

## Prevalence of tobacco smoking among students of the University of Novi Sad

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### ABSTRACT

**Aim** To determine the extent of tobacco smoking among students in Novi Sad.

**Method** This research was conducted among students of the University of Novi Sad in the period between October 2010 and April 2011. The study involved 800 students from the first and final study years (aged 20 to 24) with both sexes equally represented. A special questionnaire was designed for this study.

**Results** There was a high prevalence of consumption of tobacco among students in Novi Sad, 214 (26.7%) of students. Male students, 120 of them (30%), had more frequent contacts with tobacco compared to females ( $p < 0.08$ ). Male students often had the first contact with tobacco at the age of 15, in 25 (6.25%) cases, and female students most often had the first contact with tobacco at the age of 18, in 20 (5%) cases ( $p > 0.05$ ). There had been a large percentage of male respondents who consumed more than 15 cigarettes a day, 35 (8.7%) compared to 18 females (4.5%) ( $p < 0.02$ ). There was a statistically significant ( $p < 0.01$ ) correlation between the habit of tobacco smoking, number of cigarettes and achieved success at studies.

**Conclusion** The results indicate the necessity of primary prevention and organization, comprehensive and preventive activities with adolescents.

**Keywords:** smoking, students, risk factor, mass non-communicable diseases.

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## INTRODUCTION

Smoking is one of the major preventable causes of death worldwide (1). The harmful effects of smoking were first demonstrated more than fifty years ago, and first research began in mid-20<sup>th</sup> century to determine the impact of smoking on health (2).

The World Health Organization in the seventies of the 20<sup>th</sup> century began the largest international study MONICA (multinational monitoring of trends and determinants in cardiovascular disease), and one of 38 research centers in the 21<sup>st</sup> country in the world since 1984 is in the Novi Sad. According to the survey data from 2004, there are 37.9% of adult population in Novi Sad who smoke daily, with 20 cigarettes per day on average (3).

Smoking causes harm to health. The risk of disease increases with the number of cigarettes smoked and the longer smoking period, and this risk is even higher among young people (4).

Smoking causes heart disease and vascular disease, particularly heart attack and stroke, and diseases of the peripheral circulation (5), followed by lung cancer (6), larynx, esophagus, and chronic bronchitis, gastritis, ulcers, cataracts (7), and as many as 30-40% of all deaths from coronary heart disease are associated with smoking (4,8).

Smoking interacts with other risk factors, high blood pressure, elevated blood cholesterol, insufficient physical activity, and increases the risk of developing cardiovascular disease (CVD) (9).

In the world there is more than one billion smokers (10) and the number of smokers among men has reached its maximum, while the rates of tobacco use among women are on the rise (11).

The greatest increase in demand and consumption of tobacco is in the Far East, especially China. China's share in the total world consumption of tobacco is about one-third, with over 320 million smokers (12).

In the United States (U.S.) the incidence of smoking among young people is regularly monitored, and every two years a report is submitted to the National Center for Educa-

tion Statistics, CDC. According to these data, 22.8% of young males aged 18 to 24 years smoke in the US, whereas the percentage was lower for females, 17.4% (13).

The European project ESPAD (European School Survey Project on Alcohol and Other Drugs) showed that the prevalence of cigarette smoking is increasing in many developing countries, while in developed countries it declined (14).

The YUSAD study (Yugoslav study of atherosclerosis precursors in children) exhibited a significant decrease in prevalence of smoking among secondary school students in Novi Sad in the period 1995-2008 (15).

According to the data of the Institute of Public Health of Serbia from 2010, 27.7% of the adult population in Serbia smoke daily (16). In Vojvodina, the percentage of smokers was 36.5% (17).

The fact is that smoking is a significant factor in the creation of a mass of non-communicable diseases in the world, therefore, it is important to conduct a comprehensive epidemiological study that would give guidelines for organized and efficient prevention.

The aim of this study was to determine the prevalence of cigarette smoking among students in Novi Sad.

## EXAMINEES AND METHODS

The research was a cross-sectional study, and was conducted in the period from October 2010 until April 2011.

The sample was randomly selected, and study included 800 students, of which 400 in the first year (born in 1991), and 400 students from the last year at the University (born in 1988 and 1987). The sample represents 5% of all students of the University of Novi Sad, mostly students of the Schools of Medicine, Mathematics, Agriculture, School of Economics, School of Engineering, and the School of Sport and Physical Education. In both age groups there were 200 males and 200 females.

The original questionnaire was designed for collecting the research data. The research was approved by the Ethical Committee of the School of Medicine in Novi Sad. All parti-

cipants read and signed informed consents about the purpose of the study (participation was voluntary and anonymous).

Each survey respondent was approached with a possibility of voluntary withdrawal at any time. Improper and under-staffed polls were not taken into account. Each survey had its identification number, from 1 to 800.

The survey contained the following questions: year of birth, gender, academic performance, and consumption of the cigarettes. The survey was conducted by using personal contacts with respondents thus avoiding occurrence of logical errors. Then the data were computer processed.

For statistical analyses absolute numbers and percentages, measures of central tendency (arithmetic mean, median, standard deviation and minimum and maximum distance values), Pearson Chi-Square test and correlation test were used ( $p < 0.05$  was statistically significant).

## RESULTS

The highest percentage of students had the first contact with cigarettes at the age of 15, in 25 (6.25%) cases ( $p < 0.05$ ), while the highest percentage of female students first had their contact with cigarettes at the age of 18, in 20 (5%) cases (Figure 1).

The high prevalence of cigarette smoking was noted among the population, 214 (26.7%). There was a larger number of male respondents who daily and occasionally use cigarettes compared to female respondents, 120 (30%) and 94 (23.5%), respectively ( $p < 0.08$ ) (Table 1).

There was a larger number of male students, in 35 (8.7%) cases, who smoked daily more than 15 cigarettes compared to female students, 18 (4.5%) ( $p < 0.02$ ) (Figure 2).

Younger students were more likely to smoke

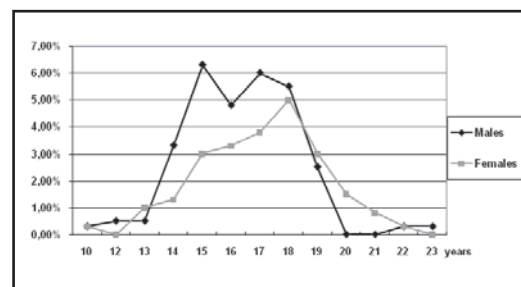


Figure 1. Distribution of respondents by gender and age in which they tried cigarettes

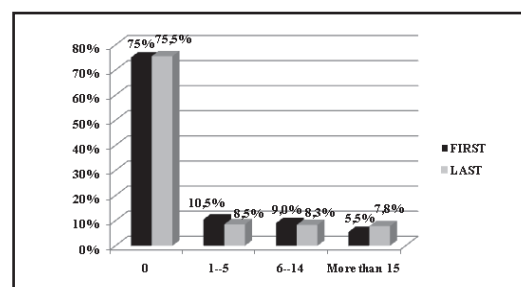


Figure 2. Distribution of respondents by year of study and frequency of use of cigarettes

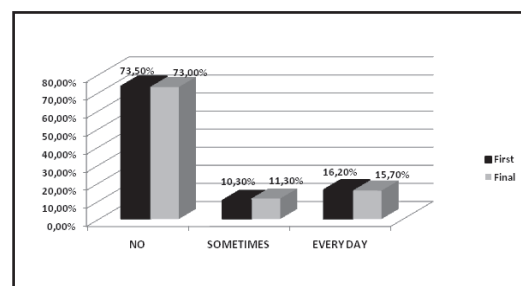


Figure 3. Distribution of respondents according to cigarettes usage and year of study

five cigarettes a day as compared to older students, 42 (10.6%) and 34 (8.4%), respectively ( $p > 0.05$ ) (Table 2).

Between the first and final year, as compared to occasional and daily smoking, there was no statistically significant difference ( $p > 0.05$ ) (Figure 3).

A positive correlation between cigarette smo-

Table 1. Distribution of cigarettes usage according to gender

		No (%) of examinees		
		Not consumed	Sometimes*	Every day
Gender	Males	280 (70.0%)	52 (13.0%)	68 (17.0%)
	Females	306 (76.5%)	34 (8.5%)	60 (15.0%)
Total		586 (73.3%)	86 (10.7%)	128 (16.0%)
				400 (100.0%)
				400 (100.0%)

\*statistically significant difference

Table 2. Distribution of cigarettes usage according to age

Year of study	No (%) of examinees				Total
	0	1-5	6- 14	More than 15	
Final	302 (75.5%)	34 (8.5%)	33 (8.3%)	31 (7.8%)	400 (100.0%)
First	300 (75.0%)	42 (10.5%)	36 (9.0%)	22 (5.5%)	400 (100.0%)
Total	602 (75.3%)	76 (9.5%)	69 (8.6%)	53 (6.6%)	800 (100.0%)

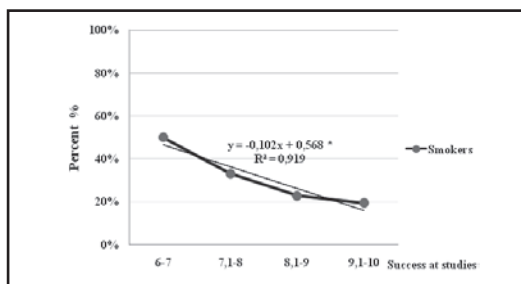


Figure 4. Correlation of usage of cigarettes and success at studies

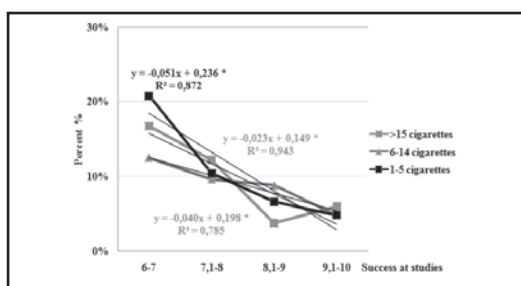


Figure 5. Correlation of number of smoked cigarettes and academic performance

king and the results in studies of final year students has been recorded (Figure 4).

There was a positive correlation between the number of cigarettes smoked and the results of the studies of students' final year (Figure 5).

## DISCUSSION

The widespread habit of smoking cigarettes is a very serious medical and socio-pathological problem in the world, especially in developing countries (18). In Finland, in the middle of last century more than 76% of adult males were smokers (19). Thanks to an integrated program of prevention and control, there was a significant decrease in prevalence to 26% (19), which is very similar to the results of this study. Finland now has the lowest percentage of lung cancer, colon cancer, esophagus, bladder, and stomach all over Europe; a woman in Finland is six times less likely to suffer from

cervical cancer than a woman in Serbia (19). The mortality from cardiovascular diseases (CVD) was reduced by 75% and overall mortality by 49% (19).

Results of MONICA study in Novi Sad have shown that the prevalence of daily smokers over the twenty years of period, increased in relation to other research centers (20). Smoking in women showed a statistically significant increasing trend (from 30.8% to 41.7%), while the male results showed significant decreasing trend, so that this percentage was almost equal to the results from 2004 and amounted to 37.9% (20). After the introduction of prevention programs and the law banning smoking indoor, the trend of declining prevalence of smoking was recorded later too. According to the latest data from the Institute of Public Health of Serbia, the prevalence of smoking among young people aged 15-29 years was 33.4% (16).

According to the ESPAD survey study of 35 participating countries, Austria is a country with the highest prevalence of tobacco use in Europe (14). Slovenia (14) and Malta (14) are the countries that have similar frequency of tobacco consumption as presented in our study. Canada is a country where the incidence is only 17%, and these results are far lower than ours (8).

According to the latest data of the YUSAD study from 2011, students older than 15 exhibited a significant decline in smoking prevalence from 46% to 23% (15), which is a slightly lower percentage as compared to our study.

According to a survey conducted in Croatia in 2004, a higher percentage of female respondents consume cigarettes several times a day (21), which is contrary to our research.

Comparative analysis of our and European research (14) of cigarette smoking indicates the

approximate prevalence rates of tobacco use, which are significantly less than in the past. Prevention of smoking among adolescents is a key factor in reducing morbidity and mortality associated with smoking (22), and in most developed countries it has a very important place.

It is interesting that among the respondents who were smokers and had problems with hypertension, hyperlipoproteinemia and fatigue after only two months after quitting, there was a marked improvement in hypertension, elevated lipid lowering, as well as better physical and psychological mood (23).

Notwithstanding the good results of researches (14-16) it is still very important to implement integrated prevention and control of cigarette smoking.

In conclusion, every third student at the University of Novi Sad smokes cigarettes. Male students are more frequent consumers. There is a greater number of males who smoked daily more than 15 cigarettes, which is a high risk of mass non-contagious diseases. There is a

connection between smoking and number of cigarettes smoked per day with their performance during the studies. The present results indicate the necessity of effective implementation of primary prevention of organized, comprehensive, preventive activities.

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## TRANSPARENCY DECLARATIONS

Competing interests: none to declare.

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## Učestalost navike pušenja cigareta među studentima Univerziteta u Novom Sadu

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### SAŽETAK

**Cilj** Istražiti rasprostranjenost navike pušenja cigareta kod studenata Univerziteta u Novom Sadu.

**Metode** Istraživanje je sprovedeno među studentima Univerziteta u Novom Sadu, u periodu od oktobra 2010. do aprila 2011. godine. Ispitivanje je uključilo 800 studenata prve i završne godine studija (uzrast od 20. do 24. godine), a polna je struktura bila podjednako zastupljena. Korišćen je specijalni anketni upitnik sastavljen za potrebe ovog istraživanja.

**Rezultati** Ustanovljena je velika učestalost navike pušenja cigareta među novosadskim studentima, 214 (26,7%) studenata. Muški ispitanici, 120 (30%), bili su češće u kontaktu s cigaretama u odnosu na ženske ( $p < 0,08$ ). Muški studenti su češće prvi kontakt s cigaretama imali s 15 godina, u 25 (6,25%) slučajeva, dok su studentkinje češće prvi kontakt s cigaretama imale s 18 godina, u 20 (5%) slučajeva ( $p > 0,05$ ). Veći je procenat muških ispitanika koji popuši više od 15 cigareta dnevno, 35 (8,7%), u odnosu na ženske ispitanike, 18 (4,5%) ( $p < 0,02$ ). Ustanovljena je statistički značajna povezanost ( $p < 0,01$ ) navike pušenja, kao i broja dnevno popušanih cigareta, s postignutim uspehom na studijama.

**Zaključak** Rezultati istraživanja ukazuju na neophodnost intenzivnijeg sprovođenja primarne prevencije organizovanim i sveobuhvatnim aktivnostima kod mladih.

**Ključne reči:** pušenje, studenti, faktor rizika, masovne nezarazne bolesti.