

## REVIEW

# Characterization of some aspects related to arterial hypertension

## Caracterización de algunos aspectos relacionados con la hipertensión arterial

Ruth Calderón Landívar,<sup>1</sup> Arelys Lizbeth Cobeña Moreano,<sup>1</sup> Verónica Mercedes Revilla Del Valle,<sup>1</sup> Jenrry Fredy Chávez-Arizala<sup>1</sup>

<sup>1</sup>Instituto Superior Tecnológico Adventista Del Ecuador. Santo Domingo. Ecuador.

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### ABSTRACT

**Introduction:** arterial hypertension (HTN) is a chronic disease characterized by a continuous increase in blood pressure levels above the limits above which cardiovascular risk increases.

**Objective:** characterize aspects related to arterial hypertension.

**Method:** a review of the literature available in databases such as SciELO, Scopus and ClinicalKey was carried out, of which a total of 16 related articles were consulted, empirical methods such as logical history and analysis and synthesis were used.

**Results:** HTN is one of the most prevalent modifiable risk factors for morbidity and mortality worldwide. It is a chronic disorder with asymptomatic characteristics, which causes lesions silently as long as it is not detected or treated in time. Changes related to aging favor increased blood pressure. It is necessary to indicate that the modifiable risk factors for HTN can be classified as behavior, those that are linked to lifestyle, susceptible to changes in behavioral habits, can be smoking, inadequate diet rich in fats, poor consumption of vegetables and fruits, low physical activity, stress, among others that could be involved in the risk of developing associated diseases.

**Conclusions:** high blood pressure is an important risk factor for many diseases, with a currently increasing prevalence. Early diagnosis and timely treatment are crucial to maintaining a good quality of life, with adequate treatment and a healthy lifestyle being essential.

**Keywords:** Arterial Hypertension; Senior Adult; Risk Factors.

### RESUMEN

**Introducción:** la hipertensión arterial (HTA) es una enfermedad crónica caracterizada por un incremento continuo de las cifras de la presión sanguínea por arriba de los límites sobre los cuales aumenta el riesgo cardiovascular.

**Objetivo:** caracterizar aspectos relacionados con la hipertensión arterial.

**Método:** se realizó una revisión de la bibliografía disponible en bases de datos como SciELO, Scopus y ClinicalKey de las cuales se consultaron un total de 16 artículos relacionados, se utilizaron métodos empíricos como el histórico lógico y de análisis y síntesis.

**Resultados:** la HTA, es uno de los factores de riesgo modificables más prevalentes de morbilidad y mortalidad mundialmente. Se trata de un trastorno crónico con características asintomáticas, que ocasiona lesiones de forma silente siempre y cuando no se detecte ni se trate a tiempo. Los cambios relacionados con el envejecimiento favorecen el aumento de la presión arterial. Es preciso indicar que los factores de riesgo modificables para HTA se pueden catalogar como comportamiento, aquellos que están ligados al estilo de vida, susceptibles a cambios en la conducta de hábitos, pueden ser tabaquismo, la dieta inadecuada rica en grasas,

pobres en consumo de vegetales y frutas, baja actividad física, estrés, entre otros que podría involucrarse con el riesgo para el desarrollo de enfermedades asociadas.

**Conclusiones:** la hipertensión arterial es un importante factor de riesgo de muchas enfermedades, presentado una prevalencia en ascenso actualmente, su diagnóstico temprano y tratamiento oportuno son cruciales para mantener una buena calidad de vida, siendo imprescindible un tratamiento adecuado y un saludable estilo de vida.

**Palabras clave:** Hipertensión Arterial; Adulto Mayor; Factores de Riesgo.

## INTRODUCTION

Arterial hypertension (AHT) is a chronic disease characterized by being one of the most frequent in the world, affecting 25 % of the adult population, of multiple etiology related to social, economic, cultural, environmental, and ethnic aspects. One of the attributable causes is the current lifestyle of the population.<sup>(1)</sup>

The World Health Organization states that hypertension is a disorder in which the blood vessels have high blood pressure. Blood is distributed through the blood vessels from the heart to the entire body. With each heartbeat, the heart pumps blood through the vessels. Blood pressure is created by the force of the blood pushing against the walls of the arteries as the heart pumps blood. The higher the pressure, the harder it is for the heart to pump.<sup>(2)</sup>

Globally, there are 1,28 billion adults between the ages of 30 and 70 years with hypertension, most of whom live in low- and middle-income countries. According to estimates, 46 % of hypertensive adults are unaware that they suffer from hypertension, and only 21 % of hypertensive adults have their condition under control.<sup>(3)</sup>

Every year, there are 1,6 million deaths due to cardiovascular diseases worldwide, of which about 30 % are people between 30 and 70 years of age, which is considered a premature and avoidable death. According to the same source, hypertension affects between 20 and 40 % of the adult population, which means that around 250 million people suffer from it, making it the main cause of half of the deaths due to cardiovascular problems. It is estimated that, in Ecuador, one out of every five Ecuadorians between 30 and 69 years of age has this disease, and 45 % of them do not know that they suffer from it, representing the main cause of death.<sup>(3)</sup>

It is of great importance to establish educational spaces to raise awareness of the continuous practice of a healthy lifestyle since HTN is a disease that shortens the life expectancy of people, which is why its treatment is focused on reducing cardiovascular morbidity and mortality; even if it is not possible to change the mortality figures, at least it should reduce the time of life as a clinical disease. Based on this approach, the Ministry of Public Health provides clear guidelines based on the best available evidence to the public through health promotion, prevention of arterial hypertension, cardiovascular risk assessment, timely detection and management at different levels of care, paying special attention to the elderly population within its public policies.<sup>(4)</sup>

It should be noted that hypertension is defined or diagnosed by measuring blood pressure for several days. In order to be diagnosed with hypertension, measurements should be constant at a systolic pressure equal to or higher than 140 mmHg and a diastolic pressure equal to or higher than 90 mmHg. Normal levels of both systolic and diastolic pressures are essential for the efficient functioning of vital organs such as the heart, brain, and kidneys, as well as general health and comfort. It is worth mentioning that there are two main types of hypertension, which are divided into primary or essential hypertension, which is the type of hypertension that occurs due to genetic causes in interaction with the environment and is related to advancing age, and secondary hypertension, which is caused by pathologies that mainly affect the kidneys, the brain or an electrolyte imbalance, and can cause alterations in blood pressure figures.<sup>(5)</sup>

Vázquez Vigoa A. et al.<sup>(6)</sup> mention that HT is not a disease since it does not respond to an etiology or pathophysiology, nor a syndrome, since it cannot be described with a set of signs and symptoms. However, HT is a major risk factor for vascular diseases, according to existing epidemiological studies. AHT has been linked to diseases such as ischemic heart disease or coronary artery disease, cerebrovascular disease (CVD), renal failure, retinal vascular disorders, peripheral vascular disease, and so on.

Arterial hypertension continues to be a subject of study for researchers since it has been shown that, in groups of people over 45 years of age, 90 % of cases develop essential or primary hypertension, and less than 10 % develop secondary hypertension. For this reason, it is important to know the traditional modifiable and non-modifiable risk factors that influence the development of the disease.<sup>(7)</sup>

When approaching and reviewing the province of Santo Domingo de los Tsáchilas, it was corroborated that hypertension has a high prevalence and incidence, especially in older adults, which is why it has become a public health problem.

Therefore, this review article aims to characterize aspects related to arterial hypertension.

## METHOD

The available literature was reviewed using articles retrieved from SciELO, Scopus, and ClinicalKey databases. Filters were used to select articles in English and Spanish, and empirical methods such as logical history, lysis, and synthesis were used to compile and understand the information obtained. The terms “Arterial Hypertension,” “Older Adult,” and “Risk Factors” were used as keywords in the article. A total of 16 references addressing different considerations on the behavior of arterial hypertension were selected.

## RESULTS

AHT is one of the most prevalent modifiable risk factors for morbidity and mortality worldwide; its prevalence in older adults and the factors associated with aging substantially increases the incidence of this condition, thus having primary hypertension, which is that in which no identifiable cause can be mentioned since there are associated factors. However, not with the cause and effect category, it can be associated with a family component, but a responsible gene has not yet been defined. Secondary hypertension is due to an identifiable cause, generally associated with a pathology; if this disease is treated and the state of health is restored, blood pressure improves.<sup>(8)</sup>

It is a chronic disorder with asymptomatic characteristics, which silently causes lesions in the heart, blood vessels, kidneys, and brain as long as it is not detected and treated in time, which is why the number of individuals who suffer from this disease without showing symptoms is greater than the number of individuals, which is why it is important to measure blood pressure frequently. A series of symptoms may occur, such as morning headaches, nosebleeds, irregular heart rhythm, visual disturbances, and tinnitus; when hypertension is severe, it causes fatigue, nausea, vomiting, confusion, anxiety, chest pain, and muscle tremors that can be associated with common symptoms of other diseases. Hence, the only way to detect hypertension is to go to a professional or health facility to measure blood pressure; this is a quick process that does not cause pain and can be performed by any individual since the device for its measurement is easy to use; however, an expert must assess the existing risk and associated disorders.<sup>(7)</sup>

Aging-related changes favor an increase in blood pressure (BP). The physiological alterations the body undergoes during aging impact factors related to the individual's lifestyle, such as an incorrect diet throughout life, excessive salt consumption, harmful habits, alcohol consumption, smoking, level of physical activity, or weight control. All this causes great differences between individuals. These constant changes are then related to age, which causes BP to increase during aging gradually. Its origin lies in the changes that take place in the arterial walls, as well as in the neuroendocrine regulatory system. Thus, the underlying mechanism causing the gradual increase in BP with age is the loss of elasticity and indistinguishability of the large and medium-sized arteries, with an increase in their stiffness and an increase in peripheral vascular resistance, known as arteriosclerosis.<sup>(9)</sup>

According to the same source, aging is accompanied by a modification of endothelium-dependent vascular responses, mainly caused by the deterioration of the nitric oxide system. Endothelium damaged by hypertension or arteriosclerosis alters the release of platelet relaxing and antiplatelet aggregation factors, favors vasoconstriction, and increases peripheral vascular resistance. It is necessary to indicate that the renin-angiotensin-aldosterone system regulates arterial pressure and extracellular volume, where the renin released in the juxtaglomerular apparatus in the kidney when arterial pressure decreases, or there is hypovolemia (decrease in blood volume), the renin will convert the angiotensinogen secreted by the liver into angiotensin I, then this reaches the lungs where it will be converted into angiotensin II by angiotensin-converting enzyme (ACE), this angiotensin II will cause vasoconstriction and stimulate the production of aldosterone in the adrenal glands, so that there is reabsorption of sodium and water, increasing the volume of water, thus producing an increase in blood pressure. It should be noted that in the elderly, it is less relevant than in the young, given that in the aging process, there is a decrease in plasma renin activity and a decrease in baroreceptor sensitivity, which explains the tendency to develop orthostatic hypotension in these patients.<sup>(9)</sup>

Non-modifiable risk factors are those that, by nature, cannot be treated or modified; these will influence blood pressure factors, such as age, race, sex, and family history. Men are more predisposed to develop hypertension than women until women reach the age of menopause, after which the frequency in both sexes becomes equal. In most cases, hypertension does not depend on a single cause but is of polygenic and multifactorial origin. Cases of HT are caused by the mutation of a single gene, which is transmitted in the family following a Mendelian pattern.<sup>(10)</sup>

It should be noted that the modifiable risk factors for HT can be classified as behavioral, i.e., those that are linked to lifestyle, susceptible and subject to changes in the behavior of acquired habits, such as smoking, inadequate diet rich in calories or fat, poor consumption of vegetables and fruits, low physical activity, high sodium intake, stress, among others that could be involved with the risk for the development of associated diseases. Hypertensive disorders are problems of public health interest, causing cardiovascular alterations and increased morbimortality rates.<sup>(11)</sup>

People with sedentary lifestyles are at greater risk of developing hypertension, so it is recommended to walk at least 30 minutes per day, which will help prevent cardiovascular disorders, as it is considered a protective factor since physical activity raises HDL cholesterol, considered good cholesterol, and reduces low-density lipoprotein (LDL), which is the bad cholesterol, causing a decrease in blood hypertension figures.<sup>(10)</sup>

Suarez C et al.<sup>(12)</sup> consider it an important factor in the development of hypertension, considering that the excessive consumption of saturated fats increases blood cholesterol levels, gradually and continuously favoring vascular risk in individuals, in addition to contributing to the development and persistence of arterial hypertension. Another important element that triggers hypertension is the excessive consumption of sodium; hence, the importance of avoiding the intake of foods with high sodium content if normal blood pressure levels are to be maintained.

*Obesity* is an abnormal or excessive accumulation of fat that can be detrimental to health. A simple way to measure obesity is the body mass index (BMI); a person's weight is in kilograms divided by the square of the height in meters. One possible explanation for the increase in body weight is that a genetic association between the metabolic disorders causes the increase in these risk factors. Obesity has to be favored by weight control education. Decrease sodium intake to less than 100 mmol/day (6 g NaCl). Regular aerobic physical exercise of 30 to 40 minutes/day most of the week. Suspend the use of tobacco. Reduce the intake of polyunsaturated fat and foods rich in cholesterol.<sup>(12)</sup>

Blood pressure (BP) is a variable parameter that is not considered a fixed constant, but as the autonomic nervous system governs it, it can undergo certain specific variations with emotional, physical, and mental stimuli. However, thanks to the body's automatic control mechanisms, these oscillations are not large, thus preserving the integrity of the blood vessels and adequate tissue perfusion. BP is higher during working hours and lower at rest, decreasing further during sleep. These variations can be easily recognized using specially designed equipment that monitors BP for 24 hours. Where the measurements are taken is important. BP is lower at the individual's home and higher in doctors' offices and pharmacies. BP varies throughout life and with time.<sup>(13)</sup>

AHT can be characterized as a silent killer since AHT is a chronic disorder with asymptomatic characteristics, which silently causes damage to the heart, blood vessels, kidneys, and brain as long as it is not detected and treated in time, which is why more individuals suffer from this disease without showing symptoms, so it is important to measure blood pressure frequently. In addition, a series of symptoms may occur, such as morning headaches, nosebleeds, irregular heart rhythm, visual disturbances, and tinnitus; when hypertension is already severe, it causes fatigue, nausea, vomiting, confusion, anxiety, chest pain and tremors, chest pain and muscle tremors that can be associated with common symptoms of other diseases. Hence, the only way to detect hypertension is to go to a health professional to measure blood pressure; this is a quick process that does not cause pain and can be performed by any individual since the device for its measurement is easy to use. However, an expert must assess the existing risk and associated disorders.<sup>(14)</sup>

To diagnose arterial hypertension, at least three BP readings should be taken in an adequate manner and on visits made on different days, either ambulatory monitoring or home self-monitoring, to rule out white apron hypertension, in which the blood pressure in the office or the hospital is higher than outside the office or hospital.<sup>(15)</sup>

The ideal characteristics of the medical treatment to be used for arterial hypertension are the reduction of peripheral resistance that it does not decrease blood flow to vital organs: brain, heart, and kidney, nor interfere with autoregulatory mechanisms that do not produce bradycardia or affect the cardiac conduction system, that slows, slows or reverses the progression of ventricular hypertrophy and arterial wall thickness, that protects against the progression of renal fibrosis, both glomerular and interstitial, that does not produce volume depletion, and that does not favor hyponatremia or hypokalemia.<sup>(13)</sup> Lifestyle plays an important role in the attitudes and behaviors that should be adopted and developed to control arterial hypertension; some recommendations include taking care of body weight, exercising, reducing sodium consumption, eating a varied and balanced diet, and quitting smoking, among others.<sup>(16)</sup>

In the world, adherence to long-term treatments in the general population is around 50 %, much lower in developing countries. In this regard, the impact of poor adherence to treatment grows as the burden of chronic disease increases globally. It is important to highlight the relationship between aging and adherence to long-term treatments, not only because aging favors the increase of people with chronic diseases but also because, among other reasons, the elderly generally present higher morbidity and reportedly constitute about 65 % of admissions to internal medicine units.<sup>(16)</sup>

## CONCLUSIONS

Arterial hypertension is an important risk factor for many diseases, and its prevalence is currently on the rise. Early diagnosis and timely treatment are crucial to maintaining a good quality of life, adequate treatment, a healthy lifestyle associated with good physical activity practices, an adequate diet, and avoiding toxic habits.

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### AUTHORSHIP CONTRIBUTION

*Conceptualization:* Ruth Calderón Landívar, Arelys Lizbeth Cobeña Moreano, Verónica Mercedes Revilla Del Valle, Jenrry Fredy Chávez-Arizala.

*Data curation:* Ruth Calderón Landívar, Arelys Lizbeth Cobeña Moreano, Verónica Mercedes Revilla Del Valle, Jenrry Fredy Chávez-Arizala.

*Formal analysis:* Ruth Calderón Landívar, Arelys Lizbeth Cobeña Moreano, Verónica Mercedes Revilla Del Valle, Jenrry Fredy Chávez-Arizala.

*Research:* Ruth Calderón Landívar, Arelys Lizbeth Cobeña Moreano, Verónica Mercedes Revilla Del Valle, Jenrry Fredy Chávez-Arizala.

*Methodology:* Ruth Calderón Landívar, Arelys Lizbeth Cobeña Moreano, Verónica Mercedes Revilla Del Valle, Jenrry Fredy Chávez-Arizala.

*Project management:* Ruth Calderón Landívar, Arelys Lizbeth Cobeña Moreano, Verónica Mercedes Revilla Del Valle, Jenrry Fredy Chávez-Arizala.

*Resources:* Ruth Calderón Landívar, Arelys Lizbeth Cobeña Moreano, Verónica Mercedes Revilla Del Valle, Jenrry Fredy Chávez-Arizala.

*Software:* Ruth Calderón Landívar, Arelys Lizbeth Cobeña Moreano, Verónica Mercedes Revilla Del Valle, Jenrry Fredy Chávez-Arizala.

*Supervision:* Ruth Calderón Landívar, Arelys Lizbeth Cobeña Moreano, Verónica Mercedes Revilla Del Valle, Jenrry Fredy Chávez-Arizala.

*Validation:* Ruth Calderón Landívar, Arelys Lizbeth Cobeña Moreano, Verónica Mercedes Revilla Del Valle, Jenrry Fredy Chávez-Arizala.

*Visualization:* Ruth Calderón Landívar, Arelys Lizbeth Cobeña Moreano, Verónica Mercedes Revilla Del Valle, Jenrry Fredy Chávez-Arizala.

*Drafting - original draft:* Ruth Calderón Landívar, Arelys Lizbeth Cobeña Moreano, Verónica Mercedes Revilla Del Valle, Jenrry Fredy Chávez-Arizala.

*Writing - proofreading and editing:* Ruth Calderón Landívar, Arelys Lizbeth Cobeña Moreano, Verónica Mercedes Revilla Del Valle, Jenrry Fredy Chávez-Arizala.