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ORIGINAL ARTICLE

Epidemiological characterization of stroke cases under rehabilitation on the Brazilian Unified Health System in Mossoró, Rio Grande do Norte

Caracterização epidemiológica dos casos de acidente vascular encefálico em reabilitação no Sistema Único de Saúde em Mossoró, Rio Grande do Norte

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KEYWORDS

Brazilian Unified Health System
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ABSTRACT

Objective: To identify the clinical and epidemiological characteristics of patients undergoing treatment for a stroke at the only public rehabilitation clinic in Mossoró/RN (Doctor Ozias Alves de Souza Rehabilitation Center).
Methods: Quantitative, prospective, descriptive, cross-sectional, exploratory study, structured from responses to a clinical-epidemiological and sociodemographic questionnaire with 39 items, to assess aspects concerning the profile of patients affected by stroke and undergoing rehabilitation treatment.
Results: Twenty-eight individuals with stroke sequelae undergoing treatment at the rehabilitation center were identified, whose clinical-epidemiological characteristics revealed equivalence concerning gender (50% male:female), the predominance of white and brown color/race (46.4% each), and overweight (35.7%). Most of the patients lived in a family environment with a spouse (64.3%), were retired (71.4%), with monthly income between one and two minimum wages (64.3%), with hemiplegic sequelae resulting from the stroke (85.7%) and difficulties in adapting to the current way of life (75%).
Conclusion: The present study allows an initial scrutiny of stroke cases in Mossoró/RN and their rehabilitation process. Such data may contribute to a better understanding of issues concerning stroke by government sectors, aiming to improve care and multidisciplinary interventions to provide patients with reinsertion in both work practice and in everyday social relationships.

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PALAVRAS-CHAVE

Acidente vascular encefálico
Epidemiologia
Reabilitação
Sistema Único de Saúde

RESUMO

Objetivos: Identificar as características clínicas e epidemiológicas dos pacientes em tratamento decorrente de acidente vascular encefálico (AVE) na única clínica de reabilitação pública de Mossoró/RN (Centro de Reabilitação Doutor Ozias Alves de Souza).
Métodos: Estudo quantitativo de caráter prospectivo, descritivo, transversal, de cunho exploratório, estruturado a partir de respostas a um questionário clínico-epidemiológico e sóciodemográfico com 39 itens, de modo a avaliar aspectos concernentes ao perfil dos pacientes acometidos por AVE e em tratamento de reabilitação.
Resultados: Vinte e oito indivíduos com sequelas de AVE em tratamento no centro de reabilitação foram identificados, cujas características clínico-epidemiológicas revelaram equivalência em relação ao sexo (50% masculino:feminino), predominância da cor/raça branca e parda (46,4% cada) e com sobrepeso (35,7%). Em sua maioria, os pacientes conviviam em meio familiar com cônjuge (64,3%), eram aposentados (71,4%), com renda mensal entre um e dois salários-mínimos (64,3%), apresentando sequelas hemiplégicas decorrentes do AVE (85,7%) e dificuldades de adaptação ao modo de vida atual (75%).
Conclusão: O presente estudo permite um escrutínio inicial a respeito dos casos de AVE em Mossoró/RN e seu processo de reabilitação. Tais informações podem contribuir para melhoria na assistência e intervenções pelas secretarias governamentais, de modo a proporcionar aos pacientes uma reinserção na prática laboral e nas relações sociais.

INTRODUCTION

Stroke and Acute Myocardial Infarction (AMI) are the most common causes of death in the 21st century in Brazil's adult and elderly population. The Brazilian North and Northeast regions have a higher incidence of stroke, with the Southeast region showing the lowest values[1].

The World Health Organization (WHO) describes chronic non-communicable diseases as the highest-burden of premature mortality of people in the range of 30-69 years old. Stroke and AMI are the leading causes of these deaths, accounting for 15.2 million deaths in 2016[2]. Still, according to the WHO, Brazil ranks fourth for stroke mortality rate among Latin American countries and the Caribbean, being the most frequent cause of death in adults (10%), corresponding to 10% of public hospital admissions[2].

In the group of cerebrovascular diseases, stroke has become one of the leading causes of death and disability and is considered the second leading cause of death globally[3]. Environmental, cultural, and public policy aspects are essential factors in the incidence of stroke, with increasing rates in developing countries[4], with reports of its association with abnormalities in dentition and vision[5-7].

Prospective epidemiological studies conducted by the Global Burden of Disease Study (GBD) show that, from 1990 to 2016, the number of deaths due to stroke declined, with a concomitant increase in the rate of impairments and disabilities[8]. This characteristic is explained by the improvement in global life expectancy, especially in developed countries, and advances in health technologies, with the increase in stroke survivors being proportional to the number of sequelae patients[9]. However, according to WHO projections, it is estimated that by 2030 stroke will remain a major causal factor for deaths worldwide, accounting for more than 12% of predicted deaths[10].

Stroke is classified as hemorrhagic or ischemic, with the latter being the most frequent (85% of cases)[11]. Atherosclerosis of the small and large cerebral arteries is the main factor responsible for strokes, with about 20% deriving from cardiogenic emboli, most commonly associated with intermittent atrial fibrillation. However, about 30% of strokes remain idiopathic after extensive etiological investigation[2]. The diagnosis is initially clinical, based on recognizable symptoms indicating sudden-onset neurological deficits of vascular origin and not based on radiological findings, considering the standard definition provided by the WHO in the 1970s: "a focal (or at times global) neurological impairment of sudden onset, and lasting more than 24 hours (or leading to death) and of presumed vascular origin"[12].

In Brazil, approximately sixty-eight thousand deaths from stroke are registered every year, representing the country's leading cause of death and disability. Another aggravating factor are the frequent causes of hospitalization among the elderly by the Unified Health System (SUS), with stroke representing 5% of the cases up to 60 years old, 5.4% up to 70 years old, and more than twice (11.6%) over 80 years old in women. In men, the percentage is 6.2% for 60 years old, 7.9% until 70 years old, and 13.3% over 80 years old[13].

The sequelae following a stroke result in a substantial economic burden. Estimates point out that Brazil experienced a significant decline in labor productivity and a decrease in family income between 2006 and 2015, generating a reduction of US$ 4.18 billion in the economy, resulting from only three non-communicable chronic diseases (diabetes, heart disease, and stroke)[14].

A retrospective study between 1988 and 2010 evaluating the Brazilian Northeast states regarding the incidence of stroke and its mortality rate detected an annual average of 31.33 cases per 100,000 inhabitants until 2002. After this period, there was a decrease of 64%, declining to an average of 11.4 cases per 100,000 inhabitants. Between 1998 and 2001, higher incidences were observed in Rio Grande do Norte, Maranhão, Sergipe, and Alagoas states, whose values were above 30 cases per 100,000 inhabitants, with Rio Grande do Norte presenting almost 80 cases of AVE per 100,000 inhabitants in 1999[15].

Rio Grande do Norte state still does not hold a

stroke Emergency Care Center. In Mossoró, the second-largest city in the state, care has three levels of attendance, with the patient presenting clinical signs of stroke being directed by the Mobile Emergency Care Service (SAMU) to one of three Emergency Care Units (UPAs) of the city or the *Tarcísio de Vasconcelos Maia* Regional Hospital, the main public general hospital in the so-called Macroregion of West of the state. After discharge, the patient receives monitoring and care at the Basic Health Unit (UBS) nearby his/her residence. UBS sends the patient to the Doctor Ozias Alves de Souza Rehabilitation Center for follow-up if one needs rehabilitation.

There are no descriptive data regarding the clinical and epidemiological characteristics of patients undergoing rehabilitation treatment due to a stroke in the city of Mossoró. So, this study described those aspects based on an exploratory investigation in the abovementioned rehabilitation center, the only public rehabilitation clinic in the city.

METHODS

A prospective, quantitative, descriptive, cross-sectional, and exploratory study, designed from the application of a clinical-epidemiological and sociodemographic questionnaire with 39 items for patients undergoing treatment at a rehabilitation center, located in Mossoró/RN, from February to July 2018, in both morning (7 am to 11 am) and afternoon (1 pm to 5 pm) shifts. As a referral center, the UBS duly referred the patient with rehabilitation and medical diagnosis requests.

The project was conducted under authorization from the Ethics Research Committee for Human Beings (CEP/UERN) (CAAE number: 69900717.6.0000.5294, ID# 2.461.838), following the normative principles of research with human beings, established by resolution 466/2012 of the National Research Ethics Commission (CONEP), complemented by resolution CNS 510/2016.

During the six months corresponding to data collection, 513 patients destined for orthopedic, neurological, and respiratory rehabilitation were treated at the Rehabilitation Center, of which 155 were neurological. Neurological rehabilitation records were evaluated, and those that met the inclusion criteria were selected: patients with stroke sequelae in the rehabilitation process and family members or caregivers who work directly in the individual's daily care, of both sexes and aged 18 years or over. Patients who had not been affected by a stroke, duly certified by a medical diagnosis, or did not reside in the city were excluded. All patients satisfying the inclusion criteria were invited to participate in the study and, after additional verbal information regarding the research, they signed the Informed Consent Form after reading it, attesting their voluntary acceptance.

The questionnaire applied was based on two models of forms that have already been validated: the IBGE Demographic Census[16], which addresses questions from the social, economic, demographic, educational, and financial scope of a given group, to form profiles for the study population, and the instrument Functional Independence Measure[17,] which comprises motor and cognitive items and a patient response grading system that can range from 1 to 7 points. The questions dealt with sociodemographic aspects (gender, marital status, color/race, age, maximum education level completed by the time the questionnaire was filled out, own housing), clinical aspects (type of stroke, number of stroke episodes, chronic diseases, side of the body with lower capacity after a stroke, smoking, regular drinking of alcohol, body mass index - BMI) and independence (decreased senses, dysarthria, dysphagia, difficulty in grasping objects, functional independence to perform life activities daily and control in bladder/intestinal elimination). After filling in, the documents were scanned and the files stored on a computer and in the cloud (Google Drive).

The information collected through the questionnaires was sorted in a data-sheet in the Microsoft Office Excel® software to perform the mean and percentage measurements of the values obtained.

RESULTS

Of all 150 neurological patients treated, 28 were diagnosed with a stroke, constituting the study group of this work. The results of the sociodemographic characterization concerning gender pointed to an equivalent number in the frequency of stroke between men and women (n = 14; 50% each). For color/race, the white and brown variables showed equivalent results (46.4% each), with black being a minority (7.2%). Regarding marital status, most had a spouse (64.3%), with the average age corresponding to 62.9 years old, with a higher frequency of patients between 39 and 59 years old (42.9%), with an approximate monthly income of 1.7 minimum wages, predominantly retired (71.4%) and living in their own house (75%), made of masonry (100%) (Table 1).

The particularities observed in the distribution of the patients' gender were crossed with the etiology and age to identify the prevalence of the type of stroke. While women had a predominance of ischemic stroke in the age group of 39 to 59 years old (n = 10; 60%), men showed a prevalence of ischemic stroke in the age group of 60 to 70 years old (n = 9; 54.5%) (Figure 1A).

All cases of hemorrhagic stroke in females occurred in young patients aged 39 to 59 years old (n = 4). In males, the variation of hemorrhagic stroke involvement by age was in the range of 60 to 70 years old (46%) (n = 5), with the other age groups showing a prevalence equal to 18% (Figure 1B).

Regarding clinical characteristics, the most prevalent stroke was ischemic (67.9%), with the number of occurrences of one episode per person corresponding to 78.6%. Concerning chronic diseases, 85.7% of sufferers said they had diabetes, hypertension, or asthma, while 92.9% confirmed by taking daily medication. An equivalent proportion of patients with normal BMI and overweight (35.7% each) was observed; 78.6% reported never having smoked or drinking alcohol (Table 2).

Concerning the level of functional independence, dysphagia was found to be present in 64.3% of patients and difficulty in grasping objects in 85.7%. As for the decrease in motor capacity on one side of the body (hemiplegia), 53.6% reported the left side. Control in

Table 1 — Sociodemographic aspects of the analyzed group (N = 28) from February to July 2018 in a SUS rehabilitation clinic in Mossoró/RN.

Variable	n (%)
Gender	
Male	14 (50)
Female	14 (50)
Age group	
39-59 years old	12 (42,9)
60-70 years old	10 (35,7)
71-89 years old	5 (17,9)
Over 90 years old	1 (3,6)
Marital status	
With spouse	18 (64,3)
Single	10 (33,7)
Color/race	
White	13 (46,4)
Brown	13 (46,4)
Black	2 (7,2)
Monthly income (minimum wages)	
4	2 (7,1)
3	5 (17,9)
2	8 (28,6)
1	10 (35,7)
0	3 (10,7)
Retired	
No	8 (28,6)
Yes	20 (71,4)
Habitation	
Own	21 (75)
Other	7 (25)
Type of habitation	
Masonry	28 (100)
Other	0 (0)

Table 2 — Clinical characterization of the analyzed group (N = 28) regarding the distribution of absolute and percentage frequencies of stroke cases from February to July 2018 in a SUS rehabilitation clinic in Mossoró/RN.

Variable	n (%)
Type of stroke	
Ischemic	19 (67,9)
Hemorrhagic	9 (32,1)
Episodes of stroke	
1	22 (78,6)
2	5 (17,9)
3	1 (3,6)
Chronic diseases	
Sufferer	24 (85,7)
Not sufferer	4 (14,3)
Daily use of medication	
No	2 (7,1)
Yes	26 (92,9)
Smoking	
No	22 (78,6)
Yes	6 (21,4)
Alcohol consumption	
No	22 (78,6)
Yes	6 (21,4)
Body mass index	
Underweight	1 (3,6)
Normal range	10 (35,7)
Overweight	10 (35,7)
Obesity class I	7 (25)

Table 3 — Characterization of the functional independence variables of the analyzed group (N = 28) regarding the distribution of absolute and percentage frequencies of stroke cases from February to July 2018 in a SUS rehabilitation clinic in Mossoró/RN.

Variable	n (%)
Dysphagia	
Yes	10 (35,7)
No	18 (64,3)
Difficulty in grasping objects	
Yes	24 (85,7)
No	4 (14,3)
Hemiplegia	
Right side	13 (46,4)
Left side	15 (53,6)
Dependence for activities of daily living	
Very dependent	5 (17,9)
Low dependent	7 (25,0)
Not dependent	16 (57,1)
Control of bladder/intestinal elimination	
Yes	17 (60,7)
No	11 (39,3)
Adaptation to the current lifestyle	
Yes	7 (25)
No	21 (75)

bladder/intestinal elimination was considered negative in 39.3% of patients; 57.1% of individuals were not dependent on activities of daily living, reporting a better quality of life because of the condition of autonomy, with 17.9% being very dependent. Concerning the adaptation to the current lifestyle, 75% of patients reported not living adjusted to the current health status/disease (Table 3).

DISCUSSION

In the present study, men and women presented the same frequency of stroke, taking as parameter individuals undergoing rehabilitation, which can be attributed to the size of the investigated population. The literature points out that the frequency of stroke is higher in males[18,19], which is associated with men's lower life expectancy than women. Additionally, males suffer more from the sequelae resulting from stroke and are more frequently affected during the aging[18]. Factors such as sex hormones, genetic origin, social interactions, and lifestyle can also explain the better condition of females concerning the incidence of stroke[20].

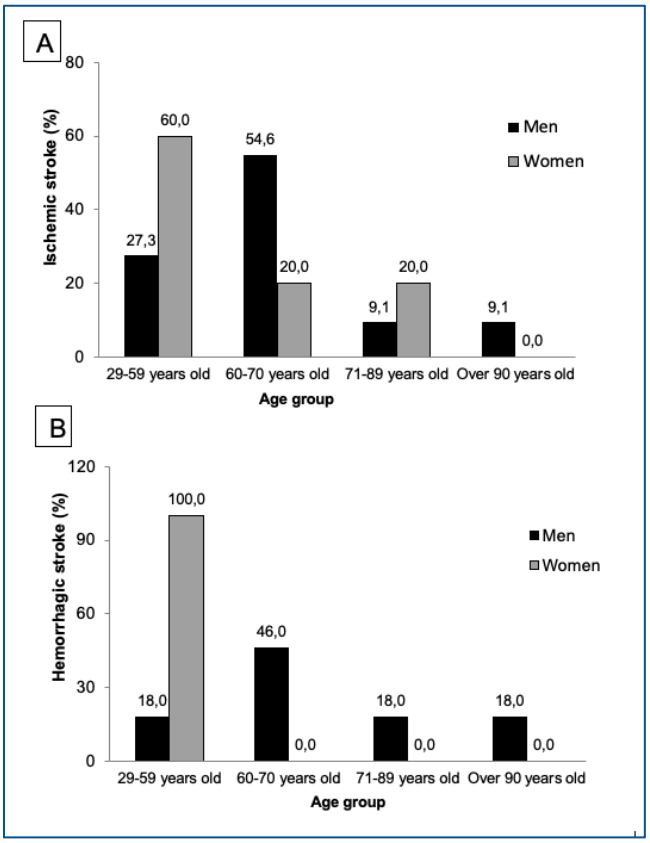

Figure 1 — Crossing of the variables gender, etiology and age of the analyzed group (N = 28) from February to July 2018 in a SUS rehabilitation clinic in Mossoró/RN.

Our results show that 64.9% of patients indicated marital status with a spouse. Studies point that the largest number of people affected by stroke is related to marital status without a spouse[22,23]. Marital status is perceived in the literature as significantly associated with survival after a stroke[21] since people who have a stable affective relationship have better coping and acceptance of the disease, besides impacting the rehabilitation process[22,23].

Most of the participants in our study had low income, compatible with the fact that the data collection site is exclusive to SUS users, with a tendency for retired patients to seek care, which had an income of approximately two minimum wages and were providers of the home. This condition, associated with the lack of access to information and health services, can increase the chance of illness, directly related to a lower purchasing power[24]. The present results are in agreement with data from Dias (2006)[25], conducted as a cross-sectional survey with 82 users in 12 Family Health Units in the city of Divinópolis/MG, whose prevalence was R$ 622.00 as an average of family income.

Data related to stroke etiology showed that 67.9% of subjects in our study suffered an ischemic stroke. This finding reveals a lower percentage compared to data reported in both national and international literature, since amongst the classification of hemorrhagic and ischemic stroke, the latter is more frequent, corresponding to 80-85% of reported cases[9,11]. Among the risk factors associated with stroke, hypertension emerges as one of the most important[26,27], as well as smoking, obesity, diabetes mellitus, dyslipidemia, age, and sedentary lifestyle[11,28-31].

In our study, in contrast to previous descriptions[31,32], the highest incidence of stroke was not observed in older ages, which may be associated with the population size analyzed. These data are interesting since the incidence of stroke is associated with advancing age, especially in males[32].

Regarding chronic diseases, 85.7% of patients reported having diabetes, hypertension, or asthma, with 92.9% claiming to regularly use medications, a value higher than those described in other studies, which indicates a prevalence of 45.1% of individuals who reported having at least one non-communicable chronic disease[33,34]. In our study, 16 patients (57.1%) did not present limitations, differing from previous reports. This difference can be explained by assessing patients undergoing an advanced rehabilitation process in this investigation. Concerning the degree of intense or very intense limitation in performing activities of daily living, stroke (25.5%) ranks second among the investigated non-communicable chronic diseases[33,35].

The majority (85%) of the patients evaluated in our study had difficulty grasping objects, with the left side being the most affected (53%), in a higher percentage than those described in the literature. Duncan et al. (2015)[36] state that 40% of stroke patients suffer from moderate functional impairments and 15% to 30% with severe disability, with paralysis being a commonly identified disorder in individuals affected with stroke[37].

In our study, the variable bladder/intestinal elimination showed that 39.3% of patients had difficulty controlling this function after stroke sequelae. Urinary incontinence (UI) is a common problem after stroke[38,39], and, in the acute phase, it affects between 50 and 79% of survivors[39,40], which explains the percentage observed in our study, since the patients evaluated had already passed the acute phase. Although UI resolves rapidly and spontaneously for some survivors, in some individuals this problem persists, and one year after the stroke, one-third of the survivors still present some degree of UI[41].

Regarding the characteristics of functional independence, 64.3% of patients in our study reported dysphagia. Generally, if there is no return of safe ingestion in the first ten days after the stroke, the patient may take up to two or three months to show signs of recovery, with no return to swallowing in extreme cases[42]. To date, the Rehabilitation Center in Mossoró does not provide this service. Dysphagia has a significant impact on the increase in health costs due to the risk of bronchoaspiration, requiring tests such as chest X-rays or antibiotic administration for diagnosis and treatment. There is considerable variation between studies regarding its frequency after a stroke, ranging between 50% to 80%[43-45].

Depression is the most common emotional disorder experienced in stroke patients, described in up to one-third of sufferers. When associated with more severe cognitive deficits, it makes rehabilitation more complex, with a consequent increase in the risk of morbidity and mortality[46]. In the present study, the

variable adaptation to the current way of life showed a critical value of 75% of stroke sufferers who does not accept the current state, similar to reported in previous studies, indicating that the difficulties described are in agreement with the feeling of discontent and difficult adaptation for many patients affected by stroke[47,48].

Currently, there is a global concern regarding a better understanding of issues related to stroke involvement in different populations[49]. In Brazil, more studies on the prevalence of the disease and its social impact are required. Recently, projects from the Brazilian Ministry of Health sought to include treatment guidelines for cerebrovascular diseases.Therefore, there is so much to be investigated about aspects related to stroke in the Brazilian population, notably regarding the functional rehabilitation process of patients, to ensure them an adequate reintegration into both work and social relationships.

The main limitation of the present study was the size of the population studied since, in a small stratum, any trends are less identifiable. Furthermore, there is only one place for stroke attendance in the municipality, causing a restriction in the healthcare provided to patients with stroke sequelae. Finally, as it is the pioneer study in the field performed in the city, there were no data for prior comparison about the indications of stroke, which could provide additional support for improved performance of the public health service.

CONCLUSION

The clinical and epidemiological characteristics described in the present study pointed out that the patients undergoing stroke treatment were of both genders, primarily white and brown, and overweight, comorbidity directly associated with the development of cerebrovascular alterations. Most of them lived in a family environment with a spouse, were retired, had a relatively low monthly income and had a higher prevalence of ischemic stroke, with hemiplegic sequelae in swallowing and physiological eliminations. As this is the first study addressing the matter in Mossoró, the second-largest city in Rio Grande do Norte, there is an imperative need for additional studies that contribute with information on the patients' rehabilitation process. Such data can contribute to a better understanding of issues concerning stroke by government sectors, aiming to improve healthcare and multidisciplinary interventions to provide patients with reinsertion in both work practice and everyday social relationships.

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