) were men and 44 (44%) were women. The population of patients involved in the study was characterized by age in the main and control groups as follows: 18-29 years old - 20 (3.3%) and 20 (20.0%), 30-33 -31 (5.17%) and 17 (17%) , 40-49-100 (16.67%) and 12 (12%), 50-59-197 (32.83%) and 26 (26.0%), 60-69 -187 (31.27%) and 16 (16.0%), 59

(9.84%) and 7 (7.0%) at 70-79, 5 (0.83%) and 2 (20) at 80-89, ≥ 90 years old - 1 (0.17%) and 00 (0.0%).

The clinical-epidemiological description of the data on the population of patients involved in the study is presented in Figure 1 and Table 1. Similar descriptions according to gender and body weight (Table 2 and Figure 2), age anthropometric indicators (Table 3 and Figures 3) are also presented in the following tables and figures.

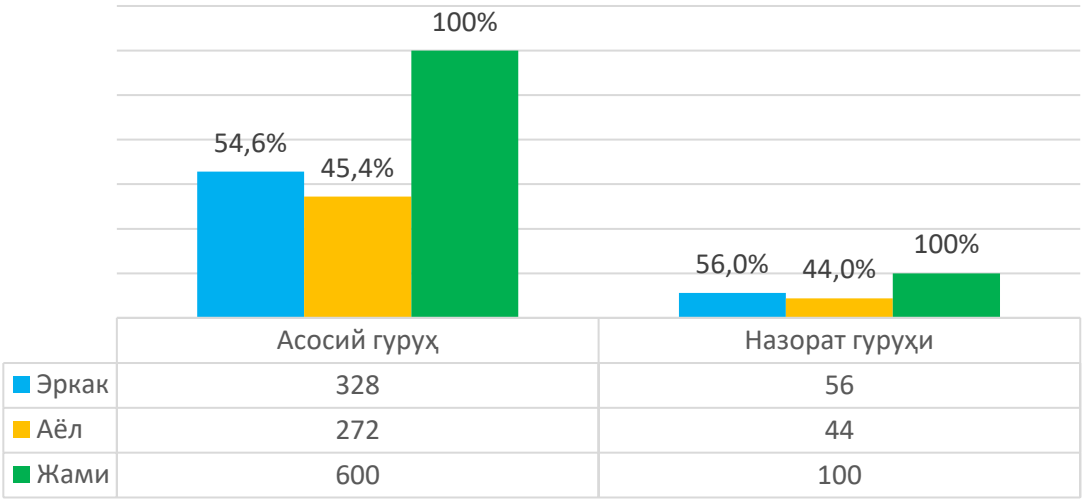


Figure 1. Clinical-epidemiological description of patients in the study group by gender

1-table Clinical-epidemiological description of patients in the research group by gender and age (age, M±SD)

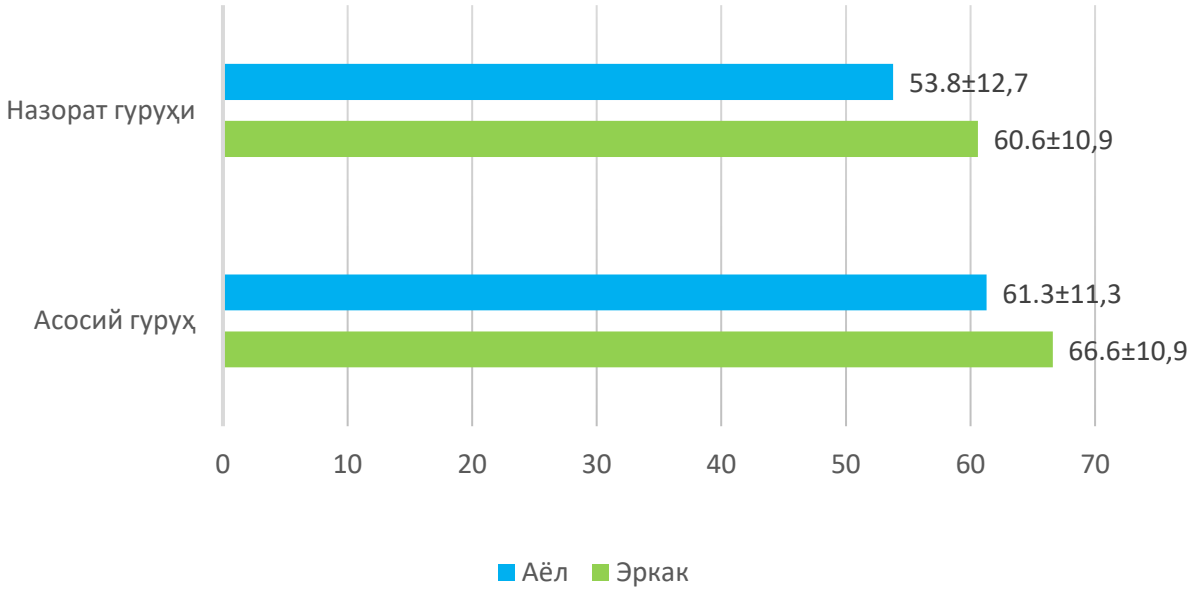
№	Groups	Sex	N	Min-max	M±SD
1	Main group	Male	328	13-97	55,8±12,4
		Female	272	19-81	57,0±11,5
2	Control group	Male	56	20-76	48,0±14,4
		Female	44	18-85	46,9±19,7

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 4, Issue 11, November, 2023

2-table

Тадқиқот гурухидаги беморларнинг жинси ва тана вазнига кўра клиник-эпидемиологик тавсифи (кг, M±SD)

№	Groups	Sex	N	Min-max	M±SD
1	Main group	Male	328	33-99	66,6±10,9
		Female	272	37-110	61,3±11,3
2	Control group	Male	56	46-82	60,6±8,03
		Female	44	37-90	53,8±12,7



Note: *The main group includes diabetic patients with tuberculosis; the control group included patients with tuberculosis without diabetes.

Figure 2. Characterization of the population involved in the study-patients according to body weight.

3-table. The degree of differentiation according to the age and anthropometric parameters of the patients in the study group (t-test for two independent samples)

Indicators	Main group, (n=600)		Control group (n=100)		95% CI		p
	m-M	M±SD	m-M	M±SD	lower	high	
Age	33-97	56,4±12,0	18-85	47,5±16,8	-12,3	-5,34	<0,001
Height	150-188	165,2±10,3	146-188	165,5±9,26	-1,67	2,34	<0,001
Weight	33-110	64,2±11,5	37-90	57,6±10,8	-8,93	-4,25	<0,001

Note: m-M - minimum and maximum indicators; 95% CI - confidence interval; r-Mann - Whitney criterion

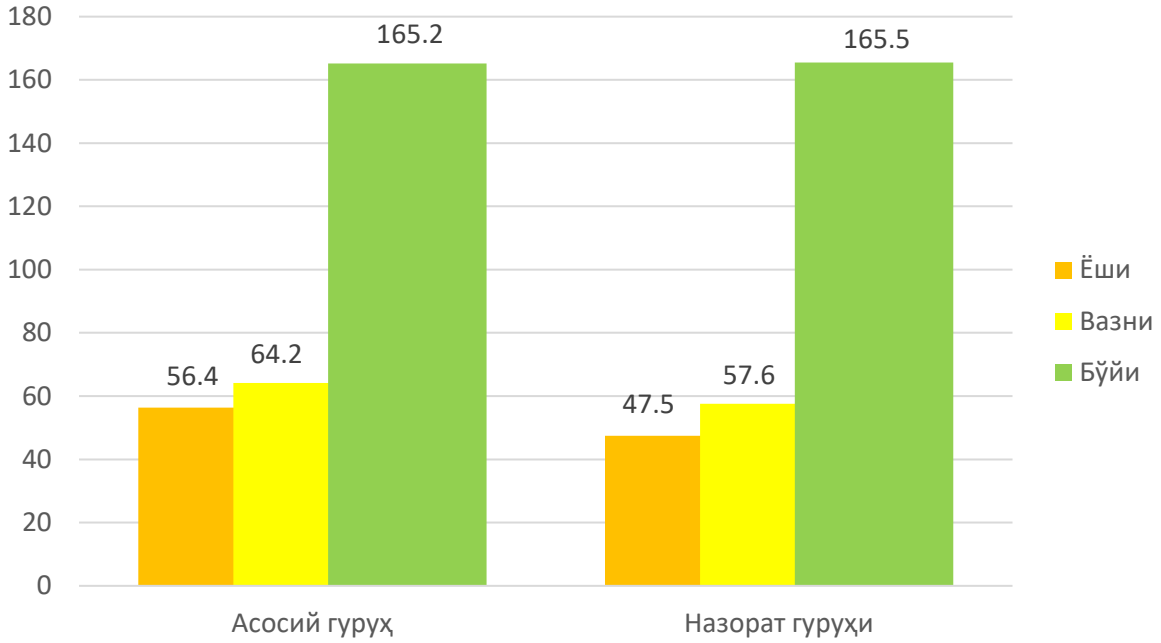


Figure 3. Clinical-epidemiological description of the population involved in the study by age and anthropometric indicators

The main group of patients received antidiabetic therapy along with the standard treatment of pulmonary tuberculosis during hospital treatment. During the retrospective screening study, the following conditions were considered as the basis for exclusion from the examination: the presence of increased immunodeficiency virus infection; cardiovascular, respiratory, nephrological, pregnancy, drug addiction, oncological diseases, acute and chronic inflammatory diseases in relapse stages, endocrine diseases other than diabetes. These were used as exclusion criteria from the review. The subject was not involved in other studies.

The study design is a retrospective, analytic concurrent cohort study. Subjects used - a representative group of patients with pulmonary tuberculosis in the population with diabetes. When choosing the type of epidemiological research used, rating schemes for evaluating reliability of evidence (Ia, Ib, IIa, IIb, III, IV) and levels of reliability of recommendations (A, V, S, D) were used. A study performed according to these criteria is suitable according to WHO levels/criteria for use in scientific research. (WHO, 2020).

Prevalence and gender characteristics of pulmonary tuberculosis among the population with diabetes in the conditions of the Fergana Valley

Diabetes mellitus type 2 - pulmonary tuberculosis in the population aged ≥ 16-90 years (focal pulmonary tuberculosis - O'O'S, infiltrative focal tuberculosis - IO'S, tuberculoma - TM, diffusely expressed pulmonary tuberculosis - TOS, fibrosis - cavernous pulmonary tuberculosis - FKO'S, caseous pneumonia form Epidemiological description of pulmonary tuberculosis - KPShO'S, cirrhotic form of pulmonary tuberculosis - OSTsSh, pulmonary tuberculosis characterized by erosion of lung tissues - O'TEO'S, pulmonary tuberculosis with the release of microbacteria - MChBkO'S) by gender specific characteristics and analytical results.

The main group (DM2 O'Sq - the population of patients with pulmonary tuberculosis combined with diabetes) and the control group (DM2 O'Sqy - the population of patients with pulmonary tuberculosis without diabetes) and the different forms of the disease in patients with pulmonary tuberculosis are distinguished according to the following distribution frequency: focal O'S – 2.83 % and 1.0 % (R> 0.05, Xi2 = 0.535, RR = 2.33, 95 % Cl – 0.381 – 21.05).

Infiltrative OS - 91.3% and 77.0% (R< 0.05, Xi2 = 16.94, RR = 1.305, 95% Cl = 1.152 - 1.478), tuberculoma - 2.17% and 0.00%, disseminated OS – 1.83% and 10.0% (R< 0.05, Xi2 = 16.93, RR = 0.183, 95% Cl = 0.080 – 0.420), fibrosis – cavernous OS – 3.83% and 12, 0% (R< 0.001, Xi2= 10.38, RR = 0.319; 95% Cl = 0.164 – 0.621), caseous pneumonia – 0.33% and 0.00%, cirrhotic form of pulmonary tuberculosis – 0.50% and 4 .0% (R< 0.05, Xi2 = 7.365, RR = 0.125 95% Cl – 0.028 – 0.550), O'S expressed by lung tissue erosion – 46.5% and 62.0% (R> 0.05, Xi2 = 7.634, RR = 0.750, 95% Cl – 0.629 – 0.894) and O'S with the release of mycobacteria 8.17% and 10.0% (R> 0.05, Xi2 = 0.174, RR = 0.817, 95% Cl – 0.428 –1.559).

In the population of men and women, the 1st and 2nd groups are recorded with the corresponding prevalence of different forms of pulmonary tuberculosis (table 1): O'O'S - 4.3% - 1.1% (R> 0.05) and 1, 8% - 0.00% (R> 0.05), IO'S - 89.9% - 93.0% (R> 0.05) and 69.6% - 86.4% (R> 0.05) , TM – 2.4% - 1.8% (R> 0.05) and 0.00% - 0.00% (R> 0.05), TOS – 1.8% - 1.8% (R > 0.05) and 10.7% - 9.1% (R> 0.05), FKO'S - 3.0% - 4.8% (R> 0.05) and 17.9% - 4.5 % (R> 0.05), KPShO'S – 0.6% - 0.00% (R> 0.05) and 0.00% - 0.00%, O'StsSh – 0.6% - 0.4% and 5.4% - 2.3% (R> 0.05), O'TEOS - 43.3% - 50.4% (R> 0.05) and 67.9% - 54.5% (R> 0, 05), MIBkO'S – 0.9% - 16.9% and 8.9% - 11.4% (R> 0.05).

Pulmonary tuberculosis characterized by infiltrative and erosive lung tissue with the highest frequency is confirmed in the population with type 2 diabetes. A similar trend is observed in the population of the 2nd group.

It is observed that DM2 O'Osq distribution occurs in almost the same frequency in men and women; pulmonary tuberculosis with infiltrative and erosion of lung tissue

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 4, Issue 11, November, 2023

and fibrotic - cavernous OS - in women, focal OS, tuberculoma and caseous and cirrhotic OS - in men are confirmed in relatively high frequencies (R> 0.05). And DM2 O'Sqb - with relatively high frequencies (P> 0,05) confirmed in men compared to women (shown in figures 4 and 5).

Figure 4. Epidemiological presentation of DM 2 O'S q in the male and female population (in absolute numbers, in %)

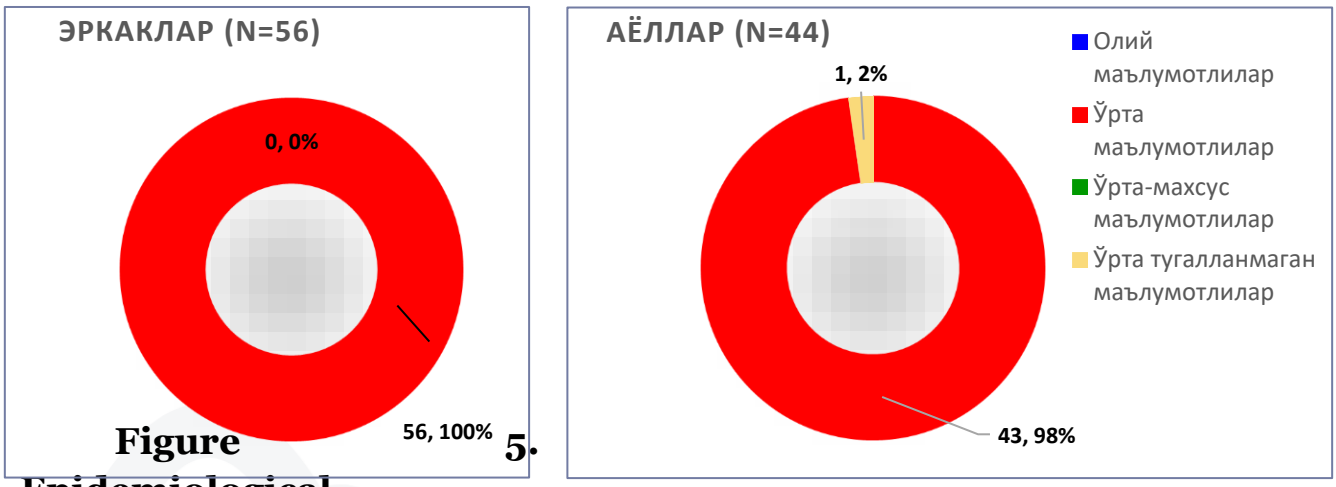


Figure 5. Epidemiological presentation of DM 2 O'S q b in the male and female population (in absolute numbers, in %)

From the results of the research, it can be seen that OS is confirmed by the differential detection frequency in the investigated population groups, depending on their level of education, place of residence and conditions, nationality and profession, socio-economic and demographic conditions (Fig. 6, Fig. 7, Fig. 8 and Fig. 9). cited).

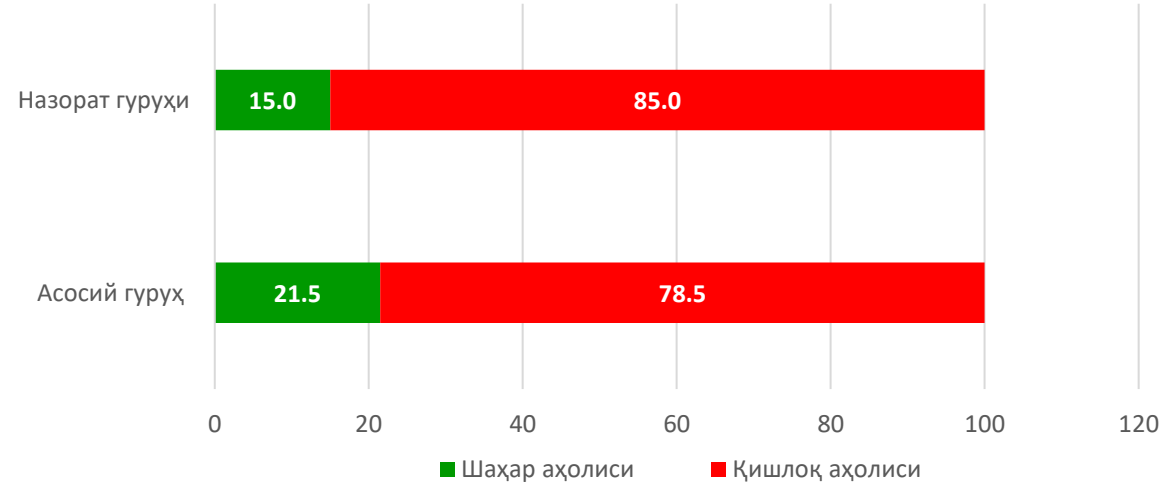


Figure 6. Representation of the frequency of detection of DM2 O'Sqni patient population depending on the place of residence

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 4, Issue 11, November, 2023

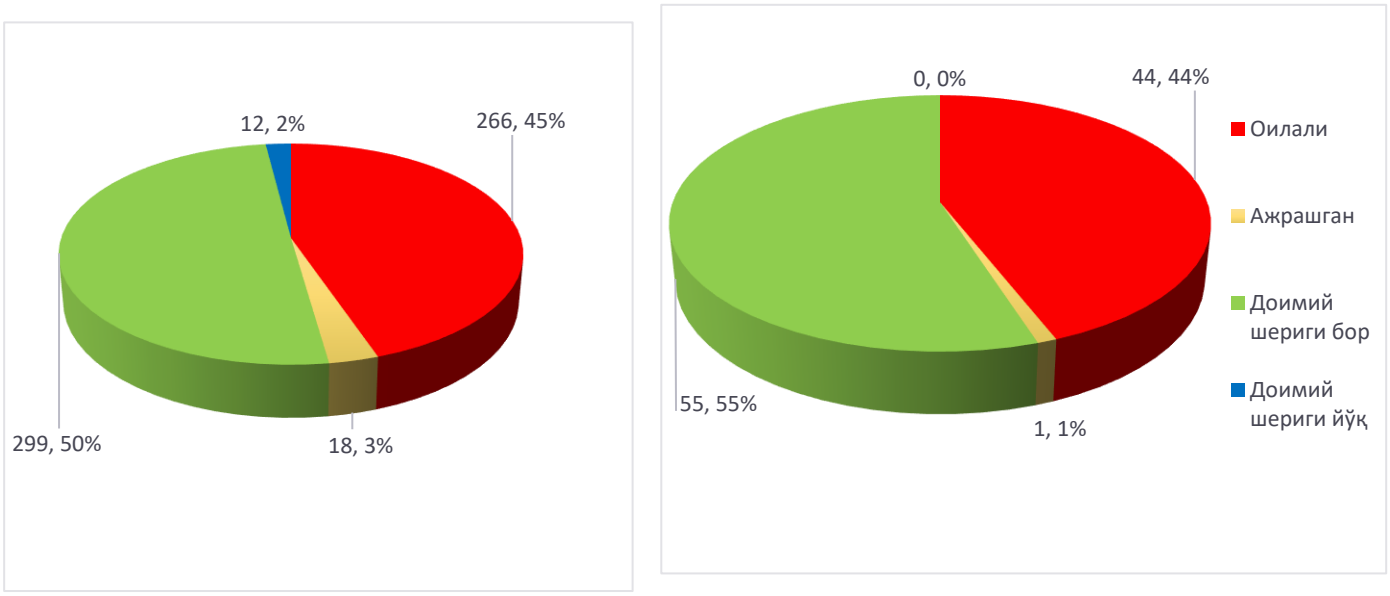


Figure 7. Aspects of frequency of distribution of DM2 O'Sqn patient population depending on family conditions

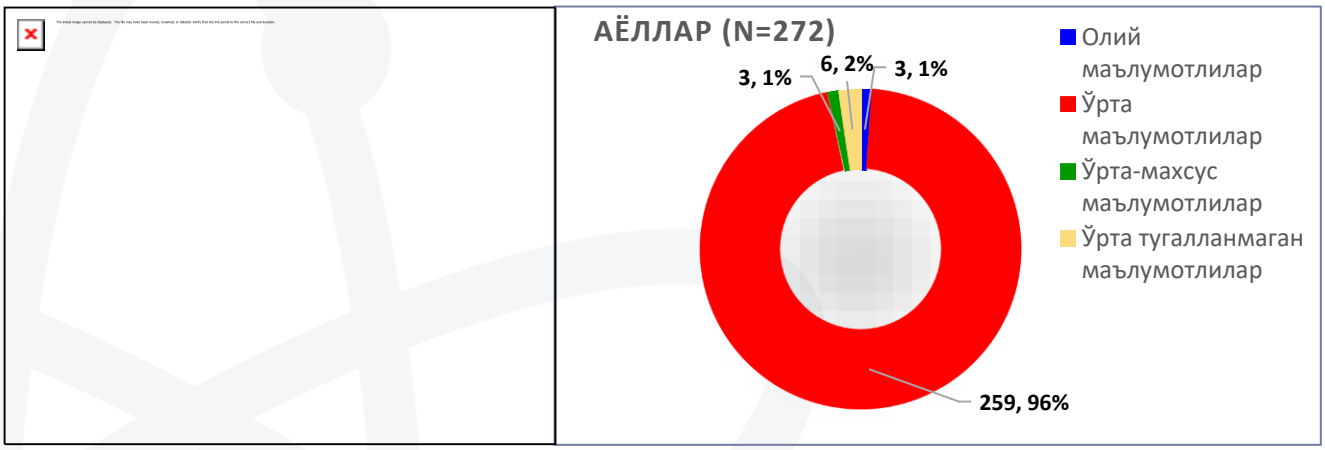


Figure 8. DM2 Representation of the frequency of distribution of OSQQ depending on the information of the population of the population

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 4, Issue 11, November, 2023

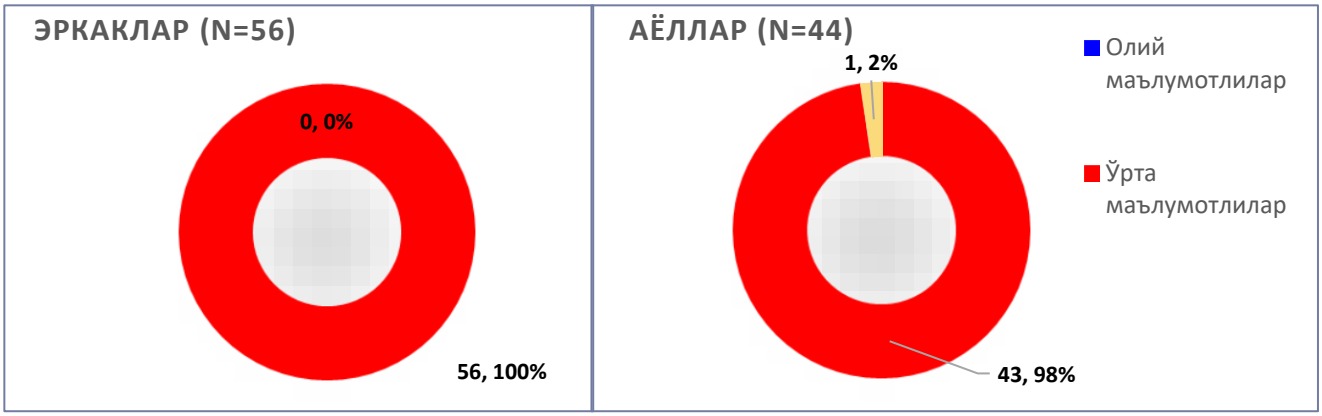


Figure 9. DM2 Representation of the frequency of distribution of OSQQ depending on the information of the population of the population

It has been confirmed that pulmonary tuberculosis is detected with a high prevalence in rural population, people with family and permanent partner, as well as middle-educated population.

In particular, the prevalence frequencies of DM2 O'Sq and DM2 O'Sqb are determined by the following epidemiological characteristics in men and women, depending on various factors, in accordance with gender characteristics: in people with higher education - 1.83% and 0.00, in people with secondary education - 92.3% and 99 from 0.0% (R< 0.05), from 1.83% and 0.00% for those with secondary special education, from 3.83% and 1.0% for those with incomplete secondary education (R> 0.05), urban population - 21.5% and 15.0% (R> 0.05), rural population - 78.5% and 85.0% (R> 0.05), family members - 44.3% and 44.0 % (R> 0.05), divorced - 3.0% and 1.0% (R> 0.05), those with a permanent partner (carer) - 49.8% and 55.0% (R > 0.05), in those without a permanent partner - from 2.0% and 0.00%, in workers - from 2.83% and 8.9% (R> 0.05), in the unemployed - 30.5% and 52, from 0% (R< 0.001), in employees - from 3.83% and 1.0% (R> 0.05), in entrepreneurs - from 4.83% and 1.0% (R> 0.05), in pensioners - from 53.7% and 41.05% (R< 0.05), in the aboriginal population (Uzbeks) - 99.0% and 100.0% (R> 0.05), in the immigrant population (all nationalities) - 1 From 0.0% and 0.00% in the Muslim population (Muslim) - from 0.7% and 0.00%, in the population with poor living conditions - from 2.0% and 0.00%, in the population with satisfactory living conditions - 92 .0% and 99.0% (R< 0.001), in the population with good living conditions – 6.0% and 1.0% (R> 0.05).

Figure 10 shows the frequency of detection and recurrence of primary DM2 O'Osq ni≥ 16-90 years in the population by gender.

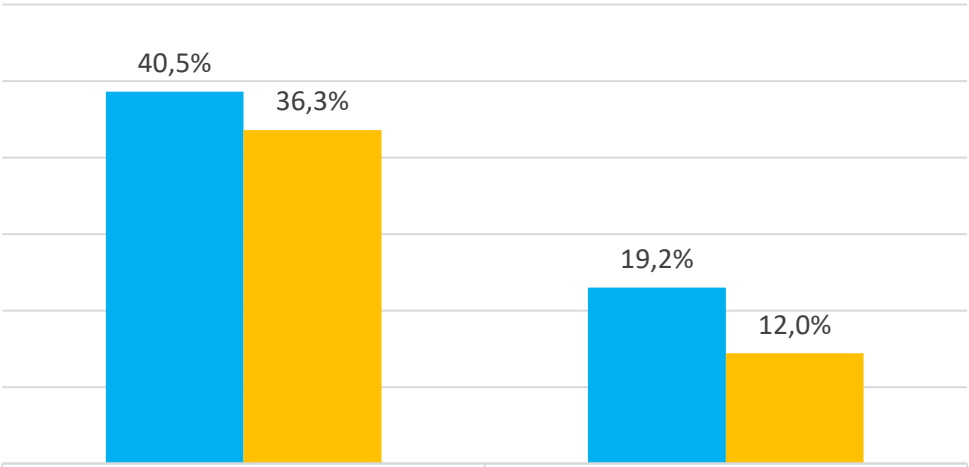
Analytical figures in the presented table show that primary pulmonary tuberculosis (DM2 O'Sq) in patients with diabetes mellitus is detected with a prevalence of 38.4% in the total population ≥ 16-90 years old (in men - 40.5% and in women - 36.3%; R > 0.05).

Recurrence (relapse) of DM2 O'Sq is confirmed by the detection frequency of 31.2% in the population aged ≥ 16-90 years involved in the examination (in men - 19.2% and in women 12.0%; R< 0.05).

A similar analysis was performed for DM2 O'Sqb and its results are shown in Figure 11.

It was found that primary and recurrent pulmonary tuberculosis (DM2 O'Sqb) in non-diabetic population have specific gender characteristics.

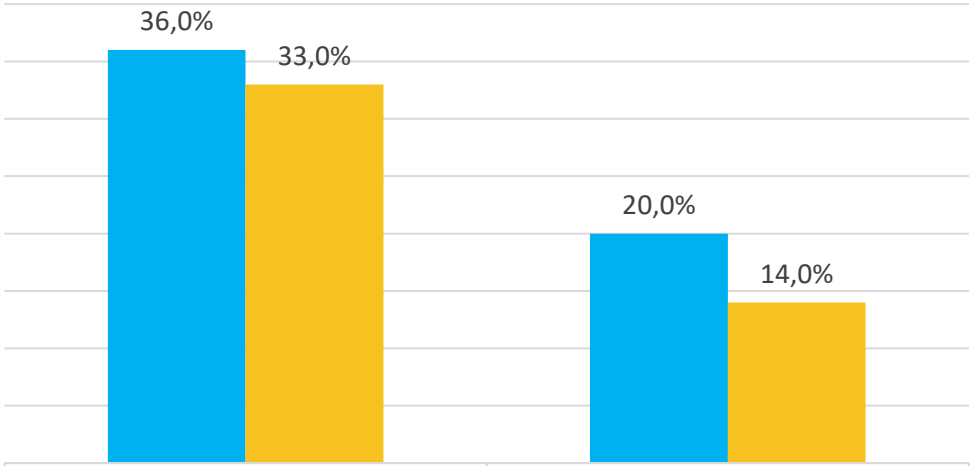
In general, it was found that primary DM2 O'Sqb is recorded with a detection frequency of - 69.0% in the examined population (in men - 36.0% and in women - 33.0% R> 0.05). The frequency of detection of repeated DM2 O'Sqb is 17.0% in the general population, and it is confirmed in men and women from 20.0% and 14.0% (R< 0.05). The results of the first research in the conditions of the mentioned valley are of scientific and practical importance, indicating the priorities of primary and secondary active prevention of pulmonary tuberculosis.



	Ўпка силининг бирламчи аниқланиши	Ўпка силининг қайталаниши
Эркак	243	115
Аёл	218	72

Figure 10. Prevalence of primary and recurrent DM 2 OS q and gender aspects in a population of patients aged ≥16-90 years (in absolute number and %)

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 4, Issue 11, November, 2023



	Ўпка силининг бирламчи аниқланиши	Ўпка силининг қайталаниши
Эркак	36	20
Аёл	33	14

Figure 11. Prevalence of primary and recurrent DM 2 OS q b and gender aspects in a population of patients aged ≥16-90 years (in absolute number and %)

The drug sensitivity of DM2 O'Sq is noted in the following descriptions with the frequency of detection in the general population, in men and women; "persistent sensitivity to ethambutol or streptomycin" - 26.3% (in men - 31.1% and in women - 20.6%, R> 0.05). "Preservation of sensitivity to the drug" - 46.3% (in men - 41.2% and in women - 52.6%, R> 0.05), "Polyresistance - 11.5% (in men - 11.9% and in women 11, 0% ; R> 0.05)", "Resistance to multiple drugs - MLU" - 12.7% (in men - 15.9% and in women - 8.8% ; R> 0.05), "MBT is present" - 86.7% (in men - 85.1% and in women - 88.6%; R> 0.05), "Sensitivity to drugs - LChMBT (+)". - 77.7% (in men - 73.8% and in women - 82.4%; R> 0.05),
"Monoresistance MBT (+)" - 12.8% (in men - 15.5% and in women - 9.6%, R> 0.05), "Polyresistant MBT (+)" - 11.5% (in men - 11 .9% and in women - 11.0%; R> 0.05), "MLU MBT (+)" - 13.2% (in men - 16.2% and in women - 9.6%; R> 0.05).

In general, pulmonary tuberculosis in patients with diabetes mellitus is characterized by drug resistance in 53.7% of cases, and almost "all drug resistance" - 11.5% in patients with DM2 O'Sq.

Susceptibility to drugs is also determined in pulmonary tuberculosis without diabetes mellitus with the following prevalence rates in the general patient population, male and female population: 1) "Stable sensitivity to ethambutol or streptomycin" - 39.0% (in men - 44.6% and in women - 31.8%; R> 0.05); 2) "Preservation of drug

sensitivity" - 26.0% (in men - 28.6% and in women - 22.7%; R> 0.05); 3) "Polyresistance" - 17.0% (in men - 21.4% and in women - 11.4%; R> 0.05); 4) "Resistance to multiple drugs - MLU" - 22.0% (in men - 21.4% and in women - 22.7%; R> 0.05); 5) "MBT is present" - 54.0% (in men - 42.9% and in women - 68.2%, R> 0.05); 6) "Sensitivity to drugs - LChMBT (+)" - 46.0% (in men - 37.5% and in women - 56.8%; R> 0.05); 7) "Monoresistance MBT (+)" - 2.0% (in men - 12.8% and in women - 4.5%, R> 0.05); 8) "Polyresistant MKT (+)" - 17.0% (in men - 21.4% and in women - 11.4% R> 0.05); 9) "MLUMBT (+)" - 22.0% (in men - 21.4% and in women - 22.7%; R> 0.05).

In general, it is known that the 1st (population of patients with DM2 O'Sq) and 2nd (patients with DM2 O'Sqy) groups with tuberculosis differ in the drug susceptibility status according to the following frequency description: 1) "Stable sensitivity to ethambutol or streptomycin" » - from 26.3% and 39.0% (R< 0.05, Xi2 = 6.189, RR = 0.675, 95% Cl = 0.512 – 0.893); 2) "Preserving drug sensitivity" - 46.3% and 26.0% (R< 0.05, Xi2 = 13.61, RR = 1.782, 95% Cl =1.266 – 2.508); 3) "Polyresistance" - 11.5% and 17.0% (R> 0.05, Xi2 = 1.923, RR = 0.676; 95% Cl = 0.416 – 1.101); 4) "Resistance to a large number of drugs" - 12.7% and 22.0% (R< 0.05, Xi2 = 3.608, RR = 0.633, 95% Cl = 0.412 – 0.972); 5) "MBT is present" - 86.7% and 54.0% (R< 0.01, Xi2 = 88.97, RR = 2.523, 95% Cl =1.993 – 3.197); 6) "Sensitivity to drugs - LChMBT (+)" - from 77.7% and 46.0% (R< 0.001, Xi2 = 42.16, RR =1.698, 95% Cl = 1.359 - 2.097); 7) "Monoresistance MBT (+)" - 12.8% and 2.0% (R< 0.05, Xi2 = 7.676, RR = 5.775, 95% Cl =1.444 – 23.09); 8) "Polyresistant MKT (+)" - 11.5% and 17.0% (R< 0.05, Xi2 = 1.923, RR = 5.245, 95% Cl = 1.309 – 21.02); "MLU MBT (+)" - 13.2% and 22.0% (R< 0.05, Xi2 = 3.019, RR = 0.658, 95% Cl = 0.429 – 1.008).

Therefore, the results of statistical processing of the research data testify that the frequency and gender characteristics of the epidemiological distribution of OS among the population suffering from diabetes in the conditions of the Fergana Valley must be taken into account in treatment-prevention-rehabilitation programs.

BIBLIOGRAPHY

1. Абдуллаева Р.Ю., Комиссарова О.Г., Михайловский А.М. Иммунологические и биохимические механизмы восприимгивости туберкулеза при саҳарном диабете \\ Русский медицинский журнал. – 2017. – № 18. – 1324 – 1325.
2. Артюхина Л.Ю., Иванова Е.С., Фролова Н.Ф.., Коменко О.Н. и др. Особенности течения туберкулезной инфекции на фоне иммуносупрессии у реципиентов почки \\ Лечебное дело. – 2015. № 1. – С. 11 – 15.

3. Агафонова О.В., Приценко Т.А., Богданова Ю.В., Булгакова С.В. и др. Поликлиническая терапия \\ Учебник. – 2 – е изд. перераб. и доп. – М: ГЭОТАР – Медиа. – 2020. – С. 830 – 844.
4. Вольф С.Б. Нежелательные побочные реакции на химиотерапию туберкулеза \\ Журнал Гродненского государственного медицинского университета. – 2016. – № 3. – С. 141 – 144.
5. ВОЗ. Информационный бюллетень. Марш 2021 \\ Социальные аспекты здоровья населения. – 2021. – № 2 (67) – С. 16 – 18.
6. Викторова И.Б., Ханин А.Л., Зимина В.Н. Летальные исходы у больных с Вич – инфекцией в крупном противотуберкулезном учреждении Кемеровской области \\ Журнал инфектологии. – 2017. – Т. 9. – № 3. – С. 25 – 29.
7. Готье С.В. Саҳарный диабет 1 типа, диабетическая нефропатия: возможности трансплантологии \\ Вестник РАМН. – 2012. – № 1. – С. 54 – 58.
8. Гордеева О.М., Карпина Н.Л., Ларионова Е.Е., Андриевкая И.Ю. и др. Аспекты верификации туберкулеза органов дыхания у больных хронической болезнью почек в терминальной стадии \\ Туберкулёз и болезни легких. – 2018. – Т. 96. – № 5. – С. 14 – 20.
9. Гольдштейн В.Д. Туберкулёз органов дыхания у лиц пожилого с старческого возраста. М.: БИНОМ. – 2013. – С. 122 – 223.
10. Дедов И.И., Шестакова М.В., Викулова Д.К. и др. Эпидемиологические ҳарактеристики саҳарного диабета в Российской Федерации: клинико – статистический анализ по данным Федерального регистра саҳарного диабета на 01.01.2021 // Саҳарный диабет. – Том 24. – Выпуск 3. – 2021. – С. 204 – 219.
11. Дейкина О.Н., Перфильев А.В., Мишин В.Ю., Пригорьев Ю.Г. и др. Клинико – рентгенелогическая ҳарактеристика туберкулеза органов дыхания у лиц пожилого и старческого возраста \\ Туберкулез и болезни легких. – 2015. – Т. 93. – № 11. – С. 22 – 25.
12. Дворецкий Л.Ц., Яковлев С.В. Пожилой больной и инфекция. – М.: ГЭО – ТАР. – Медиа. – 2008. – С. 365 – 367.
13. Есипов А.В., Алеханович А.В., Абушинов В.В. COVID – 19: первый опыт оказания медицинской помощи и возможные решения проблемных вопросов (обзор) // Госпитальная медицина: наука и практика. – 2020. Т. 1 – № 1. – С. 6 – 7.

14. Комиссарова О.Г., Черных Н.А., Коссий Ю.А., Абдуллаев Р.Ю. и др. Случай эффективного лечения больного туберкулезом легких с множественной лекарственной устойчивостью M. tuberculosis в сочетании с хронической почечной недостаточностью // Туберкулез и болезни легких. – 2014. – № 2. – С. 53 – 55.
15. Карпина Н.Л., Гордеева О.М., Набокова Т.С., Шабалина И.Ю. и др. Диагностика и лечение туберкулеза органов дыхания у больного после трансплантации почки \\ Туберкулез и болезни легких. – 2017. – Т. 95, № 10. – С. 82 – 85.
16. Кандрыгин Д.А., Стерликов С.А. Русакова Л.И., Сон И.М. и др. Влияние пандемии COVID – 19 на систему оказания противотуберкулезной помощи населению по состоянию на май 2020 г.: данные оперативного мониторинга \\ Современные проблемы здравоохранения или медицинской статистики. – 2020. – № 3. – С. 312 – 335.
17. Казимирова Н.Е., Артемьев А.М., Амирова З.Р. и др. Проблемы диагностики туберкулеза пациентов с разной коморбидностью \\ Туберкулез и болезни легких. – 2015. – Т. 97. – № 6. – С. 61 – 62.
18. Нечаева О.Б. Эпидемиологическая ситуация по туберкулезу в Российской Федерации в 2018 году. – С. 78 (Электронный ресурс). Режим доступа: http//www.mednet.ru.
19. Проконенко Е.И., Щербакова Е.О. Агафонова С.Г., Вагазин А.В. и др. Диагностика и лечение туберкулеза у больных с почечным аллотрансплантантом: одноцентровое ретроспективное исследование // Нефрология и диализ. – 2004. – Т. 6. – № 3. – С. 247 – 251.
20. Пьянзова Т.В., Джанчигильдин Ю.Т. Васильева И.А. Модели клинических ситуаций – новый методологический подход к анализу контингентов пациентов в противотуберкулезных учреждениях // Туберкулез и болезни легких. – 2022. – Т. 100. – № 4. – С. 41 – 45.
21. Савинцева Е.В., Исаева П.В., Низамова Г.Ф. Туберкулез и COVID – 19: медицинские и социальные аспекты // Туберкулез и болезни легких. – 2022. – Т. 100. – № 3. – С. 13 – 17.
22. Михайлова Ю.В., Бурыхин В.С., Стерликов С.А. Влияние пандемии COVID – 19 на систему оказания противотуберкулезной помощи в пенитенциярных учреждениях Российской Федерации // Здоровье и демография финно – угорских народов. – 2020. – № 4. – С. 18 – 19.

23. Шарыков А.С., Сутягина Л.А., Долгова М.А. Туберкулез органов дыхания у лиц старше 70 лет: особенности течения и трудности диагностики \\ Туберкулёз и болезни легких. – 2021. – Т. 99. – № 6. – С. 39 – 41.
24. Anand M., Nayyar E. Concepcion B. et al. Tuberculosis in kidney transplant recipients: A cose series // Worid J. Trans plant. – 2017. Vol. 7. № 3. – P. 213 – 220. doi: 105 500 wif. V 7,13213.
25. Arredondo A. Universal coverage and economic bueden from epidemiological chandes of diabetes in latin America \\ J Glob Health. – 2016; 6 (2). Doi. https \\\\ doi.org\10/7189\jogh ob. 020309.
26. Varg W., Dall T.M. Economic Costs of Diabetes in the US in 2017 \\ Diabetes Care 2018; 41 (5): 917 – 925.
27. Global tuberculosis report 2017. – Geneva: Worid Health Organization. –2017. – H. 145 – 146.
28. Gupta A., Singla R., Caminero J.A., Mrigpuri P. eta l. Impact of Covid – 19 on tuberculosis services in India \\ Intern. J. Tuberc. Lung Dis. – 2020. – Vol. 24. – № 6. – H. 637 – 638.
29. Global Tuberculosis Report 2021 \\ Geneva: WHO, 2021. – С. 41 – 42. – ISSBN: 978 – 92 – 4 – 003702 – 1.
30. Gao Y., Lui M., Chen Y., Shii. et al. Association between tuberculosis and Covid – 19 severity abd mortality: A rapid systematic review and metaanalysis \\ J. Med. Virol. – 2021. – Vol. 93. – № 2. – Рю 1994 – 195.
31. Hameed H.M.A., Islam M.M., Chnotaray C. et al. Molecular targets related drug resistance mechanism in MDK –, XDR –, and TDK – Mycobacterium tuberculosis strains \\ Front. Cell. Ifect. Microbiol. – 2018; 8; 112. doi: 10.3389\fcimb.
32. Insulin and associated devices fo evrybody: Who Statkehoider workshop, 21 and 23 – 25 september 2020 (Electronic resurse). Available from: https \\ www.who.inv publications – detaili –credinect\insulin – insulin – and associated – devices – acces – for – everybody – Who – Stakehoider – workshop – 21 – and – 23 – 25 – September – 2020 (accessed: 11.02.2021).
33. Kaupael M., Naimi A., Moafi N., Mohammadi P. et al. Clinical charecteristica, diagnosis, treatment, and mortality rate of TB/Covid – 19 coinfectetd patients: A systematic review // Front. Med. (Lausance). – 2021. – Vol. 8. P. 740592. https://doi.org//10.3389//fmed.2021.740593.
34. Mori T., Leung C.C. Tuberculosis in the global aging population //infect.Dis Clin. North. Am. – 2010. – Vol 24. – № 3. – P. 751 – 765.

35. Peltzer K., Tuberculosis non – communicable disease camorbidity and multimorbidity in public primary care patients in Sauth Africa // Afr. J. Prm. Health Care Fam. Med. – 2018. – Vol. 10. – № 1. – P. e 1 – e 4.
36. Ritacco V., Kantoz I.N. Tuberculosis and COVID – 19: a dangerons relationship. Tuberculosis y COVID – 19: Una relation peligrosa // Medicina. 2020. – № 80. – S. 6. – P. 117.
37. Toyota M., Sasaki Y. The issue of tuberculosis in the eklerly in Japan // Kekkaku. – 2010. – Vol. 85. – № 12. – P. 881 – 891.