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IDENTIFICATION AND PRIORITIZATION OF CARDIOVASCULAR RISK FACTORS IN RELATION TO FOOD INTAKE PATTERNS

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Abstract

The purpose of this research was to explore the impact of lifestyle, genetic predisposition and metabolic risk factors on the incidence of cardiovascular disease, given the fact that economic reasons must emphasize with inexpensive measures that have impact on health status. The research was based on a medical questionnaire about lifestyle, diet habits and personal history of the disease in patients with or without clinical signs of cardiovascular diseases. All the respondents identified with atherosclerotic damage were associated with the following risk factors: physical inactivity (13%), high body mass index (15%), family history (15%), history of hypertension (17%), frequent consumption of at least five types of unhealthy food (20%). At 89% of patients who completed the questionnaire was identified the combination of at least three risk factors. From the total of five cardiovascular risk factors, one cannot be changed (family history), one can be modified by drug therapy and through lifestyle changes (hypertension) and the other three could be eliminated through inexpensive methods, by changing everyday behaviour, which can be achieved with a minimum cost to society. A healthy diet was correlated only with the subclinical form of the disease thus its role seems important in preventing disease rather than in healing. Besides dietary risk factors, cardiovascular diseases were influenced in a cumulative way by socio-economic, behavioural and biological factors.

Keywords: *dietary habit, cardiovascular risk, lifestyle, health status.*

INTRODUCTION

Cardiovascular disease (CVD) is the number one cause of death worldwide. Nearly 50 percent of all deaths in high-income countries and about 28 percent of deaths in low- and middle-income countries are the result of CVD (WHO, 2002). It is now well established that cardiovascular diseases are of multifactorial origin. In a given individual, the level of cardiovascular risk results from the combination and interactions between genetic and environmental components such as diet, alcohol, smoking and drug consumption, physical activity and stress (Pallaud et al., 1999). The scientific evidence regarding the efficacy, cost effectiveness, strengths, and limitations of a range of pharmacologic aimed at lifestyle approaches to CVD prevention - both primary and secondary.

The purpose of this research was to explore the impact of lifestyle, genetic predisposition and metabolic risk factors on the incidence of cardiovascular disease, given the fact that economic reasons must emphasize with inexpensive measures that have impact on health status.

MATERIALS AND METHODS

This study included a total of 206 patients hospitalized in the cardiology department of the Municipal Hospital, Cluj-Napoca, presenting various forms of dyslipidemia with or without clinical manifestations of cardiovascular disease.

Clinical evaluation was performed using the medical questionnaire which assessed: general information about the subject (sex, age, area of origin), information on medical history (diseases, drug therapy and its cost). Dietary variables: Respondents had to answer the question "How often do you eat the following foods?" followed by a list of 14 food items. The frequencies were established

from rarely to most often, using a scale from 1 to 5 (1 - most often and 5 – rarest).
Covariables: Information regarding physical activity were based on participants' choice of one of the following: (A) mostly sedentary, (B) performing a physical activity; in this case, respondents are asked to specify number of hours spent doing exercises per week. People from group A were considered as inactive, the other group was considered active. Anthropometric data were collected by direct measurement of respondents. Body mass index (BMI) was calculated as weight (in kilograms) divided by height squared (in meters).
The prevalence and prioritization of each risk factor at the level of each individual was calculated for each sex - men and women, stratified by age, in order to identify differences between various cardiovascular risk factors in a representative population. Data were analyzed using Pearson correlation coefficient – r value. P values of <0.5 were considered statistically significant.

RESULTS AND DISCUSSIONS

By applying the semi-quantitative food questionnaire along with the medical questionnaire we evaluated the importance that certain risk factors have in the development and progression of atherosclerotic disease, in order to create a prioritization of them. Thus, we found the following risk factors with high impact on health: diet rich in animal fat, history of hypertension or family history of cardiovascular disease. Risk factors considered to have a medium impact on cardiovascular health are sedentary, increased body mass index, diabetes mellitus type II. Risk factors with low impact were represented by: cigarette smoking and alcohol consumption.
This hierarchy of risk factors differs from others mentioned in literature that hypertension, smoking and excessive alcohol consumption are considered the most important risk factors for the chronic diseases and cardiovascular (Yusuf et al., 2004). This prioritization of risk factors differs from some mentions in literature where is mentioned that hypertension, smoking and excessive alcohol consumption are considered the most important risk factors for the chronic and cardiovascular diseases (Yusuf et al., 2004).
Also, European Society of Cardiology has developed a European cardiovascular disease risk assessment model according to cardiovascular SCORE Risk Charts, based on the following risk factors: age, sex, smoking, systolic blood pressure and total cholesterol; The SCORE risk function can be calibrated to each country's national mortality statistics. (www.escardio.org/communities/EACPR/toolbox/health-professionals/Pages/SCORE-Risk-Charts.aspx). The disadvantage of this risk score is that it does not take into account the dietary habits of patients, which is known to have a major impact on the risk of developing cardiovascular disease.
Subsequent analysis of the data collected during this research showed that inadequate nutrition, mainly with high intake of food rich in saturated fat is a very important factor in the occurrence of cardiovascular disease and its progression to severe forms. The importance of nutrition appeared to be similar in impact with hypertension, family history, surpassing the level of impact of other risk factors such as obesity, physical inactivity, diabetes and being even more important as smoking and alcohol consumption.
Taking a closer look we observe that among the risk factors listed above we can find almost every metabolic syndrome components. Today, the association between metabolic syndrome and cardiovascular disease is internationally recognized, being considered the issue that causes an epidemic of cardiovascular disease (Qiao et al., 2007).
In these circumstances, if the impact of unhealthy food is almost similar to the metabolic syndrome components leads us to include the dietary habits as an integral part of this syndrome. Therefore, this study shows that any attempt to quantify the risk of cardiovascular disease must include a minimum of knowledge on dietary habits of individuals to be more relevant.
In our research the most common foods rich in animal fat consumed by respondents who suffer from cardiovascular disease were the

following: eggs, beef, cheese, sour cream, cream cheese, pork.

Our results regarding both the reduced consumption of pork and lard and the limited use of lard in cooking, considered traditional habits specific to some geographic area, are desired goals of every dietician. This allows us to launch the assumption that implementation of mass policies in changing eating habits would be successful.

Another important aspect of the research was the identification of the protector role of a healthy diet on prevention of cardiovascular disease. However, in the studied group, the categories of foods known to offer protection on health state have limited use. Also, there was a certain lack of interest in organic food, either because too little information on this group of foods or due to the fact that they are more expensive.

Besides dietary factors, cardiovascular risk was influenced in a cumulative manner by socioeconomic, lifestyle and biological factors. Individuals with lower lifestyle are more sensitive and susceptible to the development of cardiovascular risk factors leading to the development of cardiovascular pathology at an older age (Smith and Hart, 2002).

The influence of lifestyle and culture on metabolic disorders is even stronger than those caused by genetic factors (Chiu et al., 2010). Our results suggest the importance of lifestyle, especially those related to smoking and alcohol consumption, which are closely related to cardiovascular risk.

In Figure 1 is shown the incidence of risk factors, other than the diet, for cardiovascular disease among general respondents. Thus, the statistical analysis of the medical questionnaire leads us to the following results: 66% of subjects had an increased body mass index (BMI), 23% were smokers, 22% consume alcohol frequently, 50% were sedentary, 83% had a family history of cardiovascular disease, 70% were diagnosed with hypertension and 37.5 % were diagnosed with diabetes mellitus type II.

For the respondents who were identified as having atherosclerotic lesions, the risk factors observed to be associated with the illness were the following: sedentary (13%), higher body mass index (15%), family history (15%), history of hypertension (17 %), frequent consumption of at least five types of dangerous food (20%) (figure 2).

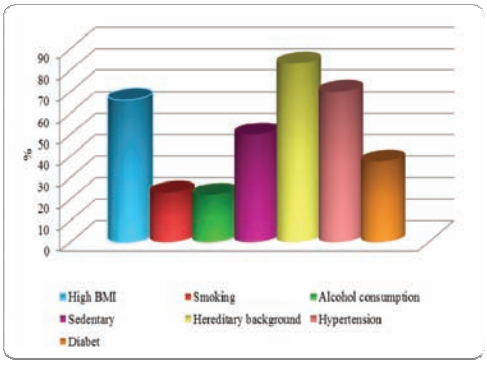

Figure 1. The incidence of cardiovascular risk factors among general study population

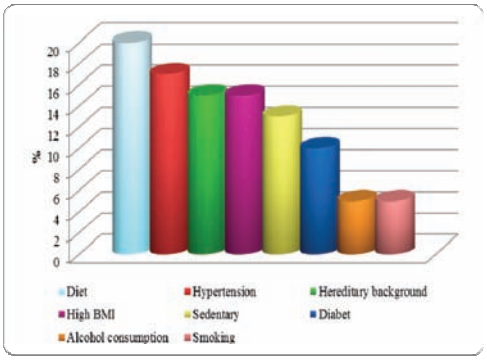

Figure 2. Frequency of a cardiovascular risk factor among respondents with cardiovascular disease

Interestingly, of the five risk factors closely related to cardiovascular disease, one cannot be changed (family history), one can be modified by drug therapy and lifestyle changes and the other three could be eliminated by changing the daily behavior, thus using inexpensive and common methods assuming minimal cost to society.

CONCLUSIONS

Diet is a complex variable that requires multiple approaches to examine the relationship between diet and cardiovascular risk.

Dietary pattern analysis is useful in demonstrating the correlation between diet and cardiovascular disease, as it takes into

account all the effects of diet, not just individual food nutritional compounds.

Besides dietary factors, cardiovascular risk was influenced in a cumulative way by socioeconomic, behavioral and biological factors.

Frequent consumption of at least five types of dangerous foods was considered the most important cardiovascular risk factor among people with cardiovascular disease.

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