

Evaluation of the profile of risk factors for stroke: observational study

Avaliação do perfil dos fatores de risco para Acidente Vascular Cerebral: estudo observacional

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RESUMO | INTRODUÇÃO: Observa-se um crescimento significativo na incidência de casos de Acidente Vascular Cerebral (AVC). Isto deve-se ao aumento da longevidade estando a idade entre um dos fatores mais relevantes ao desenvolvimento da doença. **OBJETIVO:** Identificar o perfil dos fatores de risco que predispõe o surgimento do Acidente Vascular Cerebral em frequentadores de um parque em Teresina-PI. **MATERIAIS E MÉTODOS:** Trata-se de um estudo observacional do tipo transversal realizado com 117 pessoas frequentadores de um parque localizado em Teresina-PI, estipulando os seguintes critérios de inclusão: ter idade igual ou maior a 18 anos; assinar o Termo de Consentimento Livre e Esclarecido e frequentarem as atividades desse espaço recreativo. A coleta de dados deu-se através de questionário com 18 questões objetivas fechadas sobre os fatores de risco predisponentes ao surgimento de AVC incluindo informações sobre o conhecimento desses fatores e ainda, peso, altura, idade, Índice de Massa Corporal (IMC) e Pressão Arterial (PA) dos participantes. **RESULTADOS:** O estudo evidenciou um perfil de pessoas com idade de 18 a 30 anos, sexo feminino com IMC normal, que prevalecem os fatores de risco como estresse (49%), sedentarismo (44%), sexo (43%), consumo de álcool (40%), dislipidemia (12%), obesidade (10%), hipertensão arterial (8%), cardiopatia (6%), diabetes (3%) e o tabagismo (2%). **CONCLUSÃO:** Observou-se um perfil de pessoas com faixa etária de 18 a 30 anos, do sexo feminino e com IMC normal que apresentam fatores de risco vasculares modificáveis que podem estar associados a maus hábitos e falta de informações relacionadas a esses problemas de saúde. Dessa forma, tornam-se necessárias medidas preventivas com o intuito de promover ou intensificar a promoção de saúde visando à informação, o acompanhamento e o controle desses fatores, proporcionando a população em geral um envelhecimento saudável.

PALAVRAS-CHAVE: Acidente Vascular Cerebral. Fatores de risco. Epidemiologia.

ABSTRACT | INTRODUCTION: There is a significant increase in the incidence of stroke (AVC) cases, due to the increase in longevity, with age being one of the factors most relevant to the development of the disease. **OBJECTIVE:** To identify the profile of risk factors that predisposes the appearance of stroke in visitors of a park in Teresina-PI. **MATERIALS AND METHODS:** This is an observational cross-sectional study carried out with 117 people attending a park located in Teresina-PI, stipulating the following inclusion criteria: being 18 years or older; sign the Free and Informed Consent Form and attend the activities of this recreational space. Data were collected through a questionnaire with 18 closed objective questions about risk factors predisposing to the onset of stroke including information on the knowledge of these factors and also, weight, height, age, Body Mass Index (BMI) and Pressure Arterial (PA) of the participants. **RESULTS:** The study showed a profile of people aged 18 to 30 years, female with normal BMI, which prevails risk factors such as stress (49%), sedentarism (44%), sex (43%), consumption of alcohol consumption (40%), dyslipidemia (12%), obesity (10%), hypertension (8%), heart disease (6%), diabetes (3%) and smoking (2%). **CONCLUSION:** We observed a profile of people with ages ranging from 18 to 30 years, female and with normal BMI presenting modifiable vascular risk factors that may be associated with poor habits and lack of information related to these health problems. Thus, preventive measures are necessary in order to promote or intensify health promotion aimed at information, monitoring and control of these factors, providing the general population with a healthy aging.

KEYWORDS: Stroke. Risk factors. Epidemiology

Introduction

The stroke is a disease caused by the occurrence of sudden changes in blood supply. These changes can occur both by occlusion of blood vessels (ischemic stroke), which causes ischemia and as a result of infarction of the tissue; such as vascular rupture, where hemorrhages occur due to rupture of the aneurysm or arteriovenous malformations (hemorrhagic stroke)^{1, 2,3}. Among the most observed signs and symptoms are the decrease in the strength of the upper and / or lower limbs of the hemibody causing hemiplegia, sudden loss of vision, speech dysfunctions, severe headache, imbalance, behavioral disorders, sensitivity and swallowing, among others^{3,4,5}.

Over the years, there has been a significant increase in the incidence of stroke due to the increase in longevity, with age being one of the most relevant factors to the development of the disease.¹ Although efforts have been made to prevent this disease, it is still the third leading cause of death worldwide reaching about 15 million people per year, where there are about 5 million deaths and survivors whose physical and/or mental changes significantly interfere with the quality of life and social life^{1,2,5}.

Generally, stroke presents differences between the age groups and the predisposing risk factors, which may occur early in young individuals; however, there is a peak incidence after 65 years, doubling every decade after 55 years of age, for these individuals to present other systemic alterations that are risk factors for their onset, and these can be identified and prevented avoiding the installation of the disease^{3,5,6}.

The lack of knowledge about these factors impairs the prevention and treatment of certain diseases, since there is no change in the main factor that is triggering, thus favoring the increase of the consequences and the incidence of mortality due to the disease⁶. These factors differ in two groups: the modifiable factors in which there are interventions that prevent or treat them such as: dyslipidemia^{3,7,8,9,10}, diabetes mellitus, smoking^{3,5,7,8,9} cardiopathy^{8,9}, systemic arterial hypertension^{3,9,10,11,12} obesity^{3,4,7,8,10,13,14} sedentary lifestyle^{4,5,8,9} stress^{3,7,15} excessive consumption of alcohol^{4,5,7,8,16} and use of oral contraceptives^{5,7}. The factors that can not be modified are those that can

not be treated, since there is no way to modify them, where they stand out: age, gender^{3,5,7,8} race^{3,5,8,11} and heredity^{3,4,7,8,11}.

Considering that these factors favor the onset of stroke and thus increase the mortality rates in the country, it becomes indispensable to know the profile of these factors, thus contributing to the adoption of early, effective and agile preventive measures that guarantee maintenance and quality of life of this group. The objective of this article was to identify the profile of risk factors that predisposes the onset of Stroke in park visitors in Teresina-PI. This way it was hypothesized that the profile of risk factors would be associated to a hypertensive, sedentary, diabetic, alcoholic, smoker, obese, high cholesterol and history of heart disease population.

Materials and methods

The present article followed the model of a cross-sectional observational study carried out with 117 people of different ages and different genres who attend a park located in Teresina-PI, stipulating the following inclusion criteria: being 18 years or older; sign the Free and Informed Consent Form (TCLE) and attend the activities of this recreational space.

Data were collected in April and May 2018 by means of a questionnaire with 18 closed objective questions with a YES or NO response on risk factors predisposing to the onset of stroke, including information on the knowledge of these factors and weight, height, age, body mass index (BMI) and blood pressure (BP) of the participants.

The information provided by the interviewee, referring to hypertension, diabetes, dyslipidemia, stress, sedentary lifestyle, obesity, cardiopathy, alcohol use and smoking were taken into consideration for the analysis of the data related to the risk factors present in each individual.

Regarding the BMI analysis, the Quetelet Index was used, which calculates: $(\text{weight} \div \text{height}^2)$ and is classified according to the table below:

Table 1. Classification of BMI

IMC	Classification
< 18,5	Low weight
18,5 a 24,9	Normal weight
25 a 29,9	Overweight
30 a 34,9	Obesity degree I
35 a 39,9	Obesity grade II
≥ 40	Obesity grade III

Source: ABESO, (2016)¹⁷.

All data were transcribed into Excel® software (2010) in the form of spreadsheets for later individual analysis of each variable and formation of graphs and tables.

The project was submitted to the Research Ethics Committee (CEP) of the Maurício de Nassau University - UNINASSAU in compliance with Resolution No. 510/16 of the National Health Council, with approval No. 2,720,143 (CAAE 84854218.2.0000.5193), and all participants signed the Term of Free and Informed Consent (TCLE) agreeing to participate

voluntarily in the study with their preserved rights and guarantee of total confidentiality of information.

Results

The profile of the risk factors demonstrated in the research corresponds to people aged between 18 and 30 years, female with normal BMI with prevalence of vascular risk factors. Table 1 shows the classification of the sample according to age, gender and BMI.

Table 2. Classification of parkgoers in relation to age, gender and BMI. Teresina (2018)

Sample classification		N°	%
Age	18 a 30 years	65	56%
	31 a 50 years	32	27%
	50 a 90 years	20	17%
Genre	Female	67	57%
	Male	50	43%
IMC	Low weight	6	5%
	Normal weight	62	53%
	Overweight	37	32%
	Obesity degree I	7	6%
	Obesity grade II	5	4%

Graph 1 represents percentage of the risk factors for stroke as evidenced in the research.

Graph 1. Representation of the risk factors for stroke in park visitors. Teresina (2018)

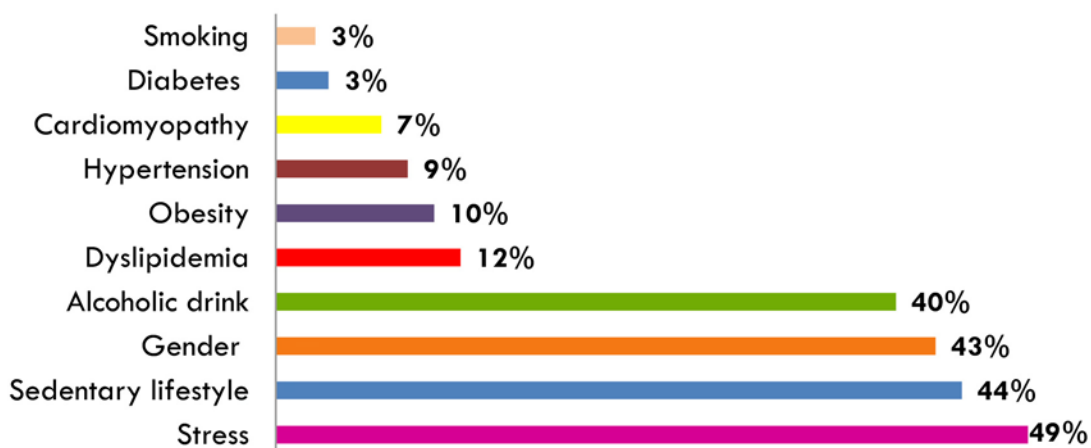


Table 3 presents the population's knowledge about stroke, and the life habits they develop, related to diet and physical activity.

Table 3. Knowledge and habits of people visiting the par with regard to risk factors. Teresina (2018)

Knowledge about stroke and living habits of the population		N°	%
Age increases the risk of stroke	Yes	94	80,34%
	No	23	19,65%
Obesity increases the risk of stroke	Yes	107	91,45%
	No	10	8,54 %
Healthy eating	Yes	64	54,70%
	No	53	45,29%
Practice of physical exercises	Yes	64	54,70%
	No	53	45,29%

Discussion

Age is one of the main non-modifiable risk factors because it is a natural process of the human being, and according to Martins et al.⁹, it stands out as an isolated factor mainly due to the cardiovascular and metabolic changes related to it and that may be present at any age.

In a study¹⁰, we observed that the increase in the incidence of stroke in young adults aged 17 to 55 years is associated with a prevalence of some important vascular risk factors such as hypertension, hypercholesterolemia, diabetes mellitus and obesity, also evidenced in the research (Graph 1). It also states that the number of vascular risk factors increases with age, especially in patients over 35 years of age^{9,18}.

Regarding gender, of the 117 interviewees, 67 (57%) were female, which differs from the studies 9,18 that present a population where 54.7% were male, and states that there was a major affection (55%), of stroke in men except in the age groups of 35 to 45 years and above 85 years⁸.

Other factors, such as dyslipidemia (12%), obesity (10%), hypertension (8%), heart disease (6%), diabetes (3%) and smoking differs from some studies, mainly related to arterial hypertension that points out as the main factor for stroke, increasing the risk of 3 to 4 times, and smoking that there is a probability of 2 to 4 times in relation to the other factors^{3,9,11,19,20}.

Regarding obesity characterized by BMI, studies have shown that there is a paradox regarding the risk of stroke^{13,21}. In their studies, they observed the relationship between stroke, obesity²¹, mortality¹⁴ and readmission after recurrent stroke¹³, and found that the mortality in obese patients is lower than in patients with normal weight¹⁴, and the relationship between the mean BMI, age and severity of stroke decreases as age increases by about 60 years, and while patients with greater severity have, for the most part, normal BMI.

Regarding the factors presented in the research, stress is a dominant factor in the whole sample. It is presented as a risk factor for stroke because it

increases the production of white blood cells in the body, and this exacerbated production increases the risk of obstruction of the arteries^{3,7,15}. A recent study analyzing blood samples collected during the service and out of it in Intensive Care Unit, physicians living in an environment of constant stress found a greater activity of cells such as blood leukocytes, neutrophils, monocytes and lymphocytes, which demonstrated an increase in its activity and this relationship with stroke¹⁵.

Another important factor is sedentary lifestyle, which is associated with obesity¹⁷, dyslipidemias^{7,8,9,10} and poor diet, and tend to increase the chances of a stroke by favoring a decrease or obstruction of blood flow, due to the excess of fat that accumulates in the walls of the arteries (atherosclerosis)^{9,10,19}.

When referring to alcohol consumption, studies^{16,20} state that this is one of the factors that lead to the risk of stroke when associated with other pathologies such as hypertension and dyslipidemias. Cassola et al 16 in a study about the alcohol consumption habit of people who had suffered hemorrhagic stroke, found that 25% of those affected had a behavior of heavy alcohol consumption (of three or more drinks per day) and had suffered a stroke with an average age of 60 years, which differentiates about 14 years, from individuals who did not consume heavy alcohol.

However, it is emphasized that the consumption of alcohol moderately in small quantities, does not cause so much damage to the organism. Associating with the findings in the research, it is important to highlight that the sample was not questioned about the frequency and amounts of alcoholic beverage intake, which does not result in a reliably dominant factor.

In short, the majority of the population has more than one risk factor, which makes control more difficult. Of the 117 interviewees, it was observed that many of these factors predominate among the young population, which does not exclude other ages of having. However, the research shows that the risk factors such as stress, sedentarism, alcohol consumption, which is present in larger numbers, are typical of a younger age group, who mainly do not take care of the diet or the practice of a physical activity and are also unaware of the risk factors that can cause a stroke.

Conclusion

Lack of knowledge about risk factors and the shortage of public care and preventive policies greatly increase the chances of a stroke. In the same way, the identification and prevention of these factors minimizes risks and also reduces the costs of treating the disease, reducing the incidence of new cases^{10,20}.

When questioning the sample about age as a risk factor for stroke, 80% of respondents reported knowing that their increase favors their onset, and 91% of those said they know that obesity also influences. However, stroke can occur at all ages, despite having a higher incidence after 65 years^{5,8,9,18} and in individuals of any weight, including normal BMI^{13,14}, this information and even those related to the most present factors, are not identified or known by the population.

Although the sample has 54.7% of the physically active individuals, there is a considerable increase in factors that includes healthy habits. These factors besides predisposing stroke, can maximize the appearance of several other pathologies², and although it is one of the most simple factors to be modified, it is not noticed. As a result, no action is taken, which becomes a worrying factor, since stroke has a high mortality rate, and the younger the disease is, the lower the life expectancy these individuals will have, regardless of whether they die or have sequelae, increasing the costs of treatment and hospitalization^{22,23,24}.

In general, it can be said that this population presents several factors that lead to a stroke event, when it is noticed that young age. Normal BMI, unhealthy eating and physical habits, and the ingestion of alcoholic beverages increase this risk, confirming once again that, the more factors present, the greater the chance of having a stroke. Besides, one factor leads to or potentiate the emergence of another.

The limitations identified in this study may be related to the sample collected because it does not represent a total number of individuals that attend the park, the use of an instrument developed by the authors that need validation, and the fidelity of the sample when responding to the questionnaire, especially with regard to pathologies that they present.

In view of the above, it was possible to observe that the risk factors for stroke in this population correspond to modifiable factors related to stress, sedentarism and alcohol consumption as predicted in the hypothesis of study. However the study presents a profile of people with age group of 18 to 30 years of age, female and with normal BMI, which do not support the initial hypothesis, but which may be associated with the presence of risk factors to a relationship between poor habits and lack of information related to these health problems.

Since the risk factors most present in this population are part of modifiable risk factors, they are necessary for the insertion of preventive measures, aiming at a greater involvement and participation of the population in order to inform them so that they may know the real risks that are running, and thus, readapt or change their lifestyle in the pursuit of a healthy life with less predispositions to these diseases. These measures are indispensable for the prevention and minimization of the incidence of stroke and consequently prevent the neurological incapacities resulting from the disease, thus allowing the general population to be healthy.

Author contributions

Pereira TMA, Silva JM: Study design and conception, search and statistical analysis of research data, interpretation of results, writing of scientific articles. Orsini M: Interpretation of the data. Teixeira S: Study design and conception, interpretation of the results. Bastos VHV: Writing, interpretation and discussion of the results.

Competing interests

No financial, legal or political competing interests with third parties (government, commercial, private foundation, etc.) were disclosed for any aspect of the submitted work (including but not limited to grants, data monitoring board, study design, manuscript preparation, statistical analysis, etc.).

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