

EVOLUTION OF CARDIOVASCULAR RISK BEHAVIOUR IN A URBAN COMMUNITY

CRISTINA VLAD

Cardiology-Recovery Clinic, Cluj-Napoca

Abstract: The purpose of this study was to identify the cardiovascular risk behaviour and its evolution in a longitudinal study during a period of 8 years (1997-2005), in a representative study group of 137 men and women, residents of "Zorilor" neighbourhood of the city of Cluj-Napoca, aged between 18 to 62 years. A questionnaire of 32 items was applied, under the form of a "face to face" interview referring to cardiovascular risk behaviour related to smoking, eating habits, PA. Cardiovascular risk behaviour has a significant prevalence within the studied population. Although there is a tendency to reduce smoking, without being statistically significant, the prevalence of smoking remains high, especially for men. We noticed that the nutrition of the subjects brings an increased intake of saturated fats and animal proteins. The index of PA shows an increase in the sedentary life and a decrease of PA as a whole.

Keywords: cardiovascular risk behaviours, nutritional score, physical activity index

Rezumat: Am urmărit identificarea comportamentelor de risc cardiovascular și evoluția acestora într-un studiu longitudinal pe o perioadă de 8 ani (1997-2005), prin eșantion reprezentativ de 137 bărbați și femei, rezidenți ai cartierului "Zorilor" Cluj-Napoca cu vârste cuprinse între 18 și 62 ani. S-a aplicat un chestionar format din 32 de itemi, printr-un interviu tip "față în față" referitor la comportamentele de risc cardiovascular legate de fumat, obiceiuri alimentare, activitate fizică. Comportamentele de risc cardiovascular au o prevalență semnificativă în populația studiată. Deși există o tendință de scădere a fumatului, fără a fi semnificativă statistic, prevalența fumatului rămâne crescută în special la bărbați. Constatăm că alimentația subiecților aduce un aport crescut de grăsimi saturate și de proteine animale. Indexul activității fizice arată o creștere a activităților sedentare și o scădere a activității fizice în ansamblu.

Cuvinte cheie: comportamente de risc cardiovascular, scor alimentar, indexul activității fizice

nutrition. (1) Observational studies and randomized clinical trials show a strong connection between lifestyle and cardiovascular risk factors. (2) Cardiovascular risk can be reduced by changing the lifestyle.

METHOD

We followed the identification and evolution of cardiovascular risk behaviour in a longitudinal study over 8 years (1997-2005), in a representative study group of 137 men and women, residents of the "Zorilor" neighbourhood Cluj, ages 18 to 62. A questionnaire of 32 items was applied by "face to face" interview, referring to cardiovascular risk behaviours related to smoking – for how long, quantity, frequency, eating habits (detailed questionnaire), physical activity (detailed questionnaire).

Smoking: The smoker was considered the person that smokes in the moment of the beginning of the study, using any tobacco product, either daily or occasionally. Non-smokers are the persons that do not smoke at all in the moment of the beginning of the study and are formed by: ex-smokers (abstinent), never smokers and former smokers (a person who was not smoking at the time of the interview but has smoked at least 100 cigarettes in their life).(3)

We noticed an increased prevalence of smoking both in 1997 and in 2005; there is a tendency to reduce smoking, without being statistically significant (48,11% vs. 50,45%).(p=NS). Half of the population included in the study group is smoking. The percentage is significantly higher for men compared to women in 1997 (65,31% vs. 40,98%), difference that is maintained in the year 2005 (60% vs. 40,98%). Repartition by age groups shows that the number of smokers under 40 remains high both in 1997- 61,9% and in 2005 - 73,33%. The prevalence of smoking for subjects with elementary and medium studies represents the main percentage – 67,8% and the prevalence of smoking for subjects with higher studies is 32,2%. The average age of starting smoking was 19,6 years. (minimal age – 11 years; maximum age - 38 years). More than half of the subjects started smoking between ages 18 and 24. We notice a decrease of the number of permanent smokers (49,55% vs. 41,51%) and an increase in the number of those abstinent (7,21% to 8,49%).(p=NS). Out of the total number of smokers - 67,1% declared they have tried to quit while 33,9% have

INTRODUCTION

Negative lifestyle (risk behaviour)- smoking, excessive alimentation, sedentary behaviour can be changed by educational actions: the systematic practice of physical exercises and avoiding sedentary behaviour, balanced

CLINICAL ASPECTS

never tried. These figures prove that only a little more than half of the women and men have the desire to quit smoking. As to the number of tries - 38,98% have tried at least once to quit smoking while 27,12% have tried at least 3 times. The small number of smokers with several attempts to quit smoking demonstrates the lack of authorized advice to complete withdrawal.

Nutrition: In the questionnaire utilized we included 10 items referring to the type of food and consumption over a period of 7 days, using a version of Food Frequency Questionnaires (FFQ).(4) We composed a nutritional score (obtained by simply adding the nutrients) with limits between 19 and 59. A minimal score reflect a deficit in alimentation. A score between 23 and 28 has the role of cardiovascular protection. The maximal score reflects an alimentation rich in fats, with excessive intake of calories, sugars, condiments (cardiovascular risk score). The nutritional score didn't change significantly in this period, fact demonstrated by the correlation of the two scores. ($r=0,99$) The alimentation of the subjects brings a high intake of saturated fats and animal protein. Even if there is an increase in poultry consumption, red meat consumption, especially pork remains high (51,06%-1997 vs. 48,02%- 2005). A significant decrease in salt consumption was recorded. (41,44% vs. 30,19%).($p<0,01$)

Physical activity (PA) and sedentary behaviour: In the study taken we classified PA in: (5)

A. occupational PA: 1. **light** – office work, secretary work; 2. **moderate** – standing up or walking, for example shop attendant, work in light industry; 3. **intense** – hard physical labour, for example manual labourers, farmers. **B. PA related to transport to the workplace:** walking to the workplace, bus (with 3 categories: 0; 1-30 minutes; >30 minutes) **C. recreational PA:** 1. **light:** recreational walking, gardening, light gymnastics, fishing; 2. **moderate:** basketball, riding a bicycle in an alert rhythm etc; 3. **intense:** swimming, jogging, climbing; **D. the index of PA.** For the evaluation of the pattern of daily physical activity over 24 hours we included the questionnaire used in the Framingham Study.(6) The question contained refer to the average number of rest hours, sedentary activities, light PA, moderate PA, intense PA. The total must be 24 (hours). The index of PA was calculated by adding the number of hours spent with each activity and multiplying the result by a factor (weight factor) derived from the estimation of the oxygen consumption related to the PA conducted resulting in the MET-score.(metabolic equivalent), For calculating PA we utilized the IPAQ model and the Framingham Study.(7,8)

Occupational PA has not changed significantly over the studied period, thus: repartition by sex shows both for men and women an increase in light occupational PA and a decrease in intense PA.($p=NS$)

PA related to transport (walking to the workplace, to the bus station etc) shows a significant increase in 2005. The average duration expressed by total minutes – has increased both for men and for women.

Recreational PA shows that half the subject

participating in the study take part in recreational activities but only 13,51% in 1997 and 13,21% in 2005 regularly, minimum 3x30 minutes/week.($p=NS$)

The index of PA: in overview there is an increase in the average number of hours of sleep (8,78 h-1997; 9,18 h 2005), an increase in sedentary activities (6,78 h -1997, 6,92 h –2005) and a decrease in PA as a whole; (8,44 h- 1997 and 7,93 h- 2005)

Table no. 1 Categories occupational PA. Repartition by sex.(1997 and 2005)

		Physical activity occupational category				
		1. Light	2. Medium	3. Intense	Total	
Year and sex	f	1997	20 (32.26%)	33 (53.23%)	9 (14.52%)	62
		2005	24 (39.34%)	29 (47.54%)	8 (13.11%)	61 $p=0.71$ (NS)
	m	1997	10 (20.41%)	26 (53.06%)	13 (26.53%)	49
		2005	11 (24.44%)	23 (51.11%)	11 (24.44%)	45 $p=0.89$ (NS)
Total	Total	65 (29.95%)	111 (51.15%)	41 (18.89%)	217	

Table no. 2 Average duration of PA related to transport. (minutes/day)

	Average	DS	p
1997	71.8	55.48	0,01
2005	92.03	53.92	0,01

Table no. 3 Average activities in 24 hours (sleep, sedentary behaviour, PA- comparative 1997 and 2005)

	1997	2005
Sleep	8.78	9.18
Sedentary behaviour	6.78	6.92
Light activities	5.59	5.13
Moderate activities	1.89	2.01
Intense activities	0.95	0.79

DISCUSSIONS

In this study we notice that although there is a tendency to decrease the number of smokers, the prevalence of smokers remains high especially for men. This fact can also be found in other studies conducted in Romania.(9) The most recent data is offered by the INSSE (2000) study: 21 % of the population over 15 smokes daily and men smoke three times as much as women. The greatest part of the daily smokers (29,3% of the total population of that age) is the age group 25-54 years. Most people start smoking between 15 – 19 years (47,5%) or 20 - 24 de years (33,8%). Over half of smoking men (51,4%) have been smoking since age 15 – 19. (10) The age of starting smoking in the conducted study is situated for most subjects between ages 18 and 24. The differences between men and women grow until around age 19. This fact differs from other studies in which the age of starting smoking is lower; “Smoking and public health in Romania” – study conducted in 2003 shows that 40,9% of the subjects started smoking between 16 and 19 years old.(11) The European Study Program for Alcohol and Drugs (ESPAD) 2004 - shows that 64% of those under 16 are smoking; only 13% believe that smoking now and then is hazardous, but 75% believe that

smoking 1-2 packs a day has high health risks.(11) The statistics mention that in **Belgium 50% of the young people smoke since age 15; in Germany 36% of children between 10 and 12 years old are smokers; in Italy 60% of the boys are smokers since 15.**(12) In the conducted study the prevalence of smoking according to educational level shows that the main percentage is represented by those with elementary and medium studies. This fact can also be noticed in the CDC USA Report - 2005 that shows that the prevalence of smoking is 39,6% for those with elementary studies and 34% for those with medium studies.(13) In France, according to WHO, in 2005 the percentage of smokers was 52% among those unemployed and 38% among those with a job.(14) As to quitting smoking in the period 1997-2005, half of the subjects declared that they had at least one attempt to quit smoking.. In the Third National Health and Nutrition Examination Survey (NHANES III), taken on 15489 subjects it was shown that quitting smoking reduces the level of inflammatory markers and reduces cardiovascular risk. Lack of interest for realizing withdrawal and the high number of failures is explained by the small number of conciliation cabinets in the field of smoking and the absence of training in the field of combating smoking of the doctors.

Entering the EU and lineation to European standards has had negative consequences by the adoption of a negative lifestyle. So “even modest changes in prosperity are accompanied by major changes in eating habits and a dramatic increase in the incidence of diseases related to nutrition” (22) The acceleration of the processes of modern life, increased comfort both home and at the workplace, the accessibility of concentrated and tasty foods, increased stress, have led to drastic changes to the traditional “alimentary model”, both in structure and in rhythm.(15) Today, in Romania we are confronted by the difficulty of correctly choosing and eating rationally. **There are numerous possibilities of informing but also a degree of ignorance that makes choosing foods difficult, most often it is random.**(16) **The mode of alimentation in Romania is characterized by:** fats in excess, excessive intake of calories, abusive consumption of simple glucoses on one hand, and on the other hand low intake of complex glucoses, in general and alimentary fibre, especially, excessive salt. We notice an unbalance concerning the preference and frequency of foods. The predilection of people from Ardeal for pork is well known, cooking pork being traditional in Transylvania. There is a tendency to reduce the consumption of pork and replace it partially with poultry. On the other hand the consumption of meat products, “fast-food” type, is increasing. According to the data of the Ministry of Agriculture **in the latest years the consumption of meat and bread has been decreasing, while milk consumption has increased.**(17) The results of primary prevention studies for persons with high risk and secondary prevention trials for those with ischemic cardiopathy have shown that a substantial decrease of the risk can be obtained by diet and the changing of the

lifestyle. Thus in the Oslo Study, primary prevention trial, interventional, which recommends the reduction of the consumption of saturated fats and the increased consumption of fibres a 13% decrease of cholesterol was obtained along with a difference of 47% of fatal and nonfatal strokes compared to the group that was not targeted by the intervention.(18)

In the modern society, in spite of the recognition of the benefic character of movement for health, statistics in heavily industrialized countries show that more than 60% of the adult population has a lacking lifestyle when in comes to physical activity. In Romania, the lifestyle has sustained radical changes after 1989 becoming more and more sedentary. Physical inactivity reduces the quality of life and increases mortality by any cause. A universal definition of sedentary lifestyle does not exist. In the studies conducted until now several methods of determining sedentary lifestyle have been proposed. Thus, a study conducted in 15 countries from the EU quantified physical activity by METS and showed that the prevalence of sedentary behaviour varies between 43,3% in Sweden and 87,8% in Portugal. The prevalence is higher for women, elderly, obese, less educated subjects and smokers.(19) In the conducted study, half of the subject are sedentary and the number of hours spent with sedentary activities is approximately 7 hours for women and 6 hours for men; women are more sedentary than men and by age groups young and elderly people are more sedentary than adults. Citizens of the EU spend an average of 5 hours doing static activities (including time spent at the office, reading a book, visiting friends, on the computer or watching TV etc.). The level varies from 5 hours in Portugal to 8 hours in Holland. In 16 of the 25 EU countries the number of hours surpasses greatly the number 5.(20) The Nurses Health Study has shown that women between 40 and 65 that practiced regular physical exercises have a 30-40% reduced risk of developing acute coronary events compared to sedentary women.(21) Although the benefic effects of physical activity on health are obvious, it is not currently know how active/inactive is the general population, how active/inactive are certain segments of the population compared to others, what are the current tendencies, what factors determine some persons to be active throughout their life, what are the effect of conciliation activities, educational campaigns.

Conclusions: Cardiovascular risk behaviours have a high prevalence in the studied population. Even though there is a decreasing tendency in the number of smokers, the prevalence of smokers remains high especially among men. For most subjects the age of starting smoking is between 18 and 24 years old. The prevalence of smoking is increased for those with elementary and medium studies. The number of permanent smokers has decreased and the number of those abstinent has increased. Alimentation has not changed, the nutritional score reflecting an unhealthy eating behaviour. The frequency of consumption of meat products has increased. The index of PA (MET-score) shows an increased prevalence of sedentary behaviour.

CLINICAL ASPECTS

Occupational and recreational PA has not changed significantly. PA related to transport shows a significant increase in 2005. Strategies to promote health are necessary, by raising the awareness to health risk, by encouraging changes of risk behaviour, by sustaining any significant positive change in behaviour.

REFERENCES

1. Popa M. Promovarea sanatatii si educatie pentru sanatate, Școala Națională de Sănătate Publică și Management Sanitar, București, Public H Press, 2006,
2. Behavioral Risk Factor Surveillance System, www.cdc.gov.brfs.
3. The health benefits of smoking cessation. A report of the Surgeon General, 1990. Department of Health and Human Services
4. Hark L, Deen D. Taking a Nutrition History; A Practical Approach for Family Physicians, AFP-1999.
5. Gang H. Physical activity, cardiovascular risk factors and mortality among Finnish adults with diabetes, *Diabetes Care*, vol. 28, April 2005.
6. Physical Activity Questions from the Framingham Study, www.framinghamstudy.com.
7. International Physical Activity Questionnaire, August 2002
http://www.sdprc.org/lhn-tools/IPAQ_SHORT_1.
8. EUPASS-European Physical Activity Surveillance System - www.public-health.tu.
9. Vladescu C, Fumatul si sanatatea publica in Romania – Cunostiinte, atitudini, practici legate de consumul de tutun in rindul populatiei generale.- Bucuresti, 2004.
10. Raportul Starea de Sanatate a Populatiei din România (2000) al Institutului National de Statistica -2000, www.INSSE.ro
11. ESPAD (European Schools Project on Alcohol and other Drugs) project 2003 Report. Department of Health and Children EU.
12. Cologne Smoking Study (CoSmoS). Teilprojekt „Psychosoziale Analyse“entrum für Versorgungsforschung Köln (ZVFK) Medizinische Fakultät der Universität zu Köln.
13. CDC. Cigarette Smoking among adults United States, 2003, *MMWR*, 2005; 54; 509-13.
14. WHO-European report on tobacco control policy – 2002, www.eurowho/int.
15. Zatonski W.A. Changes in dietary fat and declining coronary heart disease in Poland: population based study. Cancer Centre and Institute of Oncology, Harvard School of Public Health, 665 Huntington Avenue, Boston, MA 02115, USA.
16. Zapirtan H, Teza de doctorat, UMF.Cluj, Obiceiuri alimentare in Transilvania, un factor de risc in bolile de nutritie si cardiovasculare. 27 febr. 2007.
17. www.euraktiv.ro-ministerul agriculturii
18. Hierman I. Holme I. Oslo Study Diet and Antismoking Trial. Results after 102 months. *Am J Med*. 1986, Feb. 14, 80(2A);7-11.
19. Varo J, Martinez-Gonzales M, Distribution and determinants of sedentary lifestyles in the European Union, *Int. J. of Epidemiology*, 2003, 32;138-46.
20. Eurobarometer EU-Physical Activities; October-december 2002.
21. Rockhill B, Willett W, Manson J, Leitzmann M, Stampfer M, Hunter D, Colditz G, Physical activity and mortality: a prospective study among women. *Am J Public Health*. 2001 April; 91(4):578-583.
22. WHO. First technical workshop of south-east Europe Nutrition Project. Report on a WHO workshop, Belgrade, Yugoslavia, 12 Nov. 2002.