SCIENTIFIC BULLETIN

# Prevention of Cardiovascular Diseases

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**Abstract:** Cardiovascular diseases (CVD) of atherosclerotic origin, especially coronary heart disease (CHD), remain the leading cause of premature death worldwide. According to epidemiological studies, the prevention of CVD is highly effective. A 50% reduction in mortality from coronary artery disease is associated with interventions on risk factors and only 40% with improved treatment. Prevention of CVD is a coordinated effort at the community and individual levels aimed at eliminating or minimizing the impact of CVD and associated disability. Preventive measures should be carried out throughout life, from birth to old age.

**Keywords:** population: changing lifestyle, environmental situation, promoting a healthy lifestyle, nutrition.

According to the World Health Organization, 17.9 million people die annually from cardiovascular events, accounting for 31% of all other causes of death worldwide [2]. The group of cardiovascular diseases (CVD) usually includes ischemic heart disease (IHD), stroke (brain hemorrhage), and peripheral artery disease, as atherosclerosis plays a leading role in their development. The exact causes of atherosclerosis are still unclear; however, scientific research has identified factors that contribute to the development and progression of atherosclerosis-related CVD. These factors are referred to by scientists as CVD risk factors. According to WHO data, health depends 50-55% on lifestyle and social conditions, 20-22% on genetic factors, 19-20% on the environment, and only 7-10% on the level of the healthcare system and the quality of medical services. The majority of CVD cases are associated with lifestyle and modifiable psycho-physiological factors. In the structure of mortality from CVD, about 85-90% is due to stroke and IHD. These diseases are prioritized when developing CVD prevention programs. Modifying risk factors can reduce the morbidity and mortality of people with both diagnosed and undiagnosed CVD. The experience of developed countries shows that the reduction in CVD-related deaths is mainly due to a decrease in the incidence of new cases, rather than an improvement in the quality of treatment for patients. The primary goal of CVD prevention is to prevent disability and premature death (15).

By eliminating factors that contribute to the development of atherosclerosis, it is possible to prevent cardiovascular diseases. Lifestyle factors such as metabolic disorders, smoking, excess weight, physical inactivity, poor diet, high blood pressure, stress, and alcohol abuse increase the risk of atherosclerosis and related diseases. Therefore, CVD prevention programs are aimed at reducing these risk factors.

Firstly, it is necessary to increase physical activity, establish healthy eating habits, and give

up harmful habits. It is also recommended to regularly monitor blood pressure, blood sugar, and cholesterol levels, and to undergo medical check-ups. A healthy lifestyle is crucial not only for preventing CVD but also for improving overall health.

The above recommendations are mainly based on the experience of developed countries, where a reduction in deaths related to cardiovascular diseases has been achieved. At the same time, it is important to strengthen efforts to prevent CVD in developing countries, where the mortality rate from cardiovascular diseases remains high. Preventive measures should be implemented not only at the healthcare system level but also broadly through improving public health. The main causes of cardiovascular diseases are heart and blood vessel dysfunctions. These diseases include ischemic heart disease (heart attacks), cerebrovascular disease (stroke), high blood pressure (hypertension), peripheral artery disease, rheumatic heart disease, congenital heart disease, and heart failure. The main causes of cardiovascular diseases are heart and blood vessel dysfunctions. These diseases include ischemic heart disease (heart attacks), cerebrovascular disease (stroke), high blood pressure (hypertension), peripheral artery disease, rheumatic heart disease, congenital heart disease, and heart failure. Other causes include tobacco use, physical inactivity, and unhealthy diets (10, 11, 12).

Improper nutrition, particularly excessive salt intake (more than 5 grams of salt or 2 grams of sodium per day) and insufficient consumption of vegetables and fruits (less than 400 grams per day), can increase the risk of arterial hypertension, its complications, and other cardiovascular diseases [1].According to experts, a significant number of deaths from cardiovascular diseases can be prevented through various preventive and organizational measures, such as optimizing lifestyle, early correction of existing disorders in individuals with high cardiovascular risk, and controlling the sale and consumption of tobacco products and foods high in salt, fat, and sugar [3]. However, patients do not always follow doctors' recommendations, violating the prescribed regimen, thereby accelerating and exacerbating the development of the pathological process [4]. Therefore, the task of our study at the V International (75th All-Russian) Scientific and Practical Conference "Current Issues of Modern Medical Science and Healthcare" was to examine the actual nutrition of patients with cardiovascular pathology, their adherence to doctors' recommendations on lifestyle and dietary changes, and their motivation for a healthy lifestyle as a key factor in disease prognosis and prevention of complications.

The main prevention strategies are as follows: the high-risk strategy, which includes preventive measures aimed at reducing CVD risk factors. These prevention strategies should complement each other. Cardiovascular disease prevention can be broadly divided into two groups: (1, 2, 3)

Primary prevention includes a rational work-rest regime, increased physical activity, limiting table salt, avoiding alcohol and smoking, reducing food caloric intake, and weight loss. Essentially, primary prevention helps maintain optimal living conditions. The population strategy and the high-risk strategy are considered primary prevention approaches for CVD.

Secondary (medication and non-medication) prevention is conducted in a differentiated manner with groups of patients who have verified cardiovascular diseases (CVD), aiming to prevent disease recurrences, complications in individuals with established risk factors, reduce morbidity and mortality from these diseases, and improve the quality of life for patients. According to WHO, the greatest contribution to the risk of sudden death comes from three major risk factors: arterial hypertension, hypercholesterolemia (dyslipidemia), and smoking.

CVD risk factor classification includes biological (non-modifiable) factors: age, gender, heredity (early development of CVD in relatives), and genetic factors contributing to the development of dyslipidemia, hypertension, glucose tolerance, diabetes, and obesity;

anatomical, physiological, and metabolic (biochemical) characteristics: dyslipidemia, obesity and fat distribution, diabetes (8, 9, 10).

Behavioral (modifiable) factors include dietary habits, smoking, physical activity, alcohol consumption, and stress. The presence of even one risk factor increases mortality in men aged 50-69 by 3.5 times, and the combined effect of multiple factors increases it by 5-7 times. Thus, it is essential to motivate each individual to adopt a healthy lifestyle to address CVD risk factors.

Measures that promote a healthy lifestyle and reduce risk factors include: quitting smoking (non-smokers should avoid being in smoking areas to prevent passive smoking). If a person smokes five cigarettes a day, the risk of death increases by 40%, and if they smoke a pack a day, it increases by 400%, meaning they are ten times more likely to die; following a low-cholesterol diet: reducing saturated fats (decreasing consumption of fatty meats, incorporating turkey and rabbit meat with low cholesterol into the diet), focusing on whole grains, vegetables (recommended up to 5 servings a day), fruits, and fish. Sunflower, corn, rapeseed, or olive oils should be used. The total fat content should be no more than 30% of the total energy intake, and saturated fats should not exceed one-third of all consumed fats; reducing salt intake to 5 grams per day; cutting down on products containing "hidden" salt: smoked and cooked sausages, bread. Studies by scientists have shown that limiting salt intake can reduce the risk of myocardial infarction and other cardiovascular events by 25%. It is very beneficial to increase the consumption of foods rich in potassium and magnesium (seaweed, raisins, beets, apricots, zucchini, pumpkin, buckwheat).

A rational diet means balanced, regular meals (at least four times a day) with limited salt intake. In an effort to avoid atherosclerosis, some people give up meat and dairy products in favor of vegetables. Doctors recommend including lean chicken, beef, and turkey in the diet, as they provide valuable proteins and amino acids to the heart muscle. However, remember that meat should occupy no more than a quarter of the plate and should be served boiled or baked without fatty sauces.

Reducing excess weight. Excess weight increases the risk of developing ischemic heart disease (IHD) and other atherosclerosis-related diseases. It is notable that more than 12% of the population is unaware of their weight. The prevalence of overweight increases with age. To assess your weight, use a simple formula to calculate body mass index (BMI): BMI = weight (kg) / height (m²). A BMI of up to 24.9 indicates a normal body weight; 25-29.9 indicates overweight; 30-34.9 indicates obesity class I; 35-39.9 indicates obesity class II; 40 and above indicates obesity class III.

Moreover, central obesity (male-type obesity), where fat is deposited in the abdominal area, is more dangerous. Central obesity can be determined by waist circumference (WC) and the waist-to-hip ratio. The risk of cardiovascular diseases increases in men with a WC greater than 94 cm and particularly over 102 cm, and in women with a WC greater than 80 cm and particularly over 88 cm. A waist-to-hip ratio greater than 1.0 in men and 0.85 in women is a more accurate indicator of central obesity. For men with a WC <102 cm and women with a WC <88 cm and/or BMI <30 kg/m², it is recommended to maintain their weight. For men with a WC ≥102 cm and women with a WC ≥88 cm and/or BMI ≥30 kg/m², it is recommended to reduce body weight. Studies by scientists have shown that reducing salt intake can lower the risk of myocardial infarction and other cardiac events by 25%. It is also beneficial to increase the consumption of foods rich in potassium and magnesium (seaweed, raisins, beets, apricots, zucchini, pumpkin, buckwheat).

Rational nutrition is balanced, regular (at least 4 times a day) meals with limited salt consumption. In an attempt to avoid atherosclerosis, people give up meat and dairy in favor of vegetables. Doctors recommend including lean chicken, beef, and turkey in the diet, as

they provide the heart muscle with valuable proteins and amino acids. However, remember that meat products should occupy no more than a quarter of your plate and should be served boiled or baked without fatty sauces.

Reducing excess weight. Excess weight increases the risk of developing coronary heart disease and other diseases associated with atherosclerosis. It is noteworthy that more than 12% of the population does not know their own weight. The prevalence of excess body weight increases with age. To assess your weight, use the simple formula for calculating the body mass index (BMI) = weight (kg) / height (m²). A BMI up to 24.9 is considered normal body weight; 25-29.9 indicates overweight; 30-34.9 is obesity class I; 35-39.9 is obesity class II; and 40 and above is obesity class III. Moreover, the so-called central obesity (male type), where fat accumulates in the abdomen, is more dangerous. Central obesity can be assessed by waist circumference (WC) and the waist-to-hip ratio. The risk of cardiovascular diseases increases in men with a WC greater than 94 cm, especially above 102 cm, and in women with a WC greater than 80 cm and 88 cm, respectively. A waist-to-hip ratio greater than 1.0 in men and greater than 0.85 in women is a more accurate indicator of central obesity. For men with a WC < 102 cm and women with a WC < 88 cm and/or a BMI < 30 kg/m², it is recommended not to gain weight. For men with a WC ≥ 102 cm and women with a WC ≥ 88 cm and/or a BMI ≥ 30 kg/m², weight loss is recommended.

Monitor blood pressure. Keep blood pressure at or below 140/90 mmHg.

Increase physical activity. Aim for at least 150 minutes per week of moderate aerobic physical activity (walking, swimming, cycling) (30 minutes a day, 5 days a week) or 75 minutes of vigorous physical activity per week, or a combination of both.

Monitor lipid metabolism indicators. For patients with very high cardiovascular risk, it is recommended to achieve a target level of low-density lipoprotein cholesterol (LDL-C) <1.8 mmol/L or to reduce it by at least 50% if the initial level was 1.8-3.5 mmol/L (ESC, 2016). For patients with high cardiovascular risk, the recommended target LDL-C level is <2.6 mmol/L, or a reduction of at least 50% if the initial level was 2.6-5.1 mmol/L. For all other patients, the target LDL-C level is <3.0 mmol/L. Limit alcohol intake. Less than 2 standard doses (1 dose = 12 g/18 ml of ethanol) per day for men and less than 1 standard dose per day for women, which is approximately equal to 330 ml of beer, 150 ml of wine, or 45 ml of spirits. Monitor blood glucose levels. The level of glycated hemoglobin should be <6-6.5%.

Avoid prolonged stressful situations. The impact of acute stress on people already suffering from cardiovascular diseases is evident. Stress leads to episodes of angina, arrhythmia, and the development of heart failure. It can also cause the sudden onset of stroke and/or myocardial infarction. The impact of both personal and situational factors that increase the risk of cardiovascular disease can be mitigated through "coping mechanisms," which involve recognizing the problem and overcoming it by attempting to accept the situation and make the best of it.

Cardiovascular diseases are difficult to treat, so doctors recommend engaging in comprehensive prevention. Proper nutrition, cholesterol control, and regular physical activity are excellent habits that can keep your heart healthy for many years.

People suffering from certain types of chronic non-infectious diseases (such as oncology, cardiovascular, neurological, endocrinological, and others) are entitled to dispensary observation. The purpose of dispensary observation is to stabilize and improve the clinical course of the disease, prevent exacerbations and complications of cardiovascular diseases, and improve the quality and duration of life for patients. As part of dispensary observation, the doctor examines the patient, assesses their health status, adjusts treatment, and may prescribe additional tests or issue a referral to a medical organization providing specialized

care. The doctor also provides consultations and training on how to manage one's condition in case of life-threatening situations(8,9).

A proper diet: Maintaining a balanced diet is crucial for a healthy cardiovascular system. This includes a high intake of fruits and vegetables, whole grain dishes, lean meats, fish, nuts, and legumes, while limiting the intake of salt, sugar, and fat. The diet should include dishes with polyunsaturated fatty acids. It should be varied and balanced, avoiding overconsumption of the same foods. Salt intake should be limited to no more than 1 teaspoon per day. It is also important to monitor sugar intake – the daily limit for sweets should be no more than 30 grams.

Sea fish is the main source of the valuable Omega-3 fatty acid. It helps maintain the elasticity of the heart muscle, protects against free radicals, and prevents the oxidation process. Serve herring, mackerel, tuna, or flounder several times a week. To prevent atherosclerosis and angina, it is recommended to take fish oil supplements twice a year.

It should be noted that strict diets deplete the body, reducing the levels of magnesium, potassium, and sodium, which are necessary for the heart to function properly. For disease prevention, it is important to eat properly, basing the diet on low-fat dairy and meat products, cereals, vegetables, and fruits.

Thus, reducing the consumption of dishes made from potatoes, white rice, and flour is essential to maintain an optimal blood sugar level. For patients at high risk of cardiovascular disease, a healthy diet includes vegetables, fruits, nuts, whole grains, lean plant or animal proteins, and fish. It is also important to minimize the intake of trans fats, red meat, refined carbohydrates, and sugary drinks.

In conclusion, along with regular health check-ups, following universal recommendations plays a significant role in reducing the risk of cardiovascular diseases and improving overall well-being. It is important to monitor your diet, exercise regularly, avoid bad habits, maintain a sleep and rest routine, and minimize the impact of stress on the body.

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