

Prevention of cardiovascular diseases

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Abstract

Cardiovascular diseases (CVD) are socially significant diseases due to high morbidity and loss of people of working age. In Bulgaria, they are the leading cause of mortality among the population and are a consequence of the effect of cardiovascular risk factors. The draft of the National Health Strategy (NHS) 2021–2030 reports on their wide distribution, as well as on the insufficient knowledge, skills and motivation for their prevention and control.

The purpose of this review is to address the prevention of cardiovascular disease, which is a significant problem worldwide. Prevention goals for patients with established cardiovascular disease and those at high risk include smoking cessation, healthy eating, physical activity, and lowering body mass index. There are various methods that are part of health promotion to reduce CVD risks. These methods include motivational interviewing, non-pharmacological means, the use of certain medications for CVD prevention, as well as physical activity. Strategies for effective primary prevention refer to engaging the patient to change their lifestyle and identifying risk factors, while secondary prevention is aimed at activities to detect the disease early and to slow down its progression. It is necessary to create a strategy for timely preventive actions with a view to preventing the negative influence of risk factors and improving people's heart health.

Keywords

cardiovascular diseases, risk factors, prevention strateg

Introduction

Cardiovascular diseases (CVD) are socially significant diseases due to high morbidity and tragic loss of people of working age. To prevent this, it is necessary to carry out systematic prevention from an early age (Vasileva 2021). CVD prevention is a complex task that must be addressed by the joined efforts of health professionals,

non-governmental organizations and politicians. It should start from birth, be complex and achieve the set goals. CVD prevention aims to reduce premature CVD mortality and morbidity and increase the nation's life expectancy, which is well worth the effort and resources (Haute école spécialisée de Suisse occidentale 2023).

Cardiovascular diseases (CVD) are pathologies that affect the cardiovascular system, namely the heart and blood

vessels. They include ischemic heart disease, cerebrovascular disease, high blood pressure (hypertension), peripheral arteriopathy, rheumatic heart disease, malformations, congenital heart disease, deep vein thrombosis, pulmonary embolism, as well as heart failure (Organisation mondiale de la Santé 2017). CVD kills around four million people in Europe each year (Eurostat Statistics Explained 2016). From a demographic point of view, aspects of CVD to consider are population growth, which has continued to increase for several years; so, the world's population has a life expectancy that continues to improve. In other words, an aging population combined with extended life expectancy increases the proportion of people who will suffer from cardiovascular disease (Riera-Sampol et al. 2017).

Thanks to advances in the field of prevention, there has been a decline in CVD. There are various methods that are part of health promotion to reduce CVD risks. These methods include motivational interviewing, non-pharmacological means, the use of certain medications for CVD prevention, and physical activity (Arnett et al. 2019).

The aim of this review is to address the prevention of cardiovascular disease, which is a significant problem worldwide. We believe that information on the prevention of these diseases is necessary due to their social importance. The goals of prevention in patients with established cardiovascular disease and people at high risk are smoking cessation, eating healthy foods, physical activity, and reducing body mass index.

Risk factors

CVD risk factors are modifiable and non-modifiable CVD risk factors. Modifiable are those that we can change in terms of health promotion, such as active smoking, poor diet, excessive alcohol consumption, stress, and certain behaviors that promote obesity, overweight, hyperglycemia, and hyperlipidemia (Organisation mondiale de la Santé 2017).

Smoking

Smoking kills nearly six million people a year. 39% of the causes of death are related to smoking (Teo et al. 2006). Nicotine releases catecholamines, which lead to changes in the cardiovascular system, causing tachycardia or increased blood pressure. In the long term, these changes can lead to a decrease in blood flow (Revue médicale suisse 2017).

Excessive alcohol consumption

Excessive alcohol consumption increases the level of fatty substances, which leads to obstruction of blood circulation due to atherosclerosis. Blood vessels narrow and blood pressure rises. In the long term, this excessive pressure can lead to a myocardial infarction or stroke (OFSP 2019).

Stress

Constant stress has an indirect effect on heart health. In fact, stressed individuals are more likely to smoke, eat less, exercise less, and have trouble sleeping. Stress can be associated with a state of constant tension (Fondation Suisse de Cardiologie 2018).

By acting on modifiable risk factors, it would be possible to reduce risks, consequences and therefore reduce the number of deaths. In terms of non-modifiable risk factors, we can point to the aging of the population, globalization, economic, social and cultural level, without forgetting poverty and heredity (Organisation mondiale de la Santé 2023).

Prevention of cardiovascular diseases

Primordial prevention or health promotion averts the development of risk factors in society (Strasser 1978). This prevention refers to activities to ward off risk factors from entering society. Primordial prevention aims to change the social conditions of society as a whole and is subject to population interventions. These interventions include providing low-cost healthy foods and promoting desirable eating habits from childhood and school age (Popova and Stambolova 2019), implementation of preschool and school programs for physical education and sports to combat immobility and obesity (Monnet 2021), and also creating a smoke-free environment (Baudet et al. 2019).

Primary prevention

Primary prevention protects against the development of disease at present levels of risk factors in individuals who are asymptomatic. Unlike health promotion, where the population as a whole is the object of intervention, in primary prevention the main action target is the individual (Nouguès 2018).

It is important to assess the risk factors for each individual, starting from an early age. Strategies for effective primary prevention refer to engaging the patient in lifestyle changes, in identifying risk factors, delineating a lifestyle change plan, monitoring the progress of these changes by contacting medical staff whenever possible (Castro et al. 2017).

Non-pharmacological means

In patients at risk of CVD, it is possible to influence certain elements through non-pharmacological interventions, to reduce the risks caused by various factors, such as smoking, alcohol consumption, high level of stress. Eating healthy foods, dieting, reducing salt intake, getting more potassium through food, getting more physical activity and reducing stress levels are recommended (Arnett et al. 2019).

People engaged in regular physical activity would reduce the risk of cardiovascular diseases by improving their health. Whatever physical activity it may be, it contributes to delaying the appearance of atherosclerotic plaques in the vessels. It also plays an important role in reducing the mortality and morbidity of the population. Any person who begins to practice physical exercise will indirectly control several CVD risk factors such as hypertension, dyslipidemia, obesity, and blood sugar levels. Practicing regular physical activity of moderate intensity would help avoid weight gain over the years (Spreng 2015).

Performing physical activity is part of behavioral changes that require effort and real motivation on the part of patients at risk of CVD and willing to take charge of their health (Moramarco and Langlois 2015). All individuals should be encouraged to increase their physical activity to levels associated with the lowest risk of cardiovascular disease. At least half an hour of physical activity is recommended almost every day of the week, even if it is relatively moderate. Healthy people need to be encouraged to choose activities that fit into their daily routine for 30 minutes, 4–5 times a week at 75% of maximum heart rate. For patients with established cardiovascular disease, recommendations are based on clinical assessment, including the most recent cycle ergometric test (Société française de Nutrition et de Médecine du sport 2006).

Healthy foods intake is associated with a low risk of cardiovascular disease. All individuals should receive professional advice on nutrition and food choices. Consumption of fruits and vegetables, cereals and whole grain bread, low-fat dairy products, fish and lean meat should be encouraged (Dakova et al. 2008). Fatty fish and unsaturated omega-3 fatty acids have particular protective properties (Georgiev 2011). Total fat intake should not exceed 30% of energy intake. In low-calorie diets, saturated fat can be replaced by polyunsaturated fat (Kris-Etherton and Krauss 2020) that may come from marine animals, vegetables, nuts.

An unfavorable nutritional trend is observed in Bulgaria, related to the population's intake of a large amount of salt, sugar, sugar and confectionery, as well as overconsumption of fats and high intake of saturated fatty acids. Our country ranks last in Europe in milk, meat and meat products consumption - twice as low as Portugal and Ireland. The relative share of by-products in the total consumption of meat and meat products is the highest in Europe. The average daily intake of vitamins (thiamine, riboflavin, vit. C and folic acid) and minerals (iron, zinc, calcium, magnesium) are below the standards for children, pregnant women and the elderly (Vodenicharov et al. 2013).

Medicinal primary prevention

In addition to drugs for the treatment of arterial hypertension, correction of lipids and diabetes, the following classes of drugs are recommended for the prevention of

cardiovascular diseases in clinical practice: beta-blockers in patients after a myocardial infarction or with left ventricular dysfunction due to have coronary disease; preventive medication of ACE-inhibitors – in patients with symptoms or signs of left ventricular dysfunction due to coronary disease and/or increased arterial pressure (Chiuve et al. 2006), heart failure, diabetes mellitus, anticoagulants in patients with coronary disease with an increased risk of thromboembolism (Niederera et al. 2001).

In asymptomatic high-risk individuals, low-dose aspirin may reduce the risk of a cardiovascular event in diabetics, individuals with well-controlled high blood pressure, and men at high multifactorial risk for cardiovascular disease (Hayden et al. 2002). Hassan and Amonkar (2001) argued that the rate of aspirin use for secondary prevention is higher than the rate for primary prevention because of the strong evidence linking aspirin use to the prevention of recurrent cardiovascular events. However, there is still an opportunity to promote the use of an inexpensive and effective drug such as aspirin for primary CVD prevention among patients who have CVD risk factors and do not have contraindications to aspirin use.

Cleland (2002) reports that it is currently fashionable to prescribe aspirin, long-term to people with or at high risk of vascular events due to atherosclerosis. There is moderately conclusive evidence for a short-term benefit after an acute vascular event. However, there is remarkably little evidence that long-term aspirin is effective for the prevention of vascular events and managing side effects may be expensive. Reductions in nonfatal vascular events may reflect an ability of aspirin to alter cosmetically the presentation of disease without exerting real benefit.

With the introduction of statin therapy to reduce serum cholesterol and LDL-cholesterol, a revolution was achieved in the prevention of CVD, mainly for secondary prevention, but also in asymptomatic individuals. Although with weaker evidence, the use of statins for primary prevention reduces the incidence of non-fatal cases of CVD (Sherbanov and Nedeva 2014).

Arterial hypertension is a leading risk factor for the development of CVD. A primary goal of therapy in patients with high blood pressure is to maximize the reduction of long-term overall risk for cardiovascular and cerebrovascular morbidity and mortality. This requires control of all identified risk factors (Observatoire suisse de la santé 2017).

Secondary prevention

Secondary prevention is aimed at activities that detect the disease early and thus slow down its progression and the development of symptoms of the disease. It is usually done for already developed sufferings and aims to protect the sick from new incidents. Recommendations for the prevention of new incidents in patients with already developed atherosclerotic disease are generally no different

from those for primary prevention and include lifestyle changes and the impact of major risk factors and drug treatment (Knoflach et al. 2003).

The goal of secondary prevention is to achieve even tighter control of risk factors in high-risk individuals, particularly those with established cardiovascular disease or diabetes mellitus, in terms of blood pressure, fasting blood glucose, total cholesterol, and LDL-cholesterol (Baigent et al. 2010).

Tertiary prevention

Tertiary prevention reduces the negative impact of an existing disease by restoring function and reducing disease-related complications. Usually, the aim is to reduce the degree of disability among the sick (Esselstyn Jr 2008).

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Conclusion

Cardiologists can alter the prognosis of cardiovascular disease in primary and secondary prevention. In primary prevention or during the chronic phases of coronary artery disease, prevention is mainly based on drugs. However, prevention can be achieved only if patients have a good understanding of their disease, fair relationships with their physicians and a strict compliance with their treatments. Patient education is useful for the patient in order to control cardiovascular risk (Ferrières et al. 2006).

It is necessary to develop a preventive strategy, including prophylactic drug therapies for the prevention of cardiovascular diseases. The strategy for the prevention of cardiovascular diseases is of particular importance due to the social importance of these diseases, which are a cause of death, a source of disability and cause economic costs to society (Balashkevich et al. 2015).

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