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RESEARCH ARTICLE

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## MANAGEMENT OF RESISTANT ARTERIAL HYPERTENSION: SPECIALIZED CENTER HEALTH MANAGEMENT

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### ABSTRACT

Resistant Arterial Hypertension (RAH) is a health condition of high cardiovascular risk that compromises the quality of life and the health system as a whole; in addition, there are subgroups with a greater relationship with morbidity and mortality, which requires greater attention in the clinical management. Effective and targeted Public Health Policies favor the control and improvement of the quality of life of this population, however, there is still an important gap in access to specialized programs and strategies that provide targeted assistance to patients with RAH. The present study comprises an integrative literature review, which aims to seek and analyze evidence about programs carried out in reference centers specialized in the care of patients with RAH. After an exhaustive literature search, the sample included 04 studies developed in Europe and with a low level of evidence. In the synthesis, two major thematic categories were evidenced, namely, physical activity in the control of resistant arterial hypertension using combined aerobic and strength exercise and the monitoring and follow-up of antihypertensive therapy, aimed at improving pharmacological compliance by single-pill therapy and patient-directed health education and follow-up. The strategies proved to be alternatives for the care provided to resistant hypertensive patients in reference centers by an interdisciplinary team, an important ally in maintaining the quality of life of this population, reducing morbidity and mortality and conscious and targeted control of health-related costs.

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## INTRODUCTION

Resistant Arterial Hypertension (RAH) is a health condition defined by the failure to maintain blood pressure (BP) within controlled parameters considered appropriate for the specifics of the individual, with the use of three antihypertensive drugs, including a diuretic, at the maximum recommended and tolerated dose and with proven adherence (Yugar-Toledo, 2020; Unger, 2020). From this, two subgroups are classified: Controlled Resistant Arterial Hypertension (RAH-C) in which the BP is controlled with one or more antihypertensive drugs and Uncontrolled Resistant Arterial Hypertension (RAH-NC), when BP above the desirable level in use of four or more antihypertensives of different classes.

The prevalence of RAH is estimated between 10 to 20% of patients with hypertension (Yugar-Toledo, 2020; Fang-Fei, 2018; Vongpatanasin, 2014; Achelrod, 2015). The number of adults with hypertension aged between 30 and 79 has increased from 650 million to 1.28 billion in the last 30 years, according to the first comprehensive global analysis of trends in the prevalence, detection, treatment and control of hypertension – led by Imperial College London and the World Health Organization (WHO). Arterial hypertension is responsible for the death of more than 10 million people a year in the world, and in Brazil, about 30% of Brazilians are hypertensive. Clinical and experimental studies have been a priority in cardiology, due to their significant direct and indirect impact on the patient and on the socioeconomic context of a nation.

However, we still have many challenges regarding the monitoring of these diseases through viable, valid and cost-effective methodological actions that contribute to the development of public health policies (Malta, 2018). Some highly relevant studies show that patients with RAH have a higher risk between 44% and 95% of adverse cardiovascular, cerebrovascular, peripheral, renal events, as well as mortality among all these causes (Cai, 2017; Daugherty, 2012). Clinical management of patients with RAH includes diagnosis, assessment and treatment. The RAH should be treated in specialized centers with experienced professional staff and resources needed to diagnose and treat these conditions in order to reduce morbidity and mortality caused by this high-risk condition. In the Brazilian context, specialized care should preferably be provided in a hierarchical and regionalized manner, thus adapting the economic health conditions of each region to ensure an important relationship between the quality of care provided, cost, benefit and effectiveness of the actions involved (Denker, 2013; Ministério da Saúde, 2013). Thus, it is understood to be extremely important to study, develop and implement practical and managerial health measures in the care of patients with RAH. Knowledge of this may have positive impacts on the health of the population. Thus, the objective of this study was to seek and analyze the scientific evidence available in the literature on health care programs carried out in reference centers specialized in the care of patients with resistant arterial hypertension.

## METHODOLOGY

This is an integrative literature review developed in 06 stages: 1st definition of the research question guided by the PICO strategy; 2nd definition of inclusion and exclusion criteria for the review; 3rd identification of eligible studies; 4th categorization of the generated data; 5th analysis and interpretation of the results found; 6th review presentation. The elaboration of the guiding question of this review followed the PICOT strategy, which corresponds to the acronym: Patient, intervention, control, outcome and time: (P) patients over 18 years of age with resistant hypertensive in outpatient treatment; (I) Health care program at a specialized referral center; (C) does not apply; (O) improving the quality of health care; (T) 10 years. Thus, the research question of this review: what is the available evidence on Health Care Programs for Resistant Hypertensives in specialized outpatient care centers to improve care in the last 10 years?. To identify the studies, an exhaustive search was carried out in the National Center for Biotechnology information, in the PubMed database. In addition, the references of the selected studies were searched to assess the existence of other studies eligible for inclusion in the review.

The inclusion criteria used were articles that address outpatient care programs in specialized centers for patients with Resistant Arterial Hypertension, published from March 2011 to March 2021, published in English, Spanish and Portuguese, regardless of the research design. As exclusion criteria articles that address pregnant and postpartum women and records of clinical protocols. The descriptors were developed to search according to the Medical Subject Headings (MeSH) used for indexing the publication. A broad analysis of the possible descriptors was performed for use in the present review that could achieve the maximum possible indexing based on the research question used. Such as: "hypertension; ambulatory care facilities; ambulatory care; disease resistance; vascular resistance; metabolic syndrome; primary health care; treatment adherence and compliance; patient acceptance of health care; quality of health care; treatment outcome; adults; middle aged; aged; drug resistance; health services needs and demand". The crossing was done through the rounded operator "AND" and was done to lead to the exhaustion of the possibilities, where through the selected descriptors the refinement was given by crossings between two descriptors at first, when necessary to reduce the number established for analysis, namely, 200 studies, one more descriptor was added (new crossing) to guarantee the specificity of the search. In the end, 146 crosses were performed. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guide was used to describe this review (Page,

2021). After identifying the publications, the duplicates were excluded, comparing title, authors, year and country. Two authors perform the screening of publications guided by the eligibility criteria. After this step, the pre-selected articles were obtained in full for a new filtering. All publications were independently analyzed twice to define which studies met the requirements of the established inclusion and exclusion criteria. Conflicts between authors for eligibility were resolved in a consensus meeting. Then the eligible articles were analyzed according to a data collection instrument containing, identification, year, country in which the study was developed, detailed analysis of the research design and level of evidence, the information was included in Microsoft Word software tables.

The level of evidence was classified as: Level I - meta-analysis of systematic reviews or meta-analysis of randomized clinical trials or guidelines based on systematic reviews of randomized controlled clinical trials; Level II - well-designed randomized controlled trials; Level III - controlled studies without randomization; Level IV - well-designed case-control or cohort studies; Level V - systematic reviews of studies with a qualitative approach and descriptive studies; Level VI - single descriptive or qualitative study; Level VII - are the studies from the opinions of authorities and expert reports. For the presentation of this review, the selected studies were synthesized and interpreted in a descriptive way and categorized into thematic categories, considering the central theme presented by this review.

## RESULTS AND DISCUSSION

Based on the descriptors used, 3,111 potential articles were identified for inclusion in the review. The selection of articles took place in three stages, being the reading of the title, abstract and the full-text. First, a careful reading of the titles was carried out for a pre-selection of articles based on the established inclusion and exclusion criteria, where 2,959 articles were excluded, 84 duplicate articles were also excluded, leaving 68, after which the articles were submitted to a reading in full, 55 more articles were excluded because they were not related to the subject studied, and 09 were excluded because they were not related to the population (patients with Resistant Arterial Hypertension) or intervention (specialized outpatient referral center) of population or intervention proposed for the study. Four articles were selected to compose this review, as described in Figure 1 in the adapted PRISMA format. Only one study presented a strong level of evidence (level II), a randomized clinical trial and the other three with a weak level (IV and VI), being two observational and a clinical pilot study. The study sample size ranged from 20 to 1,906 patients.

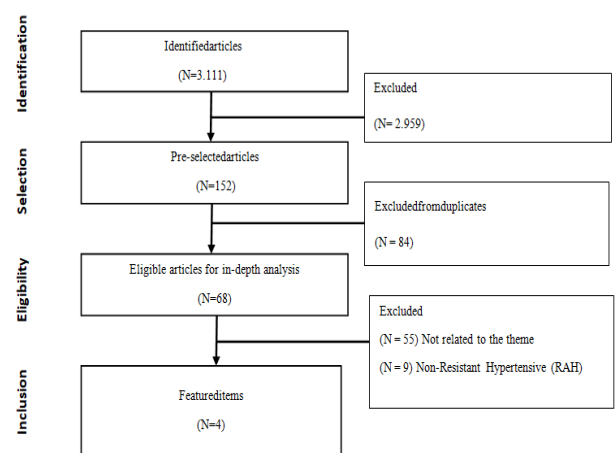


Figure 1. Flowchart for selecting articles for review

The presentation of the synthesis of the 04 studies selected for this review was grouped by type of intervention performed, where 02 thematic categories emerged, namely: Physical activity in the control of hypertension and Monitoring and follow-up of antihypertensive therapy.

**Chart 1. Characterization of the studies included in the review**

No.	Authors	Methodological Outline	Year	Local/Country	Level of Evidence
1	Pires NF, et al. (2020)	Randomizedcontrolledclinicaltrial	2020	Brazil	II
2	Kreutz R, et al (2018)	Pilot study (clinical – single blind)	2018	Germany	IV
3	Mainar, et al. (2013)	Observational, multicenter and retrospective study	2013	Germany	VI
4	Bunker J, et al. (2022)	Observational study	2010	England	VI

**Chart 2. Synthesis of studies on drug therapy in RAH**

Article No.	Study Summary
2	The study points out that single-pill fixed-dose therapy together with therapeutic drug monitoring can achieve BP control in patients with suspected RAH.
3	The study points out that polymedication is associated with lower adherence, persistence to antihypertensive treatment, increase in cardiovascular diseases and health-related costs.
4	The authors note that poor medication adherence is potentially corrected by greater patient involvement, support, and education.

**Physical activity in the control of hypertension:** In this category, we concentrate article No. 1. This study was developed in Brazil, published in 2020 with evidence level III, demonstrating a relevant scientific impact. The key approaches are related to the positive effects of health actions that involve changing and maintaining a healthier lifestyle in controlling blood pressure and reducing harmful outcomes caused by morbidity associated with arterial hypertension. Life habits become transformative therapy in the care of patients with arterial hypertension, especially those at high risk. These habits include dynamic, regular, targeted and controlled physical activity (Pires, 2020). Arterial hypertension, as a chronic disease, is currently considered a public health problem, taking into account the high degree of health impairment and the difficulty of control throughout society. This combines genetic, physiological, environmental and behavioral factors that can generate a high degree of limitation and thus directly compromise the patient's quality of life, as well as generate an economic impact on the family and society. Even more worrying when blood pressure controls are not achieved in order to reduce complications associated with the disease, and patients with RAH are an important part of a group, which requires differentiated and targeted attention. However, it is currently known that there is an important gap for this control to be carried out effectively, which is adherence to non-pharmacological therapy, which is commonly shown to be effective in controlling blood pressure (Pires, 2020). In study 1, the authors studied the acute effects of aerobic exercise, resistance exercise and combined on blood pressure in patients with and without RAH, the main findings indicate that regardless of the stimulus (aerobic, resistance and combined) showed a significant reduction of ambulatory BP in patients with RAH. However, it showed that combined exercises induce a more prolonged reduction (wakefulness and nocturnal) in systolic and diastolic BP compared to aerobic and resistance exercises alone.

The effects of aerobic exercises occurred predominantly in the waking period, while in resistance exercises the effects were greater at night. In patients without AH, the responses were shown differently, showing a drop in systolic BP after resistance exercise, and a longer drop in diastolic BP in aerobic, compared with other stimuli. The authors point to greater benefits in combined exercise compared to isolated resistance and aerobic exercises in reducing blood pressure in resistant hypertensive patients. In addition, the study shows a difference in the responses of patients with and without RAH, suggesting that the hypotensive effect of exercise in these patients has a slight influence on the pathophysiological basis of the disease (Pires, 2020). It is observed that the prescription of aerobic and combined exercises were equally effective in reducing blood pressure in elderly hypertensive patients, but indicating that, by adding the resistance component, it has a secondary benefit in reducing the patients' fat mass. There is also an improvement in diastolic blood pressure, an increase in lean body mass, an increase in strength and cardiorespiratory fitness in high-risk patients (Lima, 2017; Schroeder, 2019).

This benefit of combined exercise is also suggested and well seen in other pathological conditions of high cardiovascular risk, such as in the metabolic improvement of patients with non-alcoholic fatty liver disease (NAFLD) (Jia, 2018). Considering the pathophysiological aspects involved in this process, studies suggest that during exercise, the sympathetic nervous system is activated and releases catecholamines responsible for increasing inotropism and chronotropism, in addition to generating peripheral vasoconstriction to maintain venous return and increase CO. In addition, there is an increase in blood flow in skeletal and cardiac muscles, through local vasodilation induced by nitric oxide, which also acts to protect the heart from ROS, pathological hypertrophy and fibrosis during cardiac stress. In addition, the increase in CO stretches the walls of the heart, leading to an increase in the force of contraction, a mechanism known as Frank-Starling. This process, together with the release of hormones and growth factors, in the long term, promotes physiological hypertrophy, reduced heart rate and systolic blood pressure, making it possible to protect the heart muscle from fibrosis and cell death (Lima, 2017; Bernardo, 2018). Given the various gains already mentioned here and widely known by the scientific and clinical community, it is worth emphasizing the importance and need for patients at high cardiovascular risk, assisted by the Unified Health System, to enjoy the multiple benefits that involve the improvement of quality of life and the maintenance of a healthy life which will result in the reduction of morbidity associated with the disease. It is suggested that a physical exercise program is effective in reducing sedentary and hypertensive cardiovascular risk factors, such as weight reduction and systolic and diastolic BP. As well as a prospective study carried out by a research laboratory of a Federal University in the interior of the State of Minas Gerais that evaluated patients with physical disabilities and arterial hypertension, it suggests that a physical activity program brings benefits in the reduction of BP and heart rate of evaluated patients (Hortencio, 2018; Damázio, 2019).

This effect has also been previously seen in patients with Hypertension in general, even without resistance, which demonstrates the solidity of data directed to the physical behavior of patients and its relationship with improving quality of life and blood pressure control, even more relevant when it comes to a program aimed at controlling, monitoring and directing physical activity and maintenance of healthy lifestyle habits in these patients, especially those at high risk for the development of morbidity and mortality associated with poor disease control. Maintaining a healthy lifestyle is already known in the scientific community as a potential factor for transforming the health-disease state of a population. The treatment of hypertensive patients can be understood as drug and non-drug treatment, the latter has as its main ally healthy lifestyle habits, such as regular physical activity already discussed here, weight control, maintenance of a balanced diet within the specificities and possibility of each patient, regular sleep control, efficient awareness of smoking cessation and control of stress precipitating factors. Therefore, the work of prevention and awareness with the objective of generating a change in these habits is a fundamental tool to reduce the risks and care costs generated by the

combination of these diseases. Authors studied a healthy lifestyle intervention program for men and women at high cardiovascular risk for a period of one year in primary health care in Sweden. The study intervention included healthy lifestyle counseling sessions, guided by nurses specializing in chronic patient care. They were guided consultations focused on lifestyle habits and involved motivational interviews to strengthen the participant's ability to modify one or more unhealthy lifestyle habits. If the nurse deemed it necessary, the participants were referred to a multidisciplinary team, such as a physical therapist and nutritionist. For a period of 12 months, they participated in 03 group sessions, alone or with a spouse or friend, having 03 action bridges: Cardiovascular risk factors and physical activity; healthy eating and use of alcohol and tobacco; sleep habits, stress and behavioral change. All underwent clinical and laboratory examination, and the questionnaires used were validated. The profile found was of women (54%), mean of 62 years, where 69% were diagnosed with SAH. There was a loss of 5% of the sample, but there was no significant difference compared to the study population.

This study showed an increase in continuous levels of general physical activity and exercise, as well as reduced physical inactivity time throughout the year (all  $P < 0.05$ ) in the general population, the same occurred with hypertensive patients. There was an increase in the intake of fish, fruits and vegetables and a reduction in the consumption of fast food and extra calories (all  $P < 0.05$ ). There was also a reduction in the number of smokers in individuals with hypertension. A reduction in stress levels ( $P < 0.01$ ) and reported sleep difficulty ( $p < 0.05$ ) was also noticed. The percentage of participants with 02 to 08 risk factors reduced ( $p < 0.001$ ) during the study period. The authors identified that in the period of 1 year there were significant changes in the levels of physical activity, eating habits, smoking habits and feelings of stress and sleep limitation in patients with high cardiovascular risk. It is worth mentioning that this was a relatively large study, given the number of participants, with the possibility of subgroup analysis, as well as providing relevant external validity, since the evaluated program was carried out in a common primary care unit. The authors support a focused approach to the various health factors in patients with high cardiovascular risk aimed at changing unhealthy lifestyle habits in the context of primary health care, calling attention to the need for randomized and controlled studies to confirm the findings (Lönnberg, 2019). In this scenario, the performance of a trained multidisciplinary team is shown to be a fundamental factor for improving the quality of health care and preventing unnecessary and potentially avoidable damage, especially in high-risk patients such as patients with therapy-resistant chronic conditions. And the implementation of programs and specialized care centers aimed at prevention and health education becomes transformative, as they guarantee guidelines that are strong allies in the prevention of morbidity associated with the disease, in addition to rehabilitation, in order to obtain a better prognosis and improvement in the quality of life and reduction of expenses related to health care, impacting on the maintenance and enhancement of the strength of an integral and free health system.

**Follow-up and monitoring of antihypertensive therapy:** This category encompassed most of the articles selected for the review, study No. 2; No. 3 and No. 4, which shows us the development of studies on the management theme about drug therapy. The articles were developed in Europe, 01 in Germany, 01 in Spain and 01 in England, with evidence level IV, V and IV respectively. The productions add data about the strategies aimed at the effectiveness of the pharmacological treatment of resistant hypertensive patients, with greater outcomes of medication adherence and better control of blood pressure, however, we consider weak evidence in relation to the reference used in the evaluation. Compliance to pharmacological treatment involves different elements that constitute this process: the individual, the treatment, the disease, the services, the health professionals, as well as the social and cultural environment of the user and his family. For compliance to be achieved, alignment and organization of these elements are necessary (Silva, 2018; Abreu, 2015). Medication adherence is crucial in the treatment of resistant hypertensive patients, as it has a better relationship with maintaining

blood pressure levels within the expected range, given the peculiarity of each patient, but it also proves to be a major challenge for health professionals around the world. In resistant patients, this worsens due to the need to use multiple drugs, which becomes a limiting factor for control. In a study (Barreto, 2016) carried out with 392 hypertensive patients enrolled in a Basic Health Unit (UBS) in a city in the south of Brazil, it was identified that 44.90% were not adherent to drug treatment, and of these, 88.02% did not present values pressure at desirable levels. The antihypertensive agents used in the treatment of hypertension allow not only the reduction of blood pressure levels, but also the reduction of the rate of fatal and non-fatal cardiovascular morbid events (Souza, 2015). In this regard, study No. 3 involved a large sample of the population in question, recruited 1,906 patients in Germany, who started a third antihypertensive drug and were enrolled in a chronic prescription program. They evaluated the relationship between polypharmacy (use of multiple drugs) and BP control, adherence, treatment persistence (days without treatment abandonment or change), costs (direct and indirect) and incidence of cardiovascular events in severe and moderate hypertensive patients. The groups were separated according to drug use: 3-6 (N=765-40.1%), 7-10 (N=624-32.7%), > 11 drugs (N=517 27.2%). The 3-6 drug group showed better BP control (51.8 vs. 47.0 and 41.1%.  $P < 0.001$ ), adherence (71.4 vs. 69.9 and 67.1%.  $P = 0.017$ ), persistence (50.1 vs. 45.5 and 46.2%  $P = 0.044$ ) and the incidence of cardiovascular disease was lower (12.2 vs. 19.7 and 30.2%  $P < 0.001$ ), respectively. Based on the average cost, the unit total was lower in the 3-6 drug group when compared to the others (€3,621.6 vs. €4,115.2 and €4,618.0 respectively;  $p < 0.001$ ). The authors indicate that the use of multiple drugs, sometimes known as “polypharmacy”, is directly related to lower adherence, less time to abandon or change antihypertensive therapy, as well as fewer cardiovascular events and even higher health costs.

In this universe, in study No. 2 the authors evaluated the effects of fixed single-pill therapy (FDC) in addition to therapeutic drug monitoring (TDM) on blood pressure in resistant patients. The mean use of antihypertensive drugs in the study population was  $3.8 \pm 1.1$ . The study had an 18-week follow-up period. SBP and DBP measured in the office were significantly lower (-22.8 mmHg and -13.6 mmHg) after FDC intervention. They also demonstrated that with the use of ABPM (Ambulatory Blood Pressure Monitoring) evaluated at the beginning and at the end of the 18-week intervention, the 24-hour BP reduced (-9.3 mmHg,  $p = 0.055$ ) and in general 69% of the patients reached BP control in the office and 31% in the 24-hour ABPM. A limitation of the study is the relatively small sample (N=13), but the sampling profile of this population has a smaller reference, due to the difficulty of investigation and diagnosis of general health systems, which points to an important convenience in the actions decentralized and specialized in the clinical management of this population. In view of this, every process that aims to guarantee comprehensive care and provide continuity and safety is vital for the process of preventing complications, and the discussion of care measures and the implementation of programs that aim to provide support to the population in a cost-effective and that guarantee the maintenance of the dignity and quality of health services. Follow-up programs with a specialized team have already proven to be very effective in the management of patients with chronic conditions, better results for the patient and for the health system in which they are inserted. A study<sup>28</sup> reports that patients with congestive heart failure (CHF) who attended three or more nursing consultations in a specialized clinic showed greater adherence to cardiac rehabilitation treatment. Study No. 4 (Bunker, 2016) of this review was carried out in a specialist clinic run by nurses in England, where apparently resistant patients were recruited in order to analyze the contributing causes of Resistant Arterial Hypertension in a specialist clinic. Recruited patients underwent supervised medication administration, close BP monitoring in the office together with ambulatory blood pressure monitoring (ABPM). The profile found was of women (65%), mean age of 57 years, with mean use of 5 antihypertensive drugs. The true HAR was estimated at 40% of the sample. Of the initial 37 patients, SBP control (<140 mm Hg) was achieved in 16 patients and diastolic pressure control (<90 mm Hg) in 26 patients.



Systolic and diastolic control was achieved in 15 patients. In ABPM, mean daytime BP was lower (139/80, 80/50 mmHg) than BP when administering the medication in the office. White coat hypertension was identified in 05 patients. At the end of the follow-up of the 34 patients, there was a reduction in the dose of the drug, of these 06 had suspension of 03 or more drugs. Eleven was not changed and 05 needed to add medication. The authors conclude that although the sample was small, it is clear that low compliance to medication use is an important contributing factor and potentially corrected by greater patient involvement, evaluation, support, education and follow-up. In reference, a more recently published study (Fabricio, 2021) identified in a cross-sectional study carried out with 100 hypertensive patients assisted at a referral center specializing in low-control chronic conditions in Rio de Janeiro, that 85% of resistant hypertensive patients reported having adequate adherence to drug treatment, even with multiple daily medications, which speaks in favor of a differentiated look at this type of health management. Even with a careful search of the scientific productions generated by this review, data related to programs aimed at the studied population, the Resistant Hypertensives, were still incipient, which demonstrates an urgent attention to this, which has a high risk of complications and mortality. However, there is a wide distribution of data in the hypertensive population in general, which consolidates the data presented here. A study (Leeman, 2018) carried out a cross-sectional analysis in primary care in Luxembourg that focused on evaluating the actual rate of blood pressure control and its estimates by general practitioners, as well as analyzing the use of combined drugs in a single pill in patients treated with multiple antihypertensive drugs. Were analyzed 742 clinicians who recruited 8006 patients. The authors indicated that the control rate was overestimated by general practitioners, where the BP control rate was 45%, being estimated by clinicians at 60%, which can interfere with the intensification, change, adjustments of treatment, thus generating a possible therapeutic inertia, impacting the best clinical outcome on blood pressure and control of morbidity and mortality. In the combination of drugs evaluated, the study showed that 39% of patients still used the standard dispensing service, followed by single pill (34%) and mixed use. Interestingly, patients who used a single pill were 5 years younger when compared to those treated with a conventional pill ( $63 \pm 12$  vs.  $68 \pm 12$  years), and had fewer comorbidities (39 vs. 55%,  $p < 0.001$ ). However, clinicians indicated a change from the traditional pill regimen to a single pill in 66% of cases, with the main reason being improved medication adherence (76%) and better BP control (64%), especially in patients who need medication. several drugs to control BP. This single-tablet dose management is already well accepted and described as a key part of patient medication compliance. An interesting fact indicated by the study was that clinicians with less time of professional experience, with 11-25 years (kappa coefficient 0.70, 95% confidence interval 0.67-0.73) performed better in the evaluation of patients in relation to the outcome analyzed, when compared with clinicians aged 36 to 51 years (kappa coefficient 0.54, 95% confidence interval 0.47-0.57). Regarding the treatment of patients with chronic conditions, since technological advances in health are dynamic and occur in an accelerated way (Leeman, 2018). From the perspective of the Unified Health System, currently the most adequate and inserted model regarding health education is Permanent Health Education (EPS), which aims to improve the process of training and reorganization of services provided to the population, but still there is a gap in the understanding, appreciation and effective implementation. A study (Ferreira, 2019) points to a limited perception of EPS, as a fragmented education, with an emphasis on punctual and decontextualized actions of daily life, which is more suited to the concept of Continuing Education (CE), which is currently presented as an insufficient practice to meet the growing demands of SUS advances. It should be noted that training and development must be linked to the special needs of each population, service location and established objective. What advances every day more towards the need for specialized services, directed to demands guided by the health profile. The clinical management of chronic patients is a global challenge, which is greatly influenced by the maintenance of health status.

Taking into account that it is mostly a disease that has a progressive profile, this maintenance has several variables that interfere with it, such as the diagnosis of the disease in adulthood, where most of its life was lived without the need to strict control of one or more parameters, which limits adherence to a new practice that needs to be established and recreated, at this stage, the continuous and uninterrupted assistance of the health professional becomes essential. A randomized clinical trial (Margolis, 2007) carried out in the United States of America (USA) analyzed the mediation of 07 factors associated with BP change in a follow-up program by telemonitoring and pharmaceutical management (conducted by pharmacists) versus usual care in primary health care, analyzing the outcome improves in the control of hypertension in uncontrolled hypertensive patients. The factors analyzed were use of a BP monitor at home, number of medication classes, patient-reported adherence to medication, physical activity, salt intake, alcohol use, and weight change. The authors showed that there was a 25% increase in home BP monitoring in the intervention group, compared to 15% in the control group ( $p < 0.02$ ). As well, the intervention group showed a higher count of antihypertensive drugs ( $p < 0.03$ ). Moreover, BP over 6 months showed a greater reduction when compared to control ( $-21.6$  (15.9) and  $10.3$  (16.7) mmHg respectively). Thus, the authors indicate that about half of the effect of the intervention that showed improvement in hypertension control was attributed to BP monitoring and drug therapy intensification. However, even though the intervention appears to improve drug adherence and salt intake control, these factors contributed little to the intervention's effect. It is worth emphasizing the importance of taking into account that real world studies have several variables that sometimes may not have statistical significance, but have an interrelationship with clinical relevance. It is known that the intense and periodic monitoring of health professionals can interact with the course of the disease, minimizing bad outcomes insofar as the orientation factor is directly present. Simple measures guided by professionals become valuable, such as the use of self-monitoring of blood pressure, as common in health units as monitoring the treatment of hypertensive patients around the world, even though its use in some contexts is still being questioned. A randomized clinical trial conducted in Iran with hypertensive patients evaluated the effects of self-monitoring on BP control in an Iranian population. The authors pointed out that the patients' BP decreased in the first month of the study in both the control and intervention groups. No significant differences were observed between the evaluated groups regarding baseline systolic blood pressure ( $144.4 \pm 7.4$  vs  $145.9 \pm 6.4$  mm Hg;  $P = 0.11$ ) and diastolic blood pressure ( $85.5 \pm 6.9$  vs  $85.0 \pm 7.7$ ;  $P = 0.66$ ). Study results do not support the clinically significant effect of self-monitoring on blood pressure control of hypertensive patients on outpatient medical treatment. However, self-monitoring is indicated in several international guidelines as an aid to clinical data evaluated in the office in the management of patients with hypertension. It is worth noting that this study did not take into account the resistant population (Hosseininasab, 2014). In the Brazilian context, the Blood Pressure Self-Measurement, known as AMPA, is indicated when possible, as one of the measures to validate blood pressure outside the office, which is described in the Brazilian Guidelines on Arterial Hypertension (Barroso, 2020). For authors (Shimbo, 2020), the Blood Pressure Self-Measurement is considered a method capable of providing the professional who assists this patient with the daily BP behavior, as well as increasing the patient's attention to their disease as well as generating greater compliance to treatment, still point out as a cost-effective method compared to office-based BP monitoring alone. However, the authors also call attention to the need for randomized clinical trials to assess the impact of BP self-monitoring on cardiovascular outcomes. This measure proves to be an important monitoring of the health profile presented by hypertensive patients, since it has a strong relationship with the real situation presented by the population for most of the day, which can provide relevant data for interventions aimed at improving the quality of life and reduction of potential risks. To refer to a greater need and devotion in studies aimed at the most vulnerable population, which is the case of the population studied in this review, especially regarding the follow-up and monitoring of antihypertensive therapy since these are already

started with multiple drugs that on the one hand, they control blood pressure, but it has the power to generate damage that can be limiting and/or irreversible, this, together with the natural history of the disease, can be a complicating factor to guarantee the best possible quality of health, thus raising a cascade of management and budgetary events in different health systems, regardless of the profile adopted by each country. Finally, the correct application of health resources is essential to guarantee basic rights in a continuous, egalitarian and effective way for the population as a whole. It is worth noting that even maintaining a systematization in the search and selection of articles for this review, the impossibility of exhausting all available literature on the subject is accepted, but the search led to the exhaustion of the proposed strategy. Thus, among the limitations of the study, it is pointed out the use of only one archive portal, as well as the search in 03 languages of the authors' domain (Portuguese, English and Spanish). In view of the detailed description of new perspectives in the care of high-risk hypertensive patients, this review contributed to the rise of scientific knowledge, as well as to the foundation of a latent need for care integration from a new perspective of the conduction of the health system. Clearly demonstrating the scarcity of data correlated to the theme, especially those with great scientific impact.

## Conclusion

The analyzed studies highlighted Physical activity in the control of hypertension, through the use of combined strength and aerobic exercises in order to obtain better control of blood pressure; and Monitoring and follow-up of antihypertensive therapy, emphasizing the improvement of drug adherence through the widespread use of single-pill therapy and patient-directed follow-up and health education. These being strong allies for activities implemented in care centers specialized in the care of resistant hypertensive patients within the scope of Primary Health Care. Although the study of arterial hypertension has been clinically valued for decades, they have important gaps, as it has a clinical condition that is difficult to control and has a great impact on the lives of patients and the health system in which it is inserted. Taking into account the multiple stratifications of hypertensive groups, the alignment of efficient strategies in the clinical management of hypertension is a multidisciplinary concern that favors the need for practical, efficient and realistic interventions. In this sense, the care provided to resistant hypertensive patients in reference centers by an interdisciplinary team is shown to be an important ally in maintaining the quality of life of this population, reducing morbidity and mortality and conscious and targeted control of health-related costs. Although we know that several centers for chronic conditions may have adopted a similar procedure for investigation of resistant hypertension, we are not yet aware of any published reports contemplating the multiple variables involved.

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