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REVIEW

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Epidemiological profile of stroke patients

Perfil epidemiológico dos pacientes com acidente vascular cerebral isquêmico

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Abstract

Introduction: *Stroke is a condition that can affect cerebral vascularization, cause death and neurological sequelae in patients. Strokes can be divided by the peculiarity of the brain injuries it causes and classified into the Ischemic Stroke or Hemorrhagic Stroke types.* ***Objective:*** *To identify, through scientific articles, the demographic aspects and comorbidities of stroke patients.* ***Method:*** *A descriptive study was performed and includes a bibliographic research, accomplished in April 2019, using specific descriptors: Stroke and Brain Ischemia that in turn were crossed with a general descriptor, Health Profile, available at the DeCS / MeSH VHL Regional Portal. Complete articles written in Portuguese and published between January 2009 and April 2019 were includeds.* ***Results:*** *Sixteen scientific articles were selected, being that six were published in 2017, three in 2009, two articles each in the following years: 2011, 2012 and 2016 and finally one in 2014. One study analyzed all Brazilian regions, in five studies, data were collected in Minas Gerais State, two studies from Paraíba and São Paulo States and one study each from the following states: Santa Catarina, Rio Grande do Norte, Paraná, Ceará, Pernambuco and Rio de Janeiro. Regarding the epidemiological profile of stroke victims, prevalence among men and women was the same. In as much, six articles indicated more men and in another six more women. Regarding demographics, stroke patients were predominantly individuals above the 60 years old age group, education up to primary school, married and retired patients. As for ischemic patients that harbored comorbidities, Systemic Arterial Hypertension (SAH), Diabetes Mellitus (DM), physical inactivity and obesity were the main comorbidities.* ***Conclusion:*** *Stroke is more frequent in the elderly, with low education, married, retired, sedentary and obese and who have SAH and DM as comorbidities.*

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Keywords*: Stroke, Brain ischemia, Health profile*

Resumo

Introdução*: O Acidente Vascular Cerebral (AVC) é uma condição que pode afetar a vascularização cerebral, podendo causar morte e sequelas neurológicas para o paciente. Os acidentes vasculares cerebrais podem ser divididos pela peculiaridade da lesão cerebral, podendo ser classificado em Acidente Vascular Cerebral Isquêmico (AVCI) ou Acidente Vascular cerebral hemorrágico (AVCH).* ***Objetivo****: Identificar, por meio de artigos científicos, os aspectos demográficos e as comorbidades de pacientes com AVCI's.* ***M****étodo: Estudo descritivo com revisão bibliográfica que ocorreu no mês de abril de 2019, utilizando os descritores específicos: Acidente Vascular Cerebral e Isquemia Encefálica que foram cruzados com o descritor geral: Perfil de Saúde, disponíveis no DeCS/MeSH do Portal Regional da BVS. Incluídos artigos completos, escritos no idioma português e publicados no período de janeiro de 2009 a abril de 2019.* ***Resultados****: Selecionados 16 artigos científicos, sendo que seis foram publicados no ano de 2017, três foram publicados no ano de 2009, dois artigos foram publicados nos seguintes anos: 2016, 2012 e 2011 e um artigo publicado no ano de 2014. Um estudo analisou todas as regiões do Brasil, em cinco estudos os dados foram coletados no Estado de Minas Gerais, dois estudos tiveram os dados coletados no Estado da Paraíba e São Paulo e um Estudo com dados coletados nos seguintes Estados: Santa Catarina, Rio Grande do Norte, Paraná, Ceará, Pernambuco e Rio de Janeiro. Com relação aos aspectos demográficos das vítimas de AVCI, a prevalência entre homens e mulheres foi igual, sendo que seis artigos mostraram mais frequente em homens e outros seis mais frequentes em mulheres. Prevaleceu indivíduos na faixa etária acima de 60 anos, escolaridade até o ensino primário, casados, aposentados, sedentários e obesos. No que tange às comorbidades, houve maior prevalência de AVCI em pacientes com Hipertensão Arterial Sistêmica (HAS) e Diabetes Mellitus (DM).* ***Conclusão:*** *O AVCI é mais frequente em idosos, com baixa escolaridade, casados, aposentados, sedentários e obesos e que apresentam a HAS e DM como comorbidades.*

Palavras chave: *Acidente vascular cerebral, Isquemia encefálica, Perfil de saúde*

Introduction

Stroke is a condition that can affect cerebral vascularization, promote neurological sequela and cause death in patients[1]. Strokes can be classified by type of brain lesion caused into infarction-related or *ischemic stroke*, and hemorrhage-related or *hemorrhagic stroke*. [2]. The origin of the embolism and its risk factors leading to stroke can be associated with socioeconomic factors of the population, genetic factors, some vascular diseases such as Systemic Arterial Hypertension (SAH), dyslipidemia, smoking and obesity[3], as well as other factors such as acute or chronic endocarditis, recent myocardial infarction, cardiomyopathies with low ejection fraction or left ventricular aneurysm, paradoxical embolism secondary to patent foramen ovale or other heart abnormalities. Stroke patients are at higher risk of death, ranging from 8-20% during the 30 days post-infarction. Stroke survivors have a 3-5 fold greater risk of death compared to the healthy population at large. The risk of death also increases with the presence of cardiovascular diseases and Diabetes Mellitus (DM)[2]. The present study serves to bridge the gap in knowledge on demographic characteristics and comorbidities associated with stroke in the Brazilian milieu.

Objective

To identify, based on a literature search, the demographic characteristics and comorbidities of stroke patients in Brazil.

Method

A descriptive study involving a literature review was carried out in 2019, employing the following specific descriptors: Stroke and Brain Ischemia, crossed referenced with the general descriptor: Health Profile from the DeCS/MeSH held on the Regional Portal of the Virtual Health Library (BVS). Full articles in Portuguese published between January 2009 and April 2019 were searched. Only national publications were included so as to identify gaps in scientific knowledge in the Brazilian literature.

Results

A total of 16 scientific articles met the study criteria[4-19]. The publication year of the articles retrieved are depicted in the Figure 1.

The number of articles according to State for which data was collected is shown in the Fiogure 2.

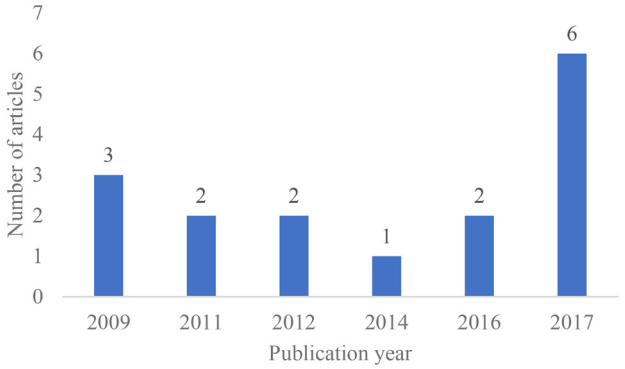

Figure 1 - Publication year of articles reviewed. Brazil, January/2009 to April/2019.

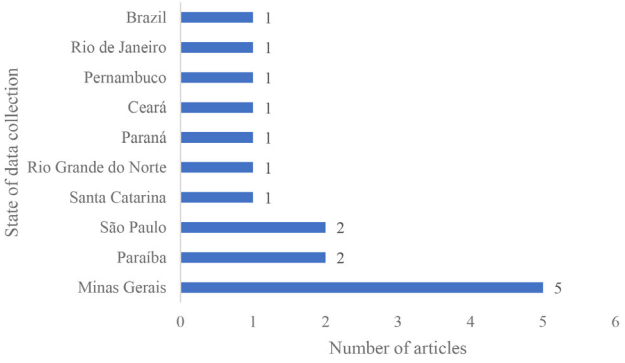

Figure 2 - State in which data was collected for articles reviewed. Brazil, January/2009 to April/2019.

Demographic data

With regard to the epidemiological profile of stroke patients, six articles reported a higher rate in males[4-6,9,11,15], while six articles[7,8,14,16-17,19] found a higher prevalence in females. Three articles[10,13,18] found the same prevalence among both men and women, whereas one article failed to report gender distribution. Stroke prevalence by gender is shown in Figure 3.

All 16 articles reviewed, except for one[10], reported stroke patients were predominantly older adults aged ≥ 60 years. Four articles[7,9,17-18] reported only age

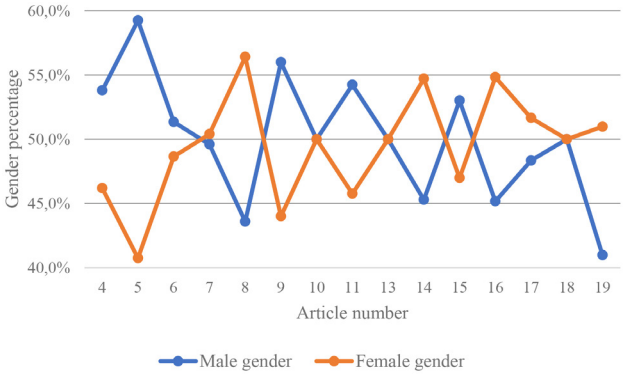

Figure 3 - Distribution of articles by most affected gender in stroke patients Brazil, January/2009 to April/2019.

bracket as opposed to mean age, with prevalence in age group > 80 years of 28.19%[7], > 60 years of 57.8%[9], 66-85 years of 33.3[17] and in the 70-79 years group of 37.70%[18]. Only one article[10] found a mean age of stroke patients < 60 years. Mean age of stroke patients reported by the articles reviewed is shown in Figure 4.

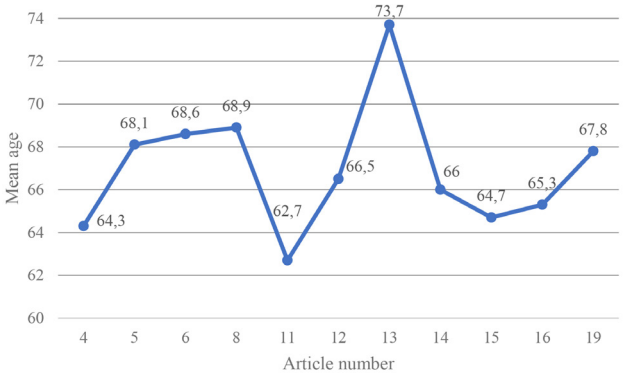

Figure 4 - Distribution of articles by mean age of stroke patients. Brazil, January/2009 to April/2019.

Comorbidities

The comorbidities most cited by nine articles [4,8,10-12,14,16-17,19] were SAH, DM, alcoholism, smoking and sedentarism. Seven articles[5-7,9,13,15,18] failed to report comorbidity information. The SAH and DM rates cited by the articles are shown in Figure 5.

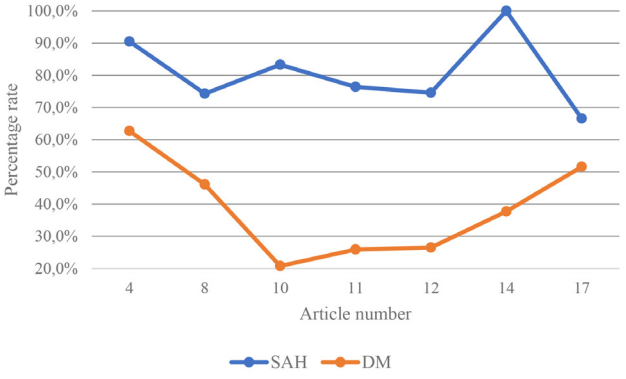

Figure 5 - Distribution of articles by SAH and DM rates in stroke patients. Brazil, January/2009 to April/2019.

Six papers [8,9,11,14,16,19] reported the body side affected by stroke, where the left side was the most common in five articles[8,11,14,16,19]. Only one article reported the right side as more frequently affected, accounting for 48% of the sample. The percentage of articles reporting the left side of the body affected by stroke is shown in Figure 6.

The death rate of stroke patients was stated in three articles, reported as 6.72%[4], 17.5%[5] and 34.26%[15] (see Figure 7).

Figure 6 - Distribution of articles by percentage reporting stroke affecting left side. Brazil, January/2009 to April/2019.

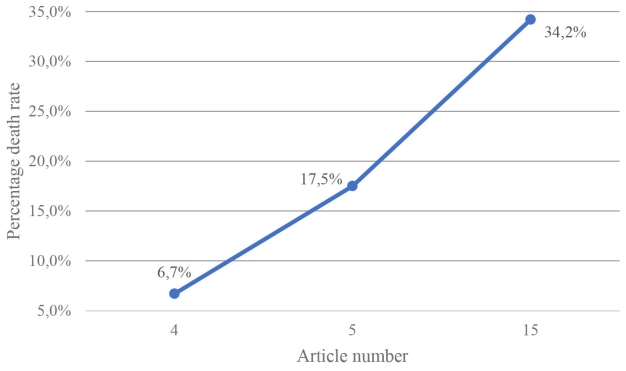

Figure 7 - Distribution of articles by death rate in stroke patients. Brazil, January/2009 to April/2019.

Discussion

Defining the demographic profile and comorbidities of stroke patients can help health teams engage in primary prevention, reducing risk factors associated with the occurrence of stroke. Measures for health promotion and prevention of risk factors can be implemented based on health education and guidance aimed at primary care users. Another important goal is to map the profile of stroke patients, allowing health teams to allocate hospital resources by providing these patients with specific care. Based on this knowledge, further field studies should be conducted to confirm the study findings.

Some studies have shown that men are generally more prone to severe and chronic health problems than women and also have higher mortality from the principal causes of death. However, although men feature significantly in morbimortality profiles, they seek primary care services to a lesser extent than women[20].

Overall, stroke is more common in older persons given this group has greater comorbidity, such as SAH, DM and cardiovascular diseases, which are risk factors for stroke. The presence of certain diseases is a contributing factor to greater frailty in older adults, negatively impacting their quality of life[21].

Ischemic stroke occurs when a blood vessel becomes blocked, often due to the formation of atherosclerotic plaques or clots entering the bloodstream from other parts of the body. Atherosclerosis leads to the formation of plaques and gradual stenosis of vessels, resulting in stenosis, ulceration of atherosclerotic lesions and thrombus. Brain thrombosis is characterized as the development of blood clots within cerebral arteries or their branches. Thrombus can travel to other regions and are referred to as embolisms. The risks for cardiovascular diseases rise with age where, for every 10 years of age, mortality from these diseases can increase 2.5-fold[22].

Arterial hypertension can compromise all cerebral arteries, including those of large caliber (carotids, cerebral), medium caliber and fine caliber, such as penetrating arteries. The structures making up the arteries can also be affected, especially the intima and media layers. In larger caliber arteries, the intima layer is most affected, causing atherosclerosis, whereas in small caliber arteries, lesions occur mainly to the media layer, promoting degeneration. These histopathological differences in arterial injury can constitute causes of stroke[23].

The incidence of cerebrovascular disease is also higher in DM patients than among non-diabetics. In DM patients, clinical manifestations of atherosclerosis occur mainly in coronary arteries, carotids, aorta, cerebral and peripheral (lower limbs) arteries. In addition, atherosclerotic lesions in diabetics have a greater tendency to display vascular calcifications than in non-diabetics[24].

Diabetes mellitus represents one of the most important health public health problems worldwide, particularly in developing countries. Risk factors for DM include hyperglycemia, lipoprotein abnormalities and hyperglyceridemia, where these promote changes in vascular biology, speeding up the molecular and cellular events that contribute to atherosclerosis and potentially causing stroke[25].

Conclusion

Based on the articles reviewed, the demographic characteristics of stroke patients revealed that stroke rates among men and women were the same and that the condition affected predominantly individuals who were aged >60 years, with low educational level, married, retired, sedentary and obese. Regarding comorbidities, SAH and DM were the most common diseases found among stroke patients.

Final considerations

The present study sheds light on several aspects of the demographic profile and common comorbidities of stroke patients in Brazil, drawing on articles in Portuguese published in the Brazilian literature. This epidemiological stroke data for Brazil enables comparisons against data for other developed and developing countries.

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