

Characterisation of patients with hypertensive crisis admitted to an emergency hospital

Caracterização dos pacientes atendidos com crise hipertensiva num hospital de pronto socorro

Características de los pacientes tratados de crisis hipertensiva en un hospital de emergencias

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Abstract

Theoretical framework: Hypertensive crisis is the acute stage of hypertension. It is considered a chronic condition that affects people worldwide.

Objectives: To characterise the profile of patients with hypertensive crisis admitted to an emergency hospital.

Methodology: Quantitative, descriptive study with secondary data collection in the paper charts and electronic records of patients admitted with hypertensive crisis between January and May 2013. Data were analysed using descriptive and inferential statistics, and a 5% level of significance was adopted ($p < 0.05$).

Results: The association between the stage of hypertension and age group shows that the most individuals aged less than 40 years (44.6%) had stage 1 hypertension, those aged between 40 and 59 years had stage 2 hypertension (34.6%), and those aged less than 60 years had stage 3 hypertension (48.0%).

Conclusion: The results of this study point to the need to create new strategies for improving adherence to hypertension treatment and user empowerment.

Keywords: ypertension; nursing; urgency; emergency.

Resumo

Enquadramento: A crise hipertensiva é o estado agudo da hipertensão arterial. Doença considerada crónica que acomete a população mundial.

Objetivos: Caracterizar o perfil dos pacientes com crise hipertensiva atendidos num hospital de pronto socorro.

Metodologia: Pesquisa quantitativa, descritiva com colheita de dados secundários em boletins de atendimento e registo eletrónico de pacientes internados com crise hipertensiva no período de janeiro a maio de 2013. Os dados foram analisados por meio de técnicas de estatística descritiva e inferencial, adotando nível de significância de 5% ($p < 0,05$).

Resultados: A associação entre o estágio da hipertensão e faixa etária aponta que o maior percentual dos sujeitos com idade inferior a 40 anos de idade (44,6%) apresentavam estágio I de hipertensão, a faixa etária entre 40 e 59 anos estágio II (34,6%), e os com idade igual ou superior a 60 anos de estágio III (48,0%).

Conclusão: Os resultados da pesquisa remetem-nos à necessidade de criação de novas estratégias para a melhoria da adesão ao tratamento da hipertensão arterial e empoderamento do utente.

Palavras-chave: hipertensão; enfermagem; urgência; emergência.

Resumen

Marco contextual: La crisis hipertensiva es la etapa aguda de la hipertensión arterial, una enfermedad considerada crónica que afecta a la población mundial.

Objetivos: Caracterizar el perfil de los pacientes con crisis hipertensiva atendidos en un hospital de emergencias.

Metodología: Investigación cuantitativa y descriptiva con recogida de datos secundarios en boletines de servicio y registo electrónico de pacientes ingresados por crisis hipertensiva en el período de enero a mayo de 2013. Los datos se analizaron por medio de técnicas de estadística descriptiva e inferencial con un nivel de significación del 5% ($p < 0,05$).

Resultados: La asociación entre el estadio de la hipertensión y la edad muestra que el mayor porcentaje de los sujetos de menos de 40 años (44,6%) presentaba el estadio I de hipertensión, los de edad entre 40 y 59 años el estadio II (34,6%) y los de edad igual o superior a 60 años el estadio III (48,0%).

Conclusión: Los resultados de la investigación muestran la necesidad de crear nuevas estrategias para mejorar la adhesión al tratamiento de la hipertensión arterial y la capacitación del usuario.

Palabras clave: hipertensión; enfermería; urgencia; emergencia.

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Introduction

In Brazil, a high percentage of the population is affected by chronic conditions, thus prevention and control actions are being prioritised. This group includes Systemic Arterial Hypertension (SAH), which is considered as a serious public health issue for affecting 20% of the adult population worldwide. SAH is a condition characterised by the persistence of blood pressure levels above the limits established by the World Health Organization (WHO). Hypertension increases the risk of Cerebrovascular Accident (CVA), Coronary Artery Disease (CAD), Heart Failure (HF), Chronic Kidney Disease (CKD), and Peripheral Vascular Disease (PVD) (Carnellosso, Barbosa, Sousa, Monego, & Carvalho, 2004; Sociedade Brasileira de Hipertensão Arterial, 2010).

SAH is an important cardiovascular Risk Factor (RF) and is more worrying when associated with other RF such as obesity, sedentary lifestyle, smoking, poor diet, black race, advanced age, and low socioeconomic level. This group of people is responsible for the increased demand for hospital emergency services (Velasco, Neto, Martins, & Neto, 2014).

Hypertensive urgency is a sudden increase in blood pressure, with stable clinical conditions, without involving impairment of target organs. Blood pressure should decrease within 24 hours, often with oral medication. It is characterised by a severe elevation in blood pressure associated with a severe clinical picture, progressive target organ damage, and imminent death risk. This clinical condition requires an immediate decrease in blood pressure and should be treated with parenteral antihypertensive agents (Velasco et al., 2014).

This study aimed to identify the profile of patients with hypertensive crisis admitted to an Emergency Hospital. By knowing the characteristics of hypertensive patients, it is possible to make a more effective intervention at the time of the crisis, as well as implement effective care measures within the healthcare team (SBHA, 2010).

Background

Hypertension usually integrates a cluster of cardiovascular risk factors which are operationally defined as the metabolic syndrome. Among these risk

factors, arterial hypertension is the leading cause of mortality worldwide and the third cause of illness-induced disability after malnutrition and sexually transmitted diseases (Zanchetti et al., 2014).

In view of the above, Blood Pressure (BP) is the force through which the heart pumps the blood through the blood vessels. It is determined by the volume of blood pumped by the heart (cardiac output) and the peripheral resistance of the blood vessels (SBHA, 2010).

Blood pressure results from the pumping activity of the heart during the systolic and diastolic stage. During the systolic phase, BP reaches its maximum level and, then, according to the heart's mechanics, it drops to its minimum level in the cardiac relaxation phase, called diastolic phase.

BP increases linearly with age. In this way, the risk for developing cardiovascular diseases associated with increased BP increases as people get older. Global estimates suggest that arterial pressure is higher in men up to 50 years of age and in women older than 60 years of age. Its prevalence is also higher in afro-descendant women than in Caucasian women. The population classified as hypertensive has lower socioeconomic factors. Among these characteristics are poor eating habits, excessive alcohol consumption, psychosocial stress, poor adherence to treatment, and low educational level (SBHA, 2010).

Blood pressure is also associated with physical activity. Patients should exercise in order to decrease BP, as well as to treat and prevent SAH. In order to maintain a good cardiovascular health and quality of life, the recommended amount of exercise for an adult is of 30 minutes of moderate continuous or accumulated physical activity at least five times a week, provided that they are able to perform it. It is recommended that individuals start by performing mild to moderate activities. They should only move on to more intense activities after this period of adaptation, if they feel comfortable with it and if there is no contraindication (SBHA, 2010).

Antihypertensive drugs are divided into six main categories: diuretics, adrenergic inhibitors, direct vasodilators, angiotensin-converting enzyme (ACE) inhibitors, calcium channel blockers, and angiotensin II (AII) type 2 receptor (AT₂) antagonists. The combination of drugs is often used, since the initial monotherapy is effective in only 40 to 50% of the cases (SBHA, 2010).

The provision of care in case of hypertensive emergency aims at reducing blood pressure levels by around 25% of initial value within 1 to 2 hours. The severity of the symptoms depends more on the speed at which the blood pressure increased than on the pressure levels reached. Thus, chronic hypertensive patients may tolerate higher levels without neurological symptoms, while a patient with acute hypertension may present acute hypertensive encephalopathy (SBHA, 2010).

The most commonly used drugs are sodium nitroprusside at a slow and constant infusion rate; intravenous nitroglycerin in patients with associated angina; and intravenous furosemide in congested patients (Pedroso, & Oliveira, 2008).

The hemodynamic monitoring of the patient's BP and cardiovascular status is necessary during the treatment of hypertensive emergencies and urgencies. A sudden drop in blood pressure may occur, which would require an immediate action to adjust BP to an acceptable level without leaving sequelae (SBHA, 2010).

The intervention aims to reduce the critically high blood pressure to a hemodynamically safe level (not necessarily to the normal level), thus target organ damage is limited. Ideally, BP should be reduced with minimum side effects, while preserving the renal, cerebral and cardiac functions.

The provision of nursing care to hypertensive patients aims at controlling and reducing BP in primary, secondary and tertiary care. Nursing must support, educate and guide the patient, so that she/he understands the importance of treatment adherence, the necessary changes in her/his lifestyle, and the need for regular appointments with healthcare professionals to monitor, identify, and treat disease complications. The healthcare professionals' role is to emphasise the concept of blood pressure management, educating patients and their families on the disease and drug side effects.

For an adequate assistance, the nursing process may be used, which consists of five steps: assessment, nursing diagnosis, planning, implementation, and evaluation. The nursing process is planned to meet the patient's specific needs, and it is designed so that all people involved in the treatment may have access to the care plan. It also has a holistic focus; helps to ensure that the interventions are designed based on the individual and not the disease; accelerates the

diagnoses and the treatment of potential and current health problems, reducing incidence and length of hospital stay (Almeida, Lucena, Franzen, & Laurent, 2011).

The nursing team should receive continuous training in order to qualify the appointments. In these appointments, the following aspects should be addressed: risk factors, treatment used and non-pharmacological measures to be adopted by patients, such as lifestyle changes, physical activity and changes in eating habits.

Research questions

Hospital emergency services, such as the main emergency hospital in the state of Rio Grande do Sul, are currently overcrowded. However, the demand does not always correspond to users with immediate need for intervention and care, as people still discredit primary care and overestimate hospital care and, in this case, the emergency department. For many years now, the reality is that the population considers the emergency room as a place to meet all their health-related needs. This reality is still very rooted in the people from Porto Alegre and it is the reason of many complaints in relation to care and the recently established risk protocol to organise care provision. The care model is in accordance with the institution's risk classification and philosophy, which is to prioritise polytraumatised patients. For this reason, the healthcare team needs to identify the patients' profile to discuss and plan measures aimed at mitigating the chaos that was identified in the healthcare sector, especially regarding the treatment of hypertensive patients.

In view of the above, the following guiding question of this study was formulated: What is the profile of patients with hypertensive crisis admitted to the emergency department an emergency hospital in the municipality of Porto Alegre/RS?

Methodology

A quantitative descriptive study was conducted with secondary data collection in patients' charts and electronic records stored in the Service of Medical and Statistical Archive (*Serviço de Arquivo Médico e*

Estatístico - SAME). The quantitative research involves the systematic collection of quantifiable data under conditions of extreme control, in addition to the analysis of these data through Statistics (Polit & Beck, 2011).

The population consisted of the records of patients admitted to the emergency department of the Emergency Hospital of Porto Alegre between January and May 2013. Inclusion criteria were: the records in which the patient had a diagnosis of hypertensive crisis at the time of consultation, patients aged 18 years old or older. The records without enough information for data collection were excluded.

The emergency department receives approximately 15,000 visits per month. A minimum of 385 cases were needed for this study, considering a margin of error of approximately 5%, power at 80%, and a significance level of $p < 0.05$.

Data were collected by the author at the Emergency Hospital of Porto Alegre - RS through secondary data in patients' charts and electronic records between 1st November 2013 and 30th February 30, 2014, after approval from the institution's Research Ethics Committee. These records are available in the Service of Medical and Statistical Archive (SAME) of the hospital. A survey instrument was used to obtain the following information: data on sample characterisation: gender, date of birth, race, origin, date of service, education; clinical data: blood pressure level, signs/symptoms, cardiovascular risk factors and referral after care provision. The sample of this study consisted of patients' charts between January and May 2013. This period was chosen given the implementation of the risk classification protocol. Data analysis aims at identifying and obtaining information on the collection, respecting criteria related to clarity, logical evidence sequence, explanation building and comparison with the scientific literature (Prodanov & Freitas, 2009).

The data collected were organised in Excel® spreadsheets and analysed using SPSS (Statistical Package for the Social Sciences, SPSS Inc, Chicago), version 18.0. for Windows.

Data were analysed using descriptive and inferential statistic methods. Categorical variables are presented as tables with relative and absolute frequencies, while continuous variables are shown as measures of central tendency (mean and median) and dispersion (standard deviation and interquartile ranges).

The student's t-test was used to compare means between groups with symmetrical distribution. Pearson's chi-square test, complemented by the adjusted residual analysis, was applied to compare proportions. The level of significance was set at 5% ($p \leq 0.05$).

In accordance with Resolution 466/2012 (2012), this study was first submitted for approval by the Research Ethics Committee of the Methodist University Centre IPA and subsequently approved by the Committee of the City of Porto Alegre, under protocol no. 16651813.9.0000.5308.

Results

Characterisation of the sample

Of the 557 patients (100%), it was observed that the largest group of individuals was the age group between 50 and 59 years old (24.8%), followed by the age group between 40 and 49 years old (23.5%). The smallest age group was composed of patients older than 80 years, corresponding to 2.95%. It was also possible to identify a higher percentage of hypertensive crisis in the female population (62.5%). In relation to race, most patients with hypertensive crisis were white (75.9%), followed by black people (12.9%) and brown people (10.6%). Most patients admitted to the hospital (81%) lived in the city of Porto Alegre - RS.

Table 1
Sample characterisation

Variables	n=557
Age (years) - mean \pm SD	53.6 \pm 14.4
Age group – n(%)	
< 30	26 (4.7)
30 – 39	66 (11.8)
40 – 49	131 (23.5)
50 – 59	138 (24.8)
60 – 69	117 (21.0)
70 – 79	63 (11.3)
\geq 80	16 (2.9)
Gender – n(%)	
Male	209 (37.5)
Female	348 (62.5)
Race – n(%)	
White	423 (75.9)
Black	72 (12.9)
Brown	59 (10.6)
Indigenous	1 (0.2)
Yellow	2 (0.4)
Region – n(%)	
POA	451 (81.0)
Greater POA	100 (17.9)
Countryside	6 (1.1)

In relation to the blood pressure levels found and observed in this study, a higher prevalence was found in the individuals with stage 3 hypertension (40%, n= 223), considering that women (n=348) show a higher percentage than men (n= 209). The

mean systolic blood pressure was higher in women (171.2 \pm 24.0) than in men (169.7 + 22.3), but no statistical significance was found ($p>0.05$) in relation to the data found in Table 2, as can be confirmed as follows:

Table 2
Data on blood pressure

Variables	Total Sample (n=557)	Men (n=209)	Women (n=348)	p
SBP - mean \pm SD	171.2 \pm 23.4	169.7 \pm 22.3	172.1 \pm 24.0	0.256
DBP - mean \pm SD	106.1 \pm 15.1	106.3 \pm 14.5	106.0 \pm 15.5	0.868
Stages of Hypertension – n(%)				0.382
1	156 (28.0)	57 (27.3)	99 (28.4)	
2	178 (32.0)	74 (35.4)	104 (29.9)	
3	223 (40.0)	78 (37.3)	145 (41.7)	

On the other hand, the association between the stage of hypertension and the age group indicates that the highest percentage of subjects aged less than 40 years (44.6%) had stage 1 hypertension, the age group

between 40 and 59 years had stage 2 hypertension (34.6%), and those aged 60 years or more had stage 3 hypertension (48.0%), showing statistical difference between the analysed groups ($p<0.05$) (Figure 1).

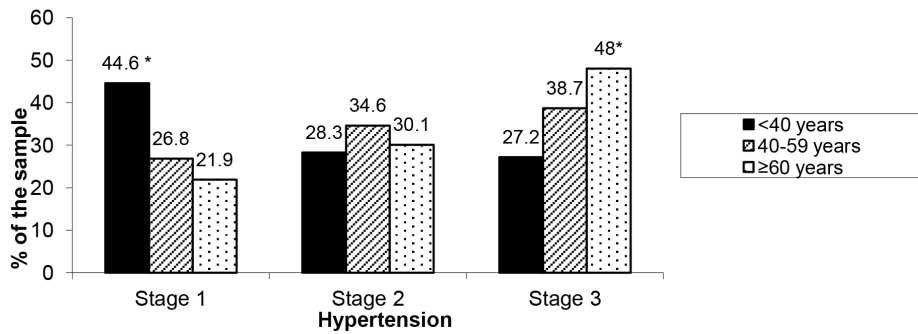


Figure 1. Association between severity of hypertension and age group.

*statistically significant association using the adjusted residuals test at 5% significance.

Figure 2 shows the symptoms reported by the patients admitted to the Emergency Department of the Emergency Hospital of Porto Alegre and recorded in the patients' charts. Headache was the most common

symptom (71.1%) (n=396), followed by dizziness (28%) (n=156) and precordial pain (17.1%) (n=95), while occipital headache was the least common symptom (2.7%) (n=15).

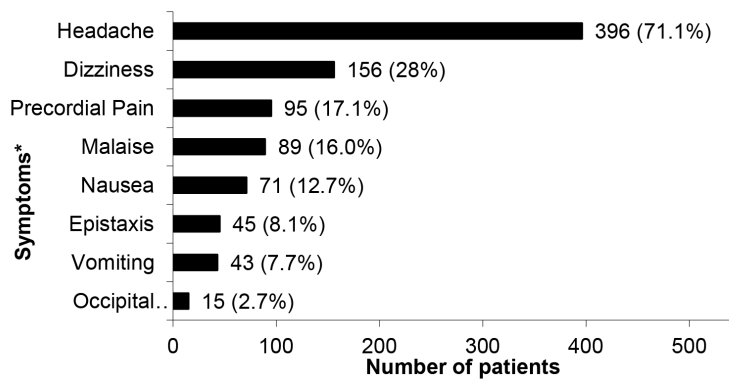


Figure 2. Sample distribution according to the symptoms recorded in the patients' charts.

Moreover, it was possible to identify the electrocardiogram as the most commonly used exam to treat hypertensive crises. This exam aims at identifying electrocardiographic changes also related with the sudden increase of blood pressure levels. The electrocardiogram was followed by the administration

of analgesic drugs such as Sodium Dipyron IV (15.8%) (n=88), Paracetamol O (9.7%) (n=54) and Scopolamine (3.8%) (n=21), and antiemetic drugs such as Metoclopramide (10.8%) (n=60). It was also possible to observe that the cardiac enzyme test was performed in 8.8% (n=49) of the study subjects.

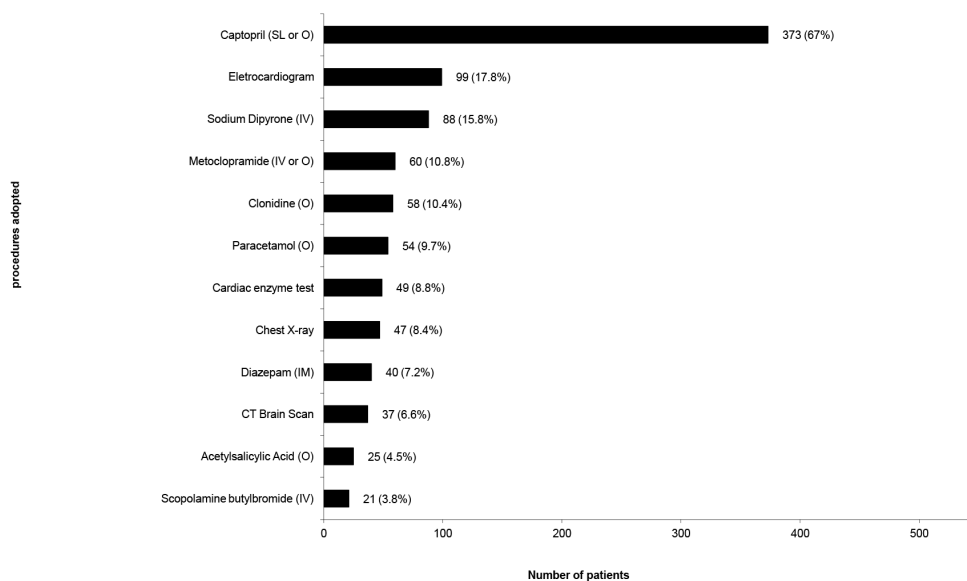


Figure 3. Main procedures adopted.

*SL: sublingually; O: orally; IV: intravenously; IM: intramuscularly.

Discussion

The present study showed an increasing number of young patients with stage 1 hypertension, with a higher rate of prevalence in women under 40 years of age.

This study had some limitations related to incomplete and inadequate records in the patients' charts. In addition, the handwriting used by the professionals made it difficult to grasp the information in many cases.

In this sense, there is an urgent need for the implementation of electronic medical records so as to unify the patients' information, as well as for the training of the teams to correctly fulfil the patients' information, thus ensuring the citizens' right to have a correct and complete medical record, and improving the provision of care to the general population.

It is worrying that uncontrolled stage 3 hypertension is affecting mature individuals aged between 40 and 59 years and those aged 60 years or more, that is, even with medicines being easily accessed by the public authorities, patients continue having high blood pressure levels. What are then the possible causes? Is it treatment adherence? Is it health education or primary care guidelines? Is it the lack of coverage of the family

health strategy? Is it the inappropriate lifestyles that prevail even with the use of antihypertensive drugs? Is it the lack of adherence of the population to groups of hypertensive patients and activities proposed for the prevention of health damages? These questions refer to the need to accurately assess this study's results in order to review the causes for this lack of control, or rather to design strategies and review the public policies for this group of patients so as to identify the necessary interventions to control blood pressure in the population under analysis.

In accordance with the national legislation and guideline of the Ministry of Health (MH), the care being provided in the Emergency Services should follow the Guidelines recommended by the National Emergency Care Policy and according to which risk classification protocols should be implemented. The analysed Institution uses the Emergency *Severity Index* (ESI) as risk classification protocol. In view of the above, this study made it possible to identify how hypertensive crisis has been classified and how patients are being treated in the Emergency Department of this Institution.

Risk classification is a task exclusively performed by nurses and should be performed by trained nurses with specific skills to identify signs and symptoms of severity at the patient's arrival in an emergency unit.

There is a lack of studies in the literature comparing the classification assigned using a colour system (red, yellow, green, and blue). In this study, it was observed that nurses assigned a green colour category to 53.5% of the patients.

The most frequent symptoms reported by patients were headache, dizziness, precordial pain, malaise, nausea, epistaxis, vomiting, and occipital headache. These results are similar to those found in other studies (Barakat, 2001; Jacobs & Matos 2005; Silva, Silva, Heinisch, & Heinisch, 2007; Simons, 2008). The high number of individuals without treatment adherence, i.e. 62 (11.1%), in this study should be highlighted, taking into account that the lack of treatment adherence is a comorbidity and one of the reasons for the high mortality rate of this serious public health problem issue.

Most patients were discharged after the consultation, which indicates the lack of severity of the cases, despite the variation in the vital parameters observed during the nurse's risk assessment. This situation is similar to the one found in national studies of large capital cities such as Sao Paulo, Florianopolis and Salvador (Barakat, 2001; Jacobs & Matos, 2005; Silva et al., 2007).

The most requested complementary exams by the medical team in this study were laboratory tests (blood), chest x-ray, CT brain scan and electrocardiogram. Some of these exams were also addressed in other Brazilian studies, which emphasise the importance of basic units presenting more solutions for the demand for complementary tests (urine, blood and electrocardiogram) to be performed in primary care (Jacobs & Matos, 2005; Furtado, Júnior, & Cavalcanti, 2004).

The measures taken at the admission of patients with hypertensive crisis are in line with the guidelines of the Brazilian Society of Cardiology. After blood pressure being immediately reduced, a maintenance antihypertensive therapy must be initiated and parenteral medication must be interrupted. Hydralazine is not recommended for patients with acute ischemic heart diseases and acute aortic dissection as it induces sympathetic activation with tachycardia and increased pulse pressure. In such situations, the use of beta-blockers, nitroglycerin or sodium nitroprusside is recommended.

In summary, it is clear that the population is in the process of understanding the actual focus of the

care provided at the Emergency Hospital. Still, they go to the Hospital in case of hypertensive crisis, which can be considered a severe condition with often irreversible complications. However, in view of the facts, there is an urgent need to educate the population to adhere to treatment and change their lifestyles, as well as to assess the modifiable risk factors in order to control the existing blood pressure levels. Therefore, it was found that the young population is becoming hypertensive, while the elderly population is not aware of the need to adhere to treatment. This is a chronic disease without cure and, without long-term treatment, it can damage other body systems, triggering imbalances and other comorbidities.

The results show that 4.7% of young people under the age of 30 years were admitted with hypertensive crisis. These results may be related to an increase in poor eating habits, obesity and sedentary lifestyle among the young population, and is in line with a study which concluded that young students are more susceptible to modulating feelings and behaviours related to their own body during this phase. Young people aged between 10 and 19 years may adopt inappropriate eating habits because they are pressured by their relatives and friends to invest in appearance (Furtado et al., 2004). It is possible to infer that advanced age is often accompanied by the prevalence of cardiovascular damage and onset of diseases associated with this complication in the studied population.

Conclusion

This study demonstrated the reasons why patients have high blood pressure levels, bringing up for discussion the subsidies needed to implement preventive and educational actions for treatment adherence.

In this way, it was possible to verify that most individuals were part of the age group 50-59 years (24.8%), female, white, and lived in Porto Alegre. The mean systolic blood pressure was higher in women than in men, but there was no statistical difference between groups. The association between stage of hypertension and age group points out that the highest percentage of individuals aged less than 40 years had stage 1 hypertension, individuals aged between 40 and 59 years had stage 2 hypertension and those aged 60

years or more had stage 3 hypertension. In addition, most patients with hypertensive crisis were assigned a green colour category, had a previous diagnosis of SAH and their main complaint was headaches.

It was also observed that most patients were referred to Basic Health Units (BHUs) without being medicated or receiving any type of treatment, which could put the patient's life at risk in the way from the hospital to the BHU due to, for example, syncope, ischemic or haemorrhagic stroke, ruptured aneurysms, and cardiopulmonary arrest. Patients who were seen (medicated) received instructions and were discharged from the hospital, thus they were cared for as recommended by the Ministry of Health. It is worrying that some patients did not wait to be treated. This aspect needs to be more carefully analysed in order to identify the actual cause for walking out without being treated and improve the assistance.

Therefore, it is important to implement awareness campaigns, as well as disseminate the services available to the community, such as groups of hypertensive patients, groups of physical activity, appointments with nutritionists to devise healthy diets, and consultations with primary care nurses on general health guidelines. If patients arrive to the Emergency Department with a hypertensive crisis, the health sector may need to revise its strategies to intervene with hypertensive population and, in this case, it is the primary health care sector.

In this study, the hypertensive population was clearly characterised, which enables the healthcare authorities to make a diagnosis of the current situation of care provision when it comes to hypertension, as well as to identify the reasons for hypertensive damages.

This study portrays the issue of hypertension and confirms what previous studies on this topic had already confirmed: that hypertension is a public health issue that can be controlled. Nevertheless, a comprehensive and effective programme is needed to identify the existing cases at an early stage, make the population aware of the need to regularly check their blood pressure levels, seek help in case of any changes, adhere to treatment, as well as change their lifestyles, thus extending their lifetime, minimizing secondary complications, and adding quality of life in the face of the diagnosis.

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