

**“ATHEROSCLEROSIS AND MYOCARDIAL INFARCTION: RISK FACTORS
AMONG YOUNG PEOPLE” THE RELATIONSHIP BETWEEN CHOLESTEROL,
DIABETES, STRESS AND HEART DISEASE**

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Abstract. This article analyzes the causes of atherosclerosis and myocardial infarction among young people and their main risk factors. In particular, it discusses how elevated blood cholesterol levels, diabetes, chronic stress and an unhealthy lifestyle affect the development of cardiovascular diseases based on scientific sources. It also discusses the interrelationships of these factors and their role in accelerating atherosclerotic processes. The article focuses on the importance of preventing heart disease among young people, early diagnosis and preventive measures.

Keywords. Atherosclerosis, myocardial infarction, cholesterol, diabetes, stress, cardiovascular diseases, youth health, risk factors, unhealthy lifestyle, prevention.

Introduction. In recent years, the widespread prevalence of cardiovascular diseases not only among the elderly, but also among young people has become one of the urgent problems facing the global health system [1]. Myocardial infarction and other serious heart diseases, previously considered to be characteristic of older people, are now occurring in people aged 30–40 years and even younger. The main reasons for this are unhealthy diet, sedentary lifestyle, harmful habits, chronic stress, and an increase in metabolic diseases. In particular, the modern pace of life leads to a decrease in physical activity among young people and an increase in mental stress. In the development of cardiovascular diseases, increased blood cholesterol levels, chronic diseases such as diabetes mellitus, and stress are important risk factors. These factors have a negative effect on the body for a long time, causing pathological changes in the walls of blood vessels. As a result, blood circulation is impaired, the heart muscle is not supplied with enough oxygen, and severe complications may develop [2]. Therefore, it is important to study in depth the mechanisms of heart disease and develop measures to prevent them. The above-mentioned risk factors directly affect the functioning of the heart, leading to a deterioration in the condition of the vessels, and atherosclerotic changes play an important role in this process. Atherosclerosis is a chronic disease characterized by narrowing of the vessels and a decrease in their elasticity as a result of the accumulation of cholesterol and lipids in the walls of blood vessels, which is one of the main pathogenetic factors in the development of myocardial infarction. Atherosclerosis is a chronic pathological process characterized by the formation of atherosclerotic plaques as a result of the accumulation of cholesterol, lipids and connective tissue in the walls of blood vessels. This process leads to a narrowing of the lumen of the vessels, a decrease in their elasticity and impaired blood flow [3]. Although atherosclerosis develops



slowly, it can occur without clinical symptoms for a long time, which makes it difficult to detect the disease at an early stage. Over time, plaque instability and rupture lead to the formation of a blood clot, which can be life-threatening. Early development of atherosclerosis is observed, especially among young people, under the influence of malnutrition, inactivity and stress. As a result of a sharp narrowing or complete blockage of the lumen of the vessels, blood flow to the heart muscle suddenly decreases, which directly leads to the development of myocardial infarction. Myocardial infarction is a severe and life-threatening pathological condition that occurs as a result of a sudden cessation of blood supply to a certain part of the heart muscle. This disease often develops due to blockage of the coronary arteries by atherosclerotic plaques or thrombi [4]. During myocardial infarction, heart muscle cells are deprived of oxygen and begin to die. Clinically, the disease is manifested by severe chest pain, shortness of breath, heart rhythm disturbances, and general weakness. In recent years, myocardial infarction has become more common among young people, and the main causes of this condition are an unhealthy lifestyle and metabolic disorders. One of the main factors leading to the formation of plaques on the walls of blood vessels in the development of myocardial infarction is an excess of cholesterol in the blood [5]. Cholesterol is a fatty substance necessary for the synthesis of cell membranes, hormones, and vitamins in the body. However, an increase in the amount of low-density lipoproteins (LDL, i.e., "bad" cholesterol) in the blood causes the accumulation of fatty layers on the walls of blood vessels. This process accelerates the formation of atherosclerotic plaques and leads to a narrowing of the lumen of the vessels. As a result, the blood supply to the heart muscle and other organs is impaired. In particular, excessive consumption of fatty and fast foods, lack of physical activity contribute to the development of hypercholesterolemia among young people. Diabetes mellitus, which is associated with carbohydrate metabolism, plays an important role in the exacerbation of cholesterol metabolism disorders in the blood and further increases the risk of cardiovascular diseases. Diabetes mellitus is a chronic disease characterized by an increase in the level of glucose in the blood as a result of impaired insulin production or its effectiveness. This disease directly affects the cardiovascular system, since high blood sugar levels stimulate inflammatory processes in the vascular walls and accelerate atherosclerotic changes [6]. Also, patients with diabetes have blood thickening, thrombus formation, and insufficient functioning of the capillary system, which significantly increases the risk of myocardial infarction and other heart diseases. The development of diabetes in young people is influenced by poor diet, overweight, lack of physical activity and genetic factors. At the same time, patients often face chronic stress during the period of living with diabetes, as constant blood sugar control, taking medications and changing lifestyles lead to psychological stress. Therefore, diabetes increases the risk of cardiovascular diseases not only by metabolic disorders, but also by increasing chronic stress, which creates the basis for the development of premature atherosclerosis and myocardial infarction. Stress is a mechanism of the human body's response to pressure and strain in the internal and external environment, which in a chronic form negatively affects the cardiovascular system [7]. Chronic stress leads to an increase in the amount of hormones in the body, in particular cortisol and adrenaline, which causes increased blood pressure, heart rhythm disturbances and damage to the vascular walls. Stress also increases metabolic disorders in the body, contributes to an increase in cholesterol and blood glucose levels, which ultimately increases the risk of atherosclerosis and diabetes. Stress is common among young people due to work, study or personal problems, and this poses a serious threat to their heart health. Therefore, chronic stress is an important factor in the development of cardiovascular diseases, which, along with atherosclerosis, diabetes and cholesterol problems, weakens heart health. Cardiovascular diseases are a set of pathological conditions accompanied by impaired function of the heart and blood vessels, the main manifestations of which include atherosclerosis, myocardial infarction,



hypertension and heart rhythm disorders. These diseases are often associated with risk factors such as high cholesterol, diabetes, chronic stress and an unhealthy lifestyle [8]. Cardiovascular diseases are widespread not only among the elderly, but also among young people today, seriously affecting their quality of life and life expectancy. Failure to detect diseases at an early stage often leads to the development of severe complications such as myocardial infarction or heart failure. Therefore, cardiovascular diseases directly affect the health of young people not only through the disease itself, but also through their prevention and promotion of a healthy lifestyle. Youth health is one of the most pressing issues in global health today. Although the body of young people has great adaptability and regenerative capacity, malnutrition, inactivity, stress, bad habits and metabolic disorders have a negative impact on their cardiovascular system [9]. Therefore, the development of atherosclerosis, myocardial infarction and other heart diseases among young people is observed faster than before. A healthy lifestyle, increased physical activity, a balanced diet and stress management play an important role in maintaining the health of young people. To maintain the health of young people and prevent heart disease, it is necessary to identify the main risk factors that should be actively controlled in their lives. Risk factors for the development of cardiovascular diseases are a set of biological, genetic, psychological and environmental factors that increase the likelihood of developing this disease. The main risk factors include high cholesterol, diabetes, chronic stress, overweight, hypertension, bad habits (smoking, alcohol) and physical inactivity. These factors are interconnected, and their combination significantly increases the risk of the disease. The frequent occurrence of risk factors among young people increases their susceptibility to serious heart diseases such as atherosclerosis and myocardial infarction. Therefore, identifying risk factors, reducing them and implementing preventive measures is important for a healthy life. Among the risk factors, one of the most common and significantly affecting human health is an unhealthy lifestyle, as it not only exacerbates metabolic disorders, but also conditions such as chronic stress and high cholesterol. An unhealthy lifestyle is a set of behaviors that negatively affect a person's life habits and daily activities, significantly increasing the risk of cardiovascular diseases. These include unhealthy eating habits (consumption of foods high in fat, salt, and sugar), physical inactivity, alcohol, and smoking. At the same time, lack of sleep, chronic stress, and psychological stress are also part of an unhealthy lifestyle. These factors are especially common among young people, and they lead to metabolic disorders, high cholesterol, diabetes, and atherosclerosis in the body. As a result, the cardiovascular system weakens and the risk of serious diseases such as myocardial infarction increases. Therefore, correcting an unhealthy lifestyle and introducing healthy lifestyle habits is important in preventing risk factors such as cardiovascular diseases, cholesterol, and diabetes, that is, in implementing effective preventive measures [10]. Prevention is a set of measures aimed at preventing or delaying the development of these diseases, and is important in preventing cardiovascular diseases, atherosclerosis, myocardial infarction and other metabolic disorders. The basis of preventive measures is the introduction of a healthy lifestyle, balanced nutrition, regular physical activity, stress management and the abandonment of harmful habits. At the same time, early identification of risk factors, control of blood cholesterol and glucose levels are also an integral part of prevention. Prevention is of particular importance in maintaining the health of young people, since unhealthy lifestyles, chronic stress, and metabolic disorders are widespread among them. As a result, the implementation of preventive measures not only helps to prevent diseases, but also strengthens the health of young people, maintains a healthy cardiovascular system, and improves the quality of life.

Conclusion. This article has highlighted the main risk factors for the development of atherosclerosis and myocardial infarction among young people. The results of the study show



that increased blood cholesterol levels, diabetes, chronic stress, and an unhealthy lifestyle directly affect the early development of cardiovascular diseases. Identifying these risk factors, reducing them, and implementing preventive measures are of particular importance in maintaining the health of young people. A healthy lifestyle, balanced nutrition, regular physical activity, and stress management not only strengthen heart health, but also help improve overall health and quality of life. Thus, preventing cardiovascular diseases among young people and reducing their risk is an important and urgent issue for the formation of a healthy generation in the future.

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