DOI: 10.1590/1809-2950/e23014824en



ORIGINAL RESEARCH

# Physical therapy care to community-dwelling individuals with stroke in primary care setting in Brazil: a cross-sectional study

*Assistência fisioterapêutica a indivíduos comunitários com Acidente Vascular Encefálico na atenção básica no Brasil: um estudo transversal*

*Asistencia de fisioterapia a personas con accidente cerebrovascular que viven en la comunidad en atención primaria en Brasil: un estudio transversal*

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**ABSTRACT |** After hospital discharge, it is recommended that post-stroke individuals receive follow-up by a physical therapist throughout all the stages of recovery. Despite clinical recommendations, few studies have investigated physical therapy care to community-dwelling individuals with stroke. This study aimed to describe physical therapy care to community-dwelling individuals with stroke in primary care setting and identify clinical-functional and sociodemographic characteristics that determined physical therapy assistance. This is an exploratory cross-sectional study. Community-dwelling individuals with stroke who were assisted by the primary healthcare team from an important Brazilian metropolis were included. Their medical records were analyzed to identify the care provided by physical therapists. Individuals who received and did not receive physical therapy care were compared ($\alpha$=0.05). Out of the 100 included individuals, 55% received assistance from the multidisciplinary primary healthcare team and 44% from physical therapists. Physical therapy approaches consisted mainly of general orientations (89%) and assessments (75%). Only 45% of the individuals who received physical therapy care were followed-up, and those who received this type of care had significantly more stroke events and higher levels of disability (p<0.001). It was observed that many individuals with various levels of disabilities have not received physical therapist assistance. Moreover, follow-up care and referrals were not frequent physical therapy approaches. Therefore, physical therapy care in primary care needs to be expanded to ensure that all individuals with some level of disability receive treatment. Moreover, it is necessary to increase the number of individuals receiving follow-up and encourage multidisciplinary work between physical therapists and other primary healthcare professionals.

Keywords | Stroke; Physiotherapy; Public health; Primary health care.

**RESUMO |** Após a alta hospitalar, recomenda-se que pacientes pós-AVC sejam acompanhados por um fisioterapeuta durante toda a recuperação. Apesar das recomendações clínicas, poucos estudos investigaram os cuidados fisioterapêuticos a indivíduos pós-AVC residindo na comunidade. O estudo objetivou descrever os cuidados fisioterapêuticos prestados a indivíduos

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que sofreram AVC residentes na comunidade em contexto de atenção primária e identificar as características clínico-funcionais e sociodemográficas que determinam a assistência de fisioterapia. Este é um estudo transversal exploratório. Foram incluídos pacientes pós-AVC, residentes na comunidade e que foram atendidos pela equipe multidisciplinar de quatro unidades de atenção primária à saúde de uma importante metrópole brasileira. Os prontuários foram analisados para identificar os cuidados prestados pelos fisioterapeutas. Os indivíduos que receberam e não receberam cuidados fisioterapêuticos foram comparados (α=0,05). Dos 100 indivíduos incluídos, 55% receberam assistência de profissionais da equipe multidisciplinar e 44% foram atendidos por fisioterapeutas. As abordagens de fisioterapia consistiram principalmente em instruções (89%) e avaliações (75%). Apenas 45% dos indivíduos que receberam cuidados fisioterapêuticos foram acompanhados, e aqueles que receberam esses cuidados apresentaram um número significativamente maior de eventos de AVC e níveis mais altos de incapacidade (p<0,001). Observou-se que muitas pessoas com diferentes níveis de incapacidade não receberam cuidado fisioterapêutico. Além disso, o acompanhamento e os encaminhamentos não foram frequentes nas práticas fisioterapêuticas. Portanto, os cuidados fisioterapêuticos na atenção primária precisam ser ampliados para garantir que todos os indivíduos com algum nível de deficiência recebam tratamento. Ademais, é preciso aumentar o número de indivíduos que recebem acompanhamento e incentivar o trabalho multidisciplinar entre fisioterapeutas e outros profissionais da área de saúde.

Descritores | Acidente vascular cerebral; Fisioterapia; Saúde pública; Atenção primária à saúde.

**RESUMEN |** Después del alta hospitalaria, se recomienda que los pacientes que han sufrido un accidente cerebrovascular sean supervisados por un fisioterapeuta durante toda su recuperación. A pesar de las recomendaciones clínicas, pocos estudios han investigado la atención de fisioterapia para personas que han sufrido un accidente cerebrovascular y viven en la comunidad. El estudio tuvo como objetivo describir la atención fisioterapéutica brindada a personas que sufrieron un accidente cerebrovascular y que viven en la comunidad en un contexto de atención primaria e identificar las características clínico-funcionales y sociodemográficas que determinan la asistencia fisioterapéutica. Se trata de un estudio exploratorio transversal. Se incluyeron pacientes post accidente cerebrovascular que vivían en la comunidad y que fueron atendidos por el equipo multidisciplinario de cuatro unidades de atención primaria de salud en una importante metrópolis brasileña. Se analizaron las historias clínicas para identificar la atención brindada por los fisioterapeutas. Se compararon los individuos que recibieron y no recibieron atención fisioterapéutica (α=0,05). De los 100 individuos incluidos, el 55% recibió asistencia de profesionales del equipo multidisciplinar y el 44% fue atendido por fisioterapeutas. Los enfoques de fisioterapia consistieron principalmente en orientación (89%) y evaluaciones (75%). Sólo el 45% de las personas que recibieron atención de fisioterapia fueron seguidas, y aquellos que recibieron esta atención tuvieron un número significativamente mayor de eventos de accidente cerebrovascular y niveles más altos de discapacidad (p<0,001). Se observó que muchas personas con diferentes niveles de discapacidad no recibieron atención fisioterapéutica. Además, el seguimiento y las derivaciones no fueron frecuentes en las prácticas de fisioterapia. Por lo tanto, es necesario ampliar la atención de fisioterapia en atención primaria para garantizar que todas las personas con algún nivel de discapacidad reciban tratamiento. Además, es necesario incrementar el número de personas que reciben seguimiento y fomentar el trabajo multidisciplinar entre fisioterapeutas y otros profesionales sanitarios.

Palabras clave | Accidente Cerebrovascula. Fisioterapia. Salud pública. Atención Primaria de Salud.

## INTRODUCTION

After hospital discharge, it is recommended that individuals with stroke be followed up by rehabilitation professionals[1]. According to clinical guidelines, follow-up of individuals with stroke should be initiated during hospitalization and continued until their functional goals are achieved[1,2]. Moreover, it is recommended that every individual with stroke be evaluated at least annually by a rehabilitation professional, for proper follow-up and monitoring[3]. Although many efforts have been made to achieve continuity of care for these individuals during the first months after the stroke, long-term care has been neglected.[4] Thus, the limited support of the primary care team and community-health services contributes to a perception of abandonment by both the individuals and caregivers[4].

Brazil, a middle-income country, presents a public health system called Unified Health System (SUS). The SUS is characterized by universal access and

comprehensive care[5]. Despite other countries also showing public and universal health systems, such as England and France, Brazil is the only country to comprise more than 100 million inhabitants under a public, universal, and free health system, available for all the population[6]. Furthermore, no major differences were found on health policies and the national health plans related to stroke between Brazil and other high-income countries[7]. Despite Brazil being highlighted for its universal health system, primary care actions aimed at community-dwelling individuals with stroke are still poorly known[7,8].

Primary care provided by SUS includes a multidisciplinary team, composed of various healthcare professionals, including physical therapists[9]. According to clinical recommendations, after stroke, physical therapists should assist individuals in recovering their lost skills by different types of care such as assessment, orientation, and referrals to other professionals[1–3]. It is also recommended that individuals with stroke be followed up by a physical therapist throughout all the stages of recovery[10]. Thus, even at chronic stages, these individuals should be accompanied by a physical therapist, who will support and advise them regarding the prevention of stroke recurrency, as well as assist them during the adaptation process, optimize their social functions in the community, preserve their physical fitness, and monitor their quality of life[10,11]. Moreover, physical therapy (PT) interventions should be continued for those individuals, who have potential for functional improvements and for those who show functional declines at the post-stroke chronic stages[10].

Despite clinical recommendations, few studies have investigated the type of PT care provided to community-dwelling individuals with stroke in primary care setting in Brazil[12]. The results of a single study that addressed this issue showed that 63% of the evaluated individuals did not receive any PT care. Among the individuals who received any care, only 37.5% were followed longitudinally[12]. However, this finding was derived from a single primary care unit[12]. In addition, differences in clinical-functional and sociodemographic characteristics among individuals, who had and did not have PT care, were not investigated. This investigation could contribute to the knowledge regarding the type of care provided by PT and the direction of PT care to community-dwelling individuals with stroke in Brazil. This study aimed to describe PT care to community-dwelling individuals with stroke and to identify clinical-functional and sociodemographic characteristics that determined PT care in primary care setting in Brazil.

## METHODOLOGY

### Study design

This is an exploratory cross-sectional study.

### Population studied

The study population is composed of community-dwelling individuals with stroke who were users of four basic health units in the SUS primary care network in the city of Belo Horizonte, an important Brazilian metropolis. These units were selected by convenience and each one was located in different districts of the city.

### Inclusion criteria

This study invited, during a one-year period, community-dwelling individuals who were identified by professionals of the primary care team as being a patient with stroke for at least six months. Individuals registered at primary care services, aged ≥20 years, and with a diagnosis of stroke, confirmed in the medical record, were included. After identifying eligible individuals, those who were not available for in-person interviews or did not agree to participate were excluded. All participants signed an informed consent form.

### Data collection

Initially, individuals' medical records were analyzed and eligible subjects were invited to participate. After agreeing and providing written consent, they were interviewed at home to confirm eligibility. Then, sociodemographic [sex, age, schooling level, socioeconomic status (classified as class A, B, C D, or E, according to the Brazilian Economical Classification Criteria, which provides an estimate of the purchasing power of the Brazilian population)][13], and clinical-functional data, including paretic side, type of stroke, levels of disability (Modified Rankin Scale – MRS)[14], number of stroke events, number of associated diseases, and time since the stroke event, were collected.

Information on PT care was obtained by analyzing the individuals' medical records. This procedure was adopted to reduce the risk of recall bias.[15] To collect data,

the professionals' records were read and analyzed so that the keywords associated with each of the investigated care were identified, and then, the frequency of each category of PT care was calculated[12]. The following classifications were applied to describe the type of care provided:

- Assessment: description of impairments in body functions, activity limitations, and\or restrictions in social participation;
- Intervention: rehabilitation tailored to the participants' needs and physical conditions;
- General orientations : timely and structured orientation to the participants, families, and/or caregivers;
- Follow-up: frequent and systematic assessments of functional changes over time;
- Referrals to other professionals: such as to occupational therapists, social workers, psychologists, etc.
- Referrals to other healthcare services: such as secondary or tertiary healthcare.

All data were collected by two well-trained researchers, who had experience on stroke rehabilitation.

### Data analyses

Descriptive statistics and tests for normality (Kolmogorov-Smirnov) were conducted for all variables. Then, participants were divided into two groups: those who received and those who did not receive any PT care. These groups were compared considering their sociodemographic and clinical-functional outcomes, using Chi-square, Mann-Whitney, and independent Student's t-tests. All statistical analyses were performed in SPSS statistical package for Windows (Version 17.0, SPSS Inc., Chicago, Illinois, USA) with a 5% significance level.

## RESULTS

Initially, 131 individuals were identified. After checking for eligibility, 31 were excluded. Therefore, 100 community-dwelling individuals with chronic stroke were included (Figure 1).

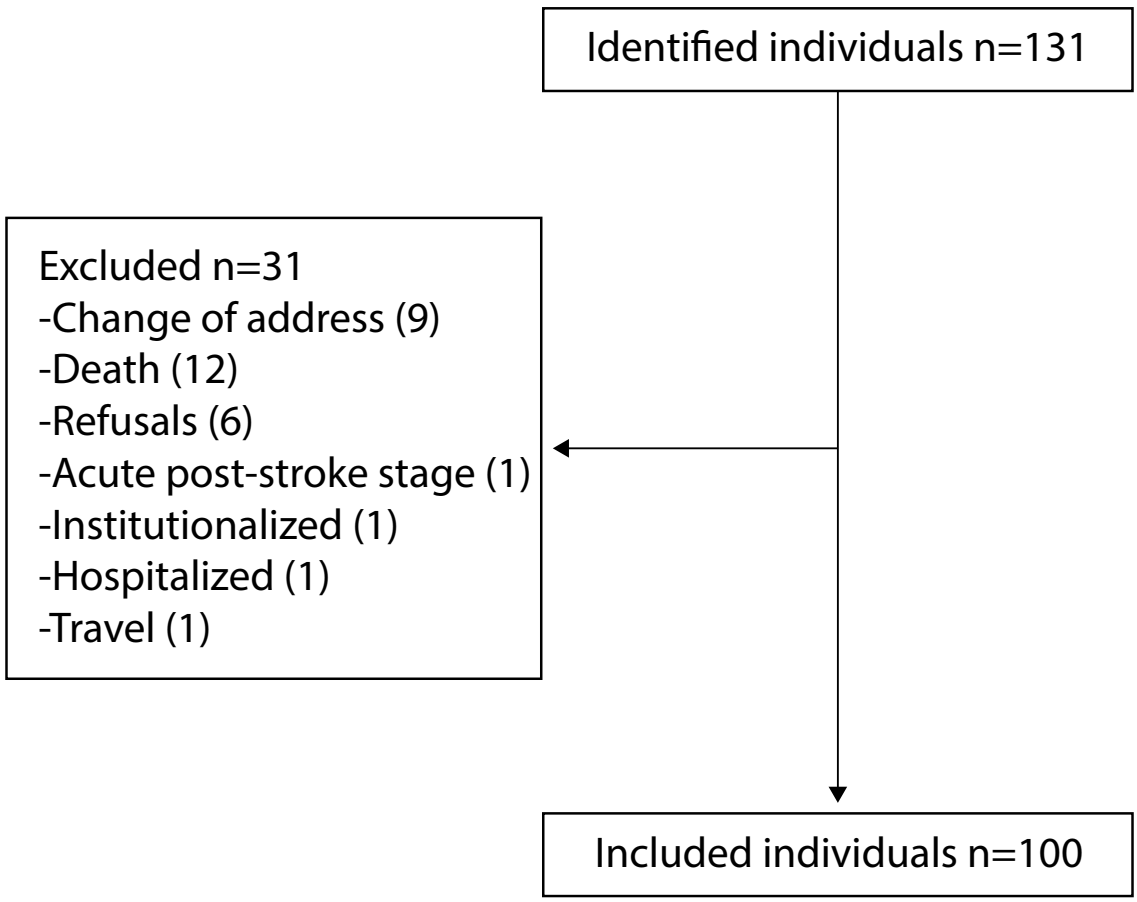


Figure 1. Flowchart of participants

Most participants were women. They had a mean age of 68±14 years, ranging from 21 to 94 years. A total of 98 participants had some level of disability and 79 did not have any private health insurances (Table 1).

Table 1. Participants' characteristics (n=100)

| Characteristic | Assisted by the multidisciplinary primary care team (n=55) | Not assisted by the multidisciplinary primary care team (n=45) | Total (n=100) |
|---|---|---|---|
| Sex, women, n (%) | 32 (58) | 25 (56) | 57 (57) |
| Age (years), mean±SD (range: min-max) | 68±13 (31-94) | 65±15 (21-90) | 68±14 (21- 94) |
| Schooling level n (%) | | | |
| Illiterate | 10 (18) | 13 (29) | 23 (23) |
| Informal schooling | 17 (32) | 9 (20) | 26 (26) |
| 1–4 years | 22 (40) | 13 (29) | 35 (35) |
| 5–7 years | 3 (5) | 3 (7) | 6 (6) |
| ≥8 years | 3 (5) | 6 (14) | 9 (9) |
| NA | 0 (0) | 1 (1) | 1 (1) |
| Socioeconomic status, n (%)* | | | |
| Class A | 0 (0) | 0 (0) | 0 (0) |
| Class B | 8 (15) | 9 (20) | 17 (17) |
| Class C | 36 (65) | 28 (63) | 64 (64) |
| Class D | 10 (18) | 6 (13) | 16 (16) |
| Class E | 1 (2) | 2 (4) | 3 (3) |
| Private health insurance, No, n (%) | 44 (80) | 35 (78) | 79 (79) |
| Paretic side | | | |
| Right | 30 (54) | 20 (45) | 50 (50) |
| Left | 24 (44) | 19 (42) | 43 (43) |
| Both | 1 (2) | 0 (0) | 1 (1) |
| NA | 0 (0) | 6 (13) | 6 (6) |
| Type of stroke, n (%) | | | |
| Ischemic | 36 (66) | 28 (62) | 64(64) |
| Hemorrhagic | 8 (14) | 8 (18) | 16(16) |
| Both Ischemic and Hemorrhagic | 0 (0) | 1 (2) | 1 (1) |
| NA | 11 (20) | 8 (18) | 19 (19) |
| Disability level, n (%)** | | | |
| No symptoms | 7 (13) | 13 (29) | 2 (2) |
| Not significant | 7 (13) | 12 (27) | 20 (20) |
| Slight | 14 (25) | 12 (27) | 19 (19) |
| Moderate | 11 (20) | 5 (11) | 26 (26) |
| Moderately severe | 15 (27) | 2 (4) | 16 (16) |
| Severe | 1 (2) | 1 (2) | 17 (17) |
| Number of stroke events, n (%) | | | |
| 1 | 34 (62) | 36 (80) | 70 (70) |
| >1 | 21 (38) | 9 (20) | 30 (30) |
| Number of associated diseases, n (%) | | | |
| 0 | 2 (4) | 1 (2) | 3 (3) |
| 1-3 | 19 (34) | 18 (40) | 37 (37) |
| >3 | 34 (62) | 26 (58) | 60 (60) |
| Time since the stroke event (months), mean±SD (range: min-max) | 47±50 (6–300) | 78±77 (8–375) | 61±66 (6–375) |

Note: SD= Standard deviation, NA= Not available (data not registered); *Brazilian Economical Classification Criteria; **Modified Rankin Scale

In total, 55 (55%) of the included individuals received care from the multidisciplinary primary care team, whereas 44% received PT care. PT approaches consisted mainly of general orientations (89%) and assessments (75%); referrals to other professionals (14%) or to other healthcare services (18%) were less frequent. Moreover, from the 44 individuals who had PT care, only 22 (50%) received interventions and 18 (41%) had follow-up care (Figure 2).

Based on the assistance provided by the physical therapists, the participants were divided into two groups:

with (n=44) and without (n=56) PT assistance. Number of stroke events (p<0.001) and levels of disability (p<0.001) were the only variables that showed significant differences between groups (Table 2).

Table 2. Comparison of sociodemographic and clinical-functional data between the groups of participants, who received and did not receive physical therapy care

| Characteristic | Classification | Received physical therapy care (n=44) | Did not receive physical therapy care (n=56) | *p-value* |
|---|---|---|---|---|
| Sex, women n (%) | | 27 (61) | 30 (54) | *0.44‡* |
| Age (years), mean±SD (range: min-max) | | 69±57 (39–94) | 65±92 (21–91) | *0.38‡‡* |
| Schooling level[+], n (%) | Illiterate<br>Informal schooling<br>1–4 years<br>5–7 years<br>≥ 8 years<br>NA | 9 (20)<br>1 (2)<br>31(71)<br>1 (2)<br>2(5)<br>0 (0) | 14 (25)<br>0 (0)<br>29(52)<br>5(9)<br>7 (12)<br>1 (2) | *0.33‡‡‡* |
| Socioeconomic status classification, n (%)[1] | A1<br>B1<br>C1<br>D<br>E | 0 (0)<br>8 (18)<br>26 (59)<br>9 (21)<br>1 (2) | 0 (0)<br>9 (16)<br>38 (68)<br>7 (12)<br>2 (4) | *0.80‡‡‡* |
| Private health insurance, none, n (%) | | 37 (84) | 42 (75) | *0.27‡* |
| Disability level, n (%)[2] | Some<br>No significant | 39 (89)<br>5 (11) | 39 (68)<br>17 (32) | *<0.001*‡* |
| Number of stroke events, n (%) | 1<br>>1 | 26 (59)<br>18 (41) | 44 (79)<br>12 (21) | *<0.001*‡* |
| Number of associated diseases, n (%) | 0<br>1 a 3<br>>3 | 2 (4)<br>14 (32)<br>28 (64) | 1 (2)<br>23 (41)<br>32 (57) | *0.32‡‡‡* |
| Time since the stroke event (months), mean±SD (range: min-max) | | 47±43 (6–300) | 72±18 (7–375) | *0.08‡‡* |

Note: [+]Data not registered by physical therapist: n=1 (2%); [1]Based on the Brazilian Economic Classification Criteria; [2]Modified Rankin Scale; *Statistically significant difference; ‡Chi-square test; ‡‡independent Student's t-test; ‡‡‡Mann-Whitney test.

Participants who received PT care had significantly more stroke events and higher levels of disability. Although 98 participants had some degree of disability, most did not receive any assistance from the physical therapists.

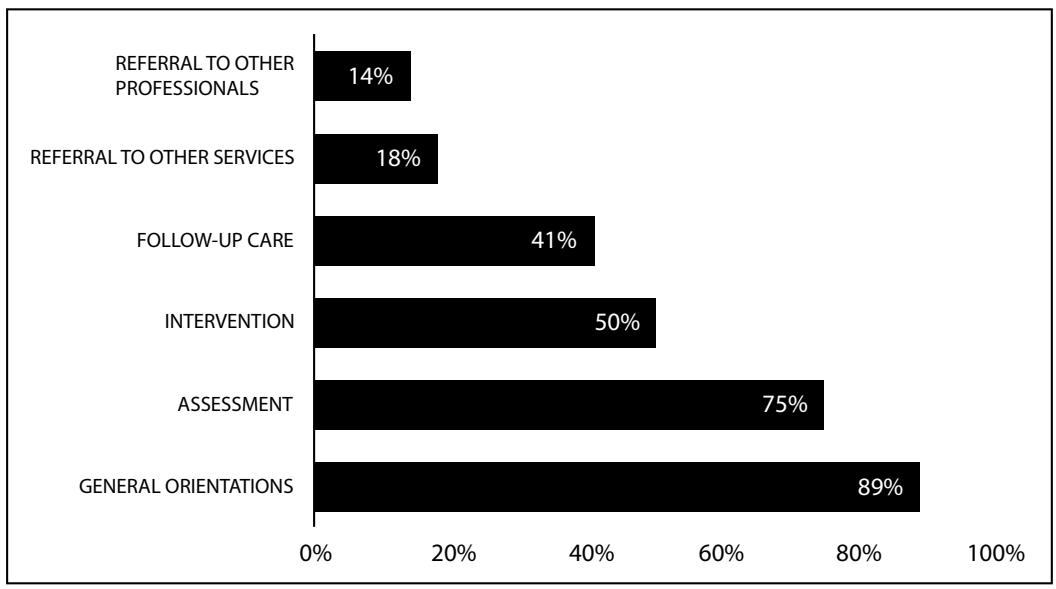


Figure 2. Types of assistance provided by physical therapists to community-dwelling individuals with chronic stroke in primary healthcare setting in Brazil

## DISCUSSION

This study described and analyzed PT care to community-dwelling individuals with stroke in primary care setting of an important Brazilian metropolis. Only 44% of the included individuals had records of assistance from physical therapists. General orientations were the most frequent PT approach, followed by assessments and interventions. Individuals who received PT care had significantly more stroke events and higher levels of disability, but follow-up was not frequent. Moreover, most participants who had some levels of disability did not receive PT care.

Despite 98% of participants having some levels of disability, 55% did not receive any assistance from the physical therapists. Therefore, national[2] and international[1,3] recommendations for stroke care have not been followed. Regarding the care provided by physical therapists, it was found that the most frequent intervention wasgeneral orientations. This corroborates rehabilitation actions recommended by clinical guidelines, which describe that professionals must be able to provide information, preventing health risks, protecting vulnerabilities, and promoting self-care in primary care services[16]. Orientation of patients and their families and/or caregivers is also reported as a key action in healthcare for the post-stroke population[17]. However, for an effective self-care, especially in chronic conditions, such as stroke, it is necessary that individuals receive support strategies, which should include goal setting and continuously monitoring by healthcare professionals, including physical therapists[18,19].

Registers of PT assessments were identified in 33 (75%) medical records. Assessment is an essential and determinant step for the diagnosis and development of appropriate rehabilitation protocols[20]. Therefore, it was expected that all medical records would have register of the performed assessment, which was not observed.

Follow-up care was observed only in 41% of the sample. After a stroke, healthcare professionals should establish goals together with patients and their families and these goals should be re-assessed and followed-up regularly[3]. However, our results showed that less than half of the individuals were followed. This result is similar to previous studies that indicate an insufficient number of physical therapists to meet the high demands in primary healthcare services[21,22]. Dissatisfaction of stroke patients from middle-income countries with the lack of follow-up care has already been described[23]. Individuals who are regularly monitored by healthcare professionals reported a feeling of reception and support, which are factors that contribute to their adherence to treatment[23]. Therefore, it is necessary to improve tools that enable better organization of longitudinal monitoring of people with chronic stroke by physical therapists in primary healthcare settings[24,25].

Referrals to other healthcare services and/or other healthcare professionals were infrequent, although referrals to other levels of care should be performed depending on the severity and complexity of the disability[9]. The low number of referrals found in this study suggests that the healthcare units may still consider levels of attention as individual and fragmented responsibilities, which makes communication between the different levels of care impossible and hinders continuous follow-up[26]. The collaboration between different healthcare professionals has been shown to improve individuals' functional status, professionals' adherence to practices recommended by guidelines, and the use of health resources[18]. Therefore, collaborative work within the multidisciplinary primary care team should be encouraged.

It is noteworthy that the organization of the multidisciplinary team follows different formats. In the SUS, the multidisciplinary team does not include the presence of physicians and nurses, who are part of the main team[9]. However, previous studies conducted in high-income countries indicate that the organizational structure of health systems and the roles assumed by professionals of the team have implications for the implementation of collaborative work among the professionals[27]. Therefore, it is necessary to reflect on whether the insertion of physical therapists in a complementary/support team would be a barrier or a facilitator for the implementation of cooperative work among primary healthcare professionals. Moreover, given the high demand for healthcare provided by physical therapists, it is necessary to reflect on which team this professional should be included, so that their care could be expanded.

Participants who received PT care had significantly more stroke events and higher levels of disability. A previous systematic review reported that stroke recurrence is associated with increased incidence of disability in the post-stroke population[28]. Therefore, it can be considered that these factors could direct or prioritize the care provided by the physical therapists to individuals with stroke. The other analyzed variables did not show any statistically significant differences between the groups

who received and did not receive PT care. However, the distribution of individuals on these variables was similar between the groups and should be considered in the analysis.

This study presents limitations. Data regarding care provided by physical therapists to individuals with chronic stroke were collected from their medical records. Despite being official documents, it is known that medical records do not always detail the care provided and are often improperly filled[29]. Therefore, the results should be cautiously generalized. Although the study results provide initial insights into PT care in primary care, future studies should be conducted to better understand this topic. Information regarding the barriers to the professional practice of physical therapists in the care of individuals with stroke in primary care and patients' perception of the difficulties in accessing these professionals should be provided by future studies. Furthermore, similar studies should be conducted in other regions of Brazil.

## CONCLUSIONS

Many individuals with different levels of disabilities have received no PT assistance. In addition, follow-up care and referrals were not frequent PT approach. Despite PT assistance being determined by the number of stroke events and the level of disability, many individuals with various levels of disabilities have not received assistance. Therefore, stroke care provided by PT of the primary care seems shallow. Despite considerable advances in the health system and health policies for stroke care in Brazil, it is still necessary to improve the care provided by physical therapists to community-dwelling individuals with chronic stroke. These improvements should be aimed mainly at ensuring that all individuals with some level of disability receive PT care. Furthermore, strategies to increase the number of individuals receiving follow-up must be established. Finally, multidisciplinary work between physical therapists and other primary care professionals and between different healthcare services should be encouraged.

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