

HIGH BLOOD PRESSURE - MAJOR RISK FACTOR IN CARDIOVASCULAR DISEASES TO THE POLICE STAFF FROM BRAŞOV

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Abstract: *The arterial hypertension is admitted as a major risk factor for the ischemic cardiopathy (pectoral angina, myocardium infarct) and the cerebral apoplexy [1]. The incidence of ischemic heart disease is 3 times higher to hypertensive patients, but at the same time it was not identified a critical threshold value at which blood pressure is a risk. The Framingham study [2] showed greater impact of elevated systolic blood pressure (SBP), namely, small or moderate increases in SBP, not accompanied by increases in diastolic blood pressure (DBP) is associated with an increased risk of cardiovascular disease.*

Key words: *Arterial hypertension, Risk factor in cardiovascular diseases.*

1. Introduction

The results of a prospective observation lasting 15 years, conducted in the provinces of North Karelia and Kuopio (Finland) on a cohort of 10,333 men and 11,160 women aged 25-64 years without history of acute myocardial infarction or stroke (the study entry period 1975-1977), showed that the rate of coronary heart disease mortality and stroke increases with increasing SBP, both men and women. To women of 45-64 years, isolated hypertension increases the global risk of death as well as the risk of death from ischemic heart disease and stroke, while to men, SBP greater than 160 mmHg are significantly associated with only the risk of death by coronary disease [3].

The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood

Pressure [8] presented a new classification of blood pressure to adults, 18 years old and over, namely (table 1):

Table 1
Classification of blood pressure for adults (JNC 7 report)

Blood Pressure Classification	SBP (mmHg)	DBP (mmHg)
Normal	< 120	≤80
Pre-hypertension	120-139	80-89
Stage 1 Hypertension	140-159	90-99
Stage 2 Hypertension	≥160	≥100

Unlike the classification of JNC 6 report, a new category was introduced: the prehypertension and the stages II and III

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were merged. People with prehypertension (SBP: 120-139 mmHg) are considered to have a higher risk of hypertension, individuals with BP 130-139/80-89 mmHg in the range are at twice the risk of developing hypertension than those with lower values.

Hypertension is often accompanied by other risk factors (hypercholesterolemia, diabetes, etc.) acting synergistically on atherogenesis. Multivariate analysis showed, however, that hypertension is an independent risk factor for ischemic heart disease. [7]

Experimental studies results on the effectiveness of antihypertensive treatment are an indirect evidence of involvement of hypertension as major cardiovascular risk factor. Thus, the reduction in BP medication lowers cardiovascular morbidity and mortality: stroke risk decreases by 42% while the risk of ischemic heart disease decreases with only 14%, the explanations for this small benefit being: multi-factorial etiology of atherosclerosis, antihypertensive treatment duration, complex effects of treatment. It is considered that the effect of hypertension control in preventing ischemic heart disease requires decades to manifest itself, on the other hand, some antihypertensive drugs (beta blockers, diuretics) have adverse effects on serum lipid levels, glucose tolerance and insulin resistance, which could adversely affect the development of coronary atherosclerosis on hypertensive patients.

HBP is actually a disease. Essential HBP accounts for 75-90% of all HBP, a prevalent mass disease, affecting about 10% of the general population, 25% of people over the age of 40 years and 40% of those over 64 years. The incidence of hypertension varies between 10-20% in industrialized countries and between 5-10% in developing countries. The number of hypertensive patients is estimated at over 50 millions in U.S., 7-8 millions in France, while in

Germany, every 5th inhabitant has hypertension.

Essential HBP occurs most often after 30 years, its frequency increases with age. Up to 60 years the incidence of HBP is about the same in both sexes, after the age of 60 years the disease is more common in women [5].

Risk factors, apart from socio-economic conditions, are represented by a series of individual or group factors, such as: family history, which, according to epidemiological studies in hypertensive families and twins, would contribute in 30 - 60% of the genesis of HBP; sex (it only has value in conjunction with other factors, namely, the incidence of HBP in women is lower before menopause, but after 50-60 years the frequency is higher in women); age (after 60 years BP increase with 10 mmHg by year due to lower vessel elasticity); increased salt intake associated with the presence of genetic abnormalities in transmembrane transport of sodium, calcium deficiency, obesity (obese children and young people are most vulnerable); alcohol, even moderate, increases BP values, the association with other risk factors (smoking, coffee consumption, psycho-emotional factors) [4,6] increases the risk of death by coronary heart disease; smoking, sedentary lifestyle, especially when are also associated with obesity, psycho-emotional factors related to personality type and the type of activity; the association of the factors listed above with diabetes mellitus and atherosclerosis increases the risk of disease by 2-3 times due to common pathogenic factors [9].

2. Objectives

- methods of monitoring, measuring and medical evaluation of HBP in police staff from Brasov Police Inspectorate;
- describe the distribution of HBP according to some personal characteristics;

- longitudinal approach in measuring the incidence of HBP in the police staff;
- the impact of HBP and the association with major diseases which characterizes the morbidity panel of the studied population;
- identifying which people are at risk of disease resulting from the measurement and the analysis of epidemiological health.

3. Materials and Methods

- for the practical application of this paper, data was used from the medical records of periodic medical examination conducted in 2010;
- for the classification of the persons exposed to the risk of HBP was used the one recommended by JNC VII May 21, 2003 U.S.;
- to present and describe their distributions were used absolute frequencies, relative frequencies expressed as percentage and cumulative frequencies;
- description of the distribution of observed values for quantitative features using the indicators of central tendency and dispersion indicators;
- description of the morbidity model based on prevalence rates (general and specific) and structural indicators (weights expressed as a percentage);
- the results were presented in tables and graphically illustrated.

4. Results and discussions

Distribution of systolic blood pressure (SBP) recorded to the examined individuals has the following characteristics: SBP minimum was 90 mmHg, 210 mmHg maximum value, the

value most frequently recorded – 120 mmHg, SBP average - 125.3 mmHg (± 15.5 mmHg).

24.0% of those examined showed values of SBP lower than 120mmHg and are considered with normal blood pressure.

60.5% had values between 120 and 139 mmHg representing the prehypertension group.

Stage I hypertension, blood pressure values between 140–159 mmHg occurred in 10.6% of those examined and stage II - SBP equal to or greater than 160 mmHg in 4.6%. That 15.5% of those examined, according to SBP values are hypertensive (graphic 1).

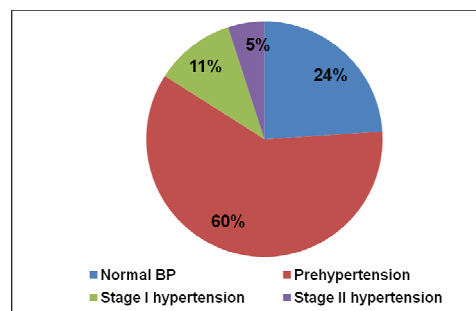


Fig. 1. *Studied group structure according to the stages of BP*

Sex based distribution (table 2) shows the following aspects:

- to males, only 20.7% of the total number of examined people showed normal values of SBP, while to women the percentage is 53.2%;
- prehypertension stage (SBP values between 120-139mmHg) was recorded in 63.3% of the total of men and 38.7% of all women examined.

The distribution of SBP values according to sex Table 2

SBP values (mmHg)	Men	Women	Total
< 120	114	33	147
	→ 77.6 %	→ 22.4 %	
	↓ 20.7 %	↓ 53.2 %	
120 – 139	347	24	371
	→ 6.5 %	→ 93.5 %	
	↓ 63.0 %	↓ 38.7%	
140 – 159	65	2	67
	→ 97.0 %	→ 3.0 %	
	↓ 11.8 %	↓ 3.2 %	
≥ 160	25	3	28
	→ 89.3 %	→ 10.7 %	
	↓ 4.5 %	↓ 4.8 %	
Total	551	62	613

Distribution by age groups shows that normal values of SBP was recorded with a share of 29.9% at ages 30-34 years followed by the age between 25-29 years (19.7%) and 20 -24 years (16.3%). Most prehypertensive people (SBP between 120-139 mmHg) were aged between 25-29 years - 23.5%, followed by the 35-39 years group (19.9%) and 30-34 years (18,9%).

Therefore, over 60% (62.3%) of potential hypertensive people is placed in the age range 25-39 years. Modal age group for both hypertension stage I and stage II is between 45-49 years (34.3% for SBP values of 140-159 mmHg, and 32.1% for values of 160 mmHg and above) (graphic 2).

Regarding the distribution of systolic blood pressure values by grade we have to remember the following:

- From the total number of people with values between 120-139 mmHg SBP (persons at risk for hypertension), the largest share is held by the police chief agents (41.5%) followed by police officers (17.8 %) and chief inspector (9.2%).

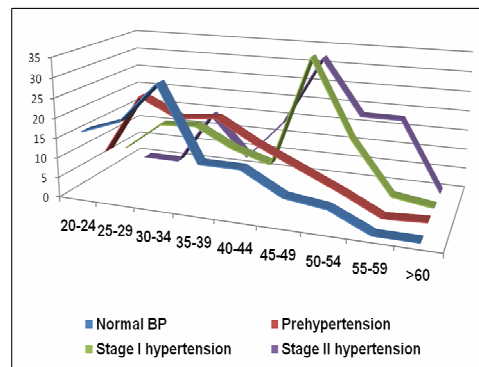


Fig. 2. Age distribution according to SBP

- Values of 140-159 mmHg (stage I hypertension) occurred, in descending order of proportions, in the main police agents (29.9%), chief of police agents (16.4%) and police officers (11,9%) in equal proportions, 9.0%, respectively, in fourth place are the main functions of the high commissioner and chief inspector.

- Stage II hypertension with SBP values (≥ 160 mmHg), was found in the chief police officers and agents (35.8% of the people with SBP ≥ 160 mmHg) and the proportion of 14.3% to under-commissary, followed by commissioners and chief inspector with equal proportions - 10.7% (graphic 3).

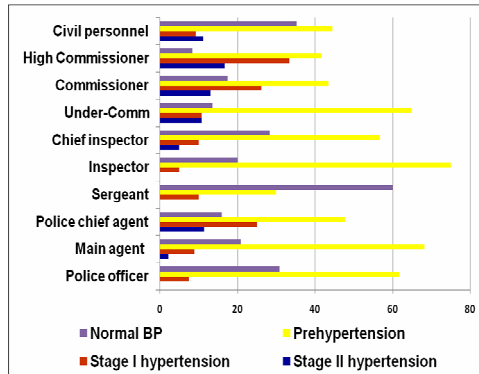


Fig. 3. *Distribution of SBP values according to job position*

Distribution shows interest and the description of SBP values distribution correlated with job position variable using structural indicators is also interesting, the denominator being the total persons with that function, as follows:

- For all positions except high commissioner and sergeant, the largest share is held by people with values of 120-139 mmHg SBP (potential hypertensive);
- of the total number of high commissioners, most (47.0%) had values ≥ 140 mmHg SBP;
- more than a third (39.1%) of the number of commissioners and police chief agents (36.4%) the recorded values were ≥ 140 mmHg SBP.

5. Conclusions

- overall prevalence rate in Brasov IPJ morbidity model is 21.5%;
- arterial hypertension is most common disease among the inspectorate staff, the prevalence rate being 5.9%;
- ischemic heart disease and obesity ranks second with a frequency each of 3.9% and accounted for 18.2% of all patients;

- stage II hypertension was diagnosed in 3.3% of those examined, while stage I had a prevalence rate of 2.6%.;
- the percentage of hypertensive patients of all patients is 27.3%;
- prevalence rate of hypertension SBP > 140 mmHg was 15.5%;
- 60.5% represents the frequency for people with risk of hypertension prehypertension SBP = 120-139 mmHg;
- 62.3% of potential hypertensive are aged between 25 and 39 years;
- blood pressure is higher to men than women 63.3% vs. 38, 7% of examined men and women.

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