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MORBIDITY IN PATIENTS WITH CARDIOVASCULAR DISEASE IN THE PRE-PANDEMIC AND PANDEMIC PERIODS: A CASE STUDY OF THE TASHKENT CITY POPULATION

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ABSTRACT

Changes in the organization of hospital services and in the use of medical care by the population have had a great impact on the activities of hospitals, especially in the sectors dealing with noncommunicable diseases [7]. During the first wave of the pandemic (COVID-19), when hospital overload was at its highest, there was a significant drop in hospital admissions for acute cardiovascular diseases worldwide from 20.2% to 73% [4]. For example, France reported a 30% reduction in hospitalizations for myocardial infarction (MI) during the first month of national lockdown, which was introduced from March 17 to May 11, 2020 [6].

The first hypothesis is that many patients with acute coronary syndrome (ACS) did not make it to the hospital, the first explanation was that many patients may have refused hospital treatment for various reasons, including fear of contracting COVID-19 in the hospital, concern about overburdened health services, or a long wait, as well as messages from the authorities urging people to stay at home [4]. The second hypothesis explaining the decrease in the number of hospitalizations for ACS is that during isolation there was a real decrease in the incidence of ACS [3].

Also, a number of studies described fewer hospitalizations, procedures, and consultations for other cardiovascular diseases not associated with COVID-19 [1, 2, 5]. However, studies on this issue are fragmented and contradictory, in many respects the results depend on geographical and socio-demographic factors.

The aim of the study was to examine the incidence of major cardiovascular diseases among the population of Tashkent in the pre-pandemic and pandemic periods.

Research Materials and Methods: The study was conducted

between 2020 and 2022. Retrospective data from the Agency of Statistics under the President of the Republic of Uzbekistan and the Tashkent City Health Department were used for the analysis. The incidence of cardiovascular diseases, breakdown by age and gender, and hospitalization rates were analyzed.

Results and Discussion:

We analyzed the overall incidence of cardiovascular diseases among the population of Tashkent from 2005 to January 2022. The data obtained are presented in Figure 1.

The diagram shows that during the novel coronavirus disease (COVID-19) pandemic (starting in 2020), there was a decrease in the overall incidence of cardiovascular disease. We attribute this to the fact that under quarantine conditions, when healthcare facilities were extremely overburdened, requiring the transformation of somatic medical facilities and departments into temporary hospitals or COVID hospitals, as well as the transfer of physicians and nurses to primarily provide COVID-19 care, there was lower coverage of medical services for the population with non-COVID-19 conditions.

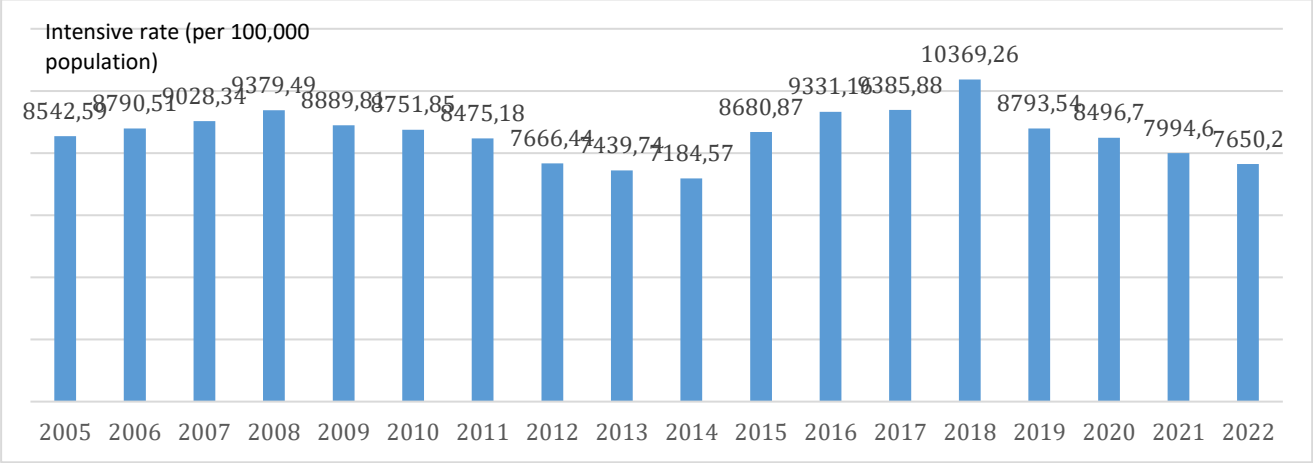

Fig. 1. Overall incidence of cardiovascular disease in the Tashkent city population (2005–2021)

This trend does not reflect a decline in incidence, but rather a decline in the registration of major cardiovascular diseases.

Next, we analyzed the dynamics of newly diagnosed cardiovascular diseases among the Tashkent population. The results are presented in Figure 2.

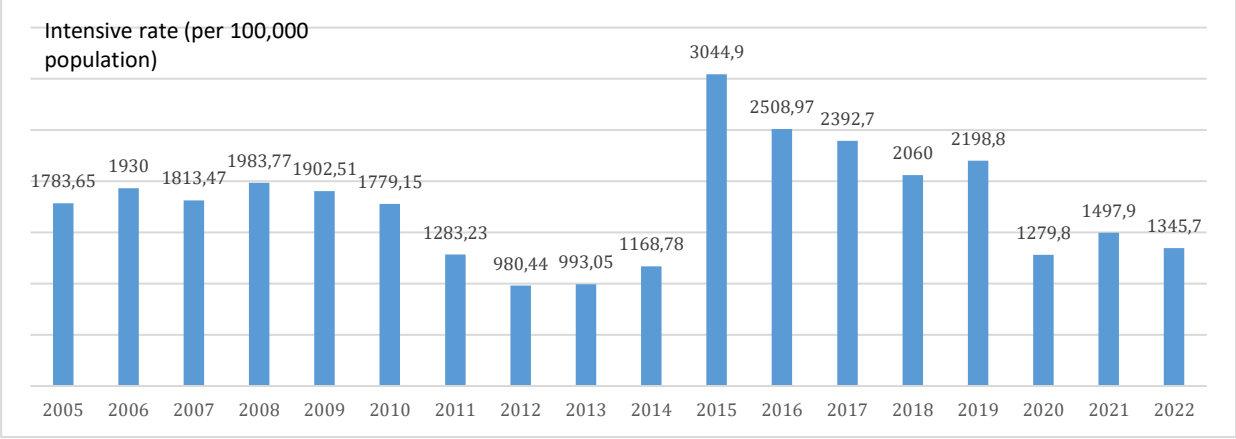

Fig. 2. Newly diagnosed cardiovascular diseases in the Tashkent population (2005–2021).

The data in the figure shows a similar downward trend in newly diagnosed cases during the height of the pandemic. We believe this may be explained by a decrease in the number of people seeking medical attention during the COVID-19 pandemic for problems unrelated to COVID-19, including cardiovascular diseases.

Currently, as the epidemic spread of COVID-19 is clearly declining in the country and globally, the severity of acute coronavirus infection has significantly shifted toward milder forms, and so-called post-COVID conditions, which affect the cardiovascular system in addition to other organs and systems, have become more prominent. Since post-COVID conditions have not yet been included in the official disease registration system in the Republic of Uzbekistan, it is expected that pathological changes in the cardiovascular system caused by COVID-19 will be included in the overall statistics of cardiovascular pathology, and, consequently, an increase in the registration of this pathology can be expected.

The next step of our study was to analyze the distribution of patients with cardiovascular pathology over time by age. The results are presented in Figure 3.

Fig. 3. Distribution of patients with CVD by age group (2005-2017) (intensive rate per 100,000 population)

Starting in 2018, we conducted a more detailed analysis of the incidence of major CVDs by age group for the adult population of Tashkent (Fig. 4).

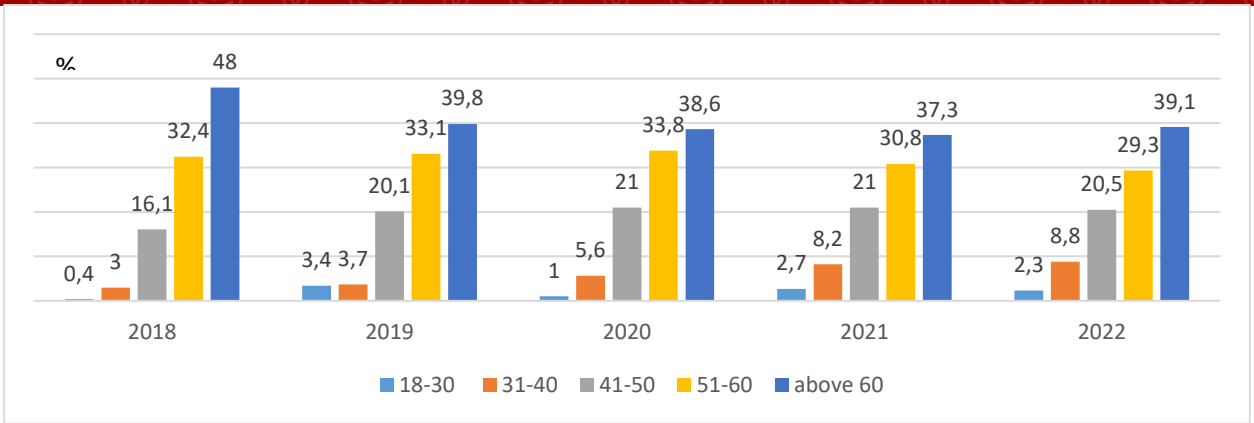

Figure 4. Distribution of patients with CVD by age group in Tashkent for the period 2018-2021.

As Figure 4 shows, during the pandemic, certain trends emerged regarding the changing age group of individuals with CVD, specifically an increase in the proportion of patients aged 18-30 and 31-40 years, while the proportion of older patients decreased slightly. We believe these data can also be explained by the impact of the COVID-19 pandemic and associated risk factors (mobility, nutrition, etc.).

Of fundamental interest was the analysis of patterns between the incidence of CVD and the gender of patients. The results are presented in Figure 5.

The diagram clearly demonstrates that in recent years, there has been a trend toward an increase in the proportion of males with CVD and a gradual decrease in the proportion of female patients.

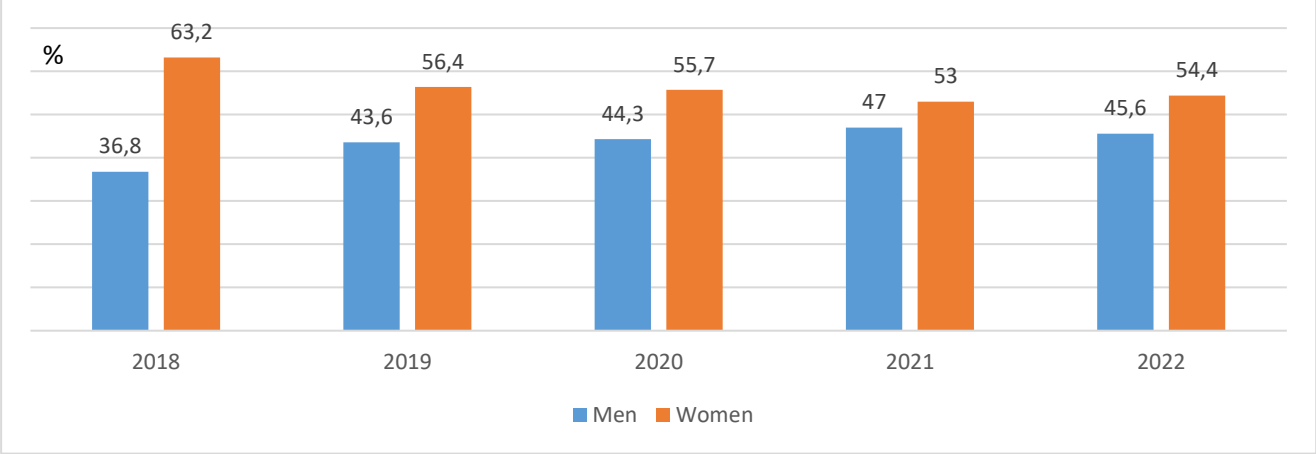

Figure 5. Distribution of patients with CVD by gender in Tashkent for the period 2018-2021.

The results of the combined analysis of the distribution of patients with CVD by gender and age in the pre-pandemic and pandemic periods are presented in Table 1.

Table 1.

Distribution of patients by age and gender in the pre-pandemic and pandemic periods in Tashkent

%	18-30 year		31-40 year		41-50 year		51 - 60 year		above 60	
	M	W	M	W	M	W	M	W	M	W
2018	36,6	63,4	37,8	62,2	32,8	67,2	34,9	65,1	39,4	60,6

2019	24,1	75,9	39,9	60,1	48,1	51,9	45,4	54,6	41,9	58,1
2020	43,9	56,1	41,6	58,4	45,0	55,0	44,4	55,6	44,3	55,7
2021	42,2	57,8	44,8	55,2	49,2	50,8	45,7	54,3	47,6	52,4
2022	51	49	46,4	53,6	45,7	54,3	46,1	53,9	44,6	55,4

Across all age groups, a trend toward a decreasing proportion of women and an increasing proportion of men was observed, but this was most noticeable in the 31-40 and 41-50 age groups ($p < 0.05$).

We further analyzed the prevalence of major cardiovascular diseases in the Tashkent population during the pre-pandemic and pandemic periods, as shown in Figure 6.

Significant changes in the structure of cardiovascular pathologies include an increase in the proportion of stable angina cases registered in 2020. The frequency of hypertension registrations is also noteworthy, with a relative decrease in registrations during the peak of the pandemic and a slight increase in the number of cases over the past two years. However, deviations from the average values were insignificant.

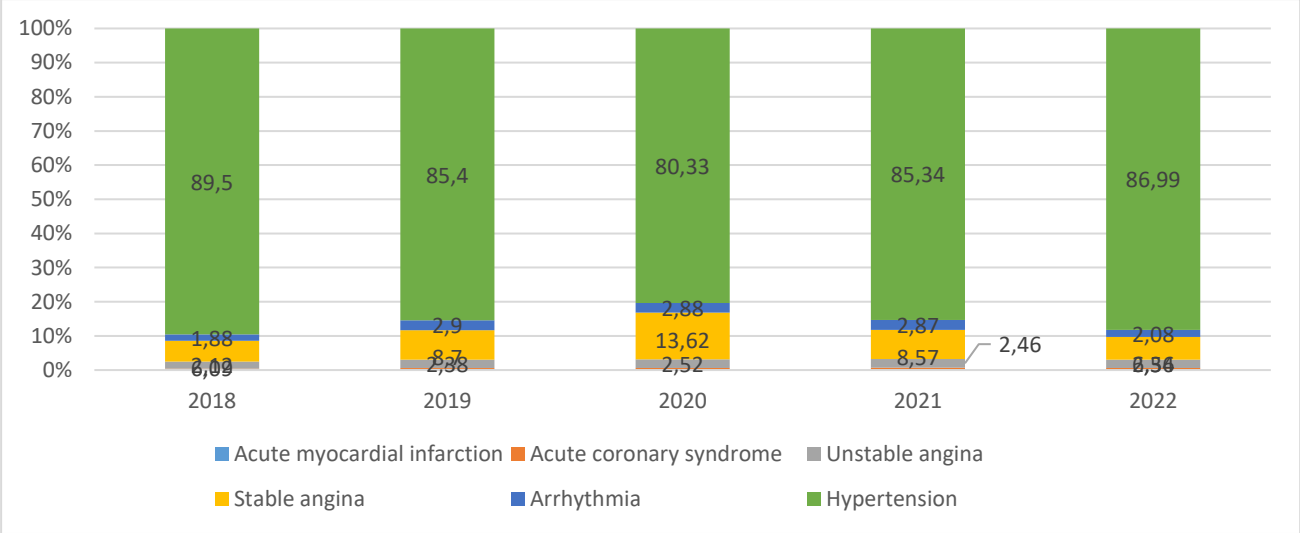

Fig. 6. Structure of cardiovascular pathology (in %) in the population of Tashkent (2018-2022)

Next, we studied the dynamics of the frequency of hospitalizations of patients with CVD in the pre-pandemic and pandemic periods (Fig. 7).

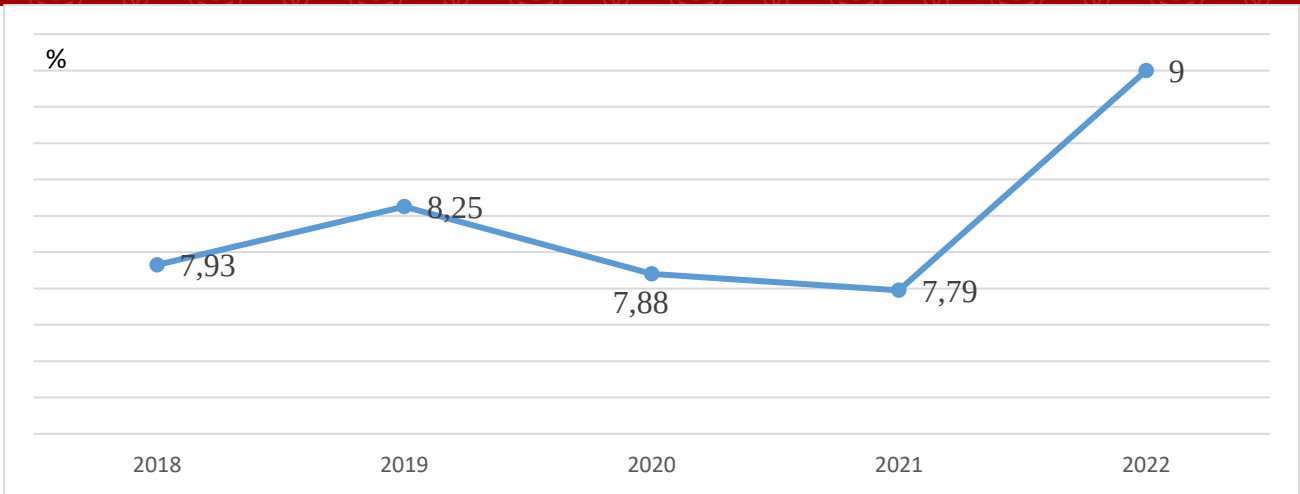

Fig. 7. Proportion of hospitalized patients (%) with cardiovascular pathology in Tashkent (2018-2022)

Our data are somewhat consistent with the results of several international studies, according to which the proportion of hospitalizations not related to COVID-19 decreased during the pandemic. However, it should be noted that the decrease in this indicator was insignificant, indicating the continued functioning of somatic hospitals providing medical care to patients with cardiovascular pathology. This is confirmed by data for 2022, which demonstrate an increase in the proportion of hospitalizations. In addition to the restoration of hospital functioning, these figures may also be explained by the detrimental impact of coronavirus infection on the risk of developing cardiovascular diseases, most often in post-COVID conditions.

Conclusion: Thus, an analysis of cardiovascular disease incidence in Tashkent during the pre-pandemic and pandemic periods revealed, along with a decrease in the number of registered patients with CVD, a change in the age and gender distribution of cases (an increase in the proportion of young patients aged 18-40 and the proportion of male patients), as well as an increase in the proportion of hospitalizations as the pandemic subsided. However, no significant changes were found in the incidence of major CVDs.

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