A STUDY ON BEHAVIOURAL RISK FACTORS OF CARDIOVASCULAR DISEASES AMONG ATTENDER PATIENTS IN CARDIOLOGY DEPARTMENTS OF REHABILITATION HOSPITAL OF CLUJ

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Abstract: *Background: Behavioural risks have negative consequences in the short and long term of physical and mental health, reduce the quality of life and the wellbeing of the person. Based on these assumptions, the study of behavioural cardiovascular risks, the identification of differences in the demographical variables such as age, gender or socioeconomic status enables the development of health promotion strategies. Purpose: To identify behavioural risk factors and to provide the arguments for effective prevention strategy. Materials and methods: The studied population: a group of 169 subjects consecutively consulted in the Cardiology Ambulatory Clinic with cardiovascular risk factors, the mean age: 59.77 years. A questionnaire of 32 items was used during a "face to face" interview regarding the cardiovascular risk behaviours related to smoking, diet, physical activity. Results: 18 (10.65%) of the subjects were current smokers, 28 (20.89%) former smokers and 123 (72.8%) never smokers. Age of smoking initiation varies between 20-22 years, for most of the subjects. Studying food score we found intense significant statistical differences between urban and rural areas. There is an increased consumption of poultry and red meat. Physical Activity Index (score MET) show no statistically significant differences between the two genders, the area of residence and age groups. Conclusions: Health education of the population should be a major goal of the health policy, with a focus on developing preventive medical activities and raising the health culture of the entire population, which requires the development of extensive educational activities in the area of health population.*

INTRODUCTION

Randomized clinical trials and observational studies show a strong link between lifestyle and cardiovascular risk factors (CVRF). Cardiovascular risk can be reduced through lifestyle changes.(1)

Negative lifestyle is associated with behavioural health risks. Behavioural risks have negative consequences in the short and long term of physical and mental health, reduce the quality of life and the wellbeing of the person.(2) Based on these assumptions, the study of behavioural cardiovascular risks, the identification of differences in the demographical variables such as age, gender or socioeconomic status enables the development of health promotion strategies.(3,4)

The results of EuroAspire I, II, III studies showed an increased prevalence of unhealthy lifestyle and modifiable risk factors. The comparison between the results obtained in the three trials showed unfavourable trends in lifestyle.(4)

Standardized mortality rate of chronic diseases is two times higher in Romania than in the European Union (EU) (225‰ deaths compared to 116.2 ‰) [Eurostat].(5)

A plausible explanation for the excess mortality caused by cardiovascular diseases observed in Romania is the lack of focus on risk assessment, the detection of cardiovascular diseases in early stages and / or inadequate therapeutic control in primary health care.(5)

PURPOSE

To identify behavioural risk factors and to provide the arguments for effective prevention strategy.

MATERIALS AND METHODS

Study design: a cross-sectional, observational study.

The studied population: a group of 169 subjects with CVRF consecutively recruited between 1 June to October 2013 in the Cardiac Ambulatory Clinic, the mean age: 59.77 years, of which 77 (45.56%) men and 92 (54.44%) women. The distribution of subjects by area of residence was: 116 subjects (68.64%) in urban areas and 53 subjects (31.36%) in rural areas.

A questionnaire of 32 items was used during a "face to face" interview regarding the cardiovascular risk behaviours related to smoking, diet, physical activity. Respondents who reported smoking at least 100 cigarettes in their lifetime and who, at the time of the survey, smoked either every day or some days, were defined as current smokers. Respondents who reported smoking at least 100 cigarettes in their lifetime and who, at the time of the survey, did not smoke at all were defined as former smokers. Respondents who reported never having smoked 100 cigarettes were defined as never smokers.(6)

To assess nutritional behaviour, we used a 10-item questionnaire concerning the type and frequency of food consumption over a period of 7 days, a version of Food Frequency Questionnaires (FFQ).(7) The Food Score is calculated by summing the number of food groups consumed in the previous seven days. A low score reflects a poor diet, while an average score reflects a balanced diet with cardiovascular protective role. The maximum score reflects an unhealthy diet, high in fats and an excessive intake of calories. To assess physical activity pattern (PA), we used the Framingham Study questionnaire (physical activity in daily life).(8) The interviewer

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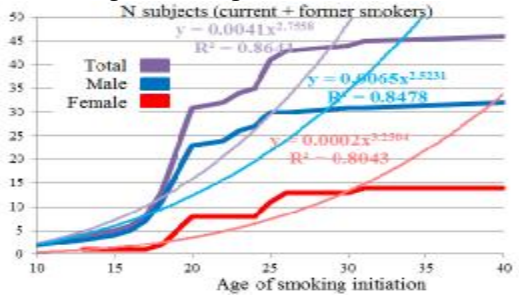
asked the individual about the average hours allocated to sleep, rest, occupational and extracurricular activities during a typical 24-h period. The physical activity index composite score is calculated by summing the number of hours spent in each activity of a certain intensity level and then multiplying it by a respective weight factor derived from the estimated oxygen consumption requirement for each intensity level. The Metabolic Equivalent of Task (MET), or simply metabolic equivalent, is a physiological measure expressing the energy cost of PA and is defined as the ratio of the metabolic rate (and therefore, the rate of energy consumption) during a specific PA related to a reference metabolic rate, set by convention to 3.5 ml $O_2 \cdot kg^{-1} \cdot min^{-1}$.(9) PA assessment depends on the number of METs.(10)

Anthropometric measurements (weight, height and body mass index) and laboratory measurements were performed (blood glucose (mg / dl), cholesterol (mg / dL), HDL-C (mg / dl) LDL-C (mg / dl), triglycerides).

Informed consent was obtained from all participants before joining the study. The study protocol was approved by the university's ethics committee.

Elements of descriptive statistics were calculated and the results were presented by using indicators of centrality, location and distribution. The Shapiro-Wilk test was used to test the normal distribution. The variance was tested using F-tests or Levene and / or Bartlett. For data with normal distribution, the t test (Student) was used, while for values with uneven distribution or rank, the nonparametric Mann-Whitney (U) for two unpaired samples was used. Materiality for the tests used was $\alpha = 0.05$ (5%), $\alpha = 0.01$ (1%) or $\alpha = 0.001$, as follows: • $0.01 < p < 0.05$ - significant difference; • $0.001 < p < 0.01$- statistically highly significant difference; • $p < 0.001$ highly significant statistical difference; • $p > 0.05$ - statistically insignificant difference. Statistical processing was performed with the StatsDirect v.2.7.2 program and Excel (Microsoft Office 2010). Graphical representation of the results was made with Excel (Microsoft Office 2010).

Figure no. 1. Age of smoking initiation



RESULTS

Smoking behaviour. 18 (10.65%) of the subjects were current smokers, 28 (20.89%) former smokers and 123 (72.8%) never smokers. The distribution of subjects by gender and smoking habit did not show a statistically significant association for either gender (15.58% male, 6.52% female), (p> 0.05) There was a statistically significant association between smoking habit and subjects from rural areas (13.79% vs. 3.77 U R), (p <0.05). The mean age for current smokers was 57.03 years and for nonsmokers: 60.09 years; no statistically significant difference was found between age and smoking habit (p> 0.05). A statistically significant association between smoking habit and occupational status could not be demonstrated: current smokers - active subjects 9 (17.65%), retired subjects 9 (7.63%)-; nonsmokers- active subjects 42 (82.35%), retired subjects 109 (92.37%) (p> 0.05). No *statistically significant differences* were found between level of education and smoking habit, (p> 0.05) We found a *significant statistical* association with the *smoking habit* in the middle group of the income category (p <0.05). *The average age of smoking initiation* was 20.78 years (20.22 years for males and 22.07 years for females). The average smoker makes multiple quit attempts. Among current smokers, 44.44% have tried between 1-2 times to quit and among former smokers, most subjects (67.86%) have tried to quit smoking between 1-2 times.

Eating Behaviour. The statistical analysis of food score values, based on the distribution of the backgrounds of the 169 subjects, shows a *significant statistical* differences between the two environment origins (p <0.001). Depending on the types and area of origin of the subjects, it was observed: statistically highly significant differences (p> 0.01) between men in urban areas (average 26.31) vs. men in rural areas (average 23.36); statistically significant differences (p <0.05) between batches of urban women (mean 25.00) vs. rural women (mean 23.14). The statistical analysis of food score values, depending on gender and age did not reveal statistically significant differences (p> 0.05), regardless of the combination between subgroups. The responses of the 169 subjects relating to nutrition questions during a week were coded by ranks. *No statistically significant differences* were found between male and female gender concerning poultry, pork, beef, fish, meat, butter, lard, eggs, sweets and salt consumption (p> 0.05), but statistically significant differences (p <0.05) were found between the individuals from the group under 34 years vs. the ones between 35-64 years in the solid fats category.

Physical activity and sedentary lifestyle. The physical activity index. By using the statistical analysis of the Framingham index values, depending on the gender distribution of the 169 subjects, it was not observed any statistically significant difference between the two genders (p> 0.05) The 169 subjects were divided into 2 groups according to the median (50% percentile) of the PA index, each with two subgroups by gender: male - M <Q50% and M> Q50%- and female - F <Q50% and F> Q50%. The statistical analysis of the PA index values between the four subgroups revealed statistical differences between M <Q50% vs. M> Q50% and F <Q50% vs. F> Q50% (p <0.001) (table no. 1) - The comparative analysis of the PA index values, depending on the type of subjects and 50% percentile and statistical significance.

No statistically significant difference was observed in any of the 4 groups (p> 0.05), neither by taking into consideration the two different origins of the subjects. The statistical analysis of the PA index values, taking into account all individuals with age ≤ 34 years, the ones between 35-64 years and the ones ≥ 65 years did not reveal any statistically significant difference (p> 0.05).

DISCUSSIONS

18 (10.65%) of the analyzed subjects are represented by current smokers. The low percentage of smoking is probably the result of indirect primary prevention (media, general culture) or direct primary prevention (warnings on cigarette packs etc.), but it may reflect low income and the decline in smoking of the population. For most subjects, the average age was between 20 to 22 years. Compared to women, men who have started smoking are more, regardless of age. Differences between men and women grow up around the age of 20 years. This differs from other studies in age of early smoking initiation; "Smoking and public health in Romania - study conducted in 2003, which shows that 40.9% of subjects had started smoking between 16 and 19 years.(11)

Table no. 1. Comparative analysis of the PA index, among men and women

Physical Activity (PA)	Gender	Mean	ES	Median	SD	Minimum	Maximum	*p*			
low PA	Male (M<Q50%)	31.88	0.37	32.7	2.33	26.2	34.1	M+F	< 0,0001	M<Q50% vs. M>Q50%	< 0,0001
	Female (F<Q50%)	31.81	0.28	32.7	2.01	25.4	34.1			F<Q50% vs. F>Q50%	< 0,0001
moderate, vigorous PA	Male (M>Q50%)	38.79	0.68	37.4	4.17	34.4	54.8			M<Q50% vs. F<Q50%	0.5094
	Female (F>Q50%)	38.14	0.41	37.7	2.61	34.6	46.3			M>Q50% vs. F>Q50%	0.7868

The percentage of smokers is higher among people with primary and secondary education, middle income (between 2000-3000 lei) and is equal among people employed and retired. Regarding smoking cessation, most of the subjects said they had at least 1-2 attempts to stop smoking. In the study "The Third National Health and Nutrition Examination Survey" (NHANES III) conducted on 15 489 subjects, it is observed that quitting smoking lowers inflammatory markers and reduces cardiovascular risk.(12) The lack of interest for withdrawal and the high percentage of failures are generated by the small number of offices for counselling in smoking and lack of training in combating smoking. Doctors should try to prepare their patients to be more ready to act (quitting smoking) (as a social marketing stage). Social marketing represents working with people who know the message already, but need help to change their behaviour, this is an extremely useful addition to health communication campaigns. Data from 2007, according to PNESS (Health Assessment Programme of the Population), shows that the percentage of men who smoke is 29% nationally (maximum in the South and West - 31% and minimum in the North East and South East - 27%). The percentage of women who smoke is 12% nationally (maximum in the Bucharest region - 17%; minimum in Northeast - 8%). Smokers in Romania represent more than 30% of the active population. Half of Romanians started smoking before 20 years old and another 33% started smoking between 20 and 25 years old. In the last 15 years, the prevalence of smoking in men has remained constant, while for women, it has doubled, increasing alarmingly among teenagers and young women.(13) To combat smoking, the Ministry of Health has decided that from 1 July 2008, the packets are marked with warning icons (non-verbal message).(14) The main target is the young individuals who have not yet started smoking or are beginner smokers, the aim being to draw attention to the disastrous effects of this vice. The Ministry of Health says in a statement, that almost one year after the introduction of the icons on tobacco products, a positive impact in the attitude and behaviour was observed. Also, the combined warnings led to better information for consumers about the effects of smoking.(15) Eating behaviour is the sum of actions and attitudes related to diet.(16) The entry into the EU and adopting the European standards had negative consequences because of the modern lifestyle. Thus, "even modest changes in wealth are accompanied by major changes in eating habits and an increase in the incidence of diet-related diseases."(17) Acceleration of modern life, improved comfort at home and at work, concentrated and very tasty food availability, increased stress, lead to drastic changes of the traditionally "food model".(18) How food in Romania is characterized by: excess fat, excessive intake of calories, abusive consumption of simple carbohydrates on the one hand, and on the other hand, low intake of complex carbohydrates and dietary fiber in general, especially salt excess and spices, alcohol consumption.(19) In the study group we found imbalances in terms of both food preference and frequency. There are statistically significant differences in urban food score than in rural, male subjects, aged 35-64 years. Studying food type and frequency of food consumption, we found that subjects have an increased intake of saturated fat and animal proteins. While there is an increased consumption of poultry meat (60.95% of subjects); the consumption of red meat, especially pork, is also increased, being present in 33.73% of subjects compared to 18.93% of subjects which prefer fish. The consumption of solid fats (lard, bacon) and salt remains high. Observational studies and randomized clinical trials have shown that there is a strong relationship between LDL-C and other CVRF and consumption of fats, especially saturated fats. A diet low in saturated fats and cholesterol is correlated with a low rate of cardiovascular diseases.(20) The Nurses Health Study showed after a follow-up of 20 years that increased intake of trans-fats is associated with an increased risk of coronary heart disease, independent of other dietary factors and CVRF. This risk is higher in women under 65 years old. Trans fat intake increases the risk of cardiovascular due to the adverse effects on blood lipids, including low density lipoprotein (LDL-C), high density lipoprotein (HDL-C), total cholesterol and lipoprotein (a).(21)

Sedentary lifestyle is characterized by physical inactivity during almost all day. Physical inactivity decreases quality of life and increase mortality of any cause.(22) There is no universal definition of sedentary lifestyle. PA has not been standardized and harmonized in the EU countries; this explains the different results from one country to another. According to the latest Eurobarometer survey in sports and PA, 59% of EU citizens rarely never do sports or play sports, while 41% do sports at least once a week.(23) Northern Europe is more physically active, 70% of respondents in Sweden said they exercise at least once a week. At the other end of the ranking is Bulgaria, where 78% of people never do sports or AF, followed by Malta (75%), Portugal (64%), Romania (60%) and Italy (60%).(23) In the study group, half of the subjects were sedentary or with low performing PA. There are no significant differences between men and women and the young and the elderly are more sedentary than adults. Although, the beneficial effects of PA for the health are obvious, is not known at present how active / inactive is the general population, how active / inactive are some parts of the population compared with others, what factors cause some people to be active throughout life, what effect do promotional activities have (counselling, educational campaigns). The European project "European Physical Activity Surveillance System" (EUPASS) aimed to test the validity and reliability of the International Physical Activity Questionnaire (IPAQ) and took place between 1997 and 2002.

The conclusion was that the IPAQ EUPASS project is promising, but needs improvement.(24) ALPHA project "Instruments for Assessing Levels of Physical Activity and Related Health Determinants" (ALPHA) proposed in May 2006, aims to develop and to find a consensus on the methodology of

evaluation of PA in EU countries. ALPHA project will contribute to the emergence of a comparable database on the level of physical activity in EU countries.(25)

CONCLUSIONS

1. In the study group, there is a small number of smokers. There was a statistically significant association between smoking and subjects from rural areas ($p < 0.05$). Age of smoking initiation varies between 20-22 years old, for most of the subjects. Compared to women, men who have started smoking are more, regardless of age, ($p > 0.05$). The number of smokers is significantly higher in those with average incomes ($p < 0.05$) There was not determined a statistically significant association between the level of education and the smoking habit ($p > 0.05$) We found a small number of regular smokers and an increased number of abstainers. ($p > 0.05$) There are a small number of smokers with more attempts to quit smoking which demonstrates the absence of counselling needed to achieve withdrawal and there is a small group of sensitive smokers with increased possibilities for achieving a significant withdrawal rate.
2. Food behaviour reflects an "unhealthy" behaviour. Studying food score, we found intense significant statistical differences between urban and rural areas. ($p < 0.001$) There is an increased consumption of poultry, red meat (especially the pork). No statistically significant differences were found between male and female gender, ($p > 0.05$). Animal fats and salt consumption is significantly increased between age groups ≤34 years old vs. 35-64 years old, ($p < 0.05$)
3. PA Index (score MET) show no statistically significant differences between the two genders, the area of residence and age groups, ($p > 0.05$)
4. Behavioural risks reduce quality of life and wellbeing of the person. The promotion of health is the process that gives people the means to secure control over their own health and to improve it by making decisions in full knowledge of the facts. Health education of the population should be a major goal of the health policy, with a focus on developing preventive medical activities and raising the health culture of the entire population, which requires the development of extensive educational activities in the area of health population.

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