

BRAZILIAN GUIDELINES ON ARTERIAL HYPERTENSION - 2025: REFLECTIONS FOR NURSING PRACTICE
DIRECTRIZ BRASILEÑA DE HIPERTENSIÓN ARTERIAL - 2025: REFLEXIONES PARA LA PRÁCTICA DE ENFERMERÍA
DIRETRIZ BRASILEIRA DE HIPERTENSÃO ARTERIAL - 2025: REFLEXÕES PARA A PRÁTICA DE ENFERMAGEM

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Submission: 23-09-2025

Approval: 16-02-2026

ABSTRACT

This reflective study critically analyzes the Brazilian Guideline on Hypertension - 2025, focusing on changes in diagnostic criteria, the use of digital and semi-digital devices, the risk of early medicalization, and appropriate methods for measuring blood pressure. Recent national data on morbidity, mortality, and prevalence of hypertension are integrated, as well as international evidence on the accuracy of digital devices and technologies. The cultural adaptation of blood pressure values, the need for multidisciplinary teams, especially to support physical activity and eating habits, and the strategic role of nursing in research, healthcare practice, and health education are also discussed. It is argued that this is the moment for nursing to reaffirm its leading role, spearheading studies on measurement methods, standardization at different levels, device testing, local validation, and clinical-epidemiological monitoring, transforming the guideline recommendations into concrete and effective actions.

Keywords: Hypertension; Prehypertension; Blood Pressure Determination; Brazil; Nursing.

RESUMEN

Este estudio reflexivo analiza críticamente la Directriz Brasileña de Hipertensión Arterial - 2025, centrándose en los cambios en los criterios diagnósticos, el uso de dispositivos digitales y semidigitales, el riesgo de medicalización precoz y los métodos adecuados para medir la presión arterial. Se integran datos nacionales recientes sobre morbilidad, mortalidad y prevalencia de la hipertensión, así como evidencias internacionales sobre la precisión de los dispositivos y tecnologías digitales. También se discute la adaptación cultural de los valores de presión arterial, la necesidad de equipos multiprofesionales, especialmente para el apoyo en la actividad física y los hábitos alimenticios, y el papel estratégico de la enfermería en la investigación, la práctica asistencial y la educación en salud. Se defiende que este es el momento para que la enfermería reafirme su protagonismo, liderando estudios sobre métodos de medición, estandarización en diferentes niveles, pruebas de dispositivos, validaciones locales y seguimiento clínico-epidemiológico, transformando las recomendaciones de la directriz en acciones concretas y efectivas.

Palabras clave: Hipertensión; Prehipertensión; Determinación de la Presión Sanguínea; Brasil; Enfermería.

RESUMO

Este estudo de reflexão analisa criticamente a Diretriz Brasileira de Hipertensão Arterial - 2025, com foco nas mudanças dos critérios diagnósticos, no uso de dispositivos digitais e semidigitais, no risco de medicalização precoce e nos métodos adequados de aferição da pressão arterial. São integrados dados nacionais recentes sobre morbimortalidade e prevalência da hipertensão, bem como evidências internacionais acerca da acurácia de aparelhos e tecnologias digitais. Discute-se ainda a adaptação cultural dos valores pressóricos, a necessidade de equipes multiprofissionais, especialmente para apoio em atividade física e hábitos alimentares, e o papel estratégico da enfermagem na pesquisa, na prática assistencial e na educação em saúde. Defende-se que este é o momento para a enfermagem reafirmar seu protagonismo, liderando estudos sobre métodos de aferição, padronização em diferentes níveis, testes de dispositivos, validações locais e acompanhamento clínico-epidemiológico, transformando as recomendações da diretriz em ações concretas e efetivas.

Palavras-chave: Hipertensão; Pré-Hipertensão; Determinação da Pressão Arterial; Brasil; Enfermagem.



INTRODUCTION

Systemic arterial hypertension (SAH) is defined as a sustained elevation of systolic and/or diastolic blood pressure (BP) above levels considered safe for a given individual, implying an increased risk of cardiovascular disease, stroke, renal failure, and other organic complications⁽¹⁻²⁾. SAH is frequently asymptomatic, making its diagnosis and control a challenge, especially in populations with limited access to health services⁽¹⁻³⁾.

SAH is characterized as a multifactorial condition resulting from the interaction of genetic factors, family history, and ethnicity; environmental and behavioral factors such as a high-sodium diet, physical inactivity, overweight/obesity, excessive alcohol consumption, and stress, in addition to associated conditions such as diabetes and chronic kidney disease. Socioeconomic and cultural factors, such as diet quality, physical activity patterns, housing conditions, and access to health services, directly influence not only the onset of the disease but also timely diagnosis, therapeutic adherence and follow-up, and clinical outcomes⁽¹⁻²⁾.

National epidemiological data demonstrate the magnitude of the problem, indicating that hypertension affects approximately 32.3% of the Brazilian adult population⁽⁴⁾. It is emphasized that SAH is the primary risk factor for cardiovascular diseases, which remain the leading cause of death in the

country, accounting for more than a quarter of recorded deaths⁽⁵⁾. In 2022, approximately 400,000 Brazilians died as a result of these diseases, and even after excluding COVID-19-related deaths, a significant increase was observed compared to the 2015-2019 period: a 54% increase in 2021 and 14% in 2022⁽⁶⁾. From a public health perspective, the impact is significant, reflected in high costs arising from medication use, hospitalizations, complication management, and mortality. In this context, SAH care must be prioritized, and Primary Health Care (PHC) is the strategic setting for the prevention, monitoring, and control of the disease⁽¹⁾.

In this context, the release of the 2025 Brazilian Guidelines on Arterial Hypertension (DBHA)⁽¹⁾ presents both an opportunity and a challenge for healthcare professionals, particularly in nursing. The document proposes changes in the diagnostic stratification of SAH, the use of technology for blood pressure measurement, the preventive approach, and treatment⁽¹⁾. However, it is necessary to reflect on whether such changes are fully feasible within the Brazilian context, whether they respect cultural adaptations, and whether healthcare practice possesses the viable methods, resources, and personnel required for their implementation.

Therefore, this study aims to contribute to a critical reflection on the DBHA by highlighting the tensions between its recommendations and the realities of healthcare provision.

METHODS

This is a theoretical-reflective study based on: (i) a critical reading of the DBHA; (ii) the incorporation of recent national epidemiological data on the prevalence, control, and morbidity and mortality of SAH; (iii) an international literature review on the accuracy and reliability of blood pressure measurement devices (digital, semi-automatic, aneroid, and mercury), as well as studies on common measurement errors; (iv) the articulation of these elements with nursing practice within the Unified Health System (SUS), especially in Primary Care, considering the limitations of resources, personnel, and infrastructure; and (v) positioning Brazilian nursing as a protagonist within this DBHA.

DEVELOPMENT

New diagnostic stratification of SAH and cultural adaptation

Prehypertension, defined by the DBHA as systolic blood pressure (SBP) between 120-

139 mmHg and/or diastolic blood pressure (DBP) between 80-89 mmHg, broadens the diagnostic range for clinical surveillance and the possibility of early intervention⁽¹⁾. It is noteworthy that such values were previously considered within the normal range⁽⁷⁾. (Table 1), but were reclassified following the incorporation of evidence from international studies conducted mostly in temperate-climate countries⁽⁸⁻¹⁰⁾, on the assumption that these same blood pressure parameters would be directly applicable to the Brazilian context.

It is worth noting that healthcare professionals must be attentive, as not only have the values defining prehypertension been modified, but the criteria for the other blood pressure classifications have also been adjusted in the most recent guidelines (Table 1). These changes directly affect diagnosis, clinical decision-making, and treatment management, necessitating ongoing updates and technical rigor in clinical practice⁽¹⁻²⁾.

Table 1 - Blood Pressure Classification, Recommended Management, and Criteria for Diagnosis and Treatment of Systemic Arterial Hypertension: Comparison between the 2020 and 2025 Brazilian Guidelines on Arterial Hypertension.

Classification	DBHA 2020		DBHA 2025	
	Value (mmHg)	Management	Value (mmHg)	Management
Optimal BP	<120/<80	Repeat annually	-	-
Normal BP	120-129/80-84	Repeat annually	<120/<80	Consider normotensive; repeat measurements annually
Prehypertension	130-139/85-89	ABPM/ HBPM to rule out masked hypertension	120-139/80-89	Consider masked hypertension; if ABPM/ HBPM is abnormal, it is

				masked hypertension.
Stage 1 SAH	140-179/90-109 (Stages 1 and 2 combined)	ABPM/HBPM to rule out white-coat hypertension	140-159/90-99	Consider white-coat hypertension; if ABPM/HBPM is normal, it is white-coat hypertension.
Stage 2 SAH			160-179/100-109	High probability of sustained hypertension; confirm with ABPM/HBPM
Stage 3 SAH	$\geq 180/110$	Diagnosis and initiate treatment	$\geq 180/\geq 110$	Diagnosis of hypertension; initiate antihypertensive treatment
Emergency / Urgency	$\geq 180/110$ with immediate risk	Refer to emergency care	$\geq 180/\geq 110$ with immediate risk	Sustained hypertension; initiate immediate antihypertensive treatment

Source: Prepared by the authors based on DBHA⁽¹⁻²⁾.

This equivalence may not be entirely valid, given that Brazil is a tropical country where higher temperatures can influence physiological parameters, such as vital signs, particularly the population's average blood pressure⁽¹¹⁾. Furthermore, it is important to consider genetic variability, regional dietary habits, physical activity patterns, and access to healthy food when applying such limits^(1-2,11) to avoid excessive labeling or psychoemotional burden on the patient.

Risk of early medicalization

Diagnostic expansion without adequate support from non-pharmacological resources or intensive follow-up may favor early drug prescription, even in situations where behavioral intervention would be sufficient⁽³⁾. This risk does not stem from the guideline itself, which

recommends the adoption of non-pharmacological measures for all individuals with blood pressure $\geq 120/80$ mmHg and indicates the initiation of pharmacological treatment only after three months of these measures in people with blood pressure between 130-139/80-89 mmHg and high cardiovascular risk, or immediately for values $\geq 140/90$ mmHg⁽¹⁾. The problem, therefore, lies in the erroneous interpretation, still common in clinical practice, that medication has a preventive function, when, in fact, its use should be restricted to the treatment of established conditions⁽¹²⁾.

Similarly, it is not uncommon to observe pain-free patients receiving analgesics as prophylaxis; the same logic, applied to blood pressure control, can lead to excessive medicalization, with increased costs, risk of polypharmacy, adverse effects, and burden on patients and healthcare services⁽¹²⁻¹³⁾. In this

perspective, healthcare teams should assess the global cardiovascular risk, rather than isolated blood pressure levels, deciding to initiate medication only "if necessary" and always after ensuring adequate adherence to lifestyle changes.

Evidence on Lifestyle

Undoubtedly, behavioral changes are among the most difficult to implement in healthcare practice. Recent studies indicate that, for a behavior to become automatic and effectively incorporated into a routine, the average time required is approximately 66 days, with a range of 18 to 254 days depending on the habit's complexity and the social and individual context⁽¹⁴⁾. In the reality of healthcare provision, this slowness often occurs. The perception, among both professionals and patients, that insisting on these guidelines is an "exercise in futility" or a "pointless endeavor," discourages the continuity of educational strategies.

However, such changes are fundamental for SAH control and the prevention of cardiovascular complications. National studies demonstrate that, although the prevalence of hypertension is high, a large part of the population still does not adopt or cannot maintain healthy lifestyle habits⁽¹⁵⁻¹⁶⁾. International evidence indicates that reducing sodium consumption, increasing fruit and vegetable intake, engaging in regular physical activity, maintaining a healthy body weight, and

smoking cessation promote modest but clinically significant reductions in blood pressure^(3,17-18).

In Brazilian studies, adherence to non-pharmacological treatment for arterial hypertension remains a challenge for healthcare services, as it requires sustained behavioral changes and multidisciplinary follow-up. Research has shown that educational interventions, including nutritional education, encouragement of physical activity, and participatory strategies such as workshops and home visits, have resulted in improvements in clinical parameters and lifestyle among participants, highlighting the importance of systematic and sustained educational actions to reduce morbidity and mortality associated with the disease⁽¹⁹⁻²⁰⁾.

These findings reinforce that health education is a central element in promoting behavioral change and improving indicators related to arterial hypertension. Not by chance, the anniversary of the SUS coincides with that of Paulo Freire, as the SUS, in its essence, assumes health education as a transformative practice of realities and lives*.

A rural cohort study in China revealed that individuals with higher healthy lifestyle

* The celebration of the SUS anniversary on September 19 stems from the promulgation of Law No. 8,080/1990, which regulated the organization of the public health system in Brazil. Interestingly, this date coincides with the birth anniversary of Paulo Freire (09/19/1921), an internationally recognized educator known for his defense of liberating and transformative education. The association between both events, although not formally planned, has been used symbolically to highlight the emancipatory and educational character of the SUS.

scores presented lower systolic and diastolic blood pressure values, as well as a significantly reduced risk of hypertension (OR = 0.853; 0.881; 0.658 for scores 3, 4, and 5), supporting the priority of non-pharmacological interventions and public policies that encourage healthy habits in a continuous and structured manner⁽³⁾. It is noteworthy that, historically, rural populations, such as those in the aforementioned study⁽³⁾, live in more precarious conditions, with limited resources and greater difficulty accessing healthcare services, which is consistent with higher blood pressure values⁽²¹⁾.

In this sense, technology-mediated interventions, such as remote care programs or digital coordination, have a high potential for efficacy. For example, a pilot study within the context of the Family Health Strategy in Brazil, using an mHealth application alongside educational workshops, demonstrated reductions in blood pressure and improvements in self-care behaviors⁽²²⁾. Thus, nursing can integrate technological resources and behavioral education into daily practice as a realistic and relevant strategy.

Correct measurement methods and practical limitations

The DBHA highlights that "the use of automatic or semi-automatic sphygmomanometers with the oscillometric technique offers advantages over the auscultatory method" (p. 34)⁽¹⁾, especially by

reducing observer influence on the results. However, it is essential to emphasize that this technique requires highly sensitive, validated, and properly calibrated devices, since a simple manometer, whether aneroid or mercury, only displays the gradual drop in pressure on the dial or column, without the ability to accurately record or interpret cuff oscillations, which are fundamental for the correct measurement of blood pressure⁽²⁾.

In light of this, it becomes imperative to train nursing teams to understand the differences between the methods, since, in some hospitals considered reference centers in Brazil, the use of the oscillometric technique associated with simple manometers is still observed, a practice without scientific backing and not recommended by national or international guidelines.

Additionally, although the description of the palpatory method for blood pressure measurement is available in the literature⁽²³⁾, this resource is not considered superior or equivalent to the auscultatory method. It should be reserved for special situations, with due regard for its limitations.

Finally, it should be remembered that the oscillometric technique also presents limitations in specific populations, such as pregnant women, children, older adults, individuals with increased arm circumference, or those with arrhythmias, and that many commercially available devices lack adequate validation⁽¹⁻²⁾. Thus, in accordance with the guidelines⁽¹⁾, the auscultatory method, despite its limitations, will continue to be widely



used during this period of technological transition until robust evidence and validated devices permit its safe replacement.

In this regard, it is recommended that educational institutions systematically include the teaching of both methods, oscillometric and auscultatory, emphasizing their advantages, limitations, and appropriate contexts of use, and training future professionals to act critically and safely⁽¹⁻²⁾. In parallel, equipment development companies must engage in dialogue with clinical practice, improve devices, develop more rigorous validation protocols, and, above all, increase device sensitivity to detect the most extreme points of blood pressure oscillation (severe hypotension and severe hypertension).

In conclusion, during this period of technological transition, healthcare services should maintain the availability of both device types, ensuring that clinical decisions are based on the most reliable method until robust studies clearly define which devices and techniques offer greater accuracy and effectiveness.

Technological advancement and wearable devices

It is also noteworthy that the future is built on existing advancements. Although we are in a transition period, new technologies are under development and will undoubtedly reach a wide range of healthcare settings in the near future^(22,24).

Wearable technologies, including sensors for continuous blood pressure monitoring,

estimates based on pulse transit time, and combinations of phonocardiograms with photoplethysmography, have been the subject of growing international research (e.g., Oscillometric monitors with deep learning)⁽²⁴⁾. These devices promise to expand monitoring outside formal healthcare environments, foster patient engagement, and enable earlier and more personalized interventions⁽²⁴⁾.

Multidisciplinary approach and organizational challenges

For both non-pharmacological (based on lifestyle changes, a balanced diet, and behavioral interventions) and pharmacological treatments for SAH to be effective, the presence of multidisciplinary teams is indispensable. Physicians, nurses, nutritionists, physical educators, psychologists, and community health workers play complementary roles, ranging from clinical assessment to continuous follow-up and emotional and educational support for patients⁽¹⁻²⁾.

However, in several Brazilian municipalities, many healthcare units lack complete multidisciplinary teams (eMulti) or adequate support, and face resource shortages that impede comprehensive care⁽²⁵⁾. This limitation compromises the effectiveness of the guideline recommendations, which risk remaining theoretical rather than having a concrete impact on healthcare practice.

Overcoming these challenges requires investing in the expansion of multidisciplinary

teams, improving the physical and technological infrastructure of the units, and implementing continuous training strategies, intersectoral integration, and public policies that prioritize the prevention and systematic follow-up of patients⁽²⁶⁾.

Applicability to the Unified Health System

The SUS, the largest public health system in the world, has completed 35 years of existence, providing comprehensive care to about 75% of the Brazilian population and, to varying degrees, the remaining 25%⁽²⁷⁻²⁸⁾. It is a source of pride to affirm that Brazil has built a constitutionally guaranteed universal health model that remains an international reference for its scope and principles of universality, comprehensiveness, and equity²⁵. However, as a "young adult in the stabilization phase," the SUS must address historical and structural challenges, including chronic underfunding, persistent attacks on its legitimacy, healthcare overload, a shortage of a specialized workforce, and insufficient supplies. These problems stem not only from resource scarcity but also from inefficient or fragmented management over time⁽²⁸⁻²⁹⁾.

Despite these adversities, it is within this gigantic and pluralistic system that we must centralize the discussion on the implementation of the DBHA recommendations. The SUS must be understood not only as a care setting but also as an educational and research field that integrates professional training, clinical practice,

and scientific investigation. Within the SUS, we will have the opportunity to validate, on a large scale, technological advances, methodological changes, and the necessary "regional and branched adaptation" of the guideline, while respecting the epidemiological, cultural, and socioeconomic specificities of each Brazilian territory.

Thus, the SUS stands as a strategic axis for transforming hypertension care in the country, while simultaneously strengthening its structure through evidence generated in the concrete reality of its healthcare network.

Evidence-based practice and the strategic role of nursing

Nursing must assume a leading role at this time by conducting population-based studies to evaluate the average blood pressure of the Brazilian population and its relationship with comorbidities, other health issues, climatic factors, lifestyle habits, social determinants, and access to healthcare services. It is equally necessary to compare measurement methods, validate devices, promote observational research and clinical trials on lifestyle interventions, and investigate digital and wearable technologies adapted to local realities, including in rural or low-resource areas.

Conducting qualitative studies on understanding, adherence, and cultural perceptions, as well as advocating for public policies that guarantee periodic calibration, certification, and inspection of equipment, is also

strategic. This is a concrete opportunity for nursing to strengthen its technical, scientific, and ethical identity, consolidating evidence-based practice as the central axis in healthcare provision for the Brazilian population.

Limitations and Contributions of the Study

The limitations of this study are mainly related to the novelty of the proposed cut-off points for prehypertension in the DBHA and the scarcity of national research validating these parameters. This is compounded by the lack of Brazilian studies evaluating the accuracy of various blood pressure measurement techniques and the devices currently in use. Furthermore, the reflective nature of this work is highlighted: as it is essentially argumentative, it does not allow for establishing the strength of evidence or generalizing findings.

On the other hand, the study advances by problematizing the applicability of the new recommendations to the Brazilian context, highlighting gaps that require future research to address. Also noteworthy is the strategic potential of nursing to lead investigations that validate measurement methods, analyze regional patterns in blood pressure, test new technologies, and develop multidisciplinary strategies for the prevention and control of hypertension, thereby strengthening evidence-based practice and improving population health.

FINAL CONSIDERATIONS

The DBHA represents an important advancement by introducing the definition of prehypertension, prioritizing prevention strategies, recommending the use of technologies, and reinforcing the importance of lifestyle changes. However, its effectiveness will depend on several factors, including reliable blood pressure measurement, cultural adaptation of the recommendations, the presence of multidisciplinary teams, and the production of local evidence confirming whether these strategies result in better outcomes for the Brazilian population.

In this context, nursing plays a central and strategic role. It is up to the profession to lead device validation processes, ensure appropriate measurement techniques while maintaining the auscultatory method as a reference, avoid practices without scientific evidence, and promote research evaluating blood pressure patterns across different settings. Moreover, it must act in an integrated manner in hypertension control, health education, and the longitudinal follow-up of patients. Only in this way will the guideline cease to be merely a normative document and truly become an instrument for transforming cardiovascular health in Brazil.

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Funding and Acknowledgments:

This study received no funding.

Conflict of Interest Statement:

None to declare.

Authors' Contributions

João Vitor Andrade: Conceptualization (conception and design of the study); Writing – Original Draft (writing the initial version); Validation (validation of the final version).

Juliana Cristina Martins de Souza: Writing – Original Draft (writing the initial version); Validation (validation of the final version).

Rita Márcia Martins Carvalho: Research (literature search and selection); Writing – Original Draft (formatting the initial and final versions).

Diogo Christian Rodrigues Felix: Research (literature search and selection); Writing – Original Draft (formatting the initial and final versions).

Tiago Ricardo Moreira: Review and Editing (critical reading, revision, and contributions).

Data Availability Statement

No databases were generated in this study. The information presented is described in the body of the article.

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