

SHORT COMMUNICATION

Mediterranean diet and cardiovascular disease: The penalty for neglecting the benefit

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Abstract: This brief review strongly suggests that the traditional mediterranean diet with its pyramid of nutrients, high fish consumption and an adequate physical activity is a desirable component of a life style model for the world being rapidly transformed by the effects of globalization (*Fig. 1, Ref. 7*). Full Text in PDF www.elis.sk. Key words: mediterranean diet, nutrients, fish consumption, physical activity, life style model, cardiovascular diseases.

A Mediterranean diet (MD) based on food patterns typical for the Crete, has been traditionally associated with good health. In 1995 Willett, Sacks, Trichopoulou et al (1) described a food pyramid of nutrients that mirrors the MD food habit. Such food patterns were typical not only for Crete but also for much of the rest of Greece and southern Italy, areas of Europe where the life expectancy was among the highest and cardiovascular disease (CVD) among the lowest in the world. The lifestyle of these populations included regular physical activity and there was a low prevalence of obesity. Such diet is characterized by abundant plant food (fruit, vegetables, breads, other forms of cereals, potatoes, beans, nuts, and seeds). Fresh fruit is the typical daily dessert. Olive oil is the principal source of fat, dairy products (principally cheese and yogurt), fish and poultry are consumed in low to moderate amounts. Red meat and eggs are not prominent on the menu. Wine is consumed in low to moderate amounts, typically with meals. This diet is low in saturated fat (about 7–8 % of energy), with total fat ranging from < 25 % to <35 % of energy intake throughout the region. A metaanalysis published in 2008, based on data from an enormous population of 1.5 million, confirmed the association of MD type of diet with favorable indicators of health (2).

A critical review of data suggested that a low prevalence of CVD in countries of the Mediterranean basin (Greece, France, Spain) compared to the rest of Europe, was valid in the 1970s (*Fig. 1*). However, since then the regional indicators of mortality underwent a substantial change (3). Life style changes in the past forty years provide an impressive argument that confirms the value of a prudent diet, health education, new antisclerotic drugs and preventive medicine in the developed European countries. Finland has had an unfortunate priority of a high CVD mortal-

ity. Excessive consumption of saturated dairy lipids (whole milk, butter, rich cheese) and low intake of fruit and vegetable has been typical. But Greece, formerly admired for good health associated with the MD, has gradually positioned itself to the higher level of premature CVD mortality.

Such is the penalty for deviating from the prudent MD and a healthy life style. A rapid rise in the standard of living brought with it to Greece an epidemic of obesity. With a body mass index of over 30 the Greek males presently belong to the fattest in Europe. The premature CVD mortality of Greek males presently exceeds that of the male population in countries not habitually accustomed to the MD (Norway, the Netherland, Sweden, Austria). The latter countries are better at prevention of the metabolic syndrome (obesity, diabetes, hypertension) and they benefit from higher intake of n-3 polyunsaturated fatty acids derived from fish. *Figure 1* documents consequence of abandoning preventive principles of a healthy life style. Greece, the country that jump started the world- wide interest in the benefit of the MD, climbed in the past 38 years to the top democratic European countries with premature male CVD mortality. Norway, in contrast greatly reduced its mortality despite the wealth from the off shore oil drilling. Despite being far from the Mediterranean, the population of Norway avoided excessive intake of energy from overeating, it enjoys a physically active life style, fish represents an important dietary component and smoking has substantially decreased. Regretfully, present day Greece has CVD mortality almost twice higher than Norway (3).

This disastrous Greek health trend is a warning signal of potential adverse effect of globalization, in case it leads to abandoning of a healthy life style and to rejection of the benefits of a MD. Farmers on the island of Crete are another example. In the past they were bearers of excellent health with a low prevalence of CVD and cancer. When they are now compared with the 1960s when MD was first described, forty five years later present day males at Crete have 30 % higher body mass index and 16 % higher total serum cholesterol (4). This interesting Greek study also described the dietary factors responsible for such adverse health

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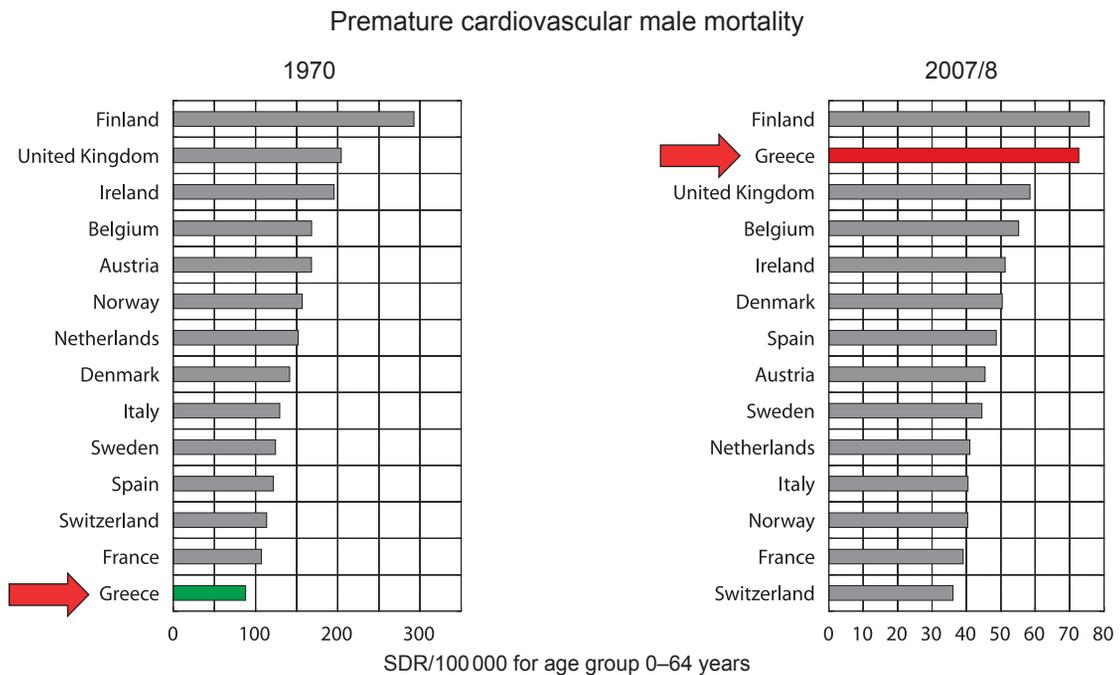


Fig. 1. Consequence of abandoning modest mediterranean diet in Greece for cardiovascular mortality (3).

outcome: increase in meat and saturated fat and a decrease in fruit consumption. These epidemiologic and dietary observations (4) were complemented by analyses of subcutaneous adipose tissue, its fatty acid content. Abandonment of the MD resulted in a decrease in the monounsaturated fatty acids with concomitant rise in adipose tissue saturated fat. This biochemical pattern accompanied the increased risk of males of Crete to develop premature CVD.

Impressive relative participation of fruit, vegetable, legume and nuts in the health benefit of MD is consistent with similar beneficial findings in a multitude of vegetarian studies (5). Regarding benefits of higher use of the virgin olive oil, this is related to the favorable proportion of fatty acids, with prominent content of the oleic and linoleic acid. Virgin olive oil also has a high content of phenolic compounds with their beneficial effect on plasma lipoproteins, on the platelet and other cellular functions. This contributes to reduction of inflammatory agents and to decrease in the oxidative damage (6). Remarkably, the diet in continental Greece is marked by low fish consumption, reducing the preventive role of n-3 polyunsaturated fatty acids against the overall risk of CVD (7).

Conclusion

This brief review strongly suggests that the traditional mediterranean diet with its pyramid of nutrients, high fish consumption

and an adequate physical activity is a desirable component of a life style model for the world being rapidly transformed by the effects of globalization.

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