Smoking and BMI as a risk factor of cardiovascular disease at a doctors in Tuzla canton

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Abstract

Introduction: Cardiovascular diseases are becoming the leading social and medical problem of civilization, given the trend indicates an increase of morbidity, disability and mortality from this diseases. The aim of our study was to determine the frequency of smoking and increased BMI, as a risk factor for cardiovascular disease in doctors in the Tuzla Canton and correlate values of BMI by the doctor smokers and nonsmokers.
Methods: The study was conducted in 13 medical centers in the area of Tuzla canton in the second quarter of 2009. Two groups were formed by randomization of 150 doctors non-smokers and 150 doctors smokers from a total of 366 doctors of both sexes, age over 25 years. The study involved doctors who smoke tobacco 5 or more years. The methods of anthropometric measurements and questionnaires were used in study.
Results: The results showed that the total number of doctors surveyed, 44.81% were smokers, with more women smokers (28.7%) than men (21.3%) smokers (p=0.011). We found that there is a significant statistical difference between subjects with BMI higher than 25 and subjects with normal weight, in the group of smokers (p = 0.0001).
Conclusion: It can be concluded that the frequency of smoking in the total number of surveyed doctors, is significant. The increased value of BMI (over 25) is present in large number of subjects (with the larger percentage subjects of smokers).

Keywords: smoking, BMI, cardiovaskcular disease.

Introduction

Chronic non-infectious diseases, including the cardiovascular and cerebrovascular diseases are the leading cause of morbidity and mortality, in addition to cancer (1). They are a significant cause of invalidity, loss of working ability, early death (before 65 years of age) and increasing health care costs, especially in countries where a high percentage of the population is represented by older people (2). For these the trend of increasing morbidity, mortality and invalidity from diseases of circulatory system, it is clear that these diseases are becoming major public health problem of civilization. According to the World Health Organization, cardiovascular diseases cause 16.7 million deaths annually (29% of all deaths), more than one third of cardiovascular deaths happens in persons of middle age (3). According to the reports of the Public Health Federation (4), in Bosnia and Herzegovina rates of mortality and morbidity of cardiovascular disease is rapidly growing from 60' of last century, and the indicators for year 2004 and 2005 show that in Bosnia and Herzegovina mortality rate from cardiovascular disease dominates about 50% of all causes of death and in women and men. During the 2008 diseases of circulatory system in Tuzla Canton, participate with 53.5% of total mortality. The mortality rate because of circulatory diseases in 2008 was 80.55 / 100.000 population younger than 65 years. Leading disease population of Tuzla Canton during 2002 to 2008 was headed the chronic non-infectious diseases, among which the first are cardiovascular diseases (5). Harming effects of smoking for cardiovascular disease depends on the quantity of cigarettes smoked per day and duration of smoking habit (6). The risk for cardiovascular disease is higher if the start

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smoking before the age of 15. More cohort studies shows that smokers have two to three times higher risk for cardiovascular disease than non-smokers (7). Stopping smoking reduces the risk of cardiovascular disease by about 50% per year, and equal to the risk of nonsmokers after 5-15 years (8). From 50th to 90th year's 19th century in many European countries, the rate (%) doctors of smokers is constantly decreased (9). Fifties of the 19th century in the U.S. is 55% of doctors smoked, while in 1993 rate doctors of smokers was only 5% (10). In England, since 1951th to 1994th rate doctors of smokers dropped from 68% to 7% (11). Northern European countries is characterized low frequency of smoking among doctors, on average 7-23% men and 3-15% women doctors of smokers, while the values in the general population ranged between 30-45%. Countries of Central Europe was characterized rate doctors of smokers some higher (20-28% men and 16-25% women), while the countries of eastern and north-eastern Europe have had even greater rate doctors of smokers, almost as general population (30-54% of men and 40% of women doctors smokers) (9). Masironi and Arciti (12) have showed, in studies, that 80-85% doctors who do not smoke or have stopped smoking, always give anti smoking advice to patients, while less than 50% doctors who smoke also, give advice. Overweight is one of the biggest public health problem in the 21 century, especially in some parts of the world, including the European Region of the World Health Organization. The risk of disease in all segments of the population increases progressively with increasing body mass index (BMI). Since the 1980, prevalence of obesity has increased in many European countries more than three times (13). Obesity is no more a problem only of the developed countries, it was become an increasing problem in developing countries. It is estimated that today the world's 1.1 billion adults and 10% of children have an increased body weight (14). Increased BMI is connected with increased risk of coronary heart disease (15) and hypertension (16). Aim of the study is determine frequency smoking among doctors in Tuzla Canton, and to determine the frequency of increased BMI as a risk factor of cardiovascular disease in smokers and nonsmokers doctors.

Methods

The research was conducted in 13 health centers in Tuzla Canton in second quarter of 2009. From a total of 366 doctors of both sexes, aged over 25 years, method of free chose formed group from 150 doctors smokers and 150 doctors nonsmokers. In the study involved doctors who smoke tobacco 5 years and over, every day a certain number of cigarettes (at least 10 cigarettes a day), and excluded doctors who smoke tobacco occasionally, every second or third day, two to three cigarettes. The research was a prospective, cross-sectional. Risk factors were evaluated: smoking and overweight - obesity. It was processed with questionnaire and anthropometric measurements. Data on risk factors were obtained by the survey. A modified questionnaire referred in part to general directories, and second part consisted of general information, general relation for smoking, smoking duration, number of cigarettes smoked per day (17, 18). Body height (cm) was measured by anthropometry, three times and was calculated as the mean value. Body weight (kg) was measured by the decimal scale (100 grams of tolerance), which calibrated before the measurement. The measurement was done with minimum clothes, three times and calculated the mean value. Body mass index (BMI) was calculated based on the relation measured body mass (kg) and body height (cm), as follows: BMI = BW (kg) / TV (m) 2, whereby as the increased body weight taken BMI value equal to or greater than 25.0 according to the World Health Organization. After the survey, made is appropriate encryption and controls to ensure proper data entry. Data were entered into the table in Excel, and then transported into the statistical software package SPSS17.0. where the after definition of the variables were statistically processed data, and with the help program Arcus QuickStat completed. For testing the statistical significance between groups, we used proportions, Chi square test, Student's t-test. Statistically significant results we considered those in which the $p < 0.05$.

Results

Of the total number of surveyed doctors (366) them 202 or 55.19% were non-smokers, and 164 or 44.81% were smokers, a sta-

tistically significant difference (p = 0.005). Method of random choice formed group from 150 doctors smokers and 150 doctors nonsmokers. In the sample from 150 smokers, was 86 or 28.7% women of smokers and 64 or 21.3% men of smokers, as shown in Table 1. The total number of observed subjects most of them in the age group between 46 and 55 years (98 or 32.7%), while the smallest number in the age group over 65 years (5 or 1.7%). The highest number doctors of smokers in the age group between 36 and 45, it is 49 or 16.3% of all respondents doctors of smokers, a statistically significant difference compared to nonsmokers of the same age group (p = 0.0001) (Table 2) . The mean age of smokers is about 42 (+ -9) years. The youngest doctor is a smoker aged 25 years and the oldest 73 years. The total number subjects of smokers largest number of them is a smoker for 20 years and over, in the age group between 46 and 55 years (19 or 12.7%), while at the same age group of 3 or 2% smoked 5 years. Of the total number of smokers, 37 subjects or 24.7% is a smoker 10 years and 33 or 22% is smoke 20 or more years, no statistically significant difference (p = 0.58). The total number subjects of smokers most of them women with smoking period of 10 years (30 or 20%), and the smallest number of men with smoking period of 10 years (7 or 4.7%), a statistically significant difference (p = 0.0001). Of the total number women who smoke 20 or more years, 19 of them or 12.7% and men 14 or 9.3%, while in the group who declared to smoked 20 years, women 12 or 8%, while men 19 or 12.7%. The total number subjects of smokers most them, in the age group between 25 and 35 years old, smokes 10 cigarettes a day (23 or 15.3%). Of the total number subjects of smokers, them 63 or 42% smoked an average of 10 cigarettes a day and 2 or 1.3% smoked 40 or more cigarettes a day, which is statistically significant difference (p = 0.0001). A statistically significant difference in the number subjects who smoked an average of 10 cigarettes a day (63 or 42%) compared to subjects who smoked an average of 40 cigarettes per day (2 or 1.3%) (p = 0.0001), while there was no statistically significant differences among subjects who smoked an average of 10 (63 or 42%) and 20 cigarettes a day (57 or 38%) (p = 0.47). Among subjects who smoke an average of 10 cigarettes a day more is a woman, 37 or 24.7% (men 26 or 17.3%), which was significantly higher

TABLE 1. The gender structure of subjects in the sample of smokers and nonsmokers

		GENDER		
		Women	Men	Total
Nonsmokers	N	90	60	150
	%	30.0%	20.0%	50.0%
Smokers	N	86	64	150
	%	28.7%	21.3%	50.0%
Total	N	176	124	300
	%	58.7%	41.3%	100.0%

Statistically significant differences by gender in subjects smokers (p = 0.011).

TABLE 2. Age structure in a sample of smokers and nonsmokers

		AGE OF SUBJECTS						
		25-35	36-45	46-55	56-65	over 65	No data	TOTAL
Non smokers	N	28	22	53	10	4	33	150
	%	9.3%	7.3%	17.7%	3.3%	1.3%	11.0%	50.0%
Smokers	N	40	49	45	6	1	9	150
	%	13.3%	16.3%	15.0%	2.0%	.3%	3.0%	50.0%
Total	N	68	71	98	16	5	42	300
	%	22.7%	23.7%	32.7%	5.3%	1.7%	14.0%	100.0%

TABLE 3. Distribution of cigarettes smoked per day by sex subjects

			women	men	TOTAL
CIGARETTES PER DAY	not has pleaded	N	19	2	21
		%	12.7%	1.3%	14.0%
	10	N	37	26	63
		%	24.7%	17.3%	42.0%
	20	N	28	29	57
		%	18.7%	19.3%	38.0%
	40	N	2	5	7
		%	1.3%	3.3%	4.7%
	40 and more	N	0	2	2
		%	.0%	1.3%	1.3%
	TOTAL	N	86	64	150
		%	57.3%	42.7%	100.0%

(p = 0.05), while among subjects who smoked an average of 20 cigarettes day more men 29 of them, or 19.3% (women 28 or 18.7%), which was not statistically significant difference (p = 0.85) (Table 3). On the basis of measured height and weight, we performed recalculation of BMI, by doctors of smokers and nonsmokers. Larger number of subjects had a higher BMI values (over 25), these 170 or 56.7%, of which 90 or 30% doctors of smokers and 80 or 26.7% doctors of nonsmokers, which is not a significant difference between groups (Table 4). By doctors of smokers in the highest percentage (22.3%) was measured higher BMI values. In subjects of smokers with a BMI 25-30 was found to have more women smokers (28.7%) than men (21.3%) smokers (p = 0.011). In the same group of subjects raised the value of BMI from 30-35 was 6.3% of subjects, and 1, 3% of subjects had a BMI from 35-40. In doctors nonsmokers is similar, with a slightly smaller percentage, 21.3% of the measured value of higher BMI in the range of 25-30, 4.3% in the range 30-35 and 1% in the BMI range of 35-40. In the group of subjects smoking more subjects with a BMI over 25, 90 of them or 29.9%, while a BMI of less than 25, were 57 or 19%, a statistically significant difference (p = 0.0001). While in the group subjects of non-smokers with a BMI over 25 were 80 or 26.6%, and of them 65 or 21.7% with a BMI less than 25, it is not statistically significant difference (p = 0.0781). Not determined connection frequency between of obesity-BMI (CHI2 = 0.86, p = 0.35) at tested group. Mean values of BMI in both groups of patients were higher, but the test of significance showed that there was no significant difference among the groups. Correlating groups subjects of smokers and nonsmokers in relation to the value of BMI showed the existence of minor correlation (pc = 0.084).

TABLE 4. BMI values of doctors smokers and doctors of non-smokers

			SUBJECTS		
			NONSMOKERS	SMOKERS	TOTAL
BMI	17-20	N	5	4	9
		%	1.7%	1.3%	3.0%
	20-25	N	60	53	113
		%	20.0%	17.7%	37.7%
	25-30	N	64	67	131
		%	21.3%	22.3%	43.7%
	30-35	N	13	19	32
		%	4.3%	6.3%	10.7%
	35-40	N	3	4	7
		%	1.0%	1.3%	2.3%
	There is not	N	5	3	8
		%	1.7%	1.0%	2.7%
	TOTAL	N	150	150	300
		%	50.0%	50.0%	100.0%

(According to WHO BMI over 25 = obesity)

Discussion

Analyzing, in our study, the frequency of smoking and increased BMI values as risk factors for cardiovascular disease in 366 doctors in primary care, both sexes, aged over 25 years, we have found that smoking among doctors is present in a significant percentage (44.81%). By Masironu (9) from 50's to 90's of the 19th century in many European countries, the rate (%) doctors of smokers has constantly decreased. In the study group of health workers in the department of pediatrics, gynecology, community health services, and home treatment in Belgrade, smokers were more than in the our study (58.5%), and 23% nonsmokers (19). In the total investigated sample of smokers in our study, it was found that there are more women smokers (28.7%) than men (21.3%) smokers (p = 0.011), the larger the percentage of survey frequency of smoking in late last century in the northern countries of Europe (9). In this study characterized the low frequency of smoking among doctors, an average of 7-23% men and 3-15% women doctors of smokers, while the values in the general population ranged between 30-45%. By the same study, the countries of Central Europe is characterized by the rate doctors of smokers slightly higher (20-28% men and women 16-25%), which is close to our study, while the countries of eastern and north-eastern Europe have had higher rate doctors of smokers, which is greater than our study and was 30-54% men and 40% women doctors of smokers. According to statistical data British Heart Foundation (20) in England in 2004 were 26% men and 23% of women aged 16 years and over who

smoke cigarettes, which is also similar to our results. Testing that was done in Croatia, in the general population group, it was found that smoking is more frequent among men than in women, which is different from our study where a larger percentage of smokers among women (21). Results of our study confirm that most patients who smoke, with smoking period of 10 years (24.7%), including more women than men, less is subjects with smoking period of 20 years and over (20 %). From the aspect of the amount of cigarettes smoked per day, we found that most subjects smokers (42%) smoked 10 cigarettes a day, significantly more women, slightly less (38%) smoked 20 cigarettes a day, and 1.3% of those smoking 40 or more cigarettes a day , which is worrying from the aspect unwanted effects on cardiovascular disease, which depends on the amount of cigarettes and smoking period, as showed De Backe et al (6) Manson and colleagues (22). Among subjects who smoked 20 cigarettes a day slightly leading men than women, which was not statistically significant difference ($p = 0.85$), and is risk of negative effects is present for both population groups. Our study shows that the largest number of smokers in the older age group between 36 and 45 years, which is different from research Kovacic and colleagues (21) which was carried in Croatia in which smoking is most common in the younger age group between 18 and 25 years. Results of ATTICA study, conducted in Greece, confirmed earlier research that obesity is connected with various cardiovascular risk factors such as diabetes, hypertension and hipercholesteronemia (23), and we have the purpose of estimating potential risk to our subjects wanted to look and value BMI. In our study, the increased values of BMI (over 25) are present in a significant number subjects (56.7%). In the study in Slovenia, Zaletel-Kragelj and Fras (24) showed that among the subjects was 40.1% overweight and 38.5% were normal weight, which is slightly smaller than our results. Increased levels of BMI in the subjects were smokers in the percentage of 30% and in nonsmokers 26.7%, which is not a significant difference between groups. There was no connection between the frequency of obesity-BMI ($CHI2 = 0.86$, $p = 0.35$) in the investigated group. Values of BMI over 30, in our study had 13% subjects, which is less than the research was conducted in Croatia by Heim and colleagues (25). In their study showed that in the adult population has more than 1/5 subjects in whom there a BMI over 30. In our study the subjects of smokers was measured by higher BMI values in the range of 25-30, in the highest percentage (22.3%), while the value the subjects of nonsmokers the BMI range of 25-30 is similar, with slightly smaller percentage (21.3 %). This differs from large epidemiological studies that show an inverse relationship between smoking and body mass - smokers are less heavy than nonsmokers (26). From study conducted in Slovenia, it is clear that among smokers less obesity than nonsmokers. This difference is statistically significant (27), which differs from the results of our research. In this research found that there is a significant statistical difference among to subjects with higher BMI and those who had a BMI lower than 25, in the group of smokers ($p = 0.0001$). While in the group nonsmokers we no found statistically significant difference among to subjects with higher BMI and less than 25 ($p = 0.0781$). Towards WHO data in Europe have obesity 1/3 of adults. The average BMI is 26.5, while the index in Croatia in 2003. totaled 29.9 (25), and in our study the mean BMI is 26.3 in the group of smokers and 25.6 in the group nonsmokers. Primary prevention and early detection of risk factors for cardiovascular diseases and their control are essential. Health workers need to, not only quit smoking, than to be a major health educators, obliged to actively publish the risk of harmful effects of smoking and other risk factors, and to transfer knowledge about keeping and improving health, still from the earliest youth.

Conclusions

This study has shown that the frequency of smoking in the total number of surveyed doctors ($N = 366$) present in a significant percentage. Smoking is frequently in women than in men, the majority of doctors smokers in the age group of 36-55 years. Increased levels of BMI (over 25) are present in a significant number subjects of both groups (56.7%), of which in most percentage of subjects smokers. In relation to BMI in the group of smokers there is a significant statistical difference between those who have an increased BMI and a satisfactory weight. There was no con-

nection between the frequency of obesity-BMI (CHI2 = 0.86, p = 0.35) in the investigated group.

Conflict of interest

Authors declare no conflict of interest.

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