Prevalence and risk factors of arterial hypertension: A literature review.

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Abstract

Background and aim: The Arterial Hypertension is part of the group of cardiovascular diseases that represent the highest proportion of death causes by diseases thus highlighting the need to evaluate the risk factors that contribute to this clinical situation and its high prevalence. The aim of this review is to assess the prevalence of arterial hypertension and its risk factors.

Methods and findings: This study is a literature review of published studies from 2003 to 2015, held in the following databases: Scientific Electronic Library Online (SciELO), Scientific Open Access Repository of Portugal (RCAAP) and online Knowledge Library (B-ON). For this research were selected 14 articles and 3 websites/reports were identified that corresponded to inclusion criteria. The prevalence of arterial hypertension in the reviewed studies ranged from 23.6% to 54.8%.

Discussion: It is more prevalent in female gender, with the highest incidence in adults and the elderly, African-native peoples and lower education. Arterial hypertension is positively associated to other diseases and genetic and environmental factors, such as: obesity, high sodium ingestion, sedentary lifestyle, stress, alcohol consumption and smoking.

Conclusion: It was observed that the development of several studies are important to contribute to the public health policies and actions, by providing indications to combat the increasing prevalence of Arterial Hypertension and risk factors, in order to better control this disease.

Introduction

Arterial hypertension (AH) is part of the group of cardiovascular diseases that symbolize the highest proportion of diseases mortality causes such as cerebral vascular accident (CVA) and acute myocardial infarction, reaching about two-fifths of the adult population in developed countries [1,2]. In this way, there is a need to evaluate the risk factors that contribute to this clinical situation and its prevalence, because the identification of groups at higher risk of being affected by arterial hypertension signifies an important contribution to the prevention of morbidities and effectiveness of the treatment [3].

Today it is known that arterial hypertension detected in some children may be secondary, of renal diseases for example, but also in other cases may denote the early start of arterial hypertension observed in adults [4].

Among the determinant etiology for the elevation of blood pressure (BP) values, it is clear that both genetic and environmental factors play an important role. In this way, since AH involves these factors, it is classified as a complex and multifactorial disease [5]. Given the high prevalence of arterial hypertension it is essential to monitoring and controls the causal agents. The majority of hypertensive patients have modifiable cardiovascular risk factors such as diabetes mellitus (DM), overweight, sedentary lifestyle, smoking habits, salt ingestion, among others. It is then reconsidered to modify these factors to maintain a controlled blood pressure [1,2].

It is necessary to sensitize the population to adopt a healthy lifestyle, not only a balanced diet and the practice of regular physical activity, but also by frequent monitoring of BP [5].

This review aims to assess the prevalence of arterial hypertension and to identify its risk factors in hypertensive patients of all ages [6-8].

Methods

To carry out this literature review, it was started by made up an intensive research in Scientific Electronic Library Online database (SciELO), with the descriptor "arterial hypertension" being made available 2,078 articles. The presented articles were not entirely desired, and had to change the topic of the descriptor for "arterial hypertension prevalence" (599 articles) and "arterial hypertension risk factors" (567 articles). In this database results, most of the articles were removed, after abstracts screening, getting a total of 75 articles. The research continued with the same search descriptors / keywords, in other databases such as the Scientific Open Access Repository Portugal (RCAAP) and the Library of online knowledge (B-ON), getting only 14 articles. In all databases, respect to a time period from 2003-2015.

After reading each article, the inclusion and exclusion criteria were applied. As inclusion criteria, were selected: studies in all age groups; presenting data on the prevalence of arterial hypertension and its risk factors; qualitative and quantitative studies and systematic literature reviews. As for the exclusion

criteria, it was excluded: the studies that approached the relationship of arterial hypertension with emotional factors and ethical aspects; which dealt exclusively with cardiovascular diseases; that associated arterial hypertension with depression or Alzheimer's disease and studies on mortality due to AH.

Additionally, in order to obtain more objective information about arterial hypertension proper and its current framework in Portugal, it was used the websites of the World Health Organization (WHO), the Portuguese Society of Hypertension (SPH), and the Portuguese General health direction (DGS). While the first two were taken definitions and detailed information of AH, and the latter correspond to a 2013 report about the epidemiology of hypertension in Portugal. Thus, this literature review includes a total of 17 articles /reports which were relevant to analysis.

Results

The World Health Organization [9] defines arterial hypertension known as high or elevated pressure, and a condition in which blood vessels have persistently increased pressure. It also states that the higher the pressure, the harder is to contract the heart. However, many authors have their own definition as: A syndrome characterized by elevated blood pressure levels associated with metabolic abnormalities, hormonal and the trophic phenomenon (cardiac and vascular hypertrophy) [1,4]; a multifactorial clinical entity, characterized by the presence of systolic arterial pressure (SAP) equal to or persistently above 140 mmHg and/or diastolic blood pressure level (DBP), consistently equal or above 90 mmHg [7] and silent chronic disease and slow evolution [10]. The BP has two measurements: systolic blood pressure or "maximum" and the diastolic blood pressure or "minimum". The first corresponds to the moment in which the heart contracts, sending blood around the body and the second happens when the heart relaxes to fill with blood again [11].

For the adult population, the definition of arterial hypertension is epidemiologic, so, the blood pressure of an adult is considered abnormal when it is above a level at which there is an association with coronary heart disease, CVA or kidney disease [12]. In contrast, for children and adolescents the definition is statistical, this because there are no studies to determine what would be the blood pressure levels associated with future diseases [4].

To understand the genesis of this disease, it is must know that the BP exerted by blood inside the arteries varies according the physiological changes to the cardiovascular system, particularly in relation to cardiac output and peripheral vascular resistance [1]. Moreover, all this complex process can undergo variations throughout the day oscillating to smaller or larger values, according the requirement of each occasion [11]. So, it is considered that a person is hypertensive when presenting, at least in two different occasions, one of the blood pressure values (systolic or diastolic) or both equal to or above 140/90 mmHg, determined by a trained professional and using a calibrated and validated device [11].

The evaluated blood pressure should be compared with reference values adopted, which define the limits according to gender, age and height percentile, using reference frames [4,11] (Table 1 according to the Portuguese Society of Hypertension) [11].

Some authors still consider the existence of arterial "hypertension of white coat", defining itself as an arterial hypertension in the clinic that it is not confirmed by the measures in Ambulatory Monitoring of Blood Pressure (AMBP) [4]. The AMBP has been widely used in the diagnosis of arterial hypertension in adults, but there is much less experience with this method in children. It is based on the principle that repeated blood pressure measurements during the 24 h promote better approximation of the true level of blood pressure than when using a single measure. It is advantageous in the evaluation of antihypertensive treatment effect when there are doubts in the control of blood pressure at 24 h and in the diagnosis of heart rhythm disturbances [2,4].

After diagnosis, arterial hypertension is usually classified into two forms: the primary or essential hypertension, whose cause is unknown, and secondary hypertension, in which it is possible to identify a responsible pathology, to be exact, it is possible find a disease/condition associated which is the real cause of AH [1,11]. Examples of such diseases/conditions: sleep apnea, chronic kidney disease, Cushing's syndrome (excess glucocorticoid), pheochromocytoma (tumors that originate in cells of the adrenal gland), primary hyperaldosteronism, aortic coarctation (narrowing the aortic), the thyroid and parathyroid disease, renovascular hypertension, use of oral contraceptives and pregnancy [11]. There is indication that the primary type corresponds to about 95% of cases of arterial hypertension, while the secondary representing the others 5% and renal and endocrine diseases are the main causes [8].

It should be noted, that there are no ideal diagnostic tests. Establishing a diagnosis is a process susceptible to systematic and random errors, which results in the probability of certainty, and not the certainty itself [1,6]. The discovery of arterial hypertension, in most people, happens in a casual manner without the presence of a specific complaint, which proven through periodic health examinations, pre-surgical exams, in monitoring during pregnancy, in public health campaigns and through the measurement of blood pressure in pharmacies and

Table 1. Definitions and classifications of BP levels (mmHg) according to PSH [11].

Category	Systolic		Diastolic
Great	<120	and	<80
Normal	120-129	and/or	80-84
High normal (or borderline)	130-139	and/or	85-89
Hypertension grade 1	140-159	and/or	90-99
Hypertension grade 2	160-179	and/or	100-109
Hypertension grade 3	≥180	and/or	≥110
Isolated systolic hypertension	≥140	and	<90

Table 2. Summary of review results.

Reference, authors (year)	Country, region	Study Design	Sample (age, gender, context)	Prevalence of AH	Associated factors
Ferreira, & Aydos (2010)	Campo Grande, Brazil	cross-sectional study	Obese children and adolescents (7 to 14 years old)	Male: 15.8%; female: 26.4%; 13 e 14 years: 52.4%	female gender, overweight, obesity, diabetes, sedentary lifestyle, smoking, high sodium intake, hereditary factors
Selem, Soraya, et al. (2013)	São Paulo, Brazil	Cross-sectional, population-based study	Adults (≥ 20 years old), with self-reported hypertension		advanced age, lower education, overweight, obesity, diabetes, sedentary lifestyle, smoking, high sodium intake, stress, smoking, alcohol
Costa, Juvenal, et al. (2007)	Pelotas, Brazil	Cross-sectional, population-based study	Adults (20 to 69 years old)	23.6%	Lower education, female gender, advanced age, non-Caucasians race, genetic factors, high sodium intake, overweight, diseases (obesity, arteriosclerosis, diabetes, metabolic syndrome), smoking, alcohol
Salgado and Carvalhaes (2003)	--	Review	children and adolescents	1% to 13%	low weight at birth, African-native race (not clinically relevant), diseases (renal diseases, obesity, diabetes), environmental factors (low potassium intake, stress) genetic factors (family history)
Baptista, Coelho & Pereira (2014)	Fundão, Portugal	Cross-sectional, population-based study	Adults (18 to 98 years old)	48.0%	Advanced age, overweight, Diseases (diabetes, hypercholesterolemia) genetic factors (Family history), environmental factors (consumption of alcohol outside meals, smoking habits)
Christofaro, Diego, et al. (2011)		Systematic review	children and adolescents	0.46% to 20.6%	environmental and genetic factors
Fonseca, Fabiana, et al (2009)		Review			Emotional factors (impulsivity, hostility, stressors, anxiety and anger), environmental and genetic factors
Massierer, Daniela, et al (2012)	Porto Alegre, Brazil	Prospective Study	Non-elderly adults (35 to 65 years) In ambulatory context	17.5%	--
Ferrazzo, Kívia, et al. (2014)	Santa Maria- RS, Brasil.	Cross-sectional study	Adults (≥18 years old; Mean: 46.6 (± 13.8)), dental patients	36.0%	Elderly, diseases, sedentary lifestyle, stress, smoking, alcohol intake
Sociedade Portuguesa de Hipertensão (2008)	Portugal	report	Adults (≥25 years old)	41.9% (46.5% in men and 37.4% in women)	diseases (dyslipidemia, diabetes, obesity, sleep apnea, chronic kidney disease, Cushing's syndrome, pheochromocytoma, primary hyperaldosteronism, aortic coarctation, thyroid and parathyroid disease, renovascular hypertension), overweight, oral contraceptives, pregnancy, family history, sedentary lifestyle, smoking, excessive alcohol consumption, high sodium intake
Moura, Ionara, et al (2015)	Northeast, Brazil	Cross-sectional study	children and adolescents (12 and 18 years)	13.7%	increased age, high capillary glycemia, low potassium intake
Oliveira-Martins, et al (2011)	Portugal	Cross-sectional study	Adults (40 to 65 years old) users of community pharmacies	54.8%	Male gender, advanced age, lower education, professionally inactive individuals, diseases (personal CD, dyslipidemia, arteriosclerosis, diabetes, obesity, metabolic syndrome), family history of CD, sedentary lifestyle, overweight, excessive alcohol consumption, high sodium intake, low potassium intake
Ribeiro, et al (2009)	Maranhão, Brazil	Cross-sectional study	Hypertensive patients of a university hospital	6.54% hypertensive refractory; 0.96% Primary hyperaldosteronism (14.3% of patients with refractory hypertension)	
Ulbrich, Anderson, et al (2011)	Curitiba, Brazil	Cross-sectional study	Adults (20 to 60 years old)	19.4% in men and 15.9% in women (9.5% and 6.6% among men and women, respectively, were classified with borderline blood pressure)	Advanced age, male gender, overweight, obesity, family history,
Oliveira, et al (2008)	São Paulo, Brazil	Cross-sectional study	elderly women	55.3% in women from 60 to 74 years old; 60.7% in women ≥75 years old	increased age, non-Caucasians race; increased number of children, increased body mass index, diabetes, cardiac disease, other health conditions, smoking
Macedo, & Ferreira (2013)	Portugal	cross-sectional study	Adults (≥18 years old), primary health care users	26.9% (female: 29.5%, male 23.9%)	female gender, elderly, lower education

health centers [5]. The diagnosis of AH is complex because it is influenced by BP variability, used equipment and techniques, body position, time of the day, environment, measurement location and by the person responsible of the measure [2].

It is observed in a review than in young children (under six years of age) arterial hypertension has a greater prominence of being secondary, while at the end of the first decade and beginning of the second, the AH begins to be of a predominant etiology [4]. However, another study [1] affirms that the etiology of arterial hypertension in children appears to follow parameters similar to adults, such as the increased frequency of cases of primary form and as well as the lack of signs and symptoms that explicit the presence of the disease. In those circumstances, the real public health problem established by arterial hypertension focuses on the primary form of the disease, since in most cases the etiology is difficult to detect.

Prevalence

The prevalence of arterial hypertension has been increasing in developed countries, due to it being an asymptomatic disease in its early stages and also the lack of information from the population, which affects not only the elderly but also individuals of age groups increasingly earlier [12].

In Portugal, the arterial hypertension has a high prevalence exceeding 40% in the adult population and although predominates in this age group, arterial hypertension in children and adolescents is not negligible [4,13]. It becomes diversified on reports of several authors, which will be discussed immediately in this review, depending mainly on the methodology used. Note that when blood pressure is measured several times, the prevalence tends to decline because of the average regression phenomenon [11].

Several studies also indicated that arterial hypertension is a disease with high prevalence in the elderly population, becoming a determining factor in the high rates of morbidity and mortality of these individuals [14-16]. It affects nearly 60% of the elderly and is often associated with other diseases such as arteriosclerosis, diabetes mellitus and metabolic syndrome, conferring to this group a high cardiovascular risk.

According to the Portuguese Health Management, through a cross-sectional study done in 2013 [17] with individuals in age equal or superior to 18 years, there has been a higher prevalence of arterial hypertension in female gender (29.5%) and in the age group equal or superior to 65 years.

Regarding a population-based study developed in Brazil [3] (individuals aged 20 to 69 years), the data showed a prevalence of arterial hypertension of 23.6%, and that individuals with less than four years of schooling were almost twice as more likely to present arterial hypertension; the female gender exhibited 17.0% more likely to have arterial hypertension than male gender; concerning the distribution of arterial hypertension with age, a significant and positive tendency was found, that is, the AH increases with age; in relation to skin color, it was verified that people classified as non-Caucasians presented 25.0% more AH than the individuals of the base category (Caucasians).

Another Brazilian study [7] stated that this prevalence in African-native peoples is due to the low socioeconomic level, to intake of a high-sodium/low potassium diet and to poor maternal nutrition that leads to low weight of the child at birth, and this in turn is associated with the risk of developing AH in adulthood.

In the study of hypertension validity [2], it was found that the prevalence of arterial hypertension based on blood pressure measurement was 43.4%, and individuals with more than nine years of education were 29.0% less likely to report the disease when compared those with lower education.

Inversely, a study done in community pharmacies in Portugal [13], revealed a prevalence of arterial hypertension in the sample of 54.8% and was significantly higher in men (61%), increased with age (the average predominated in 56 years old) and was more frequent in individuals with lower education.

Risk Factors

The cardiovascular risk factors can be classified into two types: modifiable and non-modifiable. The first are those who in a perspective of prevention we can intervene and correct, and include smoking, dyslipidemia (high cholesterol), diabetes mellitus, obesity, physical inactivity, excessive alcohol consumption, high sodium intake, among others. A healthy lifestyle has a positive influence on all these risk factors. Already the non-modifiable risk factors are not subject to intervention, and involve the personal and family history of cardiovascular disease [11,13].

Some authors claim that the blood pressure of an individual is determined by the interaction between environmental and genetic factors (heredity) [7], which generally refer to the modifiable and non-modifiable factors, respectively.

As to hereditary factors, studies developed in the pre-molecular era [1] have proved that these factors contribute at least 20% to 50% of the variation of blood pressure in humans. In a study by Costa et al. [3], the data demonstrated an association between positive family histories (for a minimum of one parent) with increased prevalence of arterial hypertension.

As for environmental factors, they are equally important in determining blood pressure throughout life [4]. Some studies [6,7] state vigorously, that one or more of these factors may permanently change physiological factors, predisposing the individual to an increased risk of cardiovascular disease later.

For a better understanding, the most important and most discussed risk factors were divided in dietary and others.

Dietary Factors

Dietary factors include: sodium, potassium and obesity, which are the most frequently cited as being important risk factors for AH in most studies.

As for sodium, there is a well-documented relationship between sodium intake and arterial hypertension in humans [1,3]. Some studies have also shown that, associated with the genetic factor, sodium intake leads to a rapid increase in blood pressure [1]. Another study [3] found a positive correlation between sodium intake and blood pressure, after adjusting for age, gender, body mass index (BMI), potassium and alcohol intake.

However, high sodium intake is not sufficient for the development of arterial hypertension, as not all people with high sodium content in the diet develop it. This phenomenon is called sodium sensitivity. This sensitivity is more evident in patients with severe hypertension, obese patients, African-native peoples, people with a family history of AH, in the elderly and hyper-aldosteronism [4,15] (characterized by elevated levels of plasma and urinary aldosterone, suppression of plasma renin activity, hypokalemia and metabolic alkalosis [14].

Results of different authors [4,13] suggested that low potassium intake in the diet can be an important function in the genesis of arterial hypertension. A study done in children and adolescents from 5 to 17 years old [12], showed that the sodium/potassium relation in diet is more important in determining blood pressure in childhood than sodium intake alone.

In adults, the analogy of obesity and arterial hypertension can be detected early in childhood and has most relevant clinical due to the relationship with silent diseases such as dyslipidemia and diabetes mellitus type II [4]. Several studies [2,3] found that, when comparing AH with people of adequate weight, overweight individuals were twice as likely to arterial hypertension, while in those with obesity this increase was 3.5 times. And a study of obese individuals in the age group between 7 and 14 years old [1] showed no difference between the same ages, and concluded that it is the range of 13 and 14 years who has a higher prevalence of arterial hypertension, differing from the other ages studied.

Other Factors

Factors such as sedentary lifestyle, stress, diseases, smoking and alcohol intake also influence the development of arterial hypertension, which are the most worrying among modifiable factors [2,10,16].

In a study by Costa et al. [3], it was found that smokers had a higher prevalence rate than non-smokers, and individuals who ingested alcohol were more likely to exhibit AH than those who did not consume; the individuals who reported having diabetes mellitus showed higher prevalence of arterial hypertension. The same is also observed in several studies [13,16], such as Oliveira-Martins et al. [13], in which arterial hypertension was also more common in professionally inactive individuals, diabetics and among those with a previous personal and family of cardiovascular diseases; and in a study of elderly women [16], heart disease and diabetes were significant associated factors since their occurrences are more likely to exhibit high blood pressure.

There is a Portuguese study [13] that revealed a negative association between AH and smoking habits.

Another study carried out in Portugal [5] indicated that the consumption of alcohol outside meals increases the risk of AH, regardless of the amount of alcohol consumed.

Concerning stress, this contributes to a large number of diseases, both of a psychic and organic nature, such as arterial hypertension. Thus, it was found in the literature some studies that have demonstrated the valid relation between AH and stress. In a study conducted by Fonseca et al. [7], it was verified that hypertensive patients exhibit significant increase in blood pressure when submitted to experimental stress sessions; and as well as in Oliveira's et al. study [16], except that in this study was of lower magnitude. So, people who are exposed to stress have a high prevalence of developing high blood pressure. The genetic factor also influences the stress response, since the offspring of hypertensive individuals have a higher BP increase in response to stress factors than non-offspring [4].

The main results of this review study are summarized in Table 2.

Discussion

The results presented in this review contributed to reveal the prevalence and identify risk factors associated to arterial hypertension in several studies found.

The prevalence of arterial hypertension in the various studies analyzed varied from 23.6% in Brazil [3] to 54.8% in Portugal [13]. This high variation may have been due to methodological differences between the studies, such as the cut-off points used or else the age groups of the sample [16] (ranging from 7 to 95 years).

As observed, the AH is more prevalent in female gender [1]. The justification for this evidence, presented by some authors, was due to other risk factors referring to arterial hypertension that are more common in women, such as the case of obesity [1]. However, it should be noted that compared with a study presented [13], it was found that the prevalence was significantly higher in male gender, in support of which according to the authors, in most of the research is the female individuals who are at higher percentage, thus influencing the prevalence in this sex.

The skin color or race variable is recognized as a factor associated with arterial hypertension, and the comparison of various studies has confirmed this association, showing higher prevalence for individuals of African-native race [3,4,14,15]. Also with regard to distribution of AH by age group, the data show that it increased with advancing age [3,12,13,17].

In the present review, there was also interdependence between arterial hypertension and genetic factors [3,4,6, 7]; also regarding lifestyle: high sodium intake [1,3], low potassium intake [4,12], sedentary lifestyle [13], stress [4,7,16] and alcohol consumption [3], lower education [2,3,17] and the association with pathologies: such as arteriosclerosis, diabetes mellitus and metabolic syndrome [3,13,16].

On the other hand, although arterial hypertension is positively associated with smoking, it was found a study that shows the inverse relationship. Although the authors do not present an authentic explanation for this fact, they only suggest that being hypertensive may have contributed to the abandonment of smoking habits [13].

The Portuguese Society of Hypertension [11] guaranteed that the body weight increased may be considered a predisposing factor in the development of arterial hypertension, being responsible for 20% to 30% of cases of high blood pressure (HBP). Which is in agreement with other studies [1,2,15].

The data synthesized in this review revealed that most studies on this issue were realized in the last decade (except one [4]), revealing the recent and growing interest in research on arterial hypertension.

Through this review it was identified that the terms used to denominate high blood pressure levels were different between the studies, because while some used the term arterial hypertension (AH), other studies used the term high blood pressure (HBP). Arterial hypertension denomination only obtains application in cases in which the evaluation of the measurements has been occurred on different days, following the procedures described for the diagnosis of this disease [11]. On the other hand, the term high blood pressure appears to be more appropriate when the blood pressure is measured only in one situation [17].

Conclusion

In conclusion, in this systematic review of the literature, arterial hypertension indiscriminately affects the whole spectrum of the population, although some groups have special characteristics, both as to its prevalence as to the prognosis, and response to various therapeutic modalities. The special situations include: female gender, adults and elderly people, African-native peoples; lower education, diseases; genetic and environmental factors (obesity, high sodium intake, sedentary lifestyle, stress, alcohol consumption and smoking habits). In this way, the proposed objectives in this review have been successfully achieved.

Despite the wide variation in the prevalence of arterial hypertension, it is observed that such studies are important to help in public health policies and actions, giving evidences to combat the increasing prevalence of AH in younger age groups, thus contributing to prevention installing this cardiovascular risk factor in adulthood. However, the comparisons between different studies should be undertaken with caution.

Knowing that arterial hypertension was confined to older adults for most of the twentieth century [16], it perceived that the current focus needs to be changed, because now this disease affects obese children and adolescents at early ages, which can lead to severe cardiovascular complications at an early age, compromising the quality and life expectancy of these people. Therefore, it is appropriate to verify the presence of such risk factors in a younger population in order to prevent more serious diseases can be installed early, reflecting on the population premature death.

Limitations

Some limitations are taken into consideration in the present review: the different age groups was a limiting factor in the comparison of different studies, making this review not so objective in the delineation of the prevalence and risk factors of arterial hypertension; the search for articles on the subject was also difficult, since at the level of temporality most part were old; also the majority of articles found dealt with a specific theme, thus causing the withdrawal exiguous information; similarly, due to reduced sample size and non-representation of the general population in the different studies (since most of the studies dealt with a specific region), these may compromise the comparisons made and the results of this review.

It has been observed in the studies conducted in different regions that they vary in the methodological procedures employed, ranging from the age of the samples up to harvest protocols. It is possible that the variability of the observed results between studies may have been due these differences [6].

The consciousness actions may happen within the health services, starting with the diagnosis of arterial hypertension and appropriately communication to the patient, so that it can understand its health condition. This would allow the design of intervention policies (research and treatment) focused on the neediest population groups and achieve more effective results. In addition, continuous and systematic screening mass campaigns can be helpful to individuals who have limited access to these services and/or those who are asymptomatic carriers of the disease [2,17].

To finish, it is revealed the need for more studies to better elucidate the relationship of arterial hypertension with the prevalence and risk factors associated with it.

Conflict of Interest

The authors confirm that this article content has no conflicts of interest.

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