

# INCREASING TRENDS OF TOBACCO USE IN MEDICAL STUDENTS IN SLOVAKIA – A REASON FOR CONCERN?

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## SUMMARY

*Objective:* The article analyses changes in tobacco use in medical students in Slovakia in 1995, 1999 and 2004.

*Methods:* Questionnaire survey in 448 students of the Jessenius Faculty of Medicine, Comenius University in Martin, Slovakia, was carried out in October and November 2004. Data were compared with similar surveys carried out in 1995 and 1999.

*Results:* Prevalence of daily smoking in men increased from 11.1 in 1995 to 21.8% in 2004. In women, within 1995–2004, daily smoking increased from 5.2% to 12.3%, occasional smoking from 11.6% to 19.8%. Also proportion of women initiating smoking during their university study increased. In both genders the proportion of never smokers dramatically dropped between 1995 and 1999 (in men from 43.2% to 23.2%; in women from 61.9 to 18.2).

*Conclusion:* Upward trend in tobacco use, particularly in women, is a reason for concern. In medical faculties, principles of prevention should be more emphasized and the students motivated for healthy life-style and to fulfill their future role in public health. The situation noted among medical students indicates that a community in Slovakia is still not satisfactory inclined towards non-smoking and a dramatic decrease of tobacco use can hardly be expected either in the near future.

*Key words:* medical students, smoking, prevalence, trends

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## INTRODUCTION

Health professionals, especially physicians, play a substantial role in tobacco control. Their behavior and views significantly share in forming of public opinion and attitudes towards tobacco use. They also considerably contribute in process of smoking cessation – their professional knowledge in this field implemented in patients' care can help to increase motivation for quitting and to provide qualified treatment of nicotine dependence (1). Medical students, as future health professionals, also reflect dynamic changes in the community and traditionally have been considered as bearers of positive changes of life-style, so their behavior can predict to some extent the overall situation in the community in the future. Moreover, they are expected to serve as a good example of healthy life-style for lay public.

Repeated surveys carried out in the same target group of students are particularly informative, since time trends can be identified, and a future situation can be estimated. Such data are valuable for planning of effective preventive public health measures.

This contribution deals with results of three successive cross-sectional questionnaire surveys carried out among medical students of the Jessenius Faculty of Medicine, Comenius University in Slovakia in 1995, 1999 and 2004. Within each time period, one generation of students has been changed. The questionnaire was focused on their smoking-related behaviors and attitudes towards smoking cessation.

## METHODS

In October and November 2004 the questionnaire data were collected from medical students of the 1st to the 5th academic years of the Jessenius Faculty of Medicine, Comenius University in Martin. Questions were selected from the standardized questionnaire addressed to medical students (2).

Data collection was performed in seminars and practicals mandatory for all students. Students were not beforehand informed about the survey, when the reason, anonymity and voluntary participation were stressed. From the total of 538 students, 448 responded (83.3%). The most frequent reason for not participating was absence from teaching due to illness or other personal reasons.

The same method and questionnaire was used in 1999 and 1995, respectively (3).

The obtained data were processed by Microsoft Excel Program and Statistix software.  $\chi^2$  and ANOVA tests with Bonferroni comparison of means were used for statistical analysis. As a level of significance  $p < 0.05$  was considered.

## RESULTS

### Smoking of Men

Within the studied period, a percentage of daily smokers had approximately doubled (from 11.1% in 1995 to 21.8% in 2004).

**Table 1.** Characteristics of tobacco use in medical students of the Jessenius Faculty of Medicine, Comenius University, 1995–1999–2004 (percentage) – men

	1995 n = 244	1999 n = 206	2004 n = 124	Diff.
Daily smokers	11.1	13.6	21.8	p < 0.05
Occasional smokers	16.5	21.8	21.8	NS
Ever smoked daily for 6 months or more	24.3	20.4	32.3	NS
Reported reduced smoking	3.3	6.8	16.1	p < 0.05
Never smoked	43.2	23.3	26.2	p < 0.05
Ex-smokers	11.1	7.3	11.3	NS
Started to smoke at the university (from daily smokers)	6/27*	5/28*	14/27*	NS
Made a serious attempt to stop smoking (from daily smokers)	15/27*	22/28*	17/27*	NS

\* because of too small base, results were expressed in absolute values  
NS – not significant

**Table 2.** Characteristics of tobacco use in medical students of the Jessenius Faculty of Medicine, Comenius University, 1995–1999–2004 (percentage) – women

	1995 n = 423	1999 n = 247	2004 n = 324	Diff.
Daily smokers	5.2	8.9	12.3	p < 0.05
Occasional smokers	11.6	19.8	16.0	p < 0.05
Ever smoked daily for 6 months or more	9.2	15.0	21.3	p < 0.05
Reported reduced smoking	1.9	3.2	8.6	p < 0.05
Never smoked	61.9	18.2	18.2	p < 0.05
Ex-smokers	5.4	3.6	9.6	p < 0.05
Started to smoke at the university (from daily smokers)	8/22*	7/22*	27/40*	p < 0.05
Made a serious attempt to stop smoking (from daily smokers)	16/22*	18/22*	27/40*	NS

\* because of too small base, results were expressed in absolute values  
NS – not significant

Similarly, the percentage of those reporting reduced smoking significantly increased, particularly between 1999 and 2004. Between 1995 and 1999, dramatically dropped the number of students reporting “never smoked”, while after 1999 this parameter changed only slightly. Other characteristics of tobacco use were only slightly changing through the given period. The majority of smokers reported serious attempts to quit (Table 1).

The average age of the first smoking experiences as well as of the daily smoking initiation had not changed significantly during the studied period and remained app. 13.5 and 17.5 years, respectively (Table 3).

### Smoking of Women

In women, almost all characteristics of tobacco use changed considerably within the studied time period (Table 2). The percentage of daily smokers had more than doubled (from 5.2% in 1995 to 12.3% in 2004), as well as percentage of those ever-smoked daily. Prevalence of occasional smokers dramatically increased namely between 1995 and 1999 (from 11.6% to 19.8%).

Noticeable was the drop of “never smoked” women in 1999 to less than one third of a percentage found in 1995, while between 1999 and 2004 this parameter almost did not changed at all. On the other hand, percentage of those reported reduced smoking also increased from less than 2% in 1995 to almost 9% in 2004. Similarly, number of ex-smokers had almost doubled. Proportion of smokers initiating smoking during their university study increased significantly, particularly after 1999.

While average age of the first smoking experiences remained almost the same (slightly above 15 years), the average age of daily smoking initiation considerably decreased (Table 4). According to Bonferroni comparison of means, the result in 2004 (16.9 years) significantly differs from those in 1995 and 1999.

### DISCUSSION

An increasing trend of tobacco use found in our study should be considered as a cause for concern. To a limited extent it was

**Table 3.** Average age of the first smoking experience and age of regular smoking initiation (daily smoking for 6 months and more) – men

Year	The first smoking experience		Daily smoking initiation	
	Mean ± S.D.	CI95%	Mean ± S.D.	CI95%
1995	13.0 ± 4.0	12.4-13.6	17.7 ± 1.9	17.2-18.2
1999	13.5 ± 4.0	12.9-14.1	17.2 ± 1.8	16.7-17.7
2004	13.9 ± 4.4	13.0-14.8	17.1 ± 3.0	16.1-18.1
Diff.	NS		NS	

S.D. - standard deviation  
NS – not significant

**Table 4.** Average age of the first smoking experience and age of regular smoking initiation (daily smoking for 6 months and more) – women

Year	The first smoking experience		Daily smoking initiation	
	Mean ± S.D.	CI95%	Mean ± S.D.	CI95%
1995	15.6 ± 3.8	15.1-16.1	18.0 ± 1.6	17.5-18.5
1999	15.5 ± 3.5	14.9-16.1	17.8 ± 1.7	17.3-18.3
2004	15.0 ± 2.8	14.6-15.4	16.9 ± 2.0	16.4-17.4
Diff.	NS		p < 0.05	

S.D. – standard deviation

shown in men as a significant rise of a prevalence of daily smokers, while in women within last 10 years almost all characteristics of tobacco use have increased. Contrary to men, women initiated regular smoking in younger age resulting in shortened period from experimenting (the first smoking experiences) to regular smoking, i.e. accelerated development of smoking habit. Another unfavorable finding was that prevalence of women's smoking was at least partially caused by a larger proportion of women initiating smoking after their admission to the University, suggesting that academic environment still accepts smoking as a normal part of a students' life-style. Very informative is a noticeable decrease between 1995 and 1999 of the percentage of those reporting "never smoked", found in both genders. However, in 2004 this parameter surprisingly remained almost the same as in 1999. Taking into consideration the approximate age of the first smoking experiences 13 years in men and 15.5 years in women, this finding can be explained by deep social changes in former Czechoslovakia after 1989. The generation of students surveyed in 1999 already grew up in the atmosphere of social and economic transformation bringing also deep changes of traditional attitudes leading to widespread social acceptance of smoking at that time. Another important consequence of social-economic transformation was wide opening of the market for tobacco industry and its harmful social activities (4).

On the other hand, positively should be considered, that together with tobacco use also the increase of a number of ex-smokers and those reporting reduced smoking were observed, suggesting, that positive attitudes towards smoking cessation and non-smoking generally become more popular among students, after all.

Considering distribution of tobacco use according to study year, this could provide a clearer picture of the development of smoking habit as well as role of increasing professional knowledge on tobacco in this. However, due to a relative small numbers of students in individual study years, confidence intervals of the respective percentages would be too wide causing only very limited information value of such analysis.

Other surveys on tobacco use in medical students in Europe carried out within recent years showed a considerable heterogeneity, however, compared to our results, some general characteristics can be identified:

- Considering smoking prevalence and dominating of men over women, a similar situation as in Slovakia was found in Hungary (5), Spain (6) and Albania (7).
- In Sweden (8), Norway (9), France (10) and Greece (11) only slight gender differences has been found, i.e. women smoke as frequently as men.
- Relatively more frequently students smoke in Turkey (12), where prevalence of regular-daily smoking is approximately twofold higher than in Slovakia.
- More favourable situation than in Slovakia was found in Sweden (8) and Czech Republic (13) where only relatively few students smoked. Taking into consideration very similar cultural and social background as well as epidemiology of tobacco use in Czech Republic and Slovakia, results from the 3<sup>rd</sup> Medical Faculty, Charles University in Prague were exceptionally low (daily smoking: 9.0% of men and 1.3% of women, occasional smoking 5.1% of men and 6.4% of women), even compared with Slovakia results from 1999. If such low

prevalence will be confirmed also in next surveys, situation should be deeply analyzed to identify possible explanation of this situation.

Considering the general model of smoking evolution (14) in the context of latter mentioned findings in countries with long history of tobacco, further increase of women's smoking among medical students in Slovakia should be expected. In that aspect, rather worrying seems also a steady increase of men's smoking, even if not so dramatic as in women, but not corresponding with expectations based on experiences from western countries with longer smoking history. Such finding could be a reflection of overall worsening of life-style in university students in Slovakia noticed by other authors (15) and therefore deserving relevant public health attention. Another possible reason could be underestimation of addictive potential of tobacco, common among young people (16). Moreover, in countries with long history of tobacco use, decrease of prevalence of smoking was firstly observed just among physicians (1). Thus, in Slovakia the dramatic change for the better in a general tobacco use cannot be expected in the near future. This makes extra demands on research in this field and calls for revision of the implemented tobacco control measures as well.

Currently, at the Jessenius Faculty of Medicine, no special course on tobacco control is taught. These issues are lectured as a part of preventive disciplines such as Epidemiology and Hygiene as well as partially within some clinical disciplines, particularly pneumology, cardiology, oncology etc, i.e. mainly in the two final years of the study. It also can contribute to low level of understanding of the importance of tobacco control, when students become educated in this field only at the end of their pregradual study. Our findings suggest that preventive issues should be included also into preclinical disciplines and all aspects of tobacco control should be more emphasized, using attractive and convincing evidence (17) and demonstrating standpoints of internationally renowned authorities such as World Health Organization, Centers for Disease Control and Prevention, World Bank etc. In extracurricular life, non-smoking should be promoted as a part of a modern behavior. Moreover, a more intensive enforcement of current legislation, which bans smoking at university facilities in Slovakia, could be helpful.

## CONCLUSIONS

Upward trend in tobacco use in medical students in Slovakia, particularly in women, is a reason for concern. Our results indicated that the social environment at our medical school did not satisfactorily promote non-smoking among students. Even a considerable part of them, namely women, initiate regular smoking after their admission to university studies.

Our results suggest that in education of medical students principles of prevention should be more emphasized both as integrated into their pregradual curricula and as a component of extracurricular academic life.

On the other hand, behavior of medical students reflect the overall social environment in Slovakia, which indicates that a dramatic decrease of smoking prevalence cannot be expected, and again stresses the importance of all activities in this field.

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*Received July 7, 2006*

*Received and accepted in revised form October 11, 2006*