

**UTILIZING PREDICTION AND MONITORING
TECHNIQUES WITH CORRELATION FOR THE ANALYSIS AND
MANAGEMENT OF VASCULAR DISEASES**

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Abstract. *Correlation analysis identifies the relationships between key risk factors—such as age, obesity, hypertension, and lifestyle habits—and the onset of vascular conditions. Regression models, including linear, logistic, and multivariate approaches, predict disease progression, treatment efficacy, and mortality rates.*

The research leverages patient data to build predictive models that assess risk levels and monitor disease trends over time. Advanced tools, such as machine learning algorithms and time-series regression, enhance accuracy and provide actionable insights. These methods enable healthcare professionals to allocate resources effectively, design targeted interventions, and reduce the burden of vascular diseases on populations.

The findings emphasize the importance of integrating predictive analytics into vascular disease management strategies, offering a scalable and data-driven framework to improve patient care and public health outcomes.

Key words: *prediction and monitoring techniques, correlation and regression models, blood vessel diseases, vascular diseases, morality*

According to the World Health Organization (who), 17.5 million people die each year due to cardiovascular disease. More than 75% of these deaths fall in low-and middle-income countries. According to these statistics, early heart attacks and cardiovascular diseases can be prevented at the level of 80%. It is very expensive to treat and correctly diagnose cardiovascular diseases. In Uzbekistan, coronarography, the "Golden diagnostic method", is widely used at the Scientific Research Institute of Cardiology. However, in the treatment of cardiovascular diseases, atherosclerotic vascular problems continue, so doctors need software. Vascular diseases are one of the most pressing problems in our region today, which determines the relevance of its high mortality rate and increased economic load. Medical, epidemiological and Social Research is essential to study this topic and develop ways to eliminate it. Therefore, scientific research related to vascular diseases and the improvement of medical practice will be of fundamental importance in the further development of the region's health system.

In addition, since 2006, the arrhythmia laboratory (head – professor R.D. Kurbanov, the main Scientific Officer-professor N.U. Zakirov) has conducted research on the detection and treatment of arrhythmias in various clinical forms. It has also been found to have high efficacy in the treatment of arrhythmias, such as antiarrhythmic drugs such as

propanorm, allapinin, and aksaritmin. In 2007, he was awarded the first degree professor of the State prize of the Republic of Uzbekistan in the field of Science and technology. D. Kurbanov and academician of the Scientific Institute of chemical plants of the Republic of Uzbekistan Yunusov S.Yu. in conjunction with, "Alapinin" was a berilgn for the production and introduction into clinical practice of a new type of drug. It was used to treat arrhythmias. Scientific achievements and innovations in the field of Cardiology in Uzbekistan are recognized globally, and research in this field is important for achieving a high level in the medicine of our country as well as internationally. A number of regulatory documents, initiatives and services for the reform of the health system of Uzbekistan, prevention and treatment of cardiovascular diseases are provided and they are as follows:

1. Main regulatory documents:

- Decree of the president of the Republic of Uzbekistan of February 26, 2003 "on measures to further reform the Health System" No. 3214.
- Resolution No. 140 of the Cabinet of Ministers of March 17, 2003.

2. Improvement projects in the treatment of cardiovascular diseases:

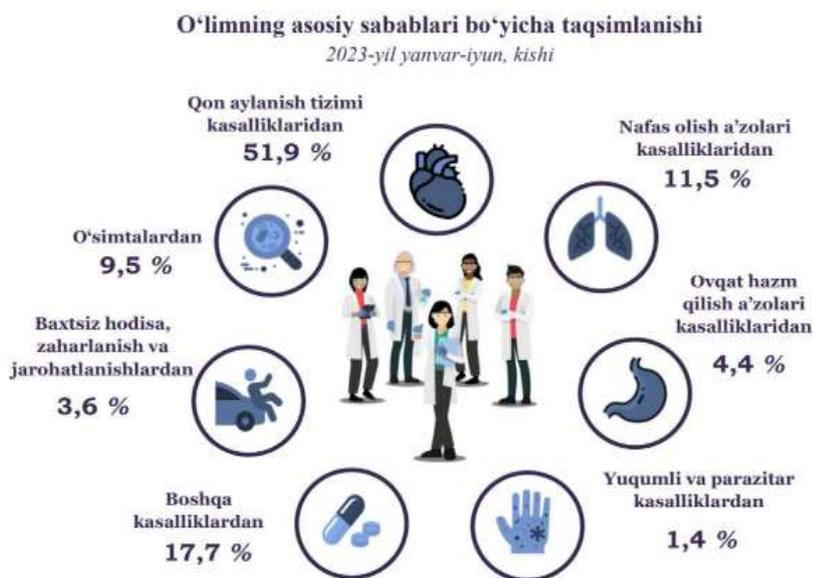
- Initiatives carried out by the Republican Center for the development of medical education of the Ministry of health of Uzbekistan within the framework of the project "improving the Health System (Health-3)".
- A set of clinical protocols for cardiovascular diseases has been developed on the basis of Order No. 57 of the minister of health of the Republic of Uzbekistan, adopted on February 1, 2016.

3. The main purpose of cardiological service:

- Providing qualified cardiac care at the level of international standards with the introduction of modern diagnostic and therapeutic methods.
- Expansion of preventive, early detection and effective treatment of cardiovascular diseases.
- Create favorable conditions for the population and provide the necessary resources.

4. Medical diagnostics and laboratory services:

- A number of important medical examinations are carried out at the Research Institute of Cardiology of Uzbekistan, including:
 - Daily ECG monitoring.
 - Test with physical loading (bicycle ergometry and treadmill).
 - Echocardiography (EhoKG), determination of cholesterol and its fractions, sugar profile and glycated hemoglobin levels.
 - Platelet aggregation activity and endothelial function studies.



Pic. 1. The main causes of death in the first half of 2023 (Uz Axa)

This diagram describes the main causes of death and their quantitative distribution in the first half of 2023. This information is expressed as follows:

- Diseases of the circulatory system: leading with 3854 cases.
- Respiratory organ diseases: 429 cases.
- Tumors: 10-10 cases.
- Accident, poisoning and injuries: 286 cases.
- Diseases of the digestive organs: 353 cases.

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