

## Access of individuals after stroke to physiotherapy services: integrative literature review

## O acesso de indivíduos após-acidente vascular encefálico aos serviços de fisioterapia: revisão integrativa da literatura

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**ABSTRACT | INTRODUCTION:** Stroke can cause dependence on the activities of daily living of individuals and, to minimize these damages, it is essential that access to rehabilitation services be immediate and uninterrupted. **OBJECTIVE:** To investigate the access to physical therapy rehabilitation of individuals after a stroke. **MATERIALS AND METHODS:** This study is an integrative literature review, in which an online search was performed in the databases Scielo, Pubmed, Lilacs, PEDro, Cochrane and Scopus. In a complementary way, secondary searches were carried out in the lists references of the analyzed studies. The research restricted articles published between the years 2009 to 2019, written in Portuguese, English and Spanish, with specific descriptors. In total, 129 articles were identified, of which 7 were selected for analysis in this review after applying the inclusion and exclusion criteria. **RESULTS:** Based on what was revealed by the research, more than half of the interviewed individuals were not referred to physiotherapy services, and the main barriers reported were the difficulty of physical and financial access to services and to continue treatment. Another highlight is the small percentage of users with neurological problems identified in the outpatient physiotherapy network. **CONCLUSION:** In general, access to physical therapy rehabilitation was classified as insufficient in most of the studies analyzed. It is in this perspective that the importance of the reorganization of health services is perceived, emphasizing the need for the insertion of the professional Physiotherapist in the Family Health Teams.

**KEYWORDS:** Stroke. Access to rehabilitation. Physiotherapy. Health services accessibility. Rehabilitation.

**RESUMO | INTRODUÇÃO:** O acidente vascular encefálico (AVE) pode causar dependência nas atividades de vida diária dos indivíduos e, para minimizar esses danos, é fundamental que o acesso aos serviços de reabilitação seja imediato e ininterrupto. **OBJETIVO:** Investigar o acesso à reabilitação fisioterapêutica de indivíduos após o AVE. **MATERIAIS E MÉTODOS:** Este estudo trata-se de uma revisão integrativa da literatura, na qual foi realizada uma busca on-line nas bases de dados Scielo, Pubmed, Lilacs, PEDro, Cochrane e Scopus. De forma complementar, foram realizadas buscas secundárias nas listas de referências dos estudos analisados. A pesquisa restringiu artigos publicados entre os anos de 2009 a 2019, escritos nos idiomas português, inglês e espanhol, com descritores específicos. No total foram identificados 129 artigos, dos quais 7 foram selecionados para análise nesta revisão após aplicar os critérios de inclusão e exclusão. **RESULTADOS:** Com base no que foi revelado pela pesquisa, mais da metade dos indivíduos entrevistados não foram encaminhados aos serviços de fisioterapia, sendo que as principais barreiras relatadas foram a dificuldade de acesso físico-financeiro aos serviços e de dar continuidade ao tratamento. Outro dado de destaque é o pequeno percentual de usuários com problemas neurológicos identificados na rede de fisioterapia ambulatorial. **CONCLUSÃO:** De maneira geral, o acesso a reabilitação fisioterapêutica foi classificado como insuficiente na maioria dos estudos analisados. É nessa perspectiva que se percebe a importância da reorganização dos serviços de saúde, ressaltando a necessidade da inserção do profissional Fisioterapeuta nas Equipes de Saúde da Família.

**PALAVRAS-CHAVE:** Acidente vascular cerebral. Acesso à reabilitação. Fisioterapia. Acessibilidade aos serviços de saúde. Reabilitação.

## Introduction

Stroke (Cerebrovascular accident - CVA) resulting from blood flow limited to brain tissue is one of the most important causes of morbidity and mortality worldwide and can cause deficits in various sensorimotor functions<sup>1</sup>.

Death by stroke has declined in the past decade, and it is currently the fifth leading cause of death in the United States. In addition, the incidence of new and recurrent episodes is decreasing, probably due to the increased use of specific prevention drugs, such as statins and antihypertensives<sup>2</sup>.

According to data from the National Health Survey (PNS), 2.231 million individuals were diagnosed with stroke in Brazil. Corresponding to 1.6% for men and 1.4% for women, with predominance in the age groups above 75 years<sup>3</sup>. Although stroke mortality rates have decreased in Brazil, differences in the declining have been observed between regions, with the highest rates prevailing in the North and Northeast regions of the country<sup>4</sup>.

The stroke is classified as ischemic, characterized by partial or total occlusion of blood flow in a cerebral artery; or hemorrhagic that occurs when there is a rupture of a blood vessel in a brain area<sup>5</sup>. Ischemic patients constitute 87% of cases<sup>1</sup>, and hemorrhagic complications are associated with an especially bad prognosis<sup>6</sup>.

There are several risk factors related to stroke, among which we can highlight age, widowhood, previous and current smoking, arterial hypertension, coronary heart disease and low education. As we can see, some of these factors are modifiable, requiring the implementation of public health policies<sup>7</sup>.

The clinical condition resulting from a stroke results in disabilities or dependence for the performance of activities of daily living (ADLs), causing psychological, physical and financial consequences for individuals, family members and health care services<sup>8</sup>.

According to data from the World Stroke Organization, one in six individuals in the world will have a stroke during their lifetime. Individuals who are affected by CVA often need hospital care, and this generates expenses, both social and economic<sup>9</sup>.

The rehabilitation process of individuals after a stroke is highlighted, which may improve physical, functional and/or mental capacity, promoting the reinsertion and reintegration of people with disabilities into society<sup>10</sup>.

In this context of neurofunctional rehabilitation, physical therapy assistance has a prominent role for contributing to reduction of pain, prevention of complications, improvement of functional status and collaborating in adapting to the limitations resulting from stroke<sup>11</sup>.

According to the Brazilian Federal Constitution of 1988, every citizen has the right to health, and it is the duty of the Federal Government to allow means that ensure equal and universal access to health actions and services<sup>12</sup>. Every person with disability has the right to receive care in health services, especially in rehabilitation services, in order to improve functionality and provide more autonomy and independence for these individuals<sup>13</sup>.

The physical therapy intervention should happen as soon as possible, preferably during the in-hospital phase, as patients who received physical therapy after the stroke had an average length of hospital stay of 8.7 days, while patients who did not receive any type of treatment by this professional remained for about 16 days hospitalized, thus significantly delaying hospital discharge<sup>14</sup>.

Nowadays, the resources used by the physiotherapist are increasingly based on scientific evidence. The main resources used are functional electrical stimulation (FES), biofeedback with electromyography, induced contention therapy, training of functional activities, gait training and balance, virtual reality, orthoses and kinesiotherapy<sup>15</sup>.

Thus, it is highlighted the relevance of research on the access to physical therapy services by individuals after the stroke. These investigations can provide subsidies for knowledge expansion in the health care scope in this segment, as well as serve as a tool to improve existing access strategies, aiming to guarantee comprehensive care.

Based on this assumption, the general objective of this study is to investigate the access to physical therapy rehabilitation of individuals after a stroke. The specific objectives are: to describe the socio-demographic profile of individuals after the stroke; report how the physiotherapeutic rehabilitation of individuals is performed after the stroke; to present the difficulties faced in obtaining access to physical therapy rehabilitation.

## Materials and methods

The present study is an integrative literature review, of a descriptive type. The articles were selected over a careful search of the information sources: Scientific Electronic Library Online (SCIELO), Medical Literature Analysis and Retrieval System Online (MEDLINE / PUBMED), Latin American and Caribbean Literature in Health Sciences (LILACS), Physiotherapy Evidence Database (PEDro), Cochrane and Scopus.

The descriptors used were: "Stroke", "Access to rehabilitation", "Physiotherapy", "Health services accessibility", "Rehabilitation", and its respective Portuguese terms, linked by the Boolean operator AND. Secondary searches on the reference lists of the analyzed studies were performed to complement the search.

The process of searching and analyzing the articles was carried out from July to October 2019. The following inclusion criteria were adopted in relation

to the articles: all article categories (original, literature review, experience report); articles with abstracts and full texts available for analysis; those published in Portuguese, English or Spanish with the publication period between 2009 to 2019. Abstracts of dissertations or academic theses, articles that investigated access to rehabilitation in conditions other than CVA, and works without free full text availability were excluded.

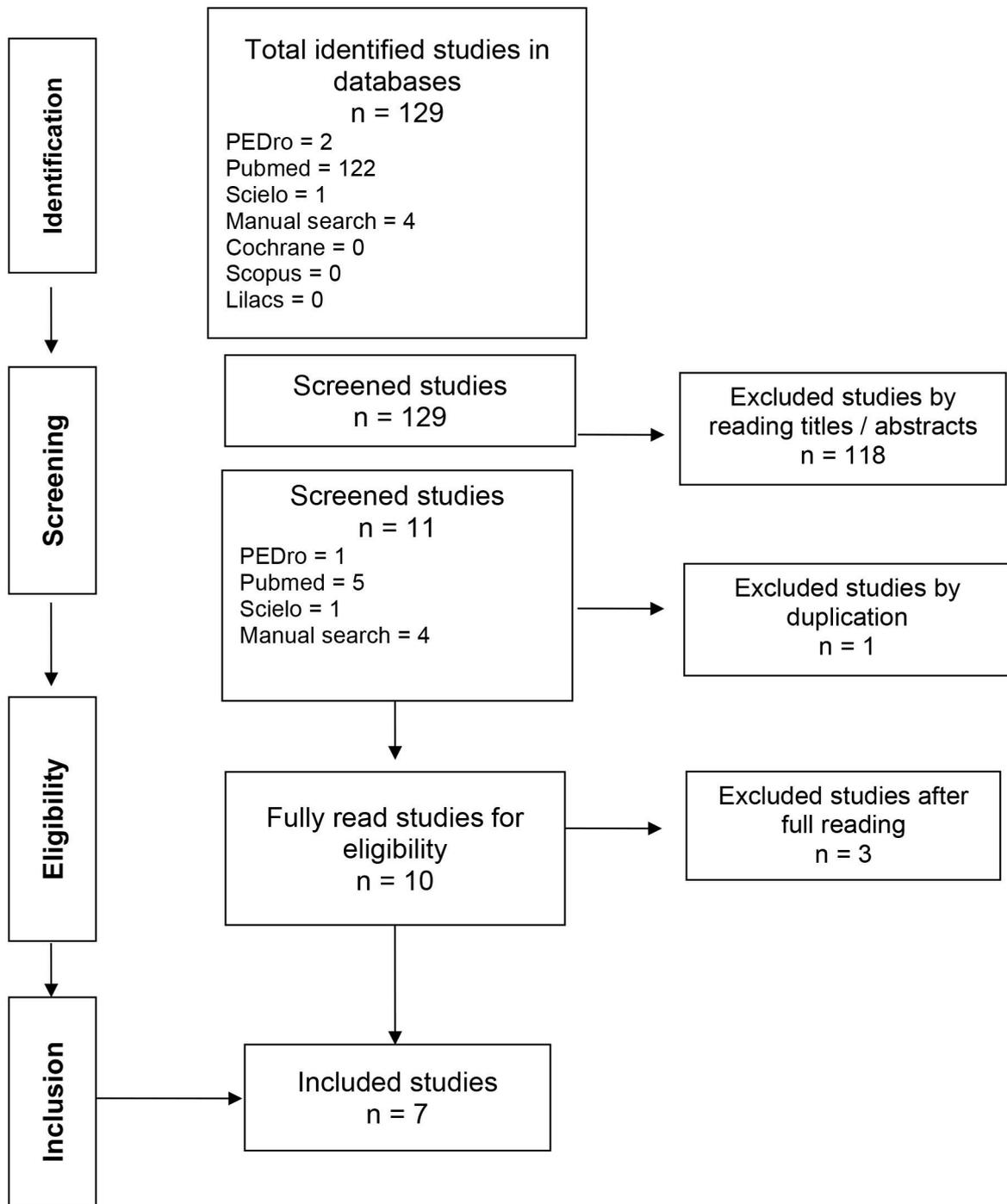
The Physiotherapy Evidence Database (PEDro) scale was applied to assess the methodological quality of the Randomized Clinical Trial (RCT) included in this article. The RCT was scored independently by two investigators, and disagreements were resolved by a third examiner (Table 1).

## Results

In the performed search, 129 articles were found from the descriptors, in which 122 were from Pubmed, 2 from PEDro, 1 from Scielo and 4 through manual search. Of the 122 found in Pubmed, 99 articles were excluded by reading the titles and another 18 were excluded by reading the abstracts, ending a total of 05 articles selected to be fully read. In PEDro, from 2 found studies, 1 was excluded by reading the title and 1 selected for full reading. In Scielo, the only article found was selected for full reading. Under manual search, the 4 articles found were selected for full reading. No articles were found in the Cochrane, Scopus and Lilacs databases. Of the 11 selected studies, 1 was excluded due to duplication. At the end, 10 articles remained for complete reading.

After reading the 10 articles, only 7 met the inclusion criteria for this study, which were selected for analysis in this integrative review. The search and selection strategy is summarized in Figure 1.

Figure 1. Search and selection of studies for integrative literature review



Source: The authors (2019).

In chart 1, general information about each article is found, listing the sample size characteristics, study objective, outcome and found results.

**Chart 1.** Summary information contained in the selected articles (to be continue)

<b>AUTHOR/ YEAR</b>	<b>SAMPLE</b>	<b>OBJECTIVE</b>	<b>OUTCOME</b>	<b>RESULTS</b>
<b>Hall P, Williams D, Hickey A, Brewer L, Mellon L, Dolan E, et al, 2016</b>	256 (148 men and 108 women)	Evaluate the disability profile, rehabilitation, recommendations for rehabilitation adherence and patient needs 6 months after hospitalization for stroke.	Modified Rankin scale - MRS	The average age was 69 years; 86% were referred to the hospital's multidisciplinary team, 59% were referred to all services (Physiotherapy, Occupational Therapy and Speech Therapy), 54% of patients (attended by the multidisciplinary team) were referred for outpatient rehabilitation at the discharge time. Of these 119 patients, 112 (95%) claimed to have received community rehabilitation, 55% of participants reported having received assistance from a single specialty. The frequency of the recommended therapy was weekly, 51% of patients reported a delay in services, with some still waiting for care 6 months after discharge.
<b>Leite HR, Nunes APN, Corrêa CL 2009</b>	51 (both sexes)	Identify the epidemiological profile of patients with hemiplegia in the city of Diamantina, MG, and implement joint actions between the university and local authorities in the studied region to create local health care policies for those patients.	Mini mental state exam	Out of 82 registered patients in the FHS units 51 were contacted at home and interviewed using a semi-structured script. The mean age was 67.8, and the stroke time was 6.7 years; 50% were illiterate, and 41.2% lived on 1 minimum wage per month, 35.3% had never had physical therapy after the stroke.
<b>Lucena EMF, Morais JD, Batista HRL, Mendes LM, Silva KSQR, Neves RF, et al. et al., 2011</b>	140 (67.06 men and 72.94 women)	Describe and analyze the ICF Activity and Participation components among users with stroke registered in the coverage area of the Family Health Teams (ESF's) in the city of João Pessoa and their associations with accessibility to rehabilitation.	International Classification of Functioning - ICF	There was a greater commitment in the categories: Fine use of the hand, Recreation and Leisure, Getting Around and Speaking in the group of participants who had accessibility to rehabilitation services, indicating that the difficulty in these activities leads to the necessity of the individual's insertion to services destined for rehabilitation.

Chart 1. Summary information contained in the selected articles (conclusion)

AUTHOR/ YEAR	SAMPLE	OBJECTIVE	OUTCOME	RESULTS
<b>Lucena EMF, Ribeiro KSQS, Moraes RM, Neves RF, Brito GEG, Santos RNLC; 2017</b>	152 (both sexes)	Determine the association of body function disabilities assessed according to the International Classification of Functioning (ICF) with referral of stroke victims to rehabilitation services in the city of João Pessoa, Paraíba.	The dimension of the body function of the International Classification of Functioning - ICF	The significant functions ( $p < 0.05$ ) were functions related to muscle tone (OR = 2.38), voluntary movement (OR = 2.60), emotional functions (OR = 2.22) and sexual functions (OR = 3.92).
<b>Mendes LM, Gadelha IDS, Brito GEG, Ribeiro K; 2016</b>	39 (both sexes)	Characterize the access to physical therapy services of subjects after a stroke.	Modified Rankin Scale	66.7% of patients had disabilities classified as moderate to severe; 30.8% had access to physical therapy services; 41.7% used the public service for booking; 66.7% performed at home physical therapy; 58.3% paid for the service and had two to three sessions weekly, and 50% between 11 and 20 sessions. At the time of the interview, only 50% were undergoing treatment.
<b>Olaleye OA, Hamzat TK, Owolabi MO; 2013</b>	56 (27 men and 29 women)	Investigate the feasibility and clinical efficacy of stroke rehabilitation at a primary health center compared to at home rehabilitation, aiming the improvement of access to physical therapy services in developing countries.	Stroke Leivity Scale - SLS	Using the General Linear Model between comparison groups, there was no statistically significant difference between the pre and post-intervention scores of the two groups in MMAS, SF-PASS, RNLI and walking speed in PHCG and DG ( $p < 0.05$ ). However, the comparison within the group yielded a statistically significant difference in each of the measured stroke recovery rates in a 10-week period for both groups.
<b>Silva MA, Santos MLM, Bonilha LAS; 2014</b>	45 (27 males and 18 females)	To know the perception of outpatient physiotherapy services users of the Unified Health System (UHS) in the city of Campo Grande, MS, about the care resolution and faced barriers.	Collective Subject Discourse - CSD	45 users were interviewed in seven physiotherapy clinics affiliated to UHS. The reasons to seek physical therapy were musculoskeletal disorders (93.3%) and neurological disorders (6.7%). Most respondents considered physical therapy to be resolvable (86.6%). The difficulties were related to access, with physical-financial and bureaucracy being the limiting issues.

Source: research data, 2019.

Table 1 shows the methodological qualification of the Experiences in Close Relationship Scale (ECR) according to the PEDro scale.

**Table 1.** Study qualification according to the PEDro scale

Author/ Year	1	2	3	4	5	6	7	8	9	10	11	Total punctuation
<b>Olaleye OA, Hamzat TK, Owolabi MO; 2013</b>	-	X	X	X	X	X				X	X	7/10

Source: research data, 2019.

NOTE: Item 1, eligibility criteria it is not included in the final score. The other items are: 2) random allocation; 3) allocation concealment; 4) baseline comparison; 5) blinding of participants; 6) blinding of therapists; 7) blinding of evaluators; 8) adequate pursuance; 9) intention-to-treat analysis; 10) comparison between groups; 11) effect and variability estimate. Each positive answer generates 1 point on the scale, resulting in a 0-10 points evaluation.

It can be seen that 71.44% (5 articles) were published in national journals<sup>16-20</sup>, and 28,56% (2) were published in foreign journals<sup>21,22</sup>. The origin countries of the articles were distributed as follows: Brazil (BR) 71.44% (5)<sup>16-20</sup>, Nigeria (NGA) 14,28% (1)<sup>22</sup>, Ireland (IRL) 14, 28% (1)<sup>21</sup>.

In the studies classification regarding the sample recruitment, the selection of subjects through registration of individuals in the Family Health Team / Unit (USFs) prevailed in 42.84% of the studies<sup>16,17,20</sup>, followed by the hospital in 35,7 % of studies<sup>18,21,22</sup>, and in 21,42% for physiotherapy clinics<sup>19,22</sup>.

The total sample size of the studies was 739 participants composed of individuals of both sexes, with a predominance of males. The average age of the subjects comprised 63.07 years, all affected by CVA, and the ischemic type was the most prevalent<sup>16-22</sup>.

However, a study showed a significant percentage for the age group between 40 and 59 years old, showing the onset of stroke also in young adults<sup>18</sup>.

Three studies indicated that more than half of the interviewed individuals were not referred to physical therapy services<sup>17,18,20</sup>. Two studies addressed that the majority of participants had undergone physical

therapy treatment; however, few subjects were undergoing this type of treatment at the time of the research<sup>16,21</sup>.

An article showed that the main barriers reported by patients were the difficulties of physical-financial access to services and the continuity of treatment, having a noteworthy small percentage of users with neurological problems identified in the outpatient physiotherapy network of the municipality<sup>19</sup>.

Another study highlighted that physical therapy assistance at a primary health center (PHC) produces similar results compared to the same service provided at the patients' home<sup>22</sup>.

Regarding the therapeutic plan, none of the included studies described which approaches were performed in the rehabilitation service. Only one study described the frequency of visits, which started up to 4 weeks after the stroke and lasted approximately 8 weeks<sup>18</sup>.

According to the methodological quality assessment using the PEDro scale, the ECR<sup>22</sup> included in this study scored 7/10. There was a greater score loss in items 7 (blinding of the evaluators), 8 (adequate follow-up), and 9 (analysis by intention to treat).

## Discussion

This article elaboration arose from the need for an update on a topic that is still underexplored, despite being widely addressed in everyday situations. The found results demonstrate the difficulty of access that people who need physical therapy attention still face during rehabilitation process.

The study by Silva et al.<sup>19</sup> reinforces that physical, financial and bureaucratic barriers distance users from rehabilitation services and, consequently, from resolving treatment. This result corroborates with Assis and Jesus who associated low income with the difficulty to access health services, claiming that people from economically impaired social classes seek less or have greater difficulty in entitling these services<sup>23</sup>. Thus, it is suggested the need in reorganizing health care networks to ensure referral, such as the expansion of physiotherapy services.

Taking into account the specialties involved in the rehabilitation process, it was found that the physiotherapeutic approach has been the most demanded in the post-stroke compared to services such as occupational therapy and speech therapy<sup>21</sup>. A study carried out with professionals specialized in family health on an after-stroke care showed that 37.7% reported that the stroke treatment in PHC must be done by a multidisciplinary team, with 39.9% of the referrals being made to physical therapists, and 11, 8% for speech therapists and nutritionists<sup>24</sup>. The rehabilitation process must be multiprofessional; however, the most visible affections are motor sequelae. Based on this, it is justified that the demand for physiotherapist professionals is the most common.

Regarding referral to physiotherapy services, more than half of the individuals reported that they were not referred after being affected by stroke<sup>16,17,19-21</sup>. However, the literature presents divergences in relation to this problem. In a study carried out with doctors and nurses supported by the Family Health Support Center pointed out that 77.3% of professionals refer patients after stroke to physical therapy<sup>25</sup>. Therefore, we can notice different findings among researches, but we must highlight that the physiotherapist is a first contact professional; in other words, it does not depend on referral by other professionals.

According to Lucena and collaborators<sup>17</sup>, the studied sample had a high-level access to rehabilitation services, particularly related to entering the service. However, the same situation did not occur regarding the continuation of treatment, since most individuals were not undergoing treatment during the research.

This corroborates Machado and Nogueira<sup>26</sup> findings where participants classified access as difficult, revealing that users faced difficulties in aspects such as walking, distance from their homes to physiotherapy clinics, financial problems, and long transit periods to service locations. Most of subjects reported that the greatest difficulty is not having access to the service, but maintaining the frequency of treatment due to bureaucratic, financial, and physical issues.

The treatment period lasted approximately up to eight weeks after hospital discharge, with a frequency of 2 to 3 times a week, an average of 11 to 20 sessions at home, and upon financial resources of the subjects and/or their families. While another study described that 6 months after the stroke episode some individuals were still waiting for the physical therapy service<sup>21</sup>.

Duncan et al.<sup>27</sup> affirm that the rehabilitation process should be started as soon as possible after the stroke, therefore the recovery chances are greater, reducing the functional sequelae and preventing possible comorbidities. Physiotherapeutic treatment should be started in the hospital phase and after discharge. Regular contact with the physiotherapist must be maintained.

In an analysis of seven physiotherapy clinics affiliated to UHS, the reasons for greater demand for physiotherapy were musculoskeletal disorders, representing around 93.3% of cases, and only 6.7% neurological disorders<sup>19</sup>. Fréz and Nobre<sup>28</sup> found similar data in their study, in which 89% of visits were related to musculoskeletal symptoms, and only 3% due to neurological causes. This data shows us the low number of outpatient care in the neurofunctional physiotherapy specialty; this fact may possibly be related to complaints such as locomotion of users and economic conditions.

When comparing physical therapy assistance in a rehabilitation center and at the patients' homes, it was concluded that there are no significant differences between the places of care; however, there was a small preference for patients to perform the treatment at home<sup>22</sup>. This fact can be justified because patients who receive rehabilitation at home have a better adjustment for residual disability<sup>29</sup>. The functional limitations of subjects are more noticed during the attempt to perform the ADLs; thus, they are easier to be adapted during physical therapy care in the home environment.

As evidenced in this study, ischemic stroke was the most frequent since it is the most common type, representing about 85% of cases<sup>1</sup>. Preventive health actions, especially in the poorest communities, should be intensified in order to minimize the emergence of new cases.

The score obtained by the ECR<sup>22</sup> on the PEDro scale was 7/10, indicating a study with moderate methodological quality. However, the number of RCTs available in the literature on the subject is still scarce.

The average age of the subjects was 63.07 years<sup>16-22</sup>. However, a study showed a significant percentage for the age group between 40 and 59 years old, showing the onset of stroke also in young adults<sup>18</sup>. Most of them are related to modifiable cardiovascular risk factors, such as diabetes, obesity, high blood pressure, and physical inactivity<sup>30</sup>.

The most affected functions were those related to muscle tone, movement control and emotional ones<sup>17</sup>. According to BAI et al.<sup>31</sup>, motor dysfunctions acquired after the CVA have a great impact on individuals' ADLs, demanding greater attention from the family and society.

Due to the various sequelae left by the stroke, the individual suffers loss of functional independence, requiring help to perform the ADLs. Physiotherapy has an essential role in total and/or partial recovery of these subjects' functionality.

## Final considerations

In general, access to physical therapy rehabilitation was classified as insufficient in most of the analyzed studies, being directly related to physical, financial, travel issues, due to lack of referral/guidance and bureaucratic reasons.

From this perspective, the importance of the reorganization of health services is perceived in its different levels of care, emphasizing the need for insertion of the Physiotherapist professional in the Family Health Teams (FHS), especially in the most distant communities of large centers. The purpose is to guarantee access to physiotherapy services; thus, treating the sequelae caused by the stroke and preventing complications of the disease, through a free and continuous professional monitoring.

It is also suggested to expand the physiotherapy services linked to UHS, in different locations within the municipalities, in order to minimize issues such as the difficulty of moving the subjects; and parallel to this, greater insertion of Physiotherapists to work in these services. Thus, due to the small number of studies found, it is necessary to develop new research with updated data so that the results can be further explored.

## Author contributions

Sampaio IC and Machado TC participated in the conception, design, search for research data, interpretation of results and writing of the scientific article.

## 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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