



RESEARCH ARTICLE

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PHARMACEUTICAL INTERVENTION IN HYPERTENSIVE PATIENTS USING ANLODIPINO

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ABSTRACT

Hypertension is a chronic disease characterized by elevated blood pressure. Because it is a risk factor for important conditions such as renal failure, it should be carefully treated and controlled, and amlodipine is one of the drugs of choice for its pharmacological therapy. However, because its action occurs only in the arteries, some adverse effects may occur in the lower limbs of patients who use it. The objective was to perform the monitoring and pharmaceutical interventions in hypertensive patients using amlodipine, treated at a family health unit. Follow-up was performed in 11 patients aged 42 to 82 years old, with hypertension and amlodipine using the unit. Data were collected through interviews conducted during the pharmaceutical consultation using the pharmacotherapeutic monitoring form extracted from the Protocol of Pharmaceutical Care Practice of the State of Bahia. Drug-related problems were classified using the PWDT methodology. Most of the patients were female, non-smoker and sedentary. The most identified drug-related problem in patients correlated with the undesirable non-dose effect of amlodipine. The most frequent interventions were suspension and orientation of use. With this study it was possible to see that pharmaceutical care in the consultation and resolution of patients' complaints, through interventions, generated the resolution of the problem with significant improvement in blood pressure and, consequently, in patients' quality of life.

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INTRODUCTION

Hypertension (SH) is considered a chronic systemic disease which treatment comprises changes in lifestyle and adherence to the continuous use of antihypertensive administered with the aim of reducing blood pressure to below 140/90 mmHg. Hypertensive patients who have a high to very high cardiovascular risk from previously existing conditions such as

diabetes and hypercholesterolemia should, according to recommendations of current guidelines for hypertension therapy, sustain blood pressure around 130x80 mmHg (Fuchs, 2011 and Marques, 2009). SAH is the main risk factor for acute myocardial infarction, chronic kidney disease and disorders such as stroke, corresponding in severity to dyslipidemia and obesity for atherosclerotic diseases.

Thus, there is a need for adequate and compromised pharmacotherapy to minimize the risk of complications and aggravations (Oliveira, 2017). One of the antihypertensive classes currently used is calcium channel blockers. These drugs act by promoting a decrease in peripheral arterial vascular resistance, which consequently reduces blood pressure. However, they present as adverse effects headache, dizziness, facial flushing and peripheral edema (Jardim, 2013 and Silva, 2013). Calcium channel antagonists are one of the clinical choices for the initial treatment of hypertension, even on its own. The VII Brazilian Guideline for Hypertension indicates them as the drug of first choice and the European Society of Hypertension (VII JNC) recommends their use as a second alternative when diuretics are no longer recommended (WHO, 2017; Malachias, 2016 and Kohlmann, 2006). Amlodipine, a dihydropyridine-derived calcium channel blocking drug, is an important hypotensive agent of arterial vasodilating action, which has natriuretic, antiproliferative and anti-atherosclerotic effects (Melo, 2017). It does not promote venous vasodilation, which generates an imbalance of hydrostatic forces in the peripheral capillary, thus causing fluid leakage into the interstitial space, so as to promote, due to the gravitational force, the formation of lower limb edema. This edema has been reported as a more frequent adverse effect of this class of antihypertensive drugs and is the cause of treatment abandonment (Jardim, 2013 and Barroso, 2017). The pharmacist plays a fundamental role in providing knowledge and qualified follow-up of the patient's therapy, as he is the health professional with explicit training in medicines and also with greater access by patients, thus contributing to reducing morbidity and mortality. drug-related mortality (Alano, 2012 and Longo, 2011). Studies show that the active presence of the pharmacist in multidisciplinary teams generates satisfactory results in terms of cost-benefit, with positive results in patient therapy due to the exchange of knowledge between the clinical pharmacist and the prescriber (Melo, 2017 and Oliveira, 2013). Pharmacotherapeutic follow-up as part of Pharmaceutical Care is effective in detecting Drug-Related Problems (PRM) and proposing drug therapy interventions that solve or prevent these problems⁽¹⁴⁾.

These interventions can be carried out through health education, pharmacological strategy and the amount of medication used by the patient to minimize the risk of adverse reactions and pathological complications caused by non or low pharmacological adherence (Martins, 2013). The detection of PRM was consolidated by the PWDT (*Pharmacist's Workup of Drug Therapy*) method (Cipolle, 2004). According to this methodology, PRMs can be classified into seven types and grouped into four categories. The types of PRM are need (have strong indications for drug use but are not using), effectiveness (are using a drug perfectly, but the results are not yet satisfactory), safety (contrary clinical condition causing an adverse drug reaction) and adherence (when the patient does not use the drugs properly). For Cipolle et al. (Cipolle, 2000), PRMs can be determined or prevented only when the causes of the problem are openly known. Thus, it is essential for the pharmacist to identify and classify the problem and its cause, thus being able to intervene for a better resolution of the PRM. Thus, the objective of this study was to perform pharmacotherapeutic follow-up and pharmaceutical interventions in hypertensive patients using amlodipine, treated at a family health unit located in Vitoria da Conquista-Ba.

MATERIALS AND METHODS

A case series study was conducted with 11 patients with hypertension on amlodipine followed by the Nossa Senhora Aparecida Family Health Unit. This Family Health Unit (USF), located in the city of Vitoria da Conquista, accompanies approximately 1500 hypertensive residents of the community, with an average attendance of 70 patients per day for various services such as medical and dental care, health services in general, vaccination, prenatal care and drug dispensing. The study included hypertensive patients taking amlodipine as an antihypertensive drug who had any complaints related to the pharmacotherapy used. All patients who agreed to participate in the study signed a consent form after being informed about the nature and objectives of the study. Data were collected through active listening interviews conducted during the pharmaceutical consultation, using the pharmacotherapeutic monitoring form, extracted from the Protocol of Pharmaceutical Care Practice of the State of Bahia (Cipolle, 2000), identifying: the patient's needs, the lifestyle, pharmacotherapeutic profile, drug history, medical history, among others. Follow-ups were performed during June and July 2019 with hypertensive patients. After determining the situation of the case and identifying the PRM, pharmacotherapeutic care plans were defined for each patient. For the interventions performed on the patients, in addition to the analysis of all prescribed pharmacotherapy, letters were also sent to other professionals and the use of written guidance instruments to the patients to ensure the resolution of the identified PRM. The identification of the MRP was effected by methodology PWDT (*workup of Pharmacy's Drug Therapy*) developed by Cipolle et al.⁽¹⁶⁾ in which it was possible to classify and divide them into domains regarding need, effectiveness and safety, as well as patient compliance. (Table 1). The data obtained from this research were arranged and compiled in its own database using *software* Microsoft Office Excel[®] 365 (2018) and the descriptive analysis of data was performed by *software* Statdisk[®] v. 13.0.1. The project was approved by the Research Ethics Committee of the Independent Faculty of the Northeast, under number 3.368.482 on June 4, 2019. All consenting to participate in the study signed an informed consent after being informed about the nature and objectives of the research.

RESULTS

The study sample consisted of 11 male and female patients with systemic arterial hypertension followed at the Nossa Senhora Aparecida Family Health Unit. Most patients were female (73%), non-smoker and sedentary with ages ranging from 42 to 82 years, with a median of 52 years (CI: 47.4089 - 66.2274) (Table 1). The median number of study visits was 5 visits (CI: 4.088 - 5.7294) and the follow-up time was 63 days (CI: 57.9883 - 66.3753). Only five patients (45%) had specific dietary restriction for the presented pathologies. Only two patients (18%) were on amlodipine alone as an antihypertensive drug. The other nine patients, two (18%) were on amlodipine and one drug and seven (64%) were on two amlodipine-associated drugs. Only one patient did not associate amlodipine with an antihypertensive drug of the diuretic class, associating it with an angiotensin-converting enzyme (ACE) inhibitor, enalapril. The antihypertensive drugs and the associations found in the study are shown in Figure 1.

Table 1. Sociodemographic-behavioral characteristics and other pathologies of patients included in the study (n = 11)

Patient	Age (years)	Sex	Smoker	Physical activity *	Other pathologies
01	82	Female	Not	Don't Practice	-
02	72	Male	Not	Don't Practice	Diabetes mellitus, dyslipidemia
03	42	Female	Not	Don't Practice	-
04	72	Male	Not	Don't Practice	Diabetes mellitus, dyslipidemia
05	60	Female	Not	Don't practice	-
06	52	Female	Not	Don't practice	Diabetes mellitus, dyslipidemia
07	64	Female	Not	Don't practice	-
08	46	Male	Yes	Don't practice	-
09	49	Female	Not	Once	Diabetes mellitus
10	44	Female	Yes	Twice	-
11	42	Female	Yes	Don't practice	Diaetes mellitus

*Number of times per week there is physical activity. Source: own research data.

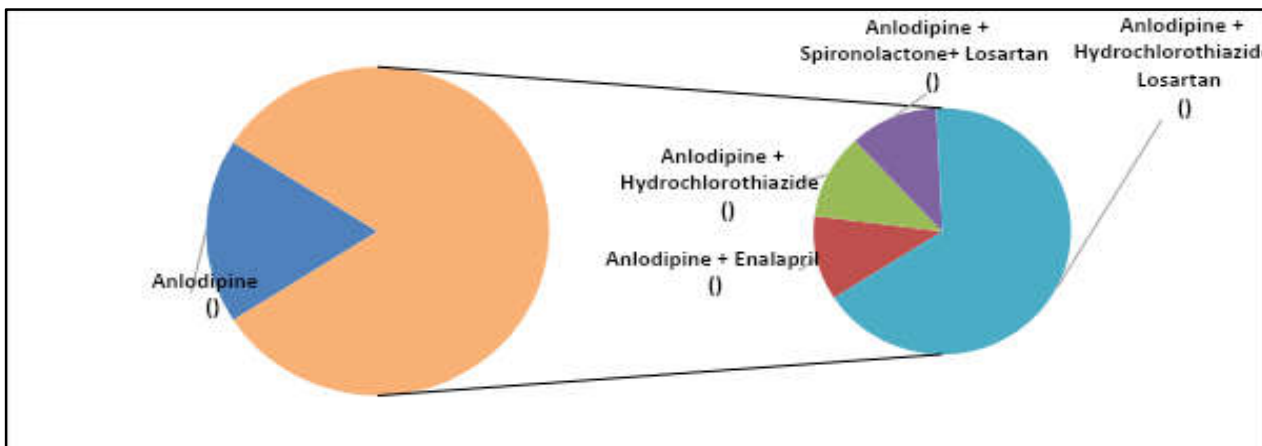


Figure 1. Number of patients per antihypertensive drug therapy (n = 11). Source: own research data

Table 2. Complaints and classification of PRM identified in the patients treated in the study (n = 11)

Patient	Complaint	PRM*	Initial blood pressure
01	Lower limb edema	5 A	143x90
02	Lower limb weakness	6 A, 6 C	90x70
03	High pressure	4 A	200x100
04	Lower limb weakness	6 A, 5 A	90x70
05	Drowsiness, fatigue	5 A	96x76
06	High blood pressure, headache	7 C, 4 C	140x90
07	Headache	4 B	180x110
08	Fatigue, lower limb pain, edema	6 A, 5 A	150x90
09	Difficulty in locomotion, fatigue	7 A, 5 A	140x90
10	Tiredness, fatigue, high blood pressure	3 D	150x90
11	Numbness and burning in the lower limb	7 A, 5 A	170x100

* PRM classification according to Cipole et al.⁽¹⁶⁾. Blood pressure in mmHg. Source: own research data.

Table 3. Intervention performed and results obtained in patients treated in the study (n = 11)

Patient	PRM*	Interval	Blood pressure initial	
			Initial	Final
01	5 A	Suspension of use	143x90	127x85
02	6 A, 6 C	Suspension of use	90x70	123x78
03	4 A	Dose adjustment	200x100	120x83
04	6 A, 5 A	Suspension of use	90x70	123x78
05	5 A	Suspension of use	96x76	128x80
06	4 C, 7 C	Usage guidance	140x90	128x86
07	4 B	Usage guidance	180x110	120x67
08	6 A	Suspension of use	150x90	130x78
09	7 A, 5 A	Usage guidance	140x90	130x80
10	3 D	Referral to expert	150x90	130x90
11	7 A, 5 A	Suspension of use ^b	170x100	130x80

* PRM classification according to Cipole et al.⁽¹⁶⁾. ^a Suspension of use occurred after attempted dose adjustment for fifteen days. ^bSuspension of use was given after an attempt to provide guidance for use for fifteen days. Blood pressure in mmHg. Source: own research data.

The other drugs reported in the survey were Metformin 850 mg (five patients, 45%), Glibenclamide 5 mg (three patients, 27%), Simvastatin 20 mg (three patients, 27%) and Acetylsalicylic Acid 100 mg (ASA). patient, 9%).

The most identified PRM in the study patients was 5A present in 6 (45%) cases, which is related to the undesirable undesirable effect (Table 2). Complaints and, consequently,

blood pressure regulation were resolved in eight patients (72%) of the study (Table 3).

DISCUSSION

Pharmaceutical Care is already a consolidated practice in the US and part of Europe and is part of the routine of health services, while in Brazil, this practice is still embryonic. However, ever since the definition of Pharmaceutical Care was established in the early 1990s, studies on the context are increasingly abundant, but other studies still need to be deepened, especially with regard to systematized routines and economic evaluation. The proven benefits of this practice go beyond reducing the onset of PRM and include better control of chronic diseases and cost savings in care management and use of medicines and inputs (Silva, 2013 and Aires, 2010). In the studied sample, the predominance of women was already believed because they seek more health services and seem to have a more determined perception of their health condition (Veras, 2009). In addition, in a survey conducted by the Ministry of Health, women have a higher degree of hypertension compared to men due to lifestyle changes, the stressful routine and the need to assume various roles are causing women to suffer more with high blood pressure than men (Gorgui, 2014). It is known that for chronic diseases, such as hypertension, it is essential to stimulate early diagnosis, adherence to drug treatment and encourage non-pharmacological care, such as changes in lifestyle, which directly influence health and patients' quality of life. The risk of developing diseases in hypertensive patients increases with diabetes, dyslipidemia, smoking, alcoholism, physical inactivity and inadequate diet, which makes these patients a major concern of health professionals (WHO, 2017 and Nery, 2010). This is the case of 27% of the sample (three cases) who were smokers and 81% (nine cases) who were sedentary, and the risk was increased for two of the smokers who were also sedentary.

Modifying eating habits, quitting alcohol and smoking, and adopting a more active lifestyle can be challenging for some individuals. Considering the importance of controlling these factors for the maintenance of hypertension, the individual who practices it will also achieve a better quality of life. According to the Brazilian Society of Cardiology, frequent physical activity triggers the production of substances capable of reducing blood pressure, thus reducing the risk of complications and worsening of cardiovascular diseases (Malachias, 2015). The adoption of healthier eating practices is essential for maintaining blood pressure at acceptable levels. Therefore, changes in dietary habits are necessary, such as decreased carbohydrate, sugar and especially sodium intake, which will favor not only the reduction of blood pressure, but also the metabolic control and the reduction of body weight (Pontes Júnior, 2010). However, it was observed that less than half of the participants (45%) performed dietary restriction. As the eating habits of Brazilians usually have their foundations fixed in childhood, they are difficult to change in adulthood. Thus, the monitoring of the nutritionist of the primary care team becomes necessary mainly with a view to raising awareness and empowering the population, considering the psychological, socio-cultural, educational and economic aspects, since in many cases only sodium restriction in food is not enough (Campolina, 2013). Another risk factor for cardiovascular disease is when hypertension is associated with other diseases such as diabetes and dyslipidemia.

These develop from similar conditions, often linked to lack of physical activity and inadequate nutrition, which makes this pathological association increasingly common (Ferreira Júnior, 2018). Since insulin resistance promotes a higher concentration of glucose in the bloodstream, which contributes to hardening of the arteries, there is a considerable increase in blood pressure in diabetic patients (Francisco, 2018). In our study, there were five patients (45%) with diabetes, and of these, three were also dyslipidemic. If blood pressure and blood glucose and cholesterol concentrations are not adequately controlled, secondary complications can be triggered, such as glaucoma, retinopathy, atherosclerosis, among others. Thus, prevention and awareness work, aiming at generating a change in the population's health habits, is a fundamental tool for adherence to prevention and treatment actions, thus reducing the risks generated by the combination of these diseases (Malta, 2013 and Stopa, 2014).

The main reported complaint was related to adverse reactions in the lower limb, such as edema, weakness and burning, which corresponded to the 5M PRM classification, being the same observed in patients with above and below adequate BP. This PRM, found in six patients (55%), refers to the undesirable effect not related to the amlodipine dose due to the hydrostatic imbalance caused by arterial only vasodilation. This imbalance occurs in most patients in use and can be alleviated by performing physical activities such as light walking (Barroso, 2017). With the exception of one patient (patient 09), all others who presented PRM 5A had their amlodipine suspended, which regularized their blood pressure. Regarding patient 09, it was identified during consultations that he did not understand the guidelines on drug use (PRM 7A) and administered the dosing schedule erroneously. Thus, after proper guidance on the use of the prescribed medications, complaints regarding this patient's amlodipine were resolved.

There were two patients who before discontinuing use of amlodipine had an intervention attempt for 15 days: patients 02 and 11. For patient 02 a dose adjustment was performed, but as the complaint was not resolved, a follow-up was continued for the suspension and thus for the complete solution of the case. Patient 02 was one of the patients who only used amlodipine as an antihypertensive drug. For patient 11, it was initially tried to guide him about the use of the drug, but only after the drug was discontinued, the blood pressure was regularized and the initial complaint disappeared. The second most commonly performed intervention was counseling regarding the use of prescribed drugs in patients with blood pressure greater than 130x80 mmHg. However, this guidance was given to all patients participating in the study with all prescription drugs, as this health education should be provided at all times by the pharmacist and should not only be informative, but should also lead users to reflect about their living conditions so that they can perceive health as a social right. The success in all interventions performed in this study shows that the need for patient / pharmacist involvement is one of the bases of the success of pharmacotherapeutic treatment and that the participation of a multidisciplinary approach team facilitates adherence and, consequently, the control and maintenance of blood pressure. Thus, prevention and awareness work, aiming at generating a change in the population's health habits, is a fundamental tool for adherence to prevention and treatment actions, thus reducing the risks generated by the combination of these diseases.

Conclusion

The present study showed the importance of pharmacotherapeutic follow-up in hypertensive patients treated at a family health unit using amlodipine to solve problems related to the use of this antihypertensive that compromised the well-being of patients. This singular action of attention performed by the pharmacist in the resolution of complaints, through interventions, generated a significant improvement in blood pressure and, consequently, in the quality of life of the patients treated. Thus, by analyzing the results obtained, it can be concluded that adherence to drug treatment and the increase of pharmacological and non-pharmacological measures cannot be restricted to medical appointments. The performance of multidisciplinary teams, especially pharmacists, in an integrated approach to risk assessment, the adoption of health promotion measures and the care of patients with hypertension are essential for a successful therapy.

REFERENCES

- Aires CCNF, Marchiorato L. 2010. Acompanhamento farmacoterapêutico a hipertensos e diabéticos na unidade de saúde Tereza Barbosa: análise de caso. *R Bras Farm Hosp Serv Saúde.*, 1(1):1-24.
- Alano GM, Correa TS, Galato D. Indicadores do Serviço de Atenção Farmacêutica (SAF) da Universidade do Sul de Santa Catarina. *Ciênc saúde coletiva.* 2012;17(3):757-764.
- Amarante LC, Shoji LS, Beijo LA, Lourenço EB, Marques LAM. 2010. A influência do acompanhamento farmacoterapêutico na adesão à terapia anti-hipertensiva e no grau de satisfação do paciente. *Rev Ciênc Farm Básica Apl.* 31(3):209-15
- Barroso VPR, Caux TR, Nascimento MMG. 2017. Descrição de um serviço de farmácia clínica em uma unidade de cuidados coronarianos. *Rev Bras Farm Hosp Serv Saúde.* 2017;8(1):8-14.
- Campolina AG, Adami F, Santos JLF, Lebrão ML. A transição de saúde e as mudanças na expectativa de vida saudável da população idosa: possíveis impactos da prevenção de doenças crônicas. *Cad Saúde Pública.* 2013;29(6):1217-1229.
- Cipolle RJ, Strand LM, Morley PC. El ejercicio de la atención farmacéutica. 3ª ed. Madrid: McGraw Hill – Interamericana, 2000. 368p
- Cipolle RJ, Strand LM, Morley PC. Pharmaceutical care practice: the clinician's guide. 3ª ed. New York: McGraw-Hill; 2004. 624p.
- Ferreira Júnior E, Batista AM. Atenção farmacêutica a idosos portadores de doenças crônicas no âmbito da atenção primária à saúde. *Rev Ciências Farmacêuticas.* 2018;30:95–101.
- Francisco PMSB, Segri NJ, Borim FSA, Malta DC. Prevalência simultânea de hipertensão e diabetes em idosos brasileiros: desigualdades individuais e contextuais. *Ciênc saúde coletiva.* 2018; 23(11):3829-3840.
- Fuchs FD, Fuchs SC, Moreira LB, Gus M, Nóbrega AC, Poli-de-Figueiredo CE et al. Prevention of hypertension in patients with pre-hypertension: protocol for the PREVER – prevention trial. *Trials.* 2011;12(65).
- Gorgui J, Gorshkov M, Khan N, Daskalopoulou SS. Hypertension as a risk factor for ischemic stroke in women. *Can J Cardiol.* 2014;30(7):774-82.
- Jardim PCBV, Jardim TSV, Souza WKS. Qual(is) o(s) antagonistas dos canais de cálcio mais indicado(s) no tratamento da hipertensão arterial? *Rev Bras Hipertens.* 2013;20(2):78–82.
- Kohlmann Jr O, Oigman W, Mion Jr D, Rocha JC, Gomes MAM, Salgado N et al. Estudo "LOTHAR": avaliação de eficácia e tolerabilidade da combinação fixa de amlodipino e losartana no tratamento da hipertensão arterial primária. *Arq Bras Cardiol.* 2006;86(1):39-51.
- Longo MAT, Martelli A, Zimmermann A. Hipertensão arterial sistêmica: aspectos clínicos e análise farmacológica no tratamento dos pacientes de um setor de psicogeriatría do Instituto Bairral de Psiquiatria, no município de Itapira, SP. *Rev bras geriatr gerontol.* 2011;14(2):271-284.
- Malachias MVB, Souza WKS, Plavnik FL, Rodrigues CIS, Brandão AA, Neves MFT et al. Sociedade Brasileira de Cardiologia; Sociedade Brasileira de Hipertensão; Sociedade Brasileira de Nefrologia. 7th Brazilian Guideline of Arterial Hypertension. *Arq Bras Cardiol.* 2016;107(Suppl 3):1-83. 2016.
- Malta DC, Iser BPM, Chueiri PS, Stopa SR, Szwarcwald CL, Schmidt MI et al. Cuidados em saúde entre portadores de diabetes mellitus autorreferido no Brasil, Pesquisa Nacional de Saúde, 2013. *Rev bras epidemiol.* 2015;18(supl. 2):17-32.
- Marques LAM, Shoji LS, Amarante LC, Lourenço EB. Perfil dos hipertensos usuários de medicamentos da farmácia popular de Alfenas-MG. *Udesc em Ação.* 2009;3(1):1-10.
- Martins BPR, Aquino AT, Provin MP, Lima DM, Dewulf NLS, Amaral RG. Pharmaceutical Care for hypertensive patients provided within the Family Health Strategy in Goiânia, Goiás, Brazil. *Braz J Pharm Sci.* 2013;49(3):609-618.
- Melo DO, Castro LLC. A contribuição do farmacêutico para a promoção do acesso e uso racional de medicamentos essenciais no SUS. *Ciênc saúde coletiva.* 2017;22(1):235-244.
- Nery SS, Gomides RS, Silva GV, Forjaz CLM, Mion Jr D, Tinucci T. Intra-arterial blood pressure response in hypertensive subjects during low- and high-intensity resistance exercise. *Clinics.* 2010;65(3):271-277.
- Oliveira GMM, Mendes M, Malachias MVB, Morais J, Moreira Filho O, Coelho AS et al. 2017: Diretrizes em Hipertensão Arterial para Cuidados Primários nos Países de Língua Portuguesa. *Arq Bras Cardiol.* 2017; 109(5):389-396.
- Oliveira PA, Menezes F. Atenção farmacêutica a pacientes hipertensos. *Rev Eletrônica Farmácia.* 2013;10(1):51-68.
- Pontes Júnior FL, Prestes J, Leite RD, Rodriguez D. Influência do treinamento aeróbio nos mecanismos fisiopatológicos da hipertensão arterial sistêmica. *Rev Bras Ciênc Esporte.* 2010;32(2-4):229-244.
- Silva AS, Rocha Filho JÁ, Bastos LL, Santana DP, Wanderley AG. Acompanhamento farmacoterapêutico em pacientes com dislipidemia em uso de sinvastatina no componente especializado de assistência farmacêutica: um estudo piloto. *Rev Ciênc Farm Básica Apl.* 2013;34(1):51-57.
- Silva JR, Choze R, Andrade ED, Dias RS. Estudo sobre partição de comprimidos de besilato de amlodipino. *Ensaios e Ciência: C Biológicas, Agrárias e da Saúde.* 2013;17(5):75-87.
- Stopa SR, César CLG, Segri NJ, Goldbaum M, Guimarães VMV, Alves MCGP et al. Diabetes autorreferido em idosos: comparação das prevalências e medidas de controle. *Rev. Saúde Pública.* 2014;48(4):554-662.
- Veras RF, Oliveira SJS. Aspectos sociodemográficos que influenciam na adesão ao tratamento anti-hipertensivo. *Rev Rene.* 2009;10(3):132-8.
- WORLD HEALTH ORGANIZATION. (WHO). World health statistics 2017: monitoring health for the SDGs: Sustainable Development Goals. Geneva; 2017.