

EUROPEAN-LEVEL INTERVENTIONS TO REDUCE THE RISK FACTORS ASSOCIATED TO INCREASED BLOOD PRESSURE. SALT, SUGAR AND FAT CONSUMPTION

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Abstract: Hypertension is a disease with serious implications on populations' health, being a major risk factor for many serious cardiovascular events. At European level, these issues are particularly relevant given the increasing prevalence and incidence of diseases caused by hypertension evidenced by morbidity and mortality rates. However, there are examples of Member States which have implemented successful interventions to improve public health and reduce blood pressure. This article presents some of these successful interventions that aim at reducing the prevalence and incidence of cardiovascular disease by lowering blood pressure levels.

Cuvinte cheie: hipertensiune arterială, intervenții, boli cardiovasculare, Europa

Rezumat: Hipertensiunea arterială reprezintă o afecțiune cu implicații serioase privind sănătatea populațiilor, deoarece este un factor major de risc pentru evenimentele cardiovasculare grave. La nivel european, aceste aspecte sunt deosebit de relevante având în vedere creșterea prevalenței și incidenței bolilor cauzate de hipertensiune arterială evidențiate prin ratele de morbiditate și mortalitate. Cu toate acestea, există exemple ale statelor membre, care au pus în aplicare intervenții de succes în îmbunătățirea sănătății publice și reducerea tensiunii arteriale. Articolul prezintă câteva din aceste intervenții de succes care au ca drept scop reducerea prevalenței și incidenței bolilor cardiovasculare prin scăderea tensiunii arteriale.

This paper highlights the risk factors associated to increased blood pressure, as well as a series of successful interventions led by some countries of the European Region to address this problem. The paper also points out that, simple, focused, cost effective interventions can have a significant impact on the prevention and reduction of blood pressure and the diseases it causes.

Starting from the fact that high values of blood pressure increase the risk of strokes, heart disease, kidney failure and other diseases, in 2009, the World Health Organization (WHO) attributed 13% of all global deaths to high blood pressure, considering it an area of major importance for public health in both developing countries and in the developed ones.(1)

According to the *Action Plan for Implementation of the European Strategy for the Prevention of Noncommunicable Diseases 2012-2016*, non-communicable diseases (NCDs) are responsible for 86% of all deaths and 77% of disease burden in the European Region. This is especially important in an aging society, where the NCDs are the leading cause of death and ill health - and here, we refer primarily to diseases caused by hypertension.(2) Globally, cardiovascular diseases comprise 48% of all deaths related to NCDs in 2008.(3) In addition, *Health Policy 2020* has made a priority in tackling the main factors of the NCDs in the European Region, particularly to reduce the prevalence of high blood pressure.(4)

In Europe, high blood pressure is a particular problem because it was found to have an increased prevalence of 60% compared to the U.S. and Canada - two non-European developed countries.(5) In addition, it directly causes about 25%

of heart attacks in Europe. In its advanced form of cardiovascular disease, it is estimated to cause 42% of all deaths in the entire European Region annually.(6)

The Action Plan for Implementation of the European Strategy for the Prevention of Noncommunicable Diseases 2012-2016 reported that hypertension is a heavy burden for the health systems, negatively influencing the economic development and the health consequences of many European people, especially the elderly.(2) Hypertension can be prevented, and it is directly related to lifestyle, such as poor diet, low physical activity, tobacco and alcohol consumption. These behavioural risk factors are responsible for about 80% of the serious heart diseases.(7)

In order to address blood pressure, the European Region has identified four priority areas for intervention with the greatest impact:(2)

- Reducing the salt intake;
- Promoting healthy food - in relation to alcohol, tobacco use, foods high in saturated fats, trans fats, salt and sugar;
- Eliminating the trans fats from food;
- Evaluation and management of the metabolic risk;

The report outlines a series of actions that are consistent with the necessary interventions to reduce high blood pressure. They are extremely cost-effective, culturally acceptable, easy to implement, and include the following:(8)

- Prohibition of smoking in public places and workplaces;
- Warnings about the dangers of tobacco;

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- Clear bans regarding the promotion, sponsorship, advertising of tobacco use;
- Increase duties on tobacco and alcohol;
- Restricting access on the retail sale of alcohol;
- Implement restrictions on alcohol consumption;
- Reduce the consumption of salt and sugar in processed and packaged foods and beverages;
- Replacing trans-fats from food with unsaturated fats;
- Promote public awareness about diet and physical activity through consumers' education and information (including the mass-media).

These main objectives of the Action Plan represented the basis for the implementation and development of interventions at European level regarding the factors associated to the increase of blood pressure.

The main factors associated to hypertension, which the European interventions are directed to are: amount of salt, fat and sugar intake, smoking, alcohol consumption, cardiovascular and metabolic risk assessment, promotion of mobility, this article referring to the first two categories of the risk factors.

1. Salt intake and blood pressure increase

The causal relationship between salt intake and hypertension is well known, as a result of the reduced capacity of the kidney to excrete salt, and the impact on the blood vessels.(9) Reducing salt intake to less than 5 g (2000mg sodium, a teaspoon of salt) per person per day is associated to reducing on long-term the risk of cardiovascular events and strokes. In a systematic review, it was found that a difference of 5g/day of the chronic consumption of salt is associated to a difference of 23% in the rate of strokes and to a difference of 17% in the rate of cardiovascular diseases in general.(10) The strong relationship established between salt intake and high blood pressure is seen as one of the most public health cost-effective and accessible measures.(2)

At European level, there have been two major interventions to reduce salt consumption. Starting with 1996, a group of experts from the United Kingdom began lobbying activities to food producers and suppliers with a view to gradually reduce the salt content in food, and to increase community awareness of the dangers associated to the consumption of excess salt.(11) Taking into account this initiative, the *Public Health Responsibility Deal* Report was launched in 2011. This report emphasizes the salt intake target values for 80 food groups. Also, the government conducted analyses on urine collected for 24 hours as part of continuous monitoring of salt intake in the population.(12) Moreover, a voluntary scheme designed as a traffic light on the product label was introduced by the Food Standards Agency, indicating the consumption of fat, sugar and salt (green = good, yellow = OK, red = bad). Although it began as a voluntary action, more than 75% of packaged foods use this label.(13) UK initiatives to reduce salt intake resulted in a decrease in salt consumption to 9.5g/day in 2001 to 8.6g/day in 2008, and has increased 10 times the consumers' awareness on the recommendations of salt intake.(14)

Finland was another country that in 1970 began the famous North Karelia project. This project focused on improving community participation, awareness, capacity and right to health in rural North Karelia, Finland. To be effective, the programme primarily used the existing structures to achieve the change: worksite intervention, television programmes (1980) advertising, working with food manufacturers and supermarkets, policies and anti-smoking campaigns, use of community leaders to disseminate messages and training of physicians to improve blood pressure screening activities and the education of patients.

What is important to note is that the initial implementation, execution and success of the programme was tested in a rural, low-income setting. In terms of results, this project led to the preparation of the initial draft law in 1992. The law provides a maximum salt content for soups, sauces and salted foods. This created definitions of low and high salt content, and requested that the term "strong salted" to be placed on the packages of high salt content food.(15) This legislation has been successful in the food industry in understanding national health initiatives. Complementarily to the results on salt consumption, the project has succeeded in a reduction of 12-20% in terms of smoking among men (depending on location), and by 8.1% (men) and 13.9% (females) reduction of blood pressure.(16)

2. Fat, sugar consumption and blood pressure

The consumption of trans fatty acids directly contributes to the occurrence of heart diseases by raising the levels of bad cholesterol (also known as low-density lipoprotein, LDL), reducing the level of good cholesterol (high density lipoprotein, HDL) and damaging the lining of blood vessels which can lead to inflammation, blockage and heart attacks.(2)

In an attempt to reduce the consumption of trans fats, Finland has successfully implemented a project that was based on the consumption of fruits, which helped dairy farmers to switch to fruit cultivation. This initiative aims to reduce the consumption of oil-based products and high-fat dairy, and fruit growth in the population, without bringing prejudices to the economic stability of dairy farmers.(15) Finland has recognized that the lack of a local source on healthy cooking alternatives affect health adversely and led to initiatives to limit the implementation of recommendations for healthy eating. One of the main issues was the high consumption of butter in cooking and the lack of local alternatives available regarding the consumption of healthier oils.(15) The cooperation between the Ministries of Health, Agriculture and Trade, together with health authorities and the accomplishment of health campaigns aimed at promoting the importance of fruits inclusion in the diet and the use of substitutes when cooking.(15) As such, they have invested in developing a new type of rapeseed plant to survive the harsh climate of the north, and to produce local rapeseed oil (Canola oil) for cooking, which is good for the heart and reduces cholesterol. Like the Russian Federation, Finland has used various competitions to promote the change in diet, physical activity and smoking cessation.(15)

Finland managed to reduce saturated fat consumption, change the cooking methods, and increase fruit consumption among its citizens. One of the competitions related to lower cholesterol aimed at lowering the level of cholesterol of the entire village by 16% in 1997.(15)

Another intervention that is worth mentioning is that of Greece, a country which usually experienced low mortality rates related to cardiovascular disease, associated to Greek diet. However, over the recent decades, the increased Westernization of the Greek diet led to an increase in mortality from heart diseases. In 1999, in order to address this issue, the Ministry of Health has developed recommendations on foods based on Mediterranean diet (rich in vegetables, fruits, olive oil), to promote the importance of nutritional diets at society level.(17) The working tool of this intervention was to create a poster of food under the shape of a pyramid to facilitate the promotion and dissemination of the pre-Westernized Greek diet, as a benchmark for strengthening the national diet.(18) The results of this intervention have shown that coronary artery disease was inversely related to the main components of the Greek diet. (19)

The Greek diet is associated with high levels of good cholesterol, compared to bad cholesterol (low-density

lipoprotein), high fiber intake, high intake of antioxidant compounds, and a general increase in high density lipoprotein - all factors serving to improve blood pressure and reduce the risk of hypertension and coronary artery disease. Although deaths due to ischemic heart disease have continued to grow throughout the 1980s and 1990s (reflecting the introduction of the Western food) until the implementation of the national dietary guidelines in 1999, the mortality rate fell from a peak of 14 067 deaths in 2003 to 11922 deaths in 2009.(19)

In the 1990s, in an effort to reduce the consumption of saturated fats, Poland addressed the issue in terms of subsidies. There were eliminated the subsidies for saturated fats, especially for those of animal origin. The food products mainly made up of unsaturated fat, as well as fruits became available and accessible at a lower price.(21) Thus, between 1990 and 2002, Poland saw a 38% reduction in coronary heart disease among men and by 42% among women. This significant decrease was associated to an increase in the consumption of polyunsaturated fats, a sustained reduction of saturated fats and an increase in fruit consumption.(21)

These interventions aim at drawing attention to policy makers, who should understand that small changes in the diet have been shown effective in producing substantial changes in the health of populations.

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