ORIGINAL ARTICLE / *ARTIGO ORIGINAL*

Sociodemographic factors and functional capacity of elderly affected by stroke

Fatores sociodemográficos e capacidade funcional de idosos acometidos por acidente vascular encefálico

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ABSTRACT: *Introduction:* Diseases of old age have shown increasing prevalence in society. One of them is stroke, which can be conceptualized as the interruption of cerebral blood supply due to a leakage or blood vessel obstruction caused by clots. *Objective:* To verify the associations between sociodemographic factors and the functional capacity of elderly affected by stroke. *Methods:* This is an epidemiological, cross-sectional, and quantitative study, including 118 elderly people with paralyses due to stroke, who were registered in one of the Family Health Strategies units of Campina Grande, Paraíba, Brazil. Data were collected by means of home interviews. Two questionnaires were used, in which one was directed for assessment of sociodemographic variables and the second was called Barthel index for assessing the functional capacity of the subjects regarding the activities of daily life. The analysis was conducted using the statistical program SPSS. *Results:* There was a predominance of the female gender, widowed, without schooling, and with household income of up to one Brazilian minimum wage. The average age was 65 years ($\pm$ 9.63). The Barthel index internal consistency was satisfactory, presenting values of Cronbach's alpha coefficient in the range of 0.897–0.918. Total correlation of corrected items was greater than 0.4, and Cronbach's alpha with a deleted item was also greater than 0.8. The activities with higher level of achievement difficulty were urination and evacuation. Association between functional capacity with race, age range, and schooling was found. *Conclusion:* It was seen that demographic factors might interfere with the functional capacity of elderly affected by stroke. Hence, it is believed that this investigation might have contributed to the reflection on this issue, thus supporting the promotion of these people's access to health assistance programs.

Keywords: Aged. Stroke. Geriatric assessment. Disabled persons. Activities of daily living. Socioeconomic factors.

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Conflict of interests: nothing to declare – Financial support: none.

RESUMO: *Introdução:* Doenças próprias da velhice têm apresentado crescente prevalência na sociedade. Dentre elas, destaca-se o acidente vascular encefálico, que pode ser conceituado como a interrupção do suprimento sanguíneo cerebral, devido a um extravasamento ou obstrução do vaso sanguíneo provocado por coágulos. *Objetivo:* Verificar as associações entre os fatores sociodemográficos e a capacidade funcional de idosos acometidos por acidente vascular encefálico. *Métodos:* Estudo epidemiológico, transversal e quantitativo, com amostra de 118 idosos com plegias por acidente vascular encefálico, cadastrados em uma das unidades da Estratégia de Saúde da Família de Campina Grande, Paraíba, Brasil. Os dados foram coletados por meio de entrevistas domiciliares. Foram utilizados dois questionários, um para avaliação das variáveis sociodemográficas e, um segundo, denominado Índice de Barthel, destinado à avaliação da capacidade funcional dos sujeitos com relação às atividades de vida diária. A análise foi realizada utilizando-se o programa estatístico SPSS. *Resultados:* Houve predomínio de sujeitos do sexo feminino, viúvos, analfabetos funcionais e com renda familiar de até um salário-mínimo. A média de idade foi de 65 anos (± 9,63). A consistência interna do Índice de Barthel foi satisfatória, com valores do coeficiente alfa de Cronbach na ordem de 0,897 a 0,918. A correlação total de itens corrigidos foi superior a 0,4 e o alfa de Cronbach com item deletado também foi superior a 0,8. As atividades nas quais se verificou maior dificuldade de realização foram micção e evacuação. Verificou-se associação entre a capacidade funcional e a raça, a faixa etária e a escolaridade. *Conclusão:* Constatou-se que os fatores sociodemográficos podem interferir na capacidade funcional de idosos acometidos por acidente vascular encefálico. Nesse sentido, acredita-se que este trabalho possa ter contribuído para a reflexão sobre essa problemática, auxiliando, dessa forma, na promoção do acesso de tais pessoas aos programas assistenciais de saúde.

Palavras-chave: Idoso. Acidente vascular encefálico. Avaliação geriátrica. Pessoas com deficiência. Atividades cotidianas. Fatores socioeconômicos.

INTRODUCTION

According to the Brazilian Institute of Geography and Statistics (IBGE)[1], the Brazilian population is in a process of demographic restructuring, showing a decrease in fertility rates, a reduction in mortality, and a consequent increase in life expectancy.

In Brazil, the elderly population, which showed a growth between 1990 (7.2%) and 2010 (10%), will grow in magnitude from 2020, going from 28.3 million (13.7%) to 52 million (23.8%) in 2040, which represents almost a quarter of all the inhabitants of the country[2].

Consequently, diseases typical of old age have shown an increasing prevalence in society[3]. Among them is the cerebrovascular accident (CVA), or stroke, which can be considered as the interruption of the cerebral blood supply due to an extravasation or obstruction of the blood vessel, caused by clots[4]. There is a high incidence of CVA among the elderly individuals, with its peak between the sixth and the seventh decades of life[5,6]. Worldwide, it is the second cause of death in adults and the first cause of functional incapacity for activities of daily living[4].

Data from a prospective Brazilian study indicate an annual incidence of 108 cases per 100,000 inhabitants, a fatality rate at 30 days of 18.5%, and at 12 months of 30.9%, the recurrence rate after a stroke episode being of 15.9%. Approximately one year after the first stroke, physical independence (for 66% of survivors) and occupation (for 75% of survivors) are the most affected domains[7].

The most frequently observed complication after a stroke is motor impairment[8]. Around 85.2% of survivors have some degree of motor impairment. As a result of the sequelae, subjects most often exhibit impaired ability to perform basic activities of daily living, such as eating, getting dressed, grooming, bathing, using the toilet, and walking[5].

Therefore, as a consequence of stroke, impairment of the survivors' functional capacity can be observed[9-11]. In this sense, functional capacity comprises the ability to maintain physical and mental abilities for autonomous and independent conduction of life[12]. Thus, functional capacity is relevant in the planning and implementation of innovative policies aimed at the care of the elderly, focused on the quality of life.

In this sense, functional capacity can be assessed through the subject's difficulty in performing their activities of daily living, which comprise the basic activities of daily living (BADLs), as well as the instrumental activities of daily living (IADLs). Activities of daily living are defined as self-care activities, such as eating or using the toilet. Therefore, they are indispensable for the maintenance of quality of life[5].

The present research will enable the exercise of healthcare for the elderly affected by a stroke, as well as the elaboration and adequacy of public health policies aimed at this population, with emphasis on self-care.

Believing the premise that sociodemographic factors may interfere with the patient's level of ability to perform BADLs, the objective was to verify the associations between sociodemographic factors and the functional capacity of elderly people affected by stroke.

METHODS

This is a cross-sectional epidemiological study with a quantitative approach, conducted in 2015, in the city of Campina Grande, Paraíba, Brazil.

The population was composed of elderly people affected by stroke, registered to the units of the Family Health Strategy (ESF) in the city of Campinas. The sample consisted of 118 elderly people with muscular paralysis caused by CVA, registered in one of the 64 ESF units of the urban zone in the city. It should be noted that no sample calculation was performed, only a population census. In this sense, the 118 elderly patients with paralysis (monoplegia, paraplegia, tetraplegia, triplegia, or hemiplegia) due to stroke were included in the study, as they met the inclusion criteria: age greater than or equal to 60 years, and clinically diagnosed with stroke.

In 2010, the city of Campina Grande had a population estimated at 400,000 inhabitants, of whom 42,817 were elderly, or 10.7% of them. In the scope of primary health care (PHC), the municipality has 64 units of the ESF, comprising 85 Family Health teams, equivalent to a coverage of 77% of the population, as well as three teams from the Community Health Agents Program (PACS)[1].

The data were obtained through home visits, with follow-up of a community health agent of the ESF, responsible for each micro-area. Two visits were made: one to establish contact, explain the research, and obtain the free and informed consent of the participants.

On this meeting, a second visit was scheduled for the elderly who agreed to participate in the application of questionnaires I and II.

Questionnaire I was used to investigate the sociodemographic variables, while Questionnaire II (Barthel Index) was applied to evaluate the functional capacity of the participants for the BADLs: hygiene, getting out of bed, dressing, feeding, bladder and bowel control, walking, climbing stairs, using the restroom, sitting on a chair, and bathing. Each item included questions that received scores 5, 10, or 15, depending on the independence or need for help performing the activity. The overall result obeyed a growing scale ranging from 0 to 100 points. A score equal to 100 means total independence; 60 I − 100, slight dependence; 40 I − 60, moderate dependence; 20 I − 40, severe dependence and < 20, total dependence[13].

The data collected were analyzed using the Statistical Package for the Social Sciences (SPSS), version 20.0 for the Windows operating system, considering a statistical significance of 0.05. For the sociodemographic data and the Barthel index scores, frequencies, averages, and standard deviation were calculated. To verify the internal consistency of the Barthel index questionnaire, the Cronbach's alpha coefficient was used. To analyze the associations between sociodemographic factors and functional capacity data for BADLs, the frequency ratios were compared using the χ^2 and Fisher's tests.

In carrying out the tests, the variables were dichotomized. Thus, the Barthel index items were considered as follows: dependent = moderate, severe or total disability; independent = light or total functional capacity.

The project was approved by the Research Ethics Committee of *Universidade Estadual da Paraíba*. Only after the approval, data collection began, respecting the rights to secrecy, privacy, and refusal at any time of the investigation, without any type of burden.

RESULTS

SOCIODEMOGRAPHIC PROFILE

Table 1 shows the sociodemographic data related to the sample. Most of the participants are female, with a ratio of 1.07 women for each man. Among the 118 participants, the age ranged from 60 to 103 years, with a mean of 65 years (± 9.63). The majority self-declared as non-white (64.4%); having a religious creed (96.6%); with up to three years of schooling (80.5%); no partner (61.1%), and with per capita income of up to two minimum salaries (79.7%).

BARTHEL INDEX INTERNAL CONSISTENCY TEST

The internal consistency of the questionnaire called the Barthel index was analyzed using the Cronbach coefficient, according to Table 2. Satisfactory reliability was verified with a total Cronbach's alpha of 0.917. The total correlation of corrected items was greater than 0.4 and of Cronbach's alpha with deleted item was greater than 0.8.

Table 1. Sociodemographic profile of the elderly affected by stroke, Campina Grande, Paraíba, Brazil, 2015 (n = 118).

Variables	n	%
Sex		
Male	57	48.3
Female	61	51.7
Age group (years)		
60 Ⱶ 70	50	42.3
71 Ⱶ 81	37	31.4
82 Ⱶ 92	23	19.5
93 Ⱶ 103	8	6.8
Color		
Brown	47	39.8
White	42	35.6
Black	29	24.6
Religion		
No creed	4	3.4
Catholic	77	65.3
Evangelical	36	30.5
Kardecist	1	0.8
Schooling (years of study)		
0	50	42.4
1 to 3	45	38.1
4 to 8	12	10.2
9 to 12	7	5.9
> 12	4	3.4
Marital status		
Single	16	13.6
Married	42	35.5
Stable union	4	3.4
Divorced	12	10.2
Widowed	44	37.3
Per capita income (minimum wage)		
1*	50	42.4
2	44	37.3
≥ 3	24	20.3

*Minimum wage of BRL 788.00.

FUNCTIONAL CAPACITY FOR BASIC ACTIVITIES OF DAILY LIVING

The functional capacity frequencies for basic activities of daily living are presented in Table 3. In percentage terms, the activities in which there was greater difficulty were micturition (73.8%) and evacuation (66.9%), while those with greater independence were climbing and descending stairs (44.1%) and washing (39%).

As shown in Figure 1, 37.3% (n = 44) of the participants ranged from moderate to total dependency.

Table 2. Barthel index tested with total Cronbach's alpha coefficient, full correlation corrected items, and alpha with deleted item, Campina Grande, Paraíba, Brazil, 2015.

Barthel Index items	Total correlation of items corrected	Cronbach's alpha coefficient if item is deleted	Total Cronbach's alpha
Eating	0.744	0.907	0.917
Washing	0.812	0.909	
Getting dressed	0.828	0.900	
Grooming	0.754	0.911	
Evacuating	0.492	0.918	
Urinating	0.510	0.918	
Using the toilet	0.874	0.897	
Moving	0.836	0.901	
Walking	0.737	0.912	
Climbing stairs	0.692	0.908	

Table 3. Frequencies of the functional capacity of elderly affected by stroke, Campina Grande, Paraíba, Brazil, 2015 (n = 118).

Basic activities of daily living	Overall	
	n	%
Eating		
Independent	15	12.7
Help	30	25.4
Dependent	73	61.9
Washing		
Independent	46	39
Dependent	72	61

Table 3. Continuation.

Basic activities of daily living	Overall	
	n	%
Getting dressed		
Independent	32	27.1
Help	25	21.2
Dependent	61	51.7
Grooming		
Independent	42	35.6
Dependent	76	64.4
Evacuating		
Normal Continence	11	9.3
Casual accident	28	23.8
Incontinent	79	66.9
Urinating		
Normal Continence	24	20.3
Casual accident	7	5.9
Incontinent	87	73.8
Using the toilet		
Independent	38	32.2
Help	14	11.9
Dependent	66	55.9
Moving		
Independent	26	22
Little Help	10	8.5
Huge Help	21	17.8
Dependent	61	51.7
Walking		
Independent	45	38.1
Help	3	2.5
On a wheelchair	28	23.7
Dependent	42	35.7
Climbing stairs		
Independent	52	44.1
Help	36	30.5
Dependent	30	25.4

RELATIONSHIP BETWEEN SOCIODEMOGRAPHIC FACTORS AND FUNCTIONAL CAPACITY

Table 4 shows that race (p = 0.027), age group (p = 0.001), and schooling (p = 0.041) are sociodemographic factors that are associated with the functional capacity of the elderly people with muscular paralysis due to CVA.

DISCUSSION

Among the participants of this study, there was a predominance of females. This finding differs from the study carried out in different health services in the city of Campinas, in the State of São Paulo, which used a convenience sample and evaluated the variable sex among the elderly individuals with stroke, concluding that they were predominantly male[14]. This fact can be explained by the difference between the selections of the study samples, since the relationships in the literature indicate that women are normally more dependent on daily activities than men, although they have a longer life expectancy with low quality[5,12].

Regarding age, the majority of the participants self-reported an average age of 65 years (± 9.63). Another study, carried out in Natal, State of Rio Grande do Norte, Brazil[9], aimed at evaluating the functional capacity of hemiplegic individuals after a stroke, emphasized that this disease has a higher incidence in people with advanced age, a period of life in which large death rates and sequelae can be observed.

With regard to to the other social variables, most of the subjects self-reported as being unmarried, and having low schooling and low family income. These results are worrying, as the consequences of stroke extend beyond mobility, interfering in the subjects' physical and mental abilities[10]. An elderly person affected by stroke is often a
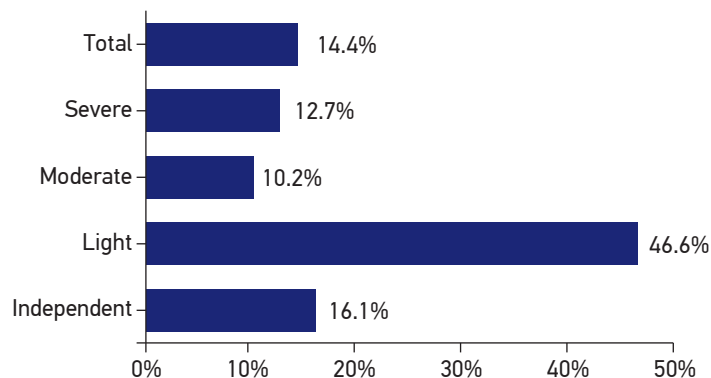

Figure 1. Distribution of mean scores of functional capacity of elderly affected by stroke, Campina Grande, Paraíba, Brazil, 2015.

Table 4. Associations between sociodemographic factors and functional capacity of the elderly affected by stroke, Campina Grande, Paraíba, Brazil, 2015 (n = 118).

Sociodemographic variables	Functional capacity				χ^{2*}	p-value
	Dependent		Independent			
	n	%	n	%		
Sex						
Male	18	31.6	39	68.4	3.133	0.077
Female	29	47.5	32	52.5		
Color						
White	22	52.4	20	47.6	7.201	0.027
Brown	19	40.4	28	59.6		
Black	6	20.7	23	79.3		
Age group (years)						
60 to 70	11	22	39	78	17.298	0.001
71 to 81	15	40.5	22	59.5		
82 to 92	15	65.2	8	34.8		
93 to 103	6	75	2	25		
Religious belief						
No	1	25	3	75	0.380	0.477
Yes	46	40.4	68	59.6		
Schooling (years)						
< 10	46	42.6	62	57.4	4.057	0.041
≥ 10	1	10	9	90		
Marital status						
No partner	30	41.7	42	58.3	0.260	0.610
Partner	17	37	29	63		
Per capita income (minimum wage)						
1*	19	38	31	62	4.171	0.124
2	22	50	22	50		
≥ 3	6	25	18	75		

*In cases smaller than five, the Fisher test was considered. Dependent: moderate, severe, or total disability; Independent: light or total incapacity of functional capacity; Minimum wage of BRL 788.00.

dependent person, who becomes partially or completely dependent on other people; in theses cases, the assistance is primarily exercised by the spouse, in order to satisfy their basic needs[14].

Regarding the frequencies of functional capacity for activities of daily living, the activities in which there was greater difficulty of accomplishment were urination and evacuation. This result differs from those found in a study conducted in Rio Grande do Sul, in which all participants had normal intestinal continence, and slightly more than half had normal urinary continence[15]. Difficulties in eliminations cause impairment of functional capacity, as well as may cause embarrassment for individuals, leading to, in several cases, social isolation[16].

Regarding functional capacity, a considerable frequency of the light dependence and independent levels was observed. Study on the functional capacity of the elderly after ischemic stroke, performed in the city of Fortaleza, Ceará, obtained a similar result. This, therefore, requires the caregivers to help with the activities of daily living in order to maintain the functional capacity of the elderly according to the individual characteristics of each situation, constituting one of the most important attributions of health professionals and lay caregivers[17].

Another study conducted using the Katz and Lawton scale to evaluate the functional ability of individuals with disabilities due to stroke has concluded that most of the elderly people affected by stroke carry out their activities of daily living independently and autonomously[16]. This fact suggests a more accurate analysis of each scale's way of measuring, in order to compare the results obtained.

Regarding the association between sociodemographic factors and the functional capacity of elderly people with muscle paralysis due to stroke, a significant result was observed in the variables age, race, and schooling. This result was corroborated by the study on the evaluation of functional capacity in the elderly with stroke, which verified the age as inversely proportional to the functional independence measure, that is, the greater the age, the lower the functional capacity presented by the elderly[14].

With regard to skin color, brown was predominant. A study carried out in the city of Montes Claros, State of Minas Gerais, on the functional capacity among the elderly and the factors associated with disability found a higher incidence of disabilities in the self-reported brown elderly[18]. These findings could be constituted by differences in socioeconomic conditions between ethnic groups, which, in theory, would favor the morbidity profile of this population, with consequent interference in the functional capacity of these individuals.

With regard to schooling, a survey applied with elderly in the urban area of São Paulo observed an association of schooling with functional decline in the elderly[19]. Low education has been related to the increase in the incidence of stroke, especially when associated with socioeconomic factors and limited information, primarily by impeding health knowledge and adherence to treatment, as well as maintaining healthy habits, while a higher level of schooling converges for greater longevity and better maintenance of lifestyles related to cardiovascular diseases[20].

CONCLUSIONS

The data analyzed show that most of the elderly people affected by stroke in Campina Grande are women, with low schooling and income, with a religious belief and without a partner. Although the participants presented disabilities in some variables, the sample was classified with a light degree of dependence. An association was found between race, age group, and schooling with the ability to perform BADLs. Thus, it is concluded that sociodemographic factors can interfere in the functional capacity of the elderly affected by stroke.

One limitation of the study that can be indicated is the impossibility of determining the directionality of the associations, since it is a cross-sectional study. It should be noted that the lack of similar studies, with respect to the approach and instruments used, made it impossible to compare the data obtained more accurately.

In this sense, it is believed that this work contributed to the reflection on this problem, thus helping in the promotion of the access of such people to the assistance programs developed by the ESF, in the improvement of the living and health conditions, as well as in the reproducibility of the method used by other studies.

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