

Cardiovascular risk and nutrition, epidemiology and clinic: a review

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Received date: February 16, 2024; Accepted date: February 26, 2024; Published date: March 06, 2024

Citation: Domenico Basta, (2024), Cardiovascular risk and nutrition, epidemiology and clinic: a review, *J. Nutrition and Food Processing*, 7(3); DOI:10.31579/2637-8914/210

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Abstract:

Cardiovascular disease (CVD) is one of the main causes of morbidity and mortality in the world and especially in developed countries^{i, ii, iii, iv}. It is estimated that in the coming years Numerous factors influence the onset and progression of these diseases, particularly the diet. Diet and nutrition have been extensively studied as risk factors for major cardiovascular diseases such as coronary heart disease (CHD) and stroke and are also linked to other cardiovascular risk factors such as diabetes, hypertension and obesity. A healthy lifestyle, which includes a balanced and adequate diet, based on the latest scientific evidence can contribute significantly to the prevention and treatment of (CVD) with a massive reduction in public health spending., In this scientific review, we examine the preventive and therapeutic importance of an adequate diet in cardiovascular diseases globally.

Key words: cardiovascular risk; public health; nutrition; epidemiology; obesity

Introduction

Cardiovascular disease (CVD) is the leading cause of death worldwide, especially in developed countries [8,9] Current epidemiological predictions show the world is heading for a storm of pandemic proportions of cardiovascular disease. The number of people at high risk of cardiovascular disease is increasing [8]. Cardiovascular disease is the leading cause of death in all developed countries. In Italy, they are responsible for about 250,000 deaths each year out of about 560,000 total deaths (we are going to about 47%). [8,9] Cardiovascular diseases include a wide range of disorders, including diseases of the heart muscle and vascular system that feed the heart, brain, and other vital organs: cardiomyopathies, congenital heart disease, systemic arterial hypertension, arrhythmias and heart tumours. [8] Among the most frequent forms of these diseases are ischaemic heart disease (including acute myocardial infarction and angina pectoris) and cerebrovascular diseases (including ischaemic stroke and haemorrhagic stroke)

Epidemiology of CVD and impact on public spending

CVD remains the most common cause of death in the world. In Europe, deaths from CVD in subjects <70 years of age, commonly referred to as premature, are a particular concern, with >60 million potential life years lost due to CVD in Europe each year. [15-17] Although more women than

men die of CVD, age-standardized rates of both morbidity and death are higher in men, and these differences in rates are greater in individuals <70 years of age. [8-10] Spending on cardiovascular disease for adults in the United States increased by >\$100 billion from 1996 to 2016. [8] Most of the health expenditure was absorbed for hospital care, followed by outpatient care, care in nursing facilities and prescribed retail pharmaceuticals. [9,10,11] The 3 major cardiovascular diseases by impact on overall health expenditure were ischemic heart disease, the treatment of arterial hypertension and cerebrovascular disease.

Risk factors for CVD

A risk factor is a specific condition that is statistically associated with a disease and is therefore believed to contribute to its pathogenesis, promote its development or accelerate its course. Unhealthy lifestyles (smoking, sedentary/poor physical activity, risky and harmful alcohol consumption, poor diet) favour the appearance of important intermediate risk factors such as high blood pressure, dyslipidaemia, diabetes mellitus, obesity and systemic inflammation. [8-10] Risk factors are divided into non-immutable (age, gender, hereditary factors) and changeable risk factors including lifestyle. (Figure 1)

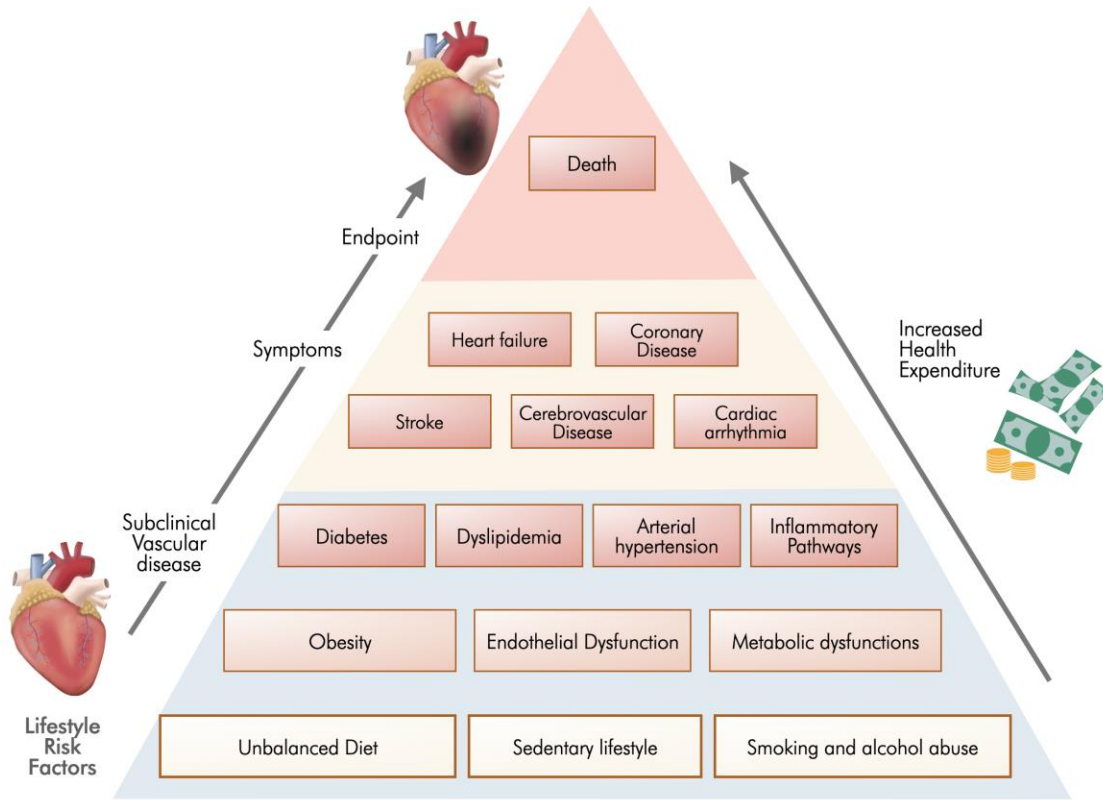


Figure 1: Etiology of CVD with associated risk factors and trend in public health expenditure for CVD.

Blood pressure, obesity and CVD risk

The obesity pandemic, favoured by the modern lifestyle typical of developed countries is characterised by an increase in total fat intake and a decline in carbohydrate consumption (especially the complex variety), excess energy intake combined with micronutrient deficiencies, reduced physical activity, excess salt intake characterise the nutritional transition that is becoming increasingly well documented in many developing countries. [8,9] These factors have helped create an unprecedented condition in human history where most over-nourished individuals are constantly growing. [10] Disorders associated with obesity, such as

diabetes mellitus, dyslipidaemia and hypertension, have certainly contributed to creating favourable conditions for atherosclerosis and thus the development of cardiovascular disease. [11,12] The relationship between obesity, particularly visceral obesity, and cardiovascular disease appears to develop at a relatively young age. Blood pressure is the pressure exerted by the blood, pumped by the heart, on the wall of the arteries that distribute the blood itself in the body. [13] Blood pressure, systolic (SAP) or diastolic (DAP) parameters have been the subject of numerous studies, some of which have an association between the increase in these parameters and mortality. (Figure 2)

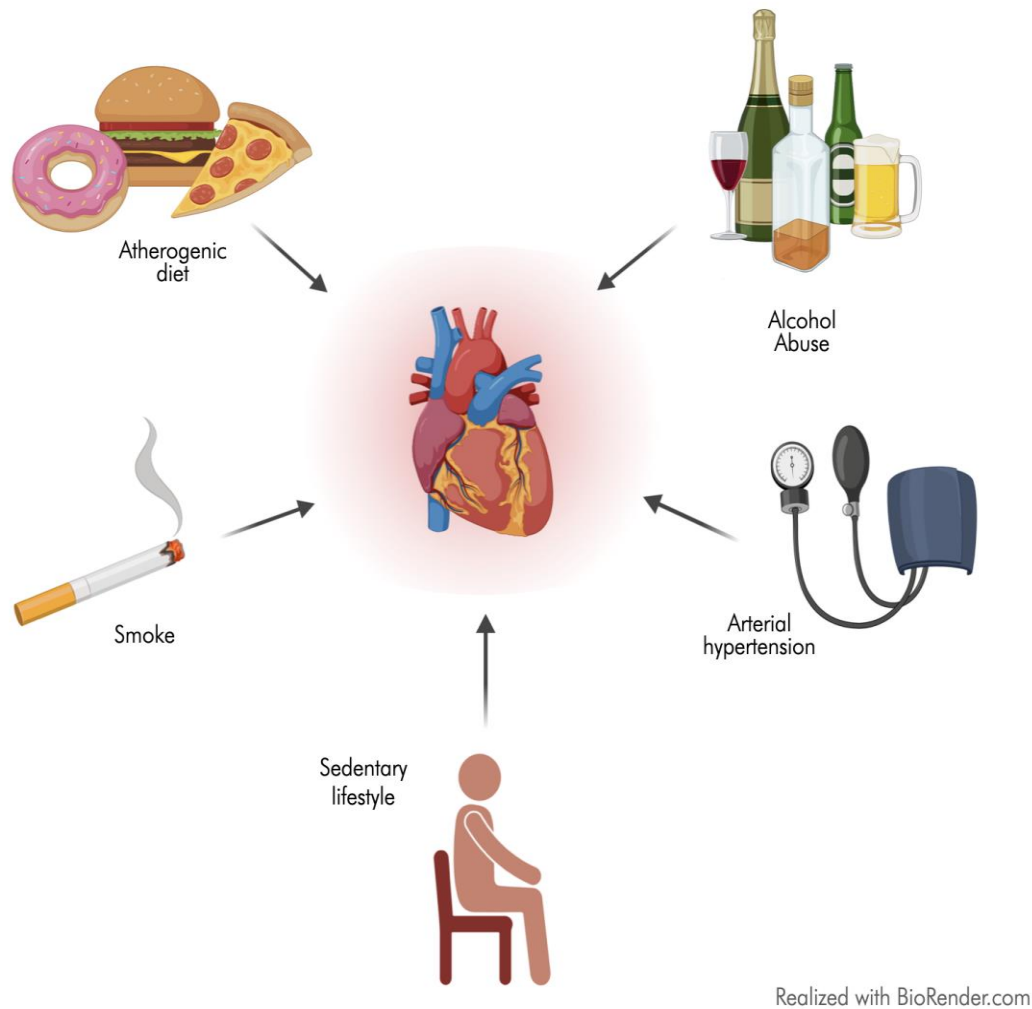


Figure 2: Increased risk factors for cardiovascular disease.

Discussion

Effectiveness of nutritional intervention in CVD risk reduction

Nutrition plays a crucial role in the development of metabolic disorders, subclinical vascular diseases and the onset of cardiovascular diseases. The Mediterranean diet has been associated in recent years with extensive benefits for human health, including protection against cardiovascular disease. Several epidemiological and clinical studies have evaluated the effect of the Mediterranean diet on recognised cardiovascular risk factors, the results of which have been summarised in several meta-analyses. [9,10] Among healthy eating patterns, the Mediterranean diet emerges in terms of benefits associated with healthy longevity. Current evidence highlights the protective effect exerted by the polyphenols contained within the MedDiet's fundamental foods (i.e. olive oil, red wine, fish and nuts) that appears to be responsible for the beneficial properties associated with this dietary model. [11-14] It is noted that these compounds perform an epigenetic action are able to prevent or delay the pathophysiological components responsible for the onset of CVD and metabolic syndrome. [09-10] From a clinical point of view, the effectiveness and speed of nutritional interventions based on the Mediterranean diet in reducing

cardiovascular risk and risk factors such as cholesterol, triglyceridemia, blood pressure and BMI by 28% has been demonstrated. [17]

Preventive strategies future public health actions

From a perspective of preventive health, this review aims to provide pieces of a complex puzzle that is the management and prevention of cardiovascular risks. In particular, it is necessary to increase certain preventive public health actions such as: health education and communication with the development of an awareness of one's health in relation to nutrition and diet, an increase in physical activity, periodic preventive clinical check-ups and the increased consumption of functional foods rich in bioactive compounds capable of exerting a positive action on cardiovascular health. [17] On the other hand, it is crucial to engage communication and preventive efforts in order to reduce alcohol consumption, the consumption of processed foods rich in trans fatty acids, sugars and food additives, reduce tobacco use and abandon the sedentary lifestyle. With these elements combined and customised for each health system you can significantly reduce cardiovascular risk, reduce public health spending and target longevity understood as chronic health. (Figure 3)

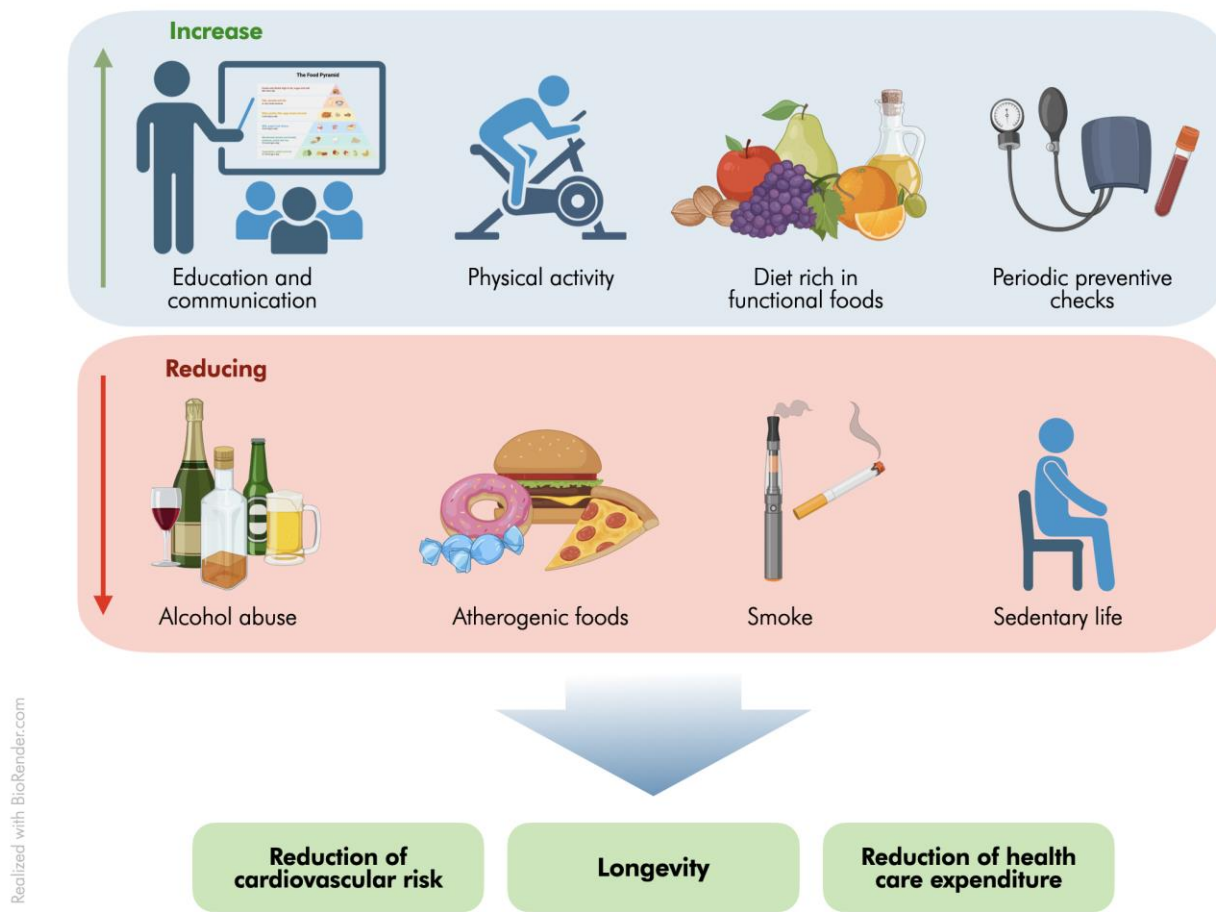


Figure 3. Preventive strategies in public health for CVD reduction

Conclusion

This review demonstrates the need and importance of preventive actions with the aim of significantly reducing the risk of developing cardiovascular disease. The epidemiological and economic burden of cardiovascular diseases is steadily increasing, so it is urgent to adopt public health policies based on scientific evidence in order to reduce the incidence of this large group of diseases by correcting lifestyles from early childhood. In particular, the central role of nutrition in reducing cardiovascular risk and improving the quality and sustainability of life for both the individual and the community is highlighted.

Conflict of Interest

The author declares that they have no conflicts of interest. The article is not under evaluation anywhere, and it is not submitted elsewhere.

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