THE INFLUENCE OF SMOKING UPON THE OCCURENCE OF CARDIOVASCULAR DISEASES

Daina Lucia, Daina Cristian, Venter Alina, Pirte Adriana, Chereji Anca, Csep Andrei

University of Oradea, Faculty of Medicine and Pharmacy, luci_daina@yahoo.co.uk

Abstract
The results of several studies conducted up to now have shown that giving up smoking before the age of 40 might reduce possible risks for health almost completely, while giving up smoking at any age can significantly reduce the risk of cardiovascular diseases. Considering such aspects, our study starts from the assumption that people need become aware of the importance of the risk factor - smoking causes cardiovascular diseases - and thereby aims to contribute to the reduction of cardiovascular diseases incidence. Conducted over a period of 4 years, the study has included 3250 people, aged over 18. The initial evaluation has been followed by a campaign aiming to inform the population about major risk factors for cardiovascular diseases, a health education for individuals and a final evaluation of the understanding level and the attitudes of patients; eventually the way smoking is perceived by the population as a risk factor in cardiovascular diseases has been evaluated. As a result, 4,24% of the persons that participated to this study gave up smoking, while 2,55% reduced the number of cigarettes smoked every day. Limiting the number of cigarettes smoked every day is not enough to reduce the risk of cardiovascular diseases: smoking-related behavior need also be changed.

Key words: smoking, cardiovascular disease, risk, incidence, population.

INTRODUCTION

Smoking represents the highest risk-factor for human health, which negatively influence both smokers and people around them. Studies indicate that smoking-related diseases determine many premature deaths, or may cause years of suffering and severe handicaps. 50% of the regular smokers die – half of them before reaching the old age - because of cigarette consumption. Giving up smoking before the age of 40 reduces the above-mentioned risks almost completely, while abandoning smoking at any age may considerably reduce the risk of cardiovascular disease occurrence.

The correlation between the high incidence of cardiovascular diseases (especially of ischemic heart disease and atherosclerosis) and tobacco consumption per capita has been emphasized in extended prospective studies, conducted in England and the U.S.A. As compared to non-smokers, a three times higher incidence of ischemic heart disease and a five times higher mortality has been observed in the case of smokers. Mortality increases directly proportional with the number of smoked cigarettes and is higher at those who started smoking in their early youth, or when smoking can be associated with other risk factors for cardiovascular diseases.

AIM: Decreasing the incidence of the main cardiovascular diseases by raising the population's awareness with regards to the importance of smoking as a risk factor in the appearance of cardiovascular diseases.

MATERIAL AND METHOD

Initially, a number of 3250 persons, registered on the lists of 10 general practitioners from Oradea municipality, have been monitored.
These patients have been selected in terms of the following criteria:
- They should have been over 18
- Patients in final stages of chronic, degenerative illnesses have been excluded

The clinical-static evaluation of the above-mentioned group of patients lasted for 4 years (from April 2005 to March 2009). Throughout the assessment period, a number of 874 patients did not return for the objective examination and the final questionnaire, which aimed to evaluate the patients' attitude with regards to the cardiovascular risk factors; consequently, only 2376 persons have been observed and evaluated.

RESULTS AND DISCUSSIONS

1.The distribution among the group of patients
   - in terms of gender

From the number of 2376 subjects chosen for this evaluation, the largest percentage (53,9%) is made up of women - 1280 persons, and only 41,6%, respectively 1096 persons, represent the number of male patients. By comparison with the general population, where the men/women ratio is of 1:1, the ratio in the case of the evaluated group is 4:5. From the statistical point of view, no significant differences appear in comparison with the general population of Oradea municipality (p>0,05).
   -   **in terms of age**

Table 1

The structuring of the population in terms of age groups

The age group	Total		Women		Men	
	No.	%	No.	%	No.	%
18-34 years	366	15,4	225	17,6	141	12,9
35-49 years	589	24,8	310	24,2	279	25,5
50-64 years	947	39,9	486	38,0	461	42,1
65 and over 65 years	474	19,9	259	20,2	215	19,6

The elderly persons form the most numerous group of people - about 60% of the subjects being over 50, while the group of people between 18-34 years old represents 15,4%, and the one between 35-49 years old represents 24,8%. The elderly persons are also predominant when focusing upon the general population of Oradea municipality, more than 55% of the population

being included in this age group. No significant differences in relation with the distribution of the general population in terms of age groups has been observed (p>0,05).
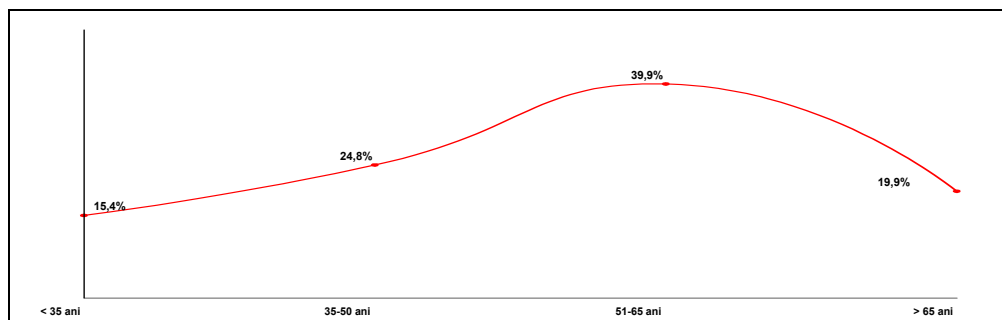

Fig. 1. The distribution of subjects in terms of age groups

In terms of gender and age groups, no significant differences have been observed in case of either men or women. When selecting the subjects for this study, the aim was to evaluate a rather equal number of men and women, although women demonstrated a livelier interest in the development of the research project.

- **in terms of education**

Table 2

The distribution of subjects in terms of their education

Educational level	Total		Women		Men	
	No.	%	No.	%	No.	%
Elementary studies	385	16,2	288	22,5	97	8,9
High-school education	1181	49,7	707	55,2	474	43,3
Post-high school (Vocational) education	506	21,3	193	15,1	313	28,6
Higher education	304	12,8	92	7,2	212	19,3

Almost 50% of the subjects living in Oradea confirmed they completed their high school education (49,7%) and over 30% (34,1%) graduated from vocational or higher education institutions.

It should be mentioned here that 51,1% of the 874 persons who have been eliminated from the study (447 subjects) finished only the elementary school.
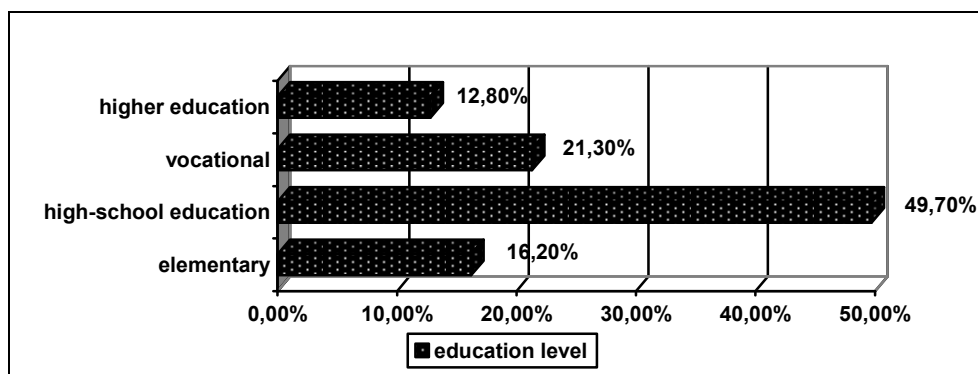
Fig. 2. The distribution of subjects in terms of their education level

2. The distribution of the group in relation to smoking

The questionnaire aimed at evaluating of patients' level of awareness, as well as their attitudes, was meant to reveal the way in which diet is perceived as a risk factor for cardiovascular diseases. The resulted data have been related to the scale for the cumulative measuring of the risk factor and a score has been obtained. In relation with these indices, the subjects have been grouped into five categories: presenting no risk factors, presenting minor risk factors, presenting moderate risk factors, presenting high risk factors and presenting major risk factors (see Table 3).

The distribution of subjects in terms of different risk factors has been achieved by means of two types of examinations, both during the initial and the final parts of the study. The first type of examination was represented by anamnesis and the objective examination of each patient in particular, while the second type of examination was associated with the questionnaire aimed at the evaluation of patients' awareness with regards to risk factors, as well as the evaluation of their attitudes; consequently the risk of incidence was obtained, in terms of the existence or the absence of risk factors.

A percentage of 31,0% of the evaluated population (of which 48,8% women and 10,2%men) is represented by non-smokers; 49,4% (41,3% women, 58,9% men) smoke up to 10 cigarettes a day. A consumption of more than 10 cigarettes a day has been observed at 19,6% of he evaluated population, of which 9,5% are women and 30,9% are men.
The following results have been obtained:

Table 3

The percentage of cases in relation to smoking

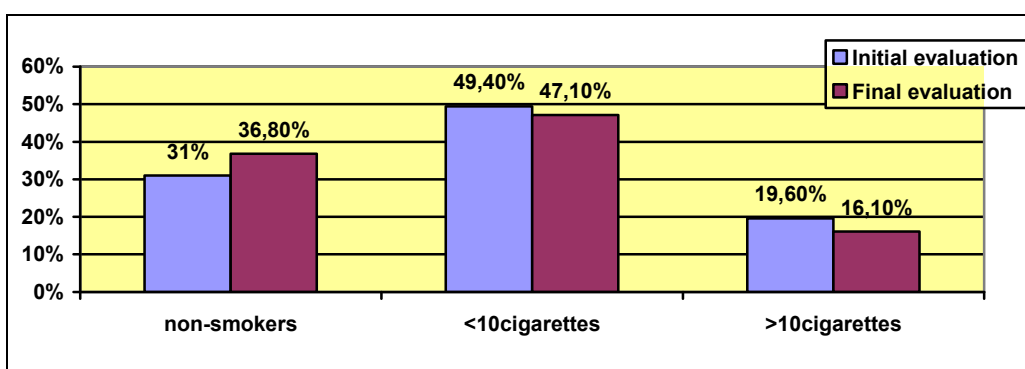| Tobacco consumption	Total		Women		Men	
	No.	%	No.	%	No.	%
Initial evaluation						
Non-smokers	737	31,0	625	48,8	112	10,2
Up to 10 cigarettes a day	1174	49,4	529	41,3	645	58,9
More than 10 cigarettes a day	465	19,6	126	9,8	339	30,9
Final evaluation						
Non-smokers	875	36,8	682	53,3	193	17,6
Up to 10 cigarettes a day	1119	47,1	497	38,8	622	56,8
More than 10 cigarettes a day	382	16,1	101	7,9	281	25,6

Fig. 3. The percentage of cases in relation to smoking

About 15% of the subjects included in this study, who used to smoke more than 10 cigarettes a day, have reduced the number of smoked cigarettes or have given up smoking, while about 9% of subjects, who used to smoke less than 10 cigarettes a day, have also reduced the number of smoked cigarettes or have given up smoking.

The distribution of the population in terms of the smoking score is presented in table 4.

Table 4

The percentage of cases in terms of the smoking-related score

0		1		2		3		4	
0-2 points		3-4 points		5-6 points		7-8 points		9-10 points	
Without risk-factor		Minor risk		Moderate risk		High risk		Major risk	
Nr.	%	Nr.	%	Nr.	%	Nr.	%	Nr.	%
Initial evaluation									
737	31,0	598	25,2	521	22,0	218	9,2	302	12,7
Final evaluation									
875	36,8	587	24,7	429	18,1	197	8,3	288	12,1

The anamnesis, as well as the questionnaire aimed at determining risk factors, indicated that 138 subjects have given up smoking. The number of smokers of more than 10 cigarettes a day has been reduced with 83 cases

while, according to the questionnaire, only 35 subjects present a diminishing of high or major risks, which indicates that reducing the number of cigarettes smoked every day is not enough for reducing the risk of cardiovascular diseases: te smoking-related behaviour needs also be changed.
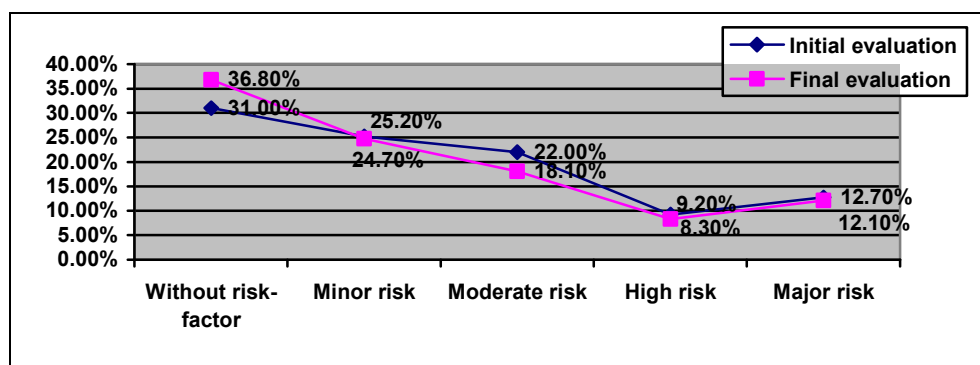

Fig. 4. The percentage of cases in terms of the smoking score

Patients who smoke more 10 cigarettes a day present a strong/major risk of cardiovascular diseases (19,6%), while the smokers of up to 10 cigarettes a day (49,4%) have been included in the category of persons with minor/moderate risk. The results obtained after the objective examination are in concordance with the results of questionnaires.

The incidence of cardiovascular diseases in terms of the smoking type

Table 5

The incidence of cardiovascular diseases in terms of smoking

Smoking	HTA (n=54)		CI (n=27)		IMA (n=9)		Total (n=90)	
	No.	‰	No.	‰	No.	‰	No.	‰
Non-smoker (n=737)	10	13,57	6	8,14	2	2,71	18	24,42
Smoker (n=1639)	44	26,85	21	12,81	7	4,27	72	43,93

In the case of the group we have considered, smoking represented a high risk factor. One can observe the increased incidence of cardiovascular diseases in the case of smokers as compared to non-smokers (43,93‰/24,42‰).

The influence of smoking upon the occurence of cardiovascular diseases

In order to quantify the intensity of risk factors in relation with the cardiovascular diseases the subjects of this study suffered from, the relative and the attributable risks have been determined.

The relative risk indicates how many times higher is the risk to develop a disease for patients presenting risk factors than for patients who are not exposed to risks, measuring the force of the epidemiologic association. When the relative risk is higher than 1, this value indicates an association between the risk factor and the disease, since the risk is higher in the case of exposed persons. The more the relative risk rises above this value (1), the stronger the association will be. If the relative risk is less than 1, it means that the studied factor is not a risk factor, but rather a protection factor, since the risk in the case of the exposed persons is weaker than in the case of persons that are not exposed.

The influence of the risk factor upon the population is measured with the help of the risk attributable in population (it indicates how high is the risk in the case of the exposed persons than in the case of persons that are not exposed). The attributable risk indicates the excess of risk in the case of exposed persons, in other words the part of the risk that is due to the risk factor. The following results have been obtained at the end of our investigation:

Table 6

The relative and the attributable risk of risk factors in CVD

	HTA		CI		IMA		Total	
Smoking	R_r	R_A	R_r	R_A	R_r	R_A	R_r	R_A
Smoker/ Non-smoker	1,98	0,13	1,57	0,05	1,58	0,01	1,80	0,20

Smokers are exposed to the risk of cardiovascular diseases incidence almost more than 2 times as compared to non-smokers (RR = 1,80);

Smoking represents the main risk factor for arterial hypertension and ischemic heart disease (RR = 1,98, respectively RR = 1,57).

Smoking and obesity represent the main risk factors in case of ischemic heart disease, followed by sedentariness (RR = 1,33) and stress (1,26);

The health education of the population and the involvement of general practitioners in monitoring the above-mentioned risk factors might significantly reduce the incidence of cardiovascular diseases.

CONCLUSIONS

Medical history indicates that 138 subjects have given up smoking, action also indicated by the questionnaires aimed at determining risk factors. The number of subjects smoking more than 10 cigarettes every day reduced with 83, while according to the questionnaire only 35 subjects have shown a reduction of strong or major risk: this indicates that not only the reducing of cigarettes smoked every day, but also a change in smoking-related behavior is needed for reducing the risk of cardiovascular diseases.

Determining the relative and the attributable risk, in order to quantify the intensity of risk factors in relation to cardiovascular diseases, in the case of persons taking into consideration for the purpose of this study, indicates the fact that giving up smoking reduces the risk of cardiovascular diseases incidence by 1,80 times.

REFERENCES

1. Campbell M.J., P.M. Machin, 1991, Medical statistics, John Wiley and Sons, New York
2. Clayton D., M. Hills, 1993, Statistical models in epidemiology, Oxford University Press, Oxford, p. 51-58.
3. Drugan T., A. Achimaş, S. Ţigan, 2005, Biostatistică, Ed. SRIMA, Cluj Napoca
4. Greaves L., 2002, High Culture: Reflections on Addiction and Modernity, edited by Anna Alexander and Mark S. Roberts. State University of New York Press. ISBN 079145553X
5. Lock S., 1998, Ashes to Ashes: The History of Smoking and Health, edited by L.A. Reynolds and E.M. Tansey 2nd ed. Rodopi. ISBN 9042003960
6. Lloyd J., J. Mitchinson, 2006, "The Book of General Ignorance". Faber & Faber
7. Marcu A., 2002, Metode utilizate în monitorizarea stării de sănătate publică, Institutul de Sănătate Publică, Bucureşti, p. 108-133, 156-187
8. Evidence – based medicine, http:/emb.bmjjournals.com/ - accesat 12.05.2008
9. MS, DSP- Bihor, 2008, Analiza stării de sănătate a populaţiei din municipiul Oradea în anul 2007, p25-41
10. Centrul de calcul, statistică sanitară şi documentare medicală a M.S., 2008: Anuar de statistică sanitară