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Frequency of Blood Pressure Measuring According to the Degree of Working Population Education in Canton Sarajevo

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ABSTRACT

Introduction: Hypertension (high blood pressure) is one of the most widely spread modern diseases and one of the leading risk factors for heart and blood vessel diseases, particularly stroke and coronary heart disease. The prevalence of hypertension is about 25% in adults. Many studies show that blood pressure tends to have lower values among people with higher education levels. **GOAL:** To determine the frequency of measurement and control of blood pressure in relation to the level of education of the active working population of the Sarajevo Canton. **Material and methods:** The study was conducted on 443 subjects randomly selected from the categories of the active working population of the Sarajevo Canton. The study was conducted at the Center for Heart, Clinical Center University of Sarajevo University through the project „Prevention of risk factors for cardiovascular disease in the active working population of the Sarajevo Canton". Respondents were at age in range from 18-65 years, who have voluntarily joined the study. **Results:** Of 443 (100%) of the respondents 153 (34.5%) were males compared to females whose participation in the sample was 290 (65.5%). Regarding the structure of respondents, the majority of them 213 (48.1%) graduated faculty, 142 (32, 1%) graduated secondary vocational schools and 66 (14.9%) with a higher degree, with the lowest number with completed grammar school (1.4%) and secondary school (0.5%). Blood pressure never measure 16 (3.6%) of respondents, which is not insignificant number, more than 5 years ago 23 (5.2%), within last 1-5 years 90 (20.3%), in the past 12 months 88 (19.9%) and 226 (51%) measured the blood pressure in the past 6 months. Blood pressure never controlled 4.33% of respondents with secondary or higher education and 2.82% of the respondents with university education. Chi-square test showed a difference between education and the prevalence of blood pressure, $\chi 2=7.812$; DF=8; p=0.045. **Conclusion:** Monitoring of blood pressure and frequent measurement can in large number prevent progression of hypertension, which can often remain unnoticed if the blood pressure is not measured regularly. Lower levels of education may be associated with lower socioeconomic status of healthy subjects, as well as the low level of health education, which may be factors that contribute to improper diet, lack of physical activity, smoking, so indirectly affect the occurrence of the disease. Education can be a potential risk factor for high blood pressure during their lifetime and thus the risk factor for other cardiovascular diseases.
Keywords: hypertension, working population, education.

1. INTRODUCTION

Hypertension (high blood pressure) is one of the most widely spread modern diseases and one of the leading risk factors for heart and blood vessel diseases, particularly stroke and coronary heart disease. The prevalence of hypertension is about 25% in adults (1). It occurs most often between the ages of 30 to 50 years of age. Symptoms of hypertension include headache, fatigue, confusion, vision changes, nausea, vomiting, anxiety, excessive sweating, paleness of skin or redness of the face, a feeling of palpitations and ringing in the ears (2). High blood pressure increases the workload of the heart and thus leads to instability in the hemodynamics and physiology of blood flow which often leads to stroke, myocardial infarction, and in severe forms leads to decompensation, kidney failure and congestive heart failure

(3). Hypertension is associated with other factors such as age, diet and food composition, obesity, smoking, high cholesterol levels, diabetes, lack of physical activity, emotional stress and increases the risk of cardiovascular diseases (4). Higher values of blood pressure increase thereby the likelihood of developing myocardial infarction, heart failure, stroke, and kidney disease (5). For individuals aged 40-70 years, any increase in systolic blood pressure of 20 mmHg or diastolic blood pressure increased by 10 mmHg, doubles the risk of developing cardiovascular disease (6). The risk increases continuously with the increase in blood pressure above levels that are considered to be within the normal range. Public health significance of hypertension results from the notion that it is an independent risk factor for cardiovascular disease (7). Arterial hypertension is a barometer of the

effectiveness of population education and in general indicator of the efficiency of health care in the country. Timely and correct treatment of hypertension inarguably extend life expectancy and greatly contribute to the success of primary and secondary prevention of cardiovascular diseases, which leads to a better life quality. It has been shown that the distribution of blood pressure values in the population varies by gender and level of education (8). Many studies show that lower blood pressure values tend to be among people with higher education levels (9).

2. GOAL

To determine the frequency of measurement and control of blood pressure in relation to the level of education of the active working population of the Sarajevo Canton.

3. MATERIAL AND METHODS

The study was conducted on 443 subjects selected randomly from the category active working population of Canton Sarajevo in the period from March to July 2011. The study was conducted at the Center for Heart, Clinical Center University of Sarajevo through the project „Prevention of risk factors for cardiovascular disease in the active working population of Sarajevo Canton" supported by the Cantonal Ministry of Health and the Public Health Institute of the Federation of Bosnia and Herzegovina. Respondents were at age from 18-65 years, who have voluntarily joined the study. Made is a cross sectional study by descriptive research methods. In a study is used a **questionnaire on socioeconomic status** which contained basic information on age, sex and education level of respondents, marital status, as well as the relation of subjects to their own health. Also used was **standardized test questionnaire to assess stress (Lindemann)**, which assesses the degree of propensity to stress and the level of daily exposure to stress, while a **clinical examination** was performed which included health status and cardiovascular risk factors BMI and increased systolic and diastolic blood pressure (BP>130/80 mmHg). For statistical analysis is used the chi square test at the level of significance of p<0.05.

4. RESULTS

Study was performed on the active population with an increased risk for cardiovascular disease in the Sarajevo Canton. Number of respondents who have been tested at the Center for Heart since January 2010 years until the end of April 2011 years was 443 and were divided into two main groups, which is presented in the following table (Table 1). From 443 (100%) of the respondents 153 (34.5%) were males compared to females whose number in the sample was 290 (65.5%).

Regarding the structure of respondents, the majority of them or 213 (48.1%) had university education, 142 (32, 1%) graduated secondary vocational schools, and 66 (14.9%) with a higher degree of education, while the lowest number completed grammar (1.4%) and secondary school (0.5%)..

Within secondary education more present are females respondents 99 (69.7%), and approximately in a similar percentage in the higher schools and college are presented both sexes (women 53.0%, men 47%), and among university educated women are more dominant (69.0%) compared to men 31.0%. Chi-square test of independence showed that education depends on the gender $\chi2=6.65$; DF=2; p=0.036.

Pressure never controlled 16 (3.6%) respondents, which is not

Education		Gender		Total
		Male	Female	
Secondary vocational education	N	43	99	142
	%	30.3%	69.7%	100.0%
Higher school or college	N	31	35	66
	%	47.0%	53.0%	100.0%
Faculty	N	66	147	213
	%	31.0%	69.0%	100.0%
Total	N	140	281	421
	%	33.3%	66.7%	100.0%

Table 1. The educational profile of the respondents in relation to gender

BP	N	Percent	Valid percent	Cumulative percent
During last 6 months	226	51.0	51.0	51.0
During last 12 months	88	19.9	19.9	70.9
1-5 years ago	90	20.3	20.3	91.2
More than 5 years ago	23	5.2	5.2	96.4
Never	16	3.6	3.6	100.0
Total	443	100.0	100.0	

Table 2. Blood pressure control

		During last 6 months	During last 12 months	1-5 years ago	1-5 years ago	Never	Total
Secondary and higher school	N	107	42	37	13	9	208
	%	51.44	20.19	17.79	6.25	4.33	100.00
Faculty	N	113	37	49	8	6	213
	%	53.05	17.37	23.00	3.76	2.82	100.00
Total	N	220	79	86	21	15	421
	%	52,26	18,76	20,43	4,99	3,56	100,00

Table 3. Blood pressure control compared to the level of education

insignificant number, more than 5 years ago 23 (5.2%), within last 1-5 years 90 (20.3%), in the past 12 months 88 (19.9%) and 226 (51%) measured blood pressure in the past 6 months.

The largest number of respondents with secondary, higher school and college controlled blood pressure in the past 6 and 12 months. Respondents with lower education are less likely to measure the blood pressure that is more than five years ago blood pressure was controlled by 3.76% of the respondents with university education, while with secondary or higher education, this percentage was 4.33%. Blood pressure never controlled 4.33% of respondents with secondary or higher education and 2.82% of the respondents with university education. Chi-square test showed a difference between education and the frequency of blood pressure control, $\chi2=7.812$; DF=8; p=0.045.

5. DISCUSSION

Cardiovascular diseases by its frequency, epidemic momentum, sociomedical consequences, with high mortality become the biggest problem of modern medicine. The highest mortality from these diseases is in undeveloped countries, followed by countries in transition and is the lowest in the developed countries. However, while mortality from cardiovascular disease through prevention measures declines in developed countries, in developing countries and transition it increases (9). Numer-

ous epidemiological studies have demonstrated the importance of high blood pressure as a major risk factor for cardiovascular diseases. Comparing normotensive and hypertensive persons demonstrated that people with hypertension often have other risk factors such as diabetes mellitus, dyslipidemia, obesity and overall have a higher cardiovascular risk. After middle age, systolic pressure is a stronger predictor of cardiovascular diseases. In some studies, increased systolic and diastolic blood pressure above 120/80 indicates a higher risk, and if the blood pressure reaches 160/100 risk is increased four times. In addition to genetic factors, hypertension can be caused by obesity, alcohol consumption, intake of large amounts of salt, a high intake of animal fat, as well as other factors. Monitoring of blood pressure can often largely prevent progression of hypertension, which can often remain unnoticed if the blood pressure is not measured regularly (10). The results of our study showed that 51% of respondents in the past 6 months measured blood pressure, 19.9% in the past 12 months, 20.3% before 1-5 years and the remaining more than 5 years ago.

Loucks and colleagues showed that the level of education is negatively correlated with the value of blood pressure. It has been shown that people with higher education have tendency of increased systolic blood pressure during follow-up of 30 years. The same authors found that the information on diastolic blood pressure and its importance was even worse, both in male and female respondents. The authors suggest that education may be a potential risk factor for high blood pressure during their lifetime and thus the risk factor for other cardiovascular diseases (11).

6. CONCLUSION

Monitoring of blood pressure can largely prevent progression of hypertension, which can often remain unnoticed if blood pressure is not measured regularly. Lower level of education can be attributed to the lower socioeconomic status of unhealthy respondents, as well as the lower level of health education, which may be factors that contribute to improper diet, lack of physical activity, smoking, so that this indirectly affect the occurrence of the disease. Education can be a potential risk factor for high blood pressure during the lifetime and thus the risk factor for other cardiovascular diseases.

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