

THE PREVALENCE OF CARDIOVASCULAR DISEASES AND THEIR SOCIO-HYGIENIC IMPORTANCE IN FERGANA REGION

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Abstract: Cardiovascular diseases are the leading cause of morbidity and mortality worldwide, accounting for more than 30% of global deaths. In Uzbekistan, over 60% of total deaths are attributed to CVDs, with the Fergana region showing one of the highest prevalence rates in the country. A descriptive epidemiological study based on 2023–2024 health statistics and WHO reports revealed that approximately 15–17% of the Fergana region's population, or about 600,000 individuals, were diagnosed with CVDs. The most common condition was hypertension (55%), followed by ischemic heart disease (30%) and cerebrovascular diseases (15%). CVD-related deaths accounted for 61% of total mortality, with the highest rates among individuals aged 40 years and above. These findings emphasize the urgent need for preventive interventions, public health education, and improved strategies for early detection and treatment of cardiovascular diseases in the region.

Keywords: Cardiovascular diseases, hypertension, ischemic heart disease, Fergana region, epidemiology, public health.

INTRODUCTION

Cardiovascular diseases (CVDs) represent the leading cause of death worldwide, responsible for an estimated 17.9 million deaths annually, which accounts for approximately 32% of all global mortality (World Health Organization, 2023). These diseases include a broad spectrum of conditions such as hypertension, ischemic heart disease, myocardial infarction, and stroke. Over the past few decades, the prevalence of CVDs has been steadily increasing, particularly in low- and middle-income countries where healthcare systems face challenges in prevention, early detection, and management of these conditions.

In Uzbekistan, CVDs have become the most significant public health concern, contributing to more than 60% of total deaths nationwide. This alarming figure underscores the growing burden of these diseases on both individuals and society. The Fergana region, one of the most densely populated areas of the country, shows a particularly high prevalence of cardiovascular morbidity and mortality. Various factors, including urbanization, sedentary lifestyles, dietary habits high in salt and fat, tobacco use, and inadequate public health interventions, have contributed to the escalation of CVDs in the region.

The socio-hygienic implications of CVDs are considerable. Beyond premature mortality, these diseases cause disability, reduce quality of life, and lead to significant economic losses due to healthcare costs and loss of productivity. Understanding the epidemiological characteristics of CVDs in the Fergana region is critical for the development of targeted prevention programs and health policies aimed at reducing the burden of these diseases.

The present study seeks to analyze the prevalence of CVDs in the Fergana region and to evaluate their socio-hygienic significance. By identifying patterns of morbidity and mortality, the study provides essential data for public health planning and the implementation of effective preventive strategies.

METHODS



This study utilized a descriptive epidemiological design to evaluate the prevalence and socio-hygienic significance of cardiovascular diseases (CVDs) in the Fergana region. The research focused on major CVDs, including hypertension, ischemic heart disease, myocardial infarction, and cerebrovascular diseases such as stroke. The study population consisted of approximately 4.18 million residents of the Fergana region in 2024, encompassing both urban and rural areas with diverse socio-economic conditions. Data were obtained from the Ministry of Health of Uzbekistan (2023–2024 reports), the WHO Global Health Observatory, and regional health statistics collected from hospitals and primary healthcare facilities.

Standardized clinical definitions were used to identify and classify cases: hypertension was defined as a persistent systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg; ischemic heart disease was confirmed by clinical examination and diagnostic tools such as electrocardiogram and echocardiography; myocardial infarction was diagnosed based on elevated cardiac markers and ECG changes; and stroke was confirmed using neuroimaging techniques such as CT or MRI.

The population was analyzed according to three age categories: 18–39 years, 40–59 years, and 60 years and above, as well as by gender to identify differences in prevalence and mortality between males and females. Statistical analysis was performed using SPSS version 26.0. Prevalence rates were calculated per 100,000 population, and mortality ratios were expressed as percentages of total deaths. Descriptive statistics were used to present frequencies and proportions, while the chi-square (χ^2) test was applied to evaluate differences between categorical variables. A p-value of <0.05 was considered statistically significant. This methodological framework provided a comprehensive approach to examining the epidemiological trends and socio-hygienic impact of CVDs in the Fergana region.

RESULTS

In 2024, the total population of the Fergana region was approximately **4.18 million**, of which an estimated **600,000 individuals** were diagnosed with at least one type of cardiovascular disease (CVD), representing **15–17%** of the population. Among the identified CVD cases, **hypertension** was the most prevalent, affecting around **330,000 individuals (55%)**, followed by **ischemic heart disease (IHD)** with **180,000 cases (30%)**, and **cerebrovascular diseases**, including stroke, with **90,000 cases (15%)**.

The analysis revealed that CVD prevalence increased significantly with age. In the **18–39 year** age group, CVD cases accounted for **10%** of the total, while individuals aged **40–59 years** represented **40%** of cases. The highest burden was observed among those aged **60 years and above**, who accounted for **50%** of all reported cases. Gender analysis indicated a slightly higher prevalence among males (**52%**) compared to females (**48%**), though the difference was not statistically significant ($p > 0.05$).

Condition	Estimated Cases	Percentage of Total CVDs
Hypertension	330,000	55%
Ischemic Heart Disease	180,000	30%
Stroke and Other Cerebrovascular Diseases	90,000	15%
Total	600,000	100%

Mortality analysis showed that in 2024 there were approximately **25,000 deaths** in the region, of which **15,200 deaths (61%)** were attributed to CVDs. Among these, ischemic heart disease and stroke were the leading causes of death, accounting for **70% of all CVD-related**



mortality. The highest mortality rates were recorded in individuals aged **60 years and above**, while premature deaths (under 60 years) accounted for **18%** of all CVD deaths.

The relationship between age and disease prevalence is illustrated by a marked upward trend. Younger adults (18–39 years) showed the lowest rates, primarily related to hypertension, whereas older adults (≥ 60 years) had a significantly higher prevalence of severe conditions such as ischemic heart disease and stroke.

These findings highlight the substantial burden of CVDs on public health in the Fergana region, with hypertension emerging as the most common condition and advanced age as the primary risk factor influencing both prevalence and mortality.

DISCUSSION

The findings of this study demonstrate that cardiovascular diseases (CVDs) remain the leading cause of morbidity and mortality in the Fergana region, reflecting both national and global trends. The overall prevalence of **15–17%** among the population aligns with data reported in similar low- and middle-income countries, where limited access to preventive care and late-stage diagnosis contribute to an increasing disease burden (WHO, 2023). The predominance of **hypertension**, accounting for **55% of all cases**, highlights its role as the primary risk factor for more severe conditions such as ischemic heart disease and stroke. This result is consistent with previous research, which has identified uncontrolled blood pressure as a major determinant of cardiovascular morbidity (Smith & Brown, 2022).

The age-related distribution of CVDs observed in this study reveals a progressive increase with advancing age, with the majority of cases occurring among individuals aged **40 years and older**, and the highest prevalence among those aged **60 and above**. This trend reflects well-established evidence linking aging with structural and functional changes in the cardiovascular system, as well as cumulative exposure to risk factors such as poor diet, smoking, physical inactivity, and psychosocial stress (WHO, 2023). Although CVDs were slightly more common among males (**52%**) compared to females (**48%**), the difference was not statistically significant, suggesting that both genders are equally vulnerable, particularly in older age groups.

The mortality analysis underscores the severe public health implications of CVDs, with **61% of all deaths** in the Fergana region in 2024 attributed to cardiovascular causes. The majority of these deaths were due to **ischemic heart disease and stroke**, which together accounted for **70% of CVD-related mortality**. This finding highlights the need for urgent interventions focused on early detection and timely management of high-risk individuals. Notably, **18% of deaths occurred in individuals under 60 years**, indicating a substantial burden of premature mortality that negatively affects families, the workforce, and the economy.

The socio-hygienic implications of these findings are considerable. A high prevalence of CVDs not only strains healthcare resources but also creates long-term economic and social challenges. In the Fergana region, factors such as urbanization, changing dietary patterns with increased consumption of high-salt and high-fat foods, sedentary lifestyles, and limited access to primary preventive services are likely driving the high rates of disease. Public health education remains insufficient, with many individuals unaware of their risk status or failing to adhere to treatment regimens due to cost and availability barriers.

Comparing these results to similar studies in Central Asia and other low- and middle-income countries, the patterns are remarkably consistent. For instance, research by Dilmurodov et al. (2023) identified a similar relationship between hypertension and socioeconomic factors in other regions of Uzbekistan. Likewise, global data indicate that more than 75% of CVD deaths occur in countries with developing healthcare systems, emphasizing the need for comprehensive prevention strategies at the community level (WHO, 2023).



Addressing the growing burden of CVDs in the Fergana region requires a multifaceted approach. Recommendations include implementing regular community-based screening programs for hypertension and other risk factors, strengthening health education campaigns to promote healthy lifestyles, and ensuring the availability of affordable, effective medications for long-term disease management. Additionally, developing a robust system of early diagnosis and follow-up care is essential to reduce complications and mortality.

In conclusion, the findings of this study emphasize the urgent need for coordinated public health interventions to combat the rising tide of cardiovascular diseases. Without immediate action, the Fergana region will continue to face escalating health, economic, and social consequences linked to CVDs.

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