



Online Brazilian Journal of Nursing

E-ISSN: 1676-4285

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Universidade Federal Fluminense  
Brasil

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Online Brazilian Journal of Nursing, vol. 10, núm. 3, septiembre-diciembre, 2011

Universidade Federal Fluminense

Rio de Janeiro, Brasil

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Original Articles

## **Descriptive study of risk factors to arterial hypertension among victims of cerebrovascular accident**

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### **ABSTRACT**

Objective: Verification of the presence of modifiable and non-modifiable risk factors to Arterial System Hypertension (ASH) in patients who had suffered Cerebrovascular Accident (CVA). Method: Descriptive study, quantitative performed in a SAH Unit of a hospital in Fortaleza, Brazil. 75 patients diagnosed with SAH and attacked by CVA, hospitalized in this same unit, composed the sample. The data was collected through interviews with the patients, then exposed in frequency datasheets. Study approved by the Ethics Committee. Results and discussion: Non-modifiable factors: male (61,4%), age above 60 years old (48%), family background of cardiovascular diseases (68%) and white-skinned (64%). Modifiable factors: unhealthy diet (64%), sedentary lifestyle (92%), smoking (20%), regular consumption of alcoholic beverages (21,3%), and inadequate use of medication (41,3%). Conclusion: CVA victims have modifiable factors related to ASH, forcing the nursing professionals to develop strategies to the population that carries ASH to the reduction of these factors and prevention of cardiovascular implications.

**Descriptors:** Hypertension; Risk Factors; Nursing.

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## INTRODUCTION

The arterial system hypertension (ASH) is considered a great problem in public health in both developed countries and emerging ones, either by a high prevalence in the adult population or to be also considered the main risk for the origin of cardiovascular diseases<sup>(1)</sup>.

The ASH is a disease that affects around 30 million Brazilians and around 50% do not know they have the disease because they do not have any symptoms, and these numbers tend to increase time after time due to the rise in life expectancy of the Brazilian population<sup>(2)</sup>.

It is considered a chronic disease characterized by the elevation of arterial pressure (AP), in many times asymptomatic, classified as: Hypertension stage 1, 2, 3 and Systolic Isolated Arterial Hypertension (SIAH)<sup>(3)</sup>.

The risk factors that initiate the ASH are divided in modifiable and non-modifiable. The non-modifiable risk factors are the ones the health professional cannot change, modify or treat; the modifiable risk factors, on the other hand, are targeted by the health professionals in treatments, coming to the attention that the sum of the modifiable factors contributes significantly to the development of complications of ASH<sup>(2)</sup>.

The non-modifiable factors include age, gender, ethnical group and family history of ASH; the modifiable factors include obesity, stress level, sedentary life, smoking, use of illicit drugs, alcoholism and general diet<sup>(4)</sup>.

The control of modifiable risk factors happen by the adoption of a healthy life style, with abolition of alcohol and tobacco, frequent physical activity, weight loss, change of diet habits and regular use of medication by the patient<sup>(2,5)</sup>.

In Brazil, among the cardiovascular diseases, the cerebrovascular accident (CVA) is emphasized to be the main cause of hospitalization, mortality and dysfunctionality, surpassing even other cardiac diseases and cancer<sup>(6)</sup>.

The CVA can be defined as a sudden, non-convulsive halt of the neurological function caused by a vascular event of hemorrhagic or ischemic nature<sup>(7)</sup>.

The risk factors generated of a CVA include ASH, smoking, high serum cholesterol rates, obesity, reduction of tolerance to glucose, use of oral contraceptives, diet rich in saturated cholesterol and age above 60 years old<sup>(7)</sup>.

It is important to mention that ASH has contributed as the main risk factor to the development of a CVA. On the other hand, the ideal control of the AP reduces seven times the risk of an ASH. Main signals and symptoms of an ASH are: dizziness, vertigo, cephalaea, vomits, double vision, weakness, confusion, tingles, among others<sup>(5,7)</sup>.

The impact of cardiovascular diseases upon the society is increasing, especially when it develops to certain degrees of dysfunction or death. The ASH and the CVA have called attention of health authorities, both by its high prevalence, and also by the straight connection to the development of incapacities.

Studies related to cardiovascular diseases with populations are an interesting practice and of great relevance that generate important information to public health authorities, so they can elaborate better strategies to attend the specific characteristics of this group. Based on these considerations, there are some questions that need responses: what are the clinical characteristics of the patients with arterial hypertension victims of ASH? What are the non-modifiable and modifiable ASH risk factors present in the patients before the CVA?

Therefore, the objective of this study is to describe the clinical characteristics of bearer patients of ASH, followed by a CVA, and verify the presence of non-modifiable and modifiable ASH risk factors in these patients.

## **METHODOLOGY**

This is a descriptive study, of quantitative nature, performed in a CVA unite of a tertiary-level state public hospital, in the municipality of Ceara, Brazil.

The population of this study is constituted by 166 patients diagnosed with ASH followed by a CVA, hospitalized in a CVA unit of the abovementioned institution. The sample was designed based on the formula indicated to calculate in other transversal studies of finite population of 75 patients, which fulfilled the following including criteria: to be affected by a CVA; to have a clear ASH diagnosis before the CVA; to be hospitalized in the CVA unit by the period of this study; to be 18 years old or more and in well-enough physical and emotional conditions to participate in the interview, answering the questions.

The data collection occurred during the months of March and April 2010, through an interview of closed questions, included with data referred to the clinical characteristics of the patient (time of diagnosis, time of treatment, type of ASH, arterial pressure and morbidities); data referred to the presence of non-modifiable ASH risk factors (gender, age group, hereditary factors and skin color) and the modifiable ones (unhealthy diet, sedentary life, smoking, alcoholism, inadequate use of medication, non-attendance to medical appointments, and non-adoption of leisure activities).

The data were placed in an Excel datasheet, presented in tables, which information was analyzed with a descriptive statistics and funded in pertinent literature to the topic.

During the performance of the study, the bioethical principles of a research involving human beings were respected, approved by the Ethics and Research Committee of Fortaleza General Hospital, under the protocol number 110302/10. As such, it was requested to each participant to sign the Free and Clear Consent Agreement, in accordance to participate in this study.

## RESULTS

The data were organized in tables according to the characteristics of the patients: clinical factors, non-modifiable ASH risk factors and modifiable ASH risk factors.

Table 1 – Classification of patients diagnosed with arterial hypertension victims of CVA based on clinical characteristics, 2010/Fortaleza-Brazil.

	<b>n = 75</b>	<b>%</b>	<b>Average</b>
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<b>Time of diagnosis of ASH</b>			
1 to 3 years	26	34,7	
4 to 10 years	27	36,0	
> 10 years	22	29,3	
<b>Time of treatment of ASH</b>			
1 to 3 years	30	40,0	
4 to 10 years	24	32,0	
> 10 years	21	28,0	
<b>Type of CVA</b>			
Ischemic	57	76,0	
Hemorrhagic	18	24,0	
<b>Arterial pressure (mmHg)</b>			
Normal ( $\leq 130 \times 85$ mmHg )	10	13,3	
Normal limitrophe (130-139 x 85- 89 mmHg )	2	2,7	
Hypertension stage 1 (140-159 x 90-99 mmHg )	6	8,0	
Hypertension stage 2 (160-179 x 100-109 mmHg)	19	25,3	
Hypertension stage 3 ( $\geq 180 \times 110$ mmHg)	15	20,0	SAP = 163 mmHg
Isolated systolic arterial hypertension (SAP $\geq$ 140 /DAP $\leq$ 90)	23	30,7	DAP = 94 mmHg
<b>Presence of Morbidities</b>			
Yes	28	37,3	
No	47	62,7	

According to table 1, from the 75 interviewed people, 34,7% found out being bearers of ASH at least for three years, 36% discovered as bearers for 4 to 10 years and 29,3% of them were diagnosed for more than 10 years. However, 40% of these patients initiated the treatment in less than three years, which means, some patients had the diagnosis of ASH, but just initiated the treatment years later.

In relation to the type of ASH, there was a predominance of ischemic ASH (76%). The AP of 84% of the patients was elevated during the moment of hospital admission. From those, 30,6% of the patients had ISAH.

The morbidities were present in 37,3% of the patients, among them, *diabetes mellitus*, cardiopathies and nefropathies.

Table 2 – Classification of the patients based on non-modifiable ASH risk factors before a CVA. 2010/Fortaleza, Brazil.

<b>Characteristics</b>	<b>n = 75</b>	<b>%</b>	<b>Average</b>
<b>Gender</b>			
Male	46	61,4	
Female	29	38,6	
<b>Age group</b>			
31 to 40 years old	3	4,0	
41 to 50 years old	16	21,3	
51 to 60 years old	20	26,7	
> 60 years old	36	48,0	60 years old
<b>Hereditary Factors</b>			
Present	51	68,0	
Absent	24	32,0	
<b>Skin Color</b>			
White	48	64,0	
Non-White	27	36,0	

On table 2, it is observed that 61,4% of the patients are male; age group varying from 31 to 82 years old, but the majority (48%) was above 60 years old and the average was also 60 years old.

In relation to the existence of family history in ASH, 68% of the patients reported so. The white skin color was predominant in 64% of the patients.

Table 3 - Classification of patients related to the modifiable ASH risk factors before a CVA. 2010/Fortaleza, Brazil.

<b>Characteristics</b>	<b>n = 75</b>	<b>%</b>
<b>Unhealthy diet</b>		
Yes	48	64
No	27	36
<b>Sedentary Life</b>		
Yes	69	92
No	6	8,0
<b>Smoking</b>		

Yes	15	20
No	60	80
<b>Alcoholism</b>		
Yes	16	21,3
No	59	78,7
<b>Inadequate use of medication</b>		
Yes	31	41,3
No	44	58,7
<b>Irregular presence to medical appointments</b>		
Yes	27	36,0
No	48	64,0
<b>Lack of leisure</b>		
Yes	62	82,7
No	13	17,3

On table 3, the variables related to the modifiable risk factors are exposed, which the most prominent are: 64% of the patients did not have a diet considered healthy; 92% of the interviewed led a sedentary life; 20% smoke; 21,3% referred to consume some sort of alcoholic beverage regularly; 41,3% of the interrogated affirmed they do not take medication according to medical prescription; 36% do not show up to the medical appointments regularly; and 82,7% of the interviewed did not adopt any leisure activity. It was considered a adequate use of medication when the patient was taking the correct drug, at the appropriate time and dosage, according to medical prescription.

The patient that were taking drugs inadequately justified themselves saying they used to forget some times, or believed it was too much medication, or it was missing in the local clinic, felt undesirable side effects or controlled AP, feeling it wasn't necessary to continue drug treatment.

The patients that did not show up to regularly scheduled medical appointments reported the following reasons: absence of a accompanying person that could take them to a



health unit, oblivion of the appointment or the long distance between their residence and the health unit.

Among the patients that reported the practice leisure activities, the mentioned ones were: to spend time with their families, to travel and to practice sports. The ones that mention they did not perform any leisure activity, alleged lack of time, using most of their time at work, they have settled down, they did not have anyone to go with them or had financial conditions to leisure.

## **DISCUSSION**

### **Clinical characteristics of the patient**

The time of ASH diagnosis varied, with 65,3% had received the medical diagnosis for more than three years, however some of these patients initiated treatment laterly. Despite that, the beginning of medicative treatment should have happened just after the ASH diagnose. Studies demonstrate men are less supportive to medicative treatments to ASH than women<sup>(8)</sup>.

In relation to the type of CVA, the majority of 76% of ischemic type match the findings of a research performed, which the author studied the initial diagnosis approach of patients who suffered CVA and stated that 80% of the CVA are of ischemic type<sup>(7)</sup>.

Referring to the AP levels measured during the hospital admission, the majority (84%) presented elevated levels, especially the ISAH, in 30,7% of the cases, followed by moderate ASH (25,3%). The ISAH is related to a more advanced age group<sup>(5)</sup>.

In a study performed in 2010, with 1717 people, it was observed 25,3% of the researched individuals had high levels of AP, and a large part of the sample (70%) was above 70 years old<sup>(9)</sup>.

The most prominent morbidity was *diabetes mellitus* (DM), in 81,4% of the cases, followed by cardiopathies (29,6%) and nefropathies (7,4%). A study developed in Rio Grande do Sul, Brazil, which sampled 93 bearers of ASH, states that 23,9% of the

interviewed were also holders of DM, and besides that, it was seen that the presence of morbidities associated to ASH, especially DM, has risen the risk of a CVA<sup>(4)</sup>.

### **The non-modifiable risk factors**

Referring to gender, 61,4% of the interviewed are males, in agreement with other researches performed that affirm the prevalence of ASH in males than in females<sup>(10)</sup>.

About the age, 48% of the interviewed are above 60 years old. A study done in Parana, Brazil, to establish the prevalence of risk factors of ASH patients states that in the last years there is a rise in ASH incidence related to the increase of life expectancy and changes in lifestyle, and age playing a major role as one of the most important risk factors to the appearance of CVA and this risk rises over the years<sup>10</sup>. This is justified by the fact in senior years, the capillaries become more rigid, demanding more energy by the heart muscles, generating a rise of AP<sup>(4)</sup>.

According to the data of a study, 85,7% of the researched hypertensive patients are 65 years old or more, with a majority of females, contradicting the findings of the study which prevalence was of males<sup>(4)</sup>.

The ISAH is mostly prevalent in people aged 70 or more, but if present in people who are 50 years old, it is considered a cardiovascular risk factor<sup>(3,4)</sup>.

The genetic factor was quite important in this study, on which 68% of the patients reported ASH family history. Another study identified 32% of the interviewed patients had ASH family history<sup>(10)</sup>. Other authors concur affirming that the presence of ASH is directly connected to heredity<sup>(4)</sup>.

In terms of race, studies show afro-Brazilians have a higher tendency to develop CVA, probably to have more to do with their susceptibility to develop DM and ASH<sup>(4)</sup>. This was not confirmed by this study, as among the 75 interviewed, 64% were white skinned.

### **Modifiable risk factors**

In relation to the modifiable risk factors, it was observed a low adherence to healthy dietary habits, as only 36% of the patients had a diet to be considered healthful. In a study performed in Mato Grosso do Sul, Brazil, with the objective to identify the behavior of hypertensive patients to the control of ASH, it was observed that 33,3% of the interviewed used a healthy dietary habit<sup>(5)</sup>. The reduction of salt and fat in the ordinary diet have satisfactory results in reducing AP, therefore, the food supplies rich in salt and grease should be avoided<sup>(3,4)</sup>.

The highest risk factor found was the sedentary life, present in 92% of the researched individuals. This percentage is above the one found in another study that stated 75% of the patients did some sort of physical activity<sup>(5)</sup>. The practice of physical exercises is of extremely importance to the control of ASH, as besides improving quality of life of the patient, increases good cholesterol rates and reduces overweight<sup>(3)</sup>.

In our study, 20% of the patients were smokers. According to a study performed in Sobral, Brazil, with fourteen participants, with an objective to identify CVA risk factors, it was observed 78,6% of the individuals were smokers<sup>(4)</sup>.

Alcoholism is considered an important risk factor to elevated AP, as the consumption of alcoholic beverages considerably increases the risk of cardiovascular diseases<sup>(4)</sup>. In this study, it was verified 21,3% of the patients made use of some sort of alcoholic beverage with a certain frequency, and of those, mostly were males.

The continuation of medicative treatment prevailed in 58,7% of the patients. The data collected in a study done in Mato Grosso do Sul, Brazil, with 18 hypertensive patients showed that 77,8% of the patients adhere to this same type of treatment<sup>(5)</sup>.

The ease to use medication and its efficiency to the control of ASH reduces the efforts of the patient to lose weight, performance of physical activities and dietary changes. It is necessary to establish an association between the medication, life style and the teamwork of the health unit to reduce to the minimum the risks ASH impose to the good health<sup>(1,5)</sup>.

The regular frequency to medical appointments was present in 64% of the patients. The ASH treatment is a challenge that must be faced in a more aggressive way by the health team, aiming to reduce the lack of adherence to the treatment, as well as the possible complications<sup>(3)</sup>.

Only 17,3% of the interviewed adopted leisure activities to alleviate the stress, which included travelling, going out with the family and friends, and practice sports. In a study developed with 25 participants with the objective to determine the prevalence of risk factors in CVA patients in Parana, Brazil, it was observed that 60% of the interviewed patients affirmed they considered themselves stressed at the time of the CVA, demonstrating the importance of stress as a risk factor to the development of a CVA<sup>(10)</sup>. The Brazilian Society of Hypertension agrees to state the elevation of AP happens in stressful situations, either mental or sleep-deprivation related<sup>(3)</sup>.

## **CONCLUSION**

With the results found, it is possible to generate a profile of the clinical characteristics, of modifiable and non-modifiable risk factors of hypertensive patients, victims of CVA.

The first objective related to the clinical characteristics of the 75 bearers of ASH followed by a CVA demonstrated a predominance of the following data: time of diagnosis of ASH superior to three years (65,3%); and treatment of ASH superior to three years (60,0%), mostly ischemic ASH (76,0%), high levels of arterial pressure (84%) and presence of morbidities (37,3%).

In relation to the second objective referring to non-modifiable risk factors, it was observed a majority of males (61,4%), age group beyond 60 years old (48%), presence of family history of ASH/cardiovascular diseases (68%) and of white skin (64%). And related to modifiable ASH factors to the patients that later suffered CVA, it was diagnosed the following: unhealthy diet (64%), sedentary life (92%), smoking (20%),

alcoholism (21,3%), inadequate use of medication (41,3%), irregular attendance to medical appointments (36%) and lack of leisure activities (82,7%).

These data refer to the adherence of the patient with ASH before going through a CVA. However, maybe it is the experience of a CVA a determinant factor to a higher adherence to anti-hypertensive treatment by the patients.

It is important to highlight the prevention to risk factors to the development of CVA is the first step to reduce its incidence and prevalence.

To conclude, it is necessary to look for better adherence of the patient to the treatment as a main goal to set straight the actions of the health team towards the patient diagnosed with hypertension, in both primary, secondary and tertiary levels, and the necessity that the health professionals perform the treatment to the hypertensive patient informing it is life long.

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