



CONTRIBUTIONS OF PHARMACEUTICAL CARE IN THE CONTROL OF SYSTEMIC ARTERIAL HYPERTENSION IN ELDERLY

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ABSTRACT

Systemic arterial hypertension is a public health problem that is difficult to control. Extrinsic and intrinsic factors consist of elements that hinder their diagnostic and medical follow-up. The present study aims to make an approach about the contributions of pharmaceutical attention in the control of the systemic arterial pressure of elderly patients. This is a qualitative, descriptive and exploratory study. For the research, a review of the scientific literature was carried out. Data were collected from the BVS using the MEDLINE and LILACS databases, BDNF, Pub-Med, CAPES Periodicals, and SciELO. The following descriptors were used: systemic arterial hypertension, hypertension control, drug treatment, pharmaceutical care. The study evidenced that the follow-up of the drug therapy is necessary to guarantee the quality of life of people affected by systemic arterial hypertension, since one of the assumptions to guarantee this quality is the patient's adherence to drug therapy.

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INTRODUCTION

Systemic Arterial Hypertension (SAH) consists of a multifactorial clinical condition characterized by elevated and sustained blood pressure levels, associated with disturbances in the function of the target organs (kidneys, blood vessels, heart and brain), and of metabolic alterations, in circulating fluid volume as well as peripheral vascular resistance, culminating in nature risks (NOBRE *et al.*, 2013). In this direction, Cerqueira and Paes (2016) affirm that diseases of cardiovascular etiology are the first cause of death in Brazil, taking into account all age groups and sexes, because mortality due to these types of pathologies represents 34% of all deaths, making it classified as one of the main public health problems. In addition, systolic hypertension affects 32.5% of adult individuals and more than 60% of elderly individuals. Data from the Surveillance of risk factors and protection for chronic diseases by telephone inquiry (2013), revealed a frequency of previous diagnosis of SAH equivalent to 24.1% in the adult population of the 27 Brazilian capitals surveyed.

The data also show that the incidence of SAH is slightly higher in female subjects (23.6%) than in males (21.5%) (MALACHIAS *et al.*, 2016). Ferreira and collaborators (2014) explain that there are two types of SAH: the primary one, characterized by being unknown etiology and secondary etiology commonly associated with factors such as tumors, renal disorders, aortic artery problems and the installation of pathologies of nature endocrine system. In the case of the diagnosis of hypertension, it is important to highlight the need to monitor blood pressure for the diagnosis as well as the success of the prescribed therapy (Mendez and Moraes, 2014). According to the VII Brazilian Hypertension Guidelines (2016), normotension is considered when the measurements of the office are $\leq 120/80$ mmHg, pre-hypertension is characterized by the presence of SBP between 121 and 139 and / or PAD between 81 and 89 mmHg, hypertension is present when blood pressure levels are present as follows: SBP ≥ 140 mm Hg and DBP <90 mm Hg. For Souza and collaborators (2014), the treatment that aims the control of hypertension are included, besides the use of medications, modifications in the lifestyle. However, there are patients who cannot perform the treatment properly, do not follow the guidelines, do not administer the drugs regularly. In addition,

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Freitas and collaborators (2015), point out that there are obstacles to the effective control of SAH. The most pointed in the scientific literature are: the deficit of adherence to the prescribed drug treatment, the age of the patient, sex, issues related to social vulnerability and economic, as well as lifestyle and cultural, accessibility to health services and medical specialties, the environment in which they live with relatives or their caregivers. In view of the challenges to the control of SAH, Vieira and Cassiani (2014) suggest that it is relevant for pharmacists to create strategies to favor hypertension control, to define the clinical diagnosis and to propose a therapy. In addition, it is important to have guidance regarding SAH, including information on morbidity, highlighting the importance of the hypertensive patient to adhere to the therapy followed by a professional, the encouragement and motivation of the patient so that he does not abandon the treatment. Given the above, the high importance of the study of the subject is explicit, since the control of SAH poses a great challenge, due to the association of medications, changes in routine habits of life, above all, patient's adherence to treatment proposed, it is of utmost importance to show the contributions of pharmaceutical attention in the control of systemic arterial hypertension in the elderly.

MATERIALS AND METHODS

This is a qualitative, descriptive and exploratory study of scientific literature. The data were collected from the Virtual Health Library (VHL), using the databases Medical Literature Analysis and Retrieval System Online (MEDLINE) and Latin American and Caribbean Literature in Health Sciences (LILACS), Health Databases (BDENF), Public Medline (PubMed), CAPES Periodicals, and Scientific Electronic Library Online (SciELO). The following descriptors were used to search the databases: systemic arterial hypertension, hypertension control, drug treatment, pharmaceutical care. The inclusion criteria for selection of the articles were: full articles, which contained in the abstract some evidence of the researched topic; search for articles in English and Portuguese; published in the specific period between 2007 and 2017. Repeated productions were excluded and those that did not address the theme of this study were excluded. Continuing with a thorough reading of the abstracts of the publications, with a view to selecting the publications that addressed the theme, 30 of the 126 articles initially selected were considered as valid for the present study.

Literature review: The VII Brazilian guidelines on hypertension (2016) defines systolic arterial hypertension as a multifactorial clinical condition characterized by an increase in arterial pressure, ≥ 140 and / or 90 mmHg, commonly related to metastasis disorders, or structures of the target organs. (Table 1). According to Radovanovic and collaborators (2014) the pathology may present a greater risk when the person has other comorbidities, such as: dyslipidemia, obesity and diabetes mellitus. Regarding the risk factors for hypertension Nobre and collaborators (2013), the most prevalent are: family history, sodium diet; age is a very relevant factor because youngsters and children may also be hypertensive, but in most cases the diagnosis is only made after age 35. It is worth mentioning that at age 50, approximately half of the population is already hypertensive, where one can increase as the age increases. Souza *et al.* (2014) point out that the sedentary lifestyle as a risk factor for hypertension also warns that risk is

amplified when the individual spends a lot of time sitting at work, at home and does not have a practice adherence exercise regularly. The same authors also indicate ethyl alcohol as a risk factor for hypertension, because frequent and abusive consumption of ethyl alcohol contributes to elevated blood pressure, causing pictures of heart failure, irregular heartbeats and in more cases severe or stroke. Mendes and collaborators (2014), explain that the management of hypertension demands beyond the use of drugs, lifestyle transformation, so it is important that the pharmaceutical professional promote strategies aimed at controlling hypertension, as well as the education of the person, especially the elderly patient about their morbidity and the importance of the hypertensive patient to adhere to the treatment. Therefore, the same authors explain that the patient has to be encouraged and motivated so that he does not abandon the treatment, since a large part of the hypertensive population brings with it other comorbidities, such as diabetes, dyslipidemia and obesity, culminating in consequences for the management of the necessary therapeutic actions, requiring motivation and permanent education.

The management of systemic arterial hypertension: The management of hypertension includes administration of medications in association with non-drug measures, with a view to controlling pressure levels, maintaining target organs and minimizing the occurrence of cardiovascular and respiratory events (PUCCI *et al.*, 2012). It is worth noting that non-drug treatment has been pointed out as an important element to reduce blood pressure, however, it is limited due to loss of adhesion in the medium and long term (ZATTAR *et al.*, 2013). The same authors explain that non-medicated therapy includes weight control, a balanced diet, physical exercise, abdication of the habit of smoking and alcoholism. According to Giroto and collaborators (2013), among the advantages of non-medical treatment are: low cost and minimal risk; control of blood pressure, control of other risk factors; amplification of the effectiveness of drug therapy; minimization of cardiovascular risk.

The medication of has: main drug classes: With regard to drug therapy, treatment choice should be based on pressure values; the installation or not of target organ damage; comorbidities; allowing the risk stratification of the patient to be managed. In addition, the reduction of the blood pressures caused by drugs contributes to the reduction of morbidity and mortality due to pathologies of cardiovascular origin in individuals affected by hypertension (SILVA *et al.*, 2013). Andrade and collaborators (2001), explain that at the moment when drug therapy is recommended, guidance should be given on the importance of continued use, the possibility of any dose adjustment, exchange or drug combination, and, especially of adverse effects that may occur. In this direction, it is important to remember that for a medication to be prescribed this must meet some requirements, such as: being able to decrease cardiovascular morbidity and mortality; be effective when administered orally; be well tolerated; be used in a smaller number daily; be initiated with lower effective doses; (MALACHIAS *et al.*, 2016). In the present study, it was possible to administer in association with a combination of the two groups. The study by Oliveira and collaborators (2016) indicated that diuretics; agents of central action; beta blockers; alpha blockers; Calcium channel blockers; angiotensin converting enzyme inhibitors; blockers of AT1 and 2 receptors; direct vasodilators are the classes of medications used to treat hypertension.

Table 1. Classification of Systemic Blood Pressure

REFERENCE VALUES (RV)	
Normal	Systolic pressure is <120 and the diastolic pressure <80 mmHg
Pre-hypertension	Systolic pressure is <121-139 and diastolic <81-89 mmHg
Stage 1 hypertension	Systolic pressure between 140 - 159 and diastolic pressure between 90-99 mmHg
Stage 2 hypertension	Systolic pressure between 160 - 179 and diastolic pressure between 100 - 109 mmHg
Stage 3 hypertension	Systolic pressure \geq 180 and diastolic \geq 110 mmHg

Source: VII Brazilian hypertension guidelines (2016).

In the case of diuretics, it is worth to infer that the mechanism of action of this class of drugs is associated with natriuretic effects, that is the capacity to promote the elimination of sodium by the kidneys, in addition to reducing extracellular volume, where the fourth week's date is already possible to observe the normalization of circulating volumetry, which consequently promotes the reduction in peripheral vascular resistance (COELHO; VILARES; CAETANO, 2017). With regard to the adverse effects associated with the use of diuretics, the most prevalent are: weakness, cramps, hypovolemia and erectile dysfunction, hypopotasemia, ventricular arrhythmias, glucose intolerance due to the reduction in insulin release. In addition, the same authors warn that it is not advisable to administer diuretics concomitantly with digitalis, due to the possibility of installing a diabetic type II, caused by increased glycemia (OLIVEIRA *et al.*, 2018). However, its use in combination with non-steroidal anti-inflammatory drugs should not be used with lithium because it may lead to elevation of serum lithium levels. Regarding the class of agents of the central action, it acts to promote the reduction of the cardiac output and the renin secretion, recomposing the baroreceptors and decreasing the catecholamines in the nerve synapses. It is worth noting that the use of these drugs is limited to people with chronic obstructive pulmonary disease and should be used with caution in the population with peripheral vasculopathies (CAMIN *et al.*, 2015).

The agents of central action have adverse reactions linked to their use: hypothermia, hemolytic anemia, galactorrhea, hepatic dysfunction, drowsiness, sedation, dry mouth, fatigue, postural hypotension and erectile dysfunction (BARBOSA; GONZALEZ; SOUZAI, 2016). With respect to beta-blockers, they act in a way that promotes a decrease in cardiac output and renin secretion (JÚNIOR; LEMOS; RABAHI, 2015). On the adverse events, the main ones are: bronchospasm, bradycardia, peripheral vasoconstriction, insomnia, asthenia, sexual dysfunction, Glucose intolerance; elevation of LDL and reduction of HDL. It is worth noting that beta-blockers for inducing bronchospasm, bradycardia, peripheral vasoconstriction are medications restricted to patients with chronic obstructive disease and those with second- and third-degree atrioventricular block (NOGUEIRA-SILVA *et al.*, 2017). Concerning the drug interactions that can occur with the use of beta-blockers, it is worth noting that they should not be concomitantly administered with insulin because of the risk of masking of hypoglycemia signs or with nasal vasoconstrictors, since it may increase the effect hypertension due to the absence of beta-blocking (Silva *et al.*, 2013). With regard to the alphas blockers, it is emphasized that these consist of competitive antagonistic drugs of post-synaptic alpha receptors, in this way, they are able to reduce the peripheral vascular resistance, however, they do not interfere in the cardiac output (Andrade *et al.*, 2017). The authors indicate that this medication has adverse effects related to its use: symptomatic hypotension in the first dose and urinary incontinence in female subjects.

In the case of calcium channel blockers, it is important to note that they act by reducing peripheral vascular resistance because they decrease the calcium concentration in smooth muscle cells. Among the most frequent effects of this drug administration are: headache, dizziness, facial flushing and edema of the extremities, gingival hypertrophy, constipation (VILELA-MARTIN *et al.*, 2015). In relation to angiotensin-converting enzyme inhibitors, its prescription is usually directed at people with arterial hypertension associated with diabetes and heart failure, because this class of drugs is capable of minimizing cardiovascular morbidity and mortality in individuals with dysfunction systolic symptoms of the left ventricle, which show symptoms or not, where they act especially in the process of ventricular remodeling, in addition, angiotensin-converting enzyme inhibitors are also indicated to prevent the progression of renal failure, especially for those with diabetes. The most common adverse reactions related to the administration of inhibitors of angiotensin-converting enzyme inhibitors are dry cough, taste disturbance, rash, and angioneurotic edema (BARBOSA *et al.*, 2016). As regards adverse reactions related to the administration of inhibitors of angiotensin-converting enzyme inhibitors, the most common are: dry cough, taste disturbance, rash and angioneurotic edema, hyperpotasemia, and increased urea and creatinine in renal failure. Blockers of AT1 and 2 receptors have the specific blocking of AT1 receptors of angiotensin 2, thus exerting cardio protective and nephroprotective effects in type II diabetics with established nephropathy. This class does not present significant adverse reactions. These drugs are the direct vasodilators, promoting muscle relaxation with vasodilatation and reduction of vascular resistance (CAMIN, *et al.*, 2003). This medication has as an adverse reaction water retention and reflex tachycardia, so they should not be prescribed as monotherapy and should be associated with diuretics or beta-blockers.

SAH: factors that interfere in accession to treatment: Prescribed drugs have great relevance in adherence to treatment, especially as regards the adverse effects of the complexity of the therapeutic schemes. Where these effects consist of relevant factors for the patient to adhere to the treatment, although, if more modern drugs with minimal side effects are on the market, the costs and the lack of access to these drugs make adherence low (Ceresira, Paes, 2016). Blood pressure control is related to factors of the nature inherent to the person and external, the inherent factors that relate to: ethnicity, age, sex and family genetics. ANDRADE, ROCHA, CRESPO, 2017). However, the same authors indicate the existence of treatment-related elements that may interfere with the control of SAH, such as: lack of knowledge about comorbidities associated with SAH. Obesity is not commonly seen by hypertensive patients as a condition associated with hypertension, because people do not judge and do not recognize that obesity is a risk factor for the onset of hypertension and that obesity should be managed, because it will favor the control of hypertension (FERREIRA; BAR-

RETO; GIATTI, 2014). To do this, it is essential to transform into routine habits in daily life, where the intake of a healthier diet, the regular practice of physical activity, for the control of body weight should be included. However, it is noticed that patients are not always adequately sensitized about the necessity of adopting a barrier-free diet for the effective control of SAH (FREITAS; NIELSON; PORTO, 2015). It is opportune to comment on the existence of morbidities that interfere in the control of hypertension, such as depression, the aforementioned pathology may contribute to the non-adherence of hypertension treatment, where some antihypertensive drugs, to exemplify: alpha-tolldopa, clonidine and central-acting beta-blockers may trigger depressive conditions, and thiazide diuretics may raise serum lithium levels (GIROTTO, *et al.*, 2013). According to Zattar and collaborators (2013), the prevalence of hypertension in patients with diabetes is about twice as high in relation to non-patients, where type I diabetes is related to diabetic nephropathy. In type 2 diabetes, hypertension is linked to other cardiovascular risk factors, such as dyslipidemia, obesity, left ventricular hypertrophy and hyperinsulinemia, the ineffective control of glycemic indexes, glue for pressure elevation.

Hypertensive patients may experience difficulty in accepting the disease, since there are limitations due to the chronic condition caused by hypertension, influencing their personal life, their relationship with family and community, and the need for changes in lifestyle, where hypertensive individuals should assume a rigorous routine that includes weight control; reduction in sodium consumption; reduction in ethyl alcohol consumption; physical activity accomplishment; administration of drugs to control the pressure (VILELA-MARTIN; YUGAR-TOLEDO, 2014). Souza *et al.* (2014) believe that socioeconomic vulnerability contributes to the deficiency of hypertension control, since issues related to the socioeconomic conditions of hypertensive patients cause interference with health situations, such as accessibility to health services. health, knowledge level and understanding about the pathology, where the lower the socioeconomic conditions of the person affected by hypertension, the greater the level of ignorance about the disease. The same authors also explain that the gap in academic training is a limiting factor in the knowledge about SAH and its management, thus, the higher the level of education and financial condition, the lower the chances of occurrence of SAH, due to access and health care, since the self-care performed by the hypertensive, are essential for the effective control of hypertension (Tavares *et al.*, 2016). Silva and collaborators (2013), point out the lack of family support, as treatment demands, changes in lifestyle, as a limitation for the control of hypertension, requiring the cooperation of all those who are part of the patient's social network, where hypertensive patients with a fragile family network, are more likely not to adhere to the proposed treatment for the control of SAH.

Pharmaceutical care and control of systemic arterial hypertension in elderly: The pharmacist is a professional in the field of health who also works to prevent people from acquiring arterial hypertension, it is worth noting that the performance of this professional also contributes to the quality of life of people who already have the pathology (PINHO and PIERIN, 2013). Regarding Pharmaceutical Care for the part of the population that has hypertension, it is worth noting that RDC 44/09 recommends that the blood pressure be measured in pharmacies and drugstores, as well as follow-up of drug

therapy (Remondi *et al.*, 2014). The same authors explain that blood pressure measurement aims at the prevention and monitoring of pathologies related to the cardiovascular system, it is valid to point out that the results cannot be given to the patient as a clinical diagnosis, nor be used for prescription of medication, the results related to pressure levels should be recorded in the user's hypertension portfolio, in addition, it is important to note the importance of BP, because through this action it is possible to verify the elevation of blood pressure levels collaborating with the diagnosis of hypertension. In addition, it is believed that the dispensing of the drug contributes to the recovery of health, since this action provides access, but not only access, the dispensing process contributes to the patient's use of the drug in an adequate manner, in the dispensing, the pharmacist should devote more time, demanding the development of communication skills to guarantee quality patient care, guiding the user, clarifying the way in which the drug should be used, contributing to minimize the occurrence of adverse effects (Motteret *et al.*, 2013).

For Oliveira and Menezes (2013), with pharmaceutical care it is possible to provide patients with important knowledge about the pathology, correct use, safety and rationality of the drug, as well as guidelines about the therapy that are linked to other attention to the quality of care. The professional must commit himself to constructing standard operating procedures, taking into account the subjectivity of each individual that will be accompanied, with these procedures the pharmacist finds bases to provide a quality pharmaceutical care (AMBIEL; MASTROIANNI, 2013). It is important to remember that the follow-up of drug therapy by the pharmaceutical professionals of hypertensive patients needs to be done with a lot of commitment in order to guarantee the quality of life of these people, besides avoiding problems related to medications such as drug interactions.

A model of success for the monitoring of hypertensive patients was developed in Spain, called Dáder, the model is guided by the drug therapy of the hypertensive person, in addition to the problems related to the drugs that the patient is in use, where the effectiveness of the model in the follow-up of hypertensive therapy takes into account factors such as the interference of hypertension in the body of the hypertensive person, blood pressure measurements with a view to safety, effectiveness and necessity of drug therapy, concomitant use of other drugs and the possibilities of medical interaction (VILELA-MARTIN; YUGAR-TOLEDO, 2014). With regard to medicines that are sold free of charge and without prescreening it is important that the professional dispenses an orientation about all the important information about the medication requested, avoiding the occurrence of problems related to the medicines (PINHO; PIERIN, 2013). It is worth mentioning that Pharmaceutical Care in the context of systemic arterial hypertension has a great relevance, especially in the older population of society, since they are persons who are more vulnerable to the occurrence of negative effects of the use of drugs demanding greater involvement. since these people need guidance in a more special way for better efficacy of therapy, generally elderly patients use about five medicines tending to increase because of the possibility of access to over-the-counter medications that can be serious problems for people's health, since they often do not have information about drug safety, nor about possible harmful effects nor about adverse effects, especially when there is association between several

drugs (ZATTAR *et al.*, 2013). In this sense, it is advised that the elderly population is the most vulnerable to the risk of drug interactions. This is due to the fact that they frequently use many medications because they have a variety of comorbidities, as well as a reduction in liver function and renal failure, and difficulty in maintaining adequate nutritional status. The pharmacist, who works in line with pharmaceutical care, understands the importance of the follow-up of pharmacological treatment, in order to identify problems related to medications, thus guaranteeing a better quality of life for hypertensive patients, as well as reducing the need for hospitalizations, reducing expenditures for health systems, and minimizing the mortality rates associated with health problems result from elevated systemic blood pressure (MOTTER *et al.*, 2013). Therefore, it should be stressed that a plan of care for the elderly patient should take into account that the aging process is not pathological, and that complaints of natural aging should be avoided to be confused with symptoms of SAH. Patient orientation and communication should be the pharmacist's mechanisms to prevent drug-related problems and contribute to effective treatment that contributes to the safe use of medications and positive therapeutic outcomes (OLIVEIRA *et al.*, 2018).

Conclusion

The study pointed out that systemic arterial hypertension consists of a pathology with a silent onset that represents a risk factor for cardiovascular disease, where the prevention of hypertension and its management, demands the commitment of the pharmacist. This article has demonstrated that the follow-up of drug therapy is a necessity to guarantee the quality of life of people affected by hypertension, since one of the assumptions for guaranteeing this quality is the patient's adherence to drug therapy.

The follow-up aims to identify possible occurrences of drug interactions, patient orientation regarding the rational use of the drug, according to the subjectivity of its pathology and the patient's organism, promotion of health education to sensitize the patient about the importance adherence to treatment, as well as changes in lifestyle. It was shown in the scope of this study that among the factors that most hinder the control of hypertension are the cultural habits and lifestyle, the relationship between the team and the patient affected by the pathology, the family context in which the individual is sick, In addition, patients have to cope with the side effects caused by prescription drugs, and the most pointed out in the literature are hypopotassemia; hypovolemia; erectile dysfunction; headache; dizziness; facial flushing; constipation; dry cough; change in taste. Finally, it is important to emphasize that in order to reduce the factors that impede the control of arterial hypertension, a work that involves the elderly, his / her family, as well as the attention of health professionals, where the hypertensive patient should know the disease and its way of controlling it, as well as its risk factors; have the support of family members to control the disease, as well as changes in lifestyle and eating habits.

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