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Original Paper

Arterial Hypertension Epidemiology: Romania among the Balkan Countries – Data from SEPHAR Surveys

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REZUMAT

Epidemiologia hipertensiunii arteriale: România între țările balcanice – date din studiile SEPHAR

Scopul studiului constă în evaluarea epidemiologiei hipertensiunii arteriale pe baza studiilor desfășurate în țările Peninsulei Balcanice comparându-le din punct de vedere al metodologiei și a rezultatelor obținute cu studiile SEPHAR.

Metode: Studiul SEPHAR II este un studiu de prevalență a hipertensiunii arteriale desfășurat în România în perioada octombrie 2011 – martie 2012. Am comparat din punct de vedere al metodologiei și al rezultatelor obținute date din 9 studii asemănătoare desfășurate în ultimii 15 ani în țările din regiunea geografică balcanică: Bulgaria, Kosovo, Albania, Bosnia Herzegovina, Turcia, Croația, Slovenia, Serbia, Grecia.

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Rezultate: Prevalența hipertensiunii arteriale în populația României este de 40,4%, similară cu prevalența bolii în celelalte țări balcanice. În România se înregistrează cel mai ridicat grad de constientizare al bolii (69,5%) dintre toate țările analizate. Proporția pacienților hipertensivi care primesc tratament este mai mare în Romania (85%) comparativ cu celelate țări balcanice. Controlul adecvat al hipertensiunii este obținut la 25% din populația hipertensivă tratată din România, procent mai ridicat decât cel înregistrat în celelalte țări din Peninsula Balcanică.
Concluzii: Studiul SEPHAR II a avut o metodologie asemănătoare cu studiile omoloage efectuate în celelalte țări balcanice. Datele epidemiologice privind hipertensiu-nea arterială în această zonă geografică sunt similare în majoritatea țărilor Peninsulei Balcanice, cu discrete diferențe, evidențiindu-se prevalența încă crescută a hipertensiunii arteriale. În ceea ce privește constientizarea bolii, tratamentul acesteia și controlul adecvat al valorilor tensionale, România se situează într-o poziție favorabilă fată de celelalte tări balcanice, însă este departe încă de o situație ideală.

Cuvinte cheie: hipertensiune arterială, prevalența, control, Peninsula Balcanică, studiu

ABSTRACT

Objectives: To evaluate the epidemiology of arterial hypertension in the Balkan countries, based on the surveys conducted in these countries and comparing their methodology and results with those obtained from SEPHAR studies.
Methods: The SEPHAR II was an arterial hypertension study conducted in Romania between October 2011 and March 2012. We compare the methodology and the results obtained from 9 other similar studies conducted in the last 18 years in the countries of the Balkan Peninsula: Bulgaria, Kosovo, Albania, Bosnia Herzegovina, Turkey, Croatia, Slovenia, Serbia, and Greece.
Results: The prevalence of arterial hypertension in adult population of Romania was 40, 4%, similar with the prevalence of the disease in the other Balkan countries. In Romania we observed the highest awareness rate of the disease (69, 5%) from all the analysed countries. The proportion of treated hypertensive patients was higher in Romania (85%) than in the other countries. The adequate control of hypertension was obtained in about 25% of patients in Romania, which was greater than that observed in the other countries of Balkan Peninsula.
Conclusions: The design of SEPHAR studies was similar to the homologues studies conducted in the other countries of the Balkan Peninsula. The arterial hypertension in Romania shared similar epidemiological characteristics with the other Balkan countries with only discrete differences. A high prevalence of hypertension has been observed in this region. Regarding the awareness, treatment and control of hypertension with treatment, Romania had a favourable position among the Balkan countries but was still far from an ideal situation.

Key words: hypertension, prevalence, control, Balkan, survey

INTRODUCTION

Cardiovascular disease prevention showed its utility and efficiency in developed countries, where it lowered the cardiovascular morbidity and mortality. Instead, in Balkan countries, the mortality due to this pathology displayed an ascendant, worrying curve [1], diagnosis and control of arterial hypertension (HT) representing efficient methods for lowering cardiovascular mortality. Though recent studies didn't show any significant differences between hypertension prevalence in developed versus developing countries [2], stroke mortality (the best surrogate marker of hypertension effects) was much higher in developing countries. Since modifying genetics was a target impossible to reach for the moment, the only solution was represented by the evaluation and correct treatment (pharmacological

and non pharmacological) of arterial hypertension.

As international scientific organisations recommend, cardiovascular disease prevention must be implemented in an individualized way in each geographical region, being inappropriate and impossible to apply the same prevention methods globally [3,9]. In this context, the Balkan Peninsula aggregates a number of countries with common geographical and social characteristics, many of them sharing economical transition.

The epidemiological data about hypertension in Romania date back to 2005, when SEPHAR I study provided an overall statistical view of hypertension in adult population of Romania [4-7]. Since then, the variables of equation had changed in part due to natural dynamics of Romanian population, but also due to the effects of the national prevention programs (i.e. The National Program for the Wealth Evaluation, 2007-2008) [8].

An up to date view of hypertension epidemiology was necessary in order to verify the efficiency of the implemented prevention measures and in the same time to trace new strategies for lowering the national cardiovascular risk.

In the last 15 years, similar studies had been conducted in most of the Balkan countries, excepting Macedonia and Montenegro.

METHODS

Starting 1996, in the countries of Balkan Peninsula, several studies had been conducted in order to evaluate the hypertension epidemiology; these studies analysed various numbers of subjects, population samples representative or not for the general population of the respective countries.

In a chronological order, these studies were (year, number of subjects): Bulgaria (1996-1997, 1618 subjects) [11], Kosovo(2000, 830 subjects) [12], Albania (2001, 1120 subjects) [13], Bosnia Herzegovina (2002, 2750 subjects) [14], Turkey (2003, 4910 subjects) [15], Croatia (2004-2005, 7031 subjects) [16], Slovenia (2005, 3067 subjects) [17], Serbia (2006, 14204 subjects) [18], Greece (2006, 11540 subjects) [19].

At the present time, we have no data regarding this specifically type of studies to be conducted in Macedonia and Montenegro. In Romania two trials of this type had been performed, the first in 2005 (SEPHAR I) the second being the SEPHAR II study, which was conducted between October 2011 and March 2012 involving 1975 subjects. To fulfil the criteria of representative sample of Romanian population, the participants were recruited from 8 regions of the country considering the recommendations of the National Statistics Institute (NSI), which took into account several public health indices also. Then, from each region, several types of localities were chosen (cities with over 200 000 inhabitants, cities with 50 000- 200 000 inhabitants, cities with less than 50 000 inhabitants and communes). Finally, from each locality, the subjects had been elected by gender and age groups (18-24 years, 25-34 years, 35-44 years, 45-54 years, 55-64 years and 65 or more years) according to data obtained from the last census available at that time (2002 Population Census), each population group being represented equally.

In this way, the study involved subjects from the rural and urban areas, according to the grade of urbanisation of the Romanian population. In similar manner, the majority of the hypertension prevalence studies conducted in Balkan region had analysed both urban and rural exponents, except the Albanian trial which included only the inhabitants of the capital Tirana [13], the trial from Croatia which analyzed only subjects from 4 large cities of this country [16], the trial from Slovenia which involved only subjects from Ljubljana area [17] and the study from Bulgaria which analyzed only Sofia inhabitants [11].

In SEPHAR II, study data was obtained by trained general practitioners in their outpatient office. The subjects had been called for two visits with a 3-5 day interval in between; during this visits, they were evaluated by a 76 items questionnaire, anthropometric measurements, blood pressure (3 measurement for each visit) and heart rate measurements. Similar methodologies have been adopted also in the majority of the other Balkan studies, excepting the studies from Serbia [12], Bosnia-Herzegovina [14] and Turkey [15] in which blood pressure was measured at the subject's domicile.

Regarding participants age, the SEPHAR studies involved subjects aged 18-80, in similarity with the studies from Turkey and Serbia [15, 12]. In a different manner, the studies from Bulgaria, Bosnia Herzegovina, Croatia and Slovenia had analysed only subjects aged 25-64. Likewise, the Albanian trial included a lower proportion of younger people, so the sample couldn't be considered representative for the country population since the analysis of an older

population might have led to an over-estimation of the true prevalence of hypertension [13].

The SEPHAR II trial had a response rate of 69 percent which is an intermediate value between the response rates in the other mentioned countries (Bosnia Herzegovina 91, 5%, Albania 72, 7%, Slovenia 30, 9%, Turkey 52%). [14, 13, 17, 15]

Definitions

Hypertension was defined in SEPHAR II survey as in the other mentioned Balkan studies, as systolic blood pressure (SBP)> 140 mmHg and/or diastolic blood pressure (DBP)>90 mmHg at both study visits or previously diagnose hypertension under treatment during the last two weeks, regardless of BP values.

Controlled blood pressure values was defined by SBPC <140 mmHg and DBP<90 mmHg in hypertensive subjects who were under treatment for at least 2 weeks before, taking into account the maximum value between the two SBP/DBP values from each visit.

Awareness of hypertension was defined by the percent of hypertensive subjects who declared being previously diagnosed with hypertension by a medical professional.

RESULTS

Arterial hypertension prevalence by area of residepnce, age and sex

Among the 1975 subjects included in SEPHAR II study, 40, 4% (798 subjects) had been considered hypertensive in respect with the definitions mentioned before. Extrapolating these data to the general population of the country, we could estimate that in Romania at the actual time there are approximately 7 billion (6 800 751) hypertensive people from a total population of 16 833 541 inhabitants.

In the other Balkan countries the following arterial hypertension prevalence were recorded: Slovenia 66%, Serbia 47%, Bosnia Herzegovina 40%, Bulgaria 39, 5%, Croatia 37.5%, Albania 31.8%, Turkey 31.8%, Greece 31.1%, and Kosovo 30.6%. (**Fig. 1**)

The mean blood pressure was 132, 47±21, 35 / 82, 44±10,92 mmHg, the value being higher in the older age groups. Similar values have been reported in the other countries: Slovenia (127,6±17,8/83,5±11,2), Albania (125,7/75,9 mmHg), Bosnia Herzegovina (133/84 mmHg), Serbia (135,2/82,4 mmHg), Bulgaria (128±22,3/82,7± 12,9 mmHg at women and 138,2 ± 19,8/89,8±12,5 at men).

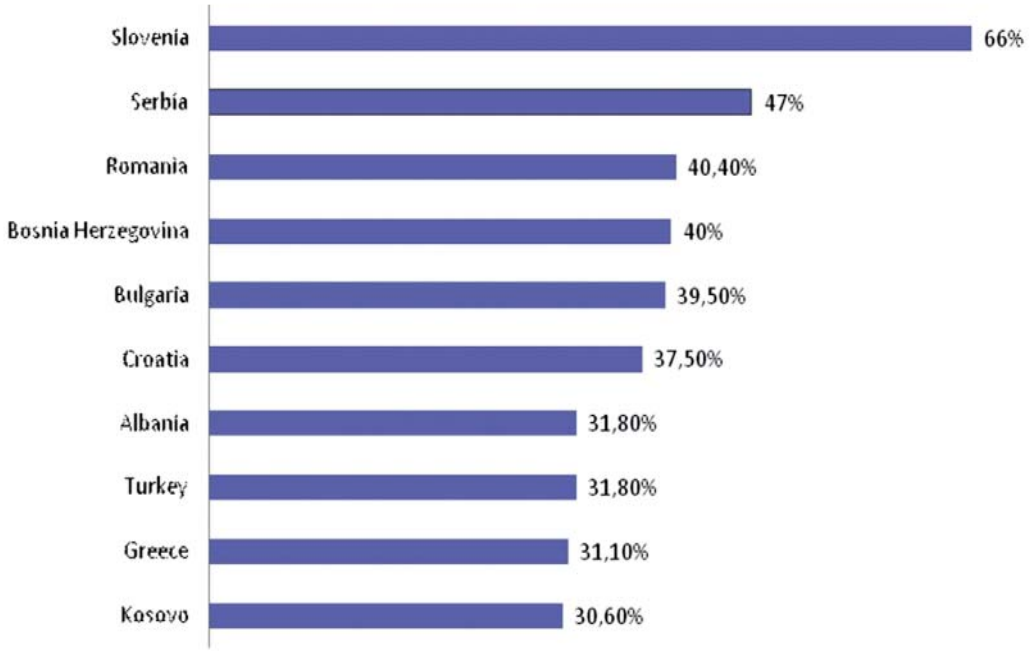

Figure 1. Arterial Hypertension Prevalence in Balkan Countries

The majority of the hypertensive subjects were women (438 subjects, 54, 9%). In the rural area, the prevalence of HT was significantly higher in women's then men's group (40, 6% vs. 36%, p<0,003). While in the urban area no significant sex differences in HT prevalence was recorded (41, 1% vs. 39, 5%, p=0,831).

In other parts of Balkan Peninsula, men and women were reported to be hypertensive in different proportions. Thus, there are countries where the percent of hypertensive men was greater (Albania, Bulgaria, Greece, Slovenia, Serbia), while in other countries the percent of hypertensive women was higher (Bosnia Herzegovina, Turkey, Kosovo); there were no differences between sexes in arterial hypertension prevalence in Croatia.

It was observed no significant differences between rural and urban areas of residence regarding hypertension prevalence (41, 4% vs. 39, 8%, p=0,486). The same pattern was reported in Turkey, with equal percents of hypertensive patients in rural and urban areas (32, 9% vs. 31, 1%, p>0, 05), while in Serbia significant differences were reported in arterial hypertension prevalence in respect of area of residence (rural vs. urban: 49, 4% vs. 44, 3%, p<0,001).

The highest prevalence of hypertension was recorded in the older than 65 years patients group (81%), a decrease of HT prevalence in younger age groups being noticed as it was expected (18-24 years – 11,1% vs. 25-34 years – 7,8%, vs. 35-44 years – 23,1% vs. 45-54 years – 49,7% vs. 55-64 years – 65,8%, p<0,0001) (**Fig. 2**). The differences in HT prevalence observed in the 6 age groups were independent by sex and geographical area. Correspondingly, in the other states of the Balkan Peninsula, the prevalence of HT rises with age

The awareness, treatment and control of HT

Among the 798 hypertensive patients, 555 (69, 5) knew about their disease, the diagnosed cases being 243 (12, 3%) p<0, 0001. The data obtained from the studies conducted in the other countries show a lower awareness among participants: Turkey – 40, 7%, Serbia – 60, 4%, Greece – 60, 2%.

A number of 472 patients (85%) were receiving antihypertensive treatment at the time of study enrollment. The proportion of treated hypertensive patients is reported to be lower in the other countries: Turkey – 31, 1%, Serbia – 60, 4%, Greece - 51, 2%. All the studies showed that woman are more frequently treated than men, regardless the area of residence.

The control of HT (BP<140/90 mmHg) was obtained in only 118 subjects (25%) more frequently in the urban area than in the rural one. The proportion of controlled hypertensive patients in the other analysed studies was: 8, 1% in Turkey, 8% in Croatia, 20, 9% in Serbia (**Fig. 3**).

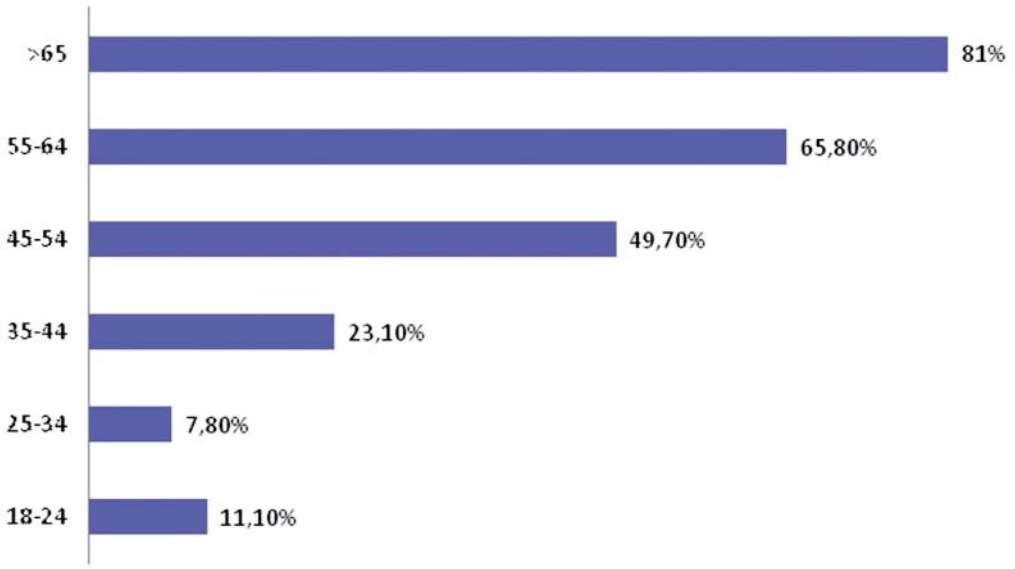

Figure 2. Arterial Hypertension Prevalence by Age Group in SEPHAR II

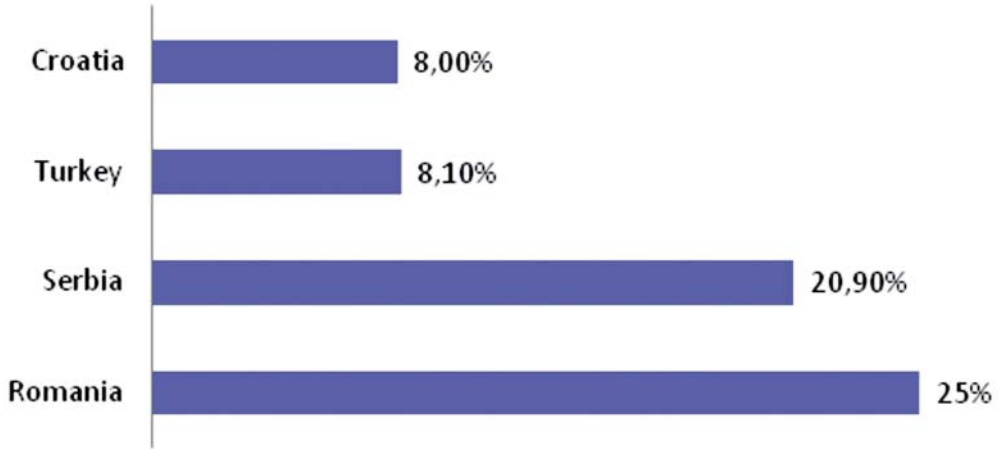

Figure 3. The Arterial Hypertension Control in Balkan Region

Between SEPHAR I and SEPHAR II there has been a 10,7% decrease in hypertension prevalence together with an increase by 57% in awareness of HT and an increase by 52% in treatment of HT, leading to almost doubling of the general HT control rate.

DISCUSSIONS

The SEPHAR studies are epidemiological surveys of cardiovascular risk in Romania based on a representative sampling of the general adult population of the country. The necessity of these studies resides in the lack of actualised data regarding prevalence, treatment and control of HT and the other cardiovascular risk factors in Romania (10).

From this point of view, with the help of these studies, Romania is taking a place among the other Balkan Peninsula countries, in which similar smaller or larger studies were conducted, the SEPHAR II being the most recent one in the region.

The most recent studies had a complex design, in accordance to homologues studies conducted in Western European Countries, analysing representative samples for the general population of the respective country, regarding the number and the age interval of the subjects included, and the area of residence.

Generally, all the studies mentioned before revealed a common, easy to guess and understand Balkan trend: the prevalence of HT rises with age, irrespective of sex or the area of residence.

In Romania we observed o favourable situation regarding the awareness of hypertension. Thus, 69, 5% of hypertensive patients were aware of their disease, in contrast with the participants from the other countries which knew about their disease in a smaller proportion (Greece 60, 2%, Serbia 58%, Turkey 41%) (19, 18, 15). In all these studies we observed a common pattern: the awareness oh hypertension is higher in the older age groups.

Regarding hypertension treatment, Romania had a favourable position, taking into account that 85,04% of the known hypertensive patients were receiving treatment at the time of the enrolment; in contrast, in the other Balkan trials the proportion of treated hypertensive patients was significantly lower (Slovenia 61%, Serbia 60.4%, Greece 51.2%, Bulgaria 37%) (17, 18, 19, 11). The exception was Albania, reporting in 2003 a proportion of 87% of patients being treated (11).

When looking at the adequate control of HT with treatment in Balkan Peninsula we observed extremely variable numbers. In the majority of countries, the proportion of patients efficiently controlled is lower than 10% (Serbia 3.4%, Croatia 8%, Turkey 8.1%, and Bulgaria 6.5%) (18, 16, 15, 11). As SEPHAR II study showed, in Romania the percent of patients with adequately controlled hypertension reaches 25%.

The Balkan Peninsula was a relatively homogenous and unique region due to geographical, historical and economic circumstances. The institutional and cultural lag was common to many of the Balkan countries; the phenomenon of economic

transition contributed to the high morby-mortality caused by preventable diseases, including cardiovascular diseases. The epidemiological surveys confirmed that HT's prevalence was higher in Balkan Peninsula than in other regions of the world, and indicate the need for greater institutional efforts for the diagnosis and adequate treatment of the disease.

The control of HT by treatment still represents a major unresolved problem with important implications in public health, knowing that uncontrolled HT associates a significant increase of fatal and non-fatal cardiovascular events.

CONCLUSIONS

The design of SEPHAR studies was similar to the homologues studies conducted in the other countries of the Balkan Peninsula. The arterial hypertension in Romania shared similar epidemiological characteristics with the other Balkan countries with only discrete differences. A high prevalence of hypertension had been observed in this region. Regarding the awareness, treatment and control of HT values with treatment, Romania had a favourable position among the Balkan countries but still far away from an ideal situation. The epidemiological surveys in this domain are necessary for tracing new strategies in order to lower the cardiovascular mortality in the future.

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