Quality of life of patients with stroke rehabilitation

Qualidade de vida de pacientes com acidente vascular cerebral em reabilitação

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Descritores
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Abstract

Objectives: To evaluate and correlate quality of life and depression of patients in rehabilitation after stoke.
Methods: A transversal study conducted in two rehabilitation services with patients after stroke. Information collected included sociodemographic data, the Medical Outcome Study Short-form 36 - item Health Survey, the Stroke Specific Quality of Life Scale, the Barthel Index and the Beck Depression Inventory.
Results: The sample consisted of 139 patients, with a mean age of 59.4 years; 59% were male. The general and specific quality of life scores were compromised. According to the Barthel Index, 49.6% of the patients presented moderate to severe dependency, and 49.7% had depressive symptoms according to the Beck Depression Index; there was no positive correlation between these data and general and specific quality of life.
Conclusion: General and specific quality of life of patients in rehabilitation, after stroke, presented compromised domains.

Resumo

Objetivos: Avaliar e correlacionar a qualidade de vida e depressão de pacientes após acidente vascular cerebral em reabilitação.
Métodos: Estudo transversal realizado em dois serviços de reabilitação, com pacientes de acidente vascular cerebral. As informações coletadas foram sociodemográficas, o Medical Outcome Study 36 - item short-form health survey, o Stroke Specific Quality of Life Scale, o Índice de Barthel e o Inventário de Depressão de Beck.
Resultados: A amostra foi constituída de 139 pacientes, idade média 59,4 anos e 59% eram homens. Houve comprometimento dos escores da qualidade de vida geral e específica. Segundo o Índice de Barthel 49,6% dos pacientes apresentavam dependência moderada a severa e 49,7% tinham sintomas depressivos, conforme Inventário de Depressão de Beck, não havendo correlação positiva entre estes dados e qualidade de vida geral e específica.
Conclusão: A qualidade de vida geral e específica dos pacientes com acidente vascular cerebral, em reabilitação, apresentou domínios comprometidos.

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Introduction

Stroke is frequent in adults and is the second leading cause of death in the world and the first cause of functional incapacity for activities of daily living. According to the World Health Organization, 15 million people present with stroke annually, and of these five million die as a result of the event and a large part of the survivors present physical and/or mental sequelae. Discrete changes are manifested by 37% of the patients after stroke, 16% present moderate incapacity, 32% present intense or severe changes in functional capacity, and others depend on a wheelchair or are confined to bed. The sequelae generate economic, social and family impacts, while 15% of the patients present no deficit in functional capacity.[1,2,3]

The patients with physical and/or mental sequelae require dynamic continuous, progressive and educational rehabilitation, to attain functional restoration, family, community and social reintegration, as well as to maintain the level of recuperation and quality of life.[4]

International research has addressed and function after stroke, but in Brazil the studies are limited. The stroke is a sudden event and it affects the individual and the family who, in general, are not prepared to deal with its sequelae, which are responsible for a large portion of retirement due to disability.[5,6]

The study of conducted in patients who had experienced a stroke showed major compromise in the domains of immediately after stroke, and during the rehabilitation showed improvement in some domains. The domains most affected in patients in these studies were: physical function, emotional role, social role, vitality, mental health, and general state of health. The domain least compromised in other research was that of pain.[7,8]

The objective of this study was to evaluate the of patients in rehabilitation after suffering a stroke, and to correlate it to sociodemographic, clinical and functional variables.

Methods

This was a transversal study conducted in two rehabilitation services in the city of Maceió, northeast of Brazil, in the state of Alagoas, in the Physical Medicine Service of the Municipal Post and the Association of the Physically Disabled. The inclusion criteria were: patients 18 years of age or older, with more than three months in a rehabilitation program for stroke. Exclusion criteria were: patients with aphasia, deafness or significant decrease in hearing, and patients with cognitive disorders that prevented understanding of the questionnaires.

The sample size calculation considered a sampling error of 0.08% and data from the local Unified Health System provided hospitalization numbers for public and private hospital patients with ischemic and hemorrhagic acute stroke, in 2007. From the 1.231 hospitalizations during that period, the sample size calculation defined a need for 139 patients for this study.

The data collection instruments considered sociodemographic, economic and clinical data of the patients; questionnaire *Medical Outcome Study Short-form 36-item Health Survey*,[9] questionnaire *Stroke Specific Scale*,[10] the Barthel Index[11] and the Beck Depression Inventory.[12]

The generic questionnaire of , the *Medical Outcome Study Short-form 36-item Health Survey* (SF-36), was translated and validated in Brazil and is composed of eight dimensions. The socre of the dimensions ranges from zero (worst state) to 100 (best state).[9]

The questionnaire specific for patients with a stroke, the *Stroke Specific Scale* – SSQOL (SSQOL), was translated and validated in Brazil and contained 49 items, divided into 12 dimensions. The minimum score is 49 points and the maximum is 245 points, where the higher the points obtained the better the . A study in Germany conducted with this instrument defined low as scores less than 60% (<147 points), and in the present study the same criterion was used.[13]

The Barthel Index is composed of ten items, and evaluates functional independence in patients

with cerebrovascular disease or with other neurological conditions. The score varies from zero to 100, with scores less than 45 considered to be severe dependency for performing activities of daily living; major dependency was between 45 and 59; moderate dependency was considered to be between 60 and 80; minor dependency was between 81 and 100.[11]

The Beck Depression Inventory was validated and translated in Brazil, and composed of 21 items that identify dysphoric or depressive signs and symptoms. Each question has four alternative response options that describe traits that characterize these conditions. The responses vary between zero (absence of symptoms) and three (very accentuated symptoms). For classification in this study we considered values of up to 15 points as lacking signs of depression; between 16 and 20 points as the presence of dysphoric symptoms; and more than 20 points, as the presence of depressive symptoms being evident.[12,14]

The research subjects were randomized and the data were collected in the previously mentioned health services. The descriptive analyses of the qualitative variables were presented in absolute and relative frequencies, and for quantitative variables the measures of distribution (mean, standard deviation, median and range) were used.

The *student's t-test* was used for comparison of the domains of the SSQOL for two categories of response, with 5% considered to be the level of significance. The ANOVA test was used to compare the SSQOL with more than three categories of responses. In these cases of differences, adjustments were made using the *Brown Forsythe test* and the *Bonferroni test*, with 5% considered to be the level of significance. The *Pearson correlation coefficient* was applied to verify correlation between the SSQOL, quantitative variables, SSQOL with the SF-36, Barthel Index and the Beck Depression Inventory. The criteria for classification of the correlation coefficients were: moderate (0.5 to <0.7) and high degree (>0,7). A regression analysis was completed between the SSQOL scores and the sociodemographic variables and SF-36 scores, Barthel Index and the Beck Depression Inventory. For the variables that presented at least a moderate correlation, we used the *Stepwise test*. The statistical application used was the *Statistical Package for the Social Sciences* (SPSS) version 15.0, and the level of significance for these tests was 5%. The research was developed attending to the national and international ethical norms for research with human subjects.

Results

Of the total of 181 patients evaluated, 139 were included and 42 patients were excluded: two due to death, one refused, and 39 for limitations in speech, hearing and/or cognitive function that compromised communication at the time of data collection. Among these participants, 59% were men, the mean age was 59.4 years, 59% were married, 59% had completed primary education, and 67.6% earned the minimum wage (Table 1).

The most compromised dimensions of the SF-36 were: functional capacity, physical aspects, general state of health, social and emotional aspects. The most compromised dimensions of the SSQOL were: mobility, work, upper limb function, behavior, family relationship, social relationship, and energy. A large part of the patients (49.6%) presented moderate to severe dependency for activities of daily living, and 49.7% of patients demonstrated the presence of dysphoric or depressive symptoms (Table 2).

Many correlations of moderate and high degree were encountered between the dimensions of the questionnaires administered to the patients with stroke, in rehabilitation, that demonstrated compromise in various aspects of their lives and decline in their (Table 3).

The level of dependence on the caregiver, the number of stroke, the level of education, female gender and higher number of individuals dependent on the salary were variables that negatively interfered with specific (Table 4).

Table 1. Characteristics of patients with stroke

Characteristics	n(%)
Gender	
Male	82(59.0)
Female	57(41.0)
Age (years)	59.4±11.0
Education	
Illiterate	38(27.4)
Primary School	82(59.0)
Middle School	12(8.6)
Higher Education	7(5.0)
Salary	
No salary	16(11.5)
Minimum wage	94(67.6)
More than one time the minimum wage	29(20.9)
Indiciduals dependent on income	3(1-14)
Marital status	
Married	82(59.0)
Single	14(10.1)
Divorced	16(11.5)
Windowed	27(19.4)
Type of housing	
Shelter	3(2.2)
Apartment	7(5.0)
House	127(91.4)
Shack	2(1.4)
Time since stroke (months)	21(3-316)
Time in rehabilitation (months)	12(4-112)
Time of initiating rehabilitation after stroke (months)	3(1-036)
Classification of stroke	
Ischemic	116(83.5)
Hemorrhagic	23(16.5)
Number of stroke	1(1-4)
Type of sequelae	
Motor	74(53.2)
Motor and speech	65(46.8)
Pacient with caregiver	
Yes	135(97.1)
No	4(2.9)
Level of dependency	
No dependency	8(5.8)
Parcial dependency	93(66.9)
Total dependency	38(27.3)
Type of relationship to caregiver	
Wife	58(41.7)
Husband	22(15.8)
Child	13(9.4)
Others	42(30.4)
No cargiver	4(2.9)

Legend: Values expressed in Numbers (%), Mean (± Standard Deviation) or Median (Range)

Table 2. Scores of the SF-36, SSQOL, Barthel Index and Beck Depression Inventory in patients in rehabilitation after stroke

Dimension	Mean (± SD)
SF-36	
Functional capacity	11.4±20.0
Physical aspects	2.9±12.8
Pain	72.4±26.8
General state of health	44.6±16.1
Vitality	58.0±28.4
Social aspects	39.7±32.8
Economics aspects	2.6±12.1
Mental health	59.6±25.6
SSQOL	
Personal care	15.9±5.6
Vision	12.4±3.2
Language	18.9±5.5
Mobility	17.7±7.0
Work	5.7±2.8
Upper limb function	13.1±6.3
Mode of thinking	9.2±4.1
Behavior	7.2±3.8
Mood	17.0±6.3
Family relationship	6.5±3.4
Social relationship	7.7±4.2
Energy	8.1±4.6
SSQOL total	139.7±38.4
Barthel Index	
Severe dependency	19(13.7)
Major dependency	16(11.5)
Moderate dependency	34(24.4)
Minor dependency	70(50.4)
Beck Depression Inventory	
Without depressive synptoms	70(50.3)
Dysphoric symptoms	40(28.8)
Depressive symptoms evident	29(20.9)

Legend: Values Expressed in Mean ± Standard Deviation; SF-36 – Medical Outcome Study Short-Form 36 - Item Health Survey; SSQOL - Stroke Specific Quality of Life Scale

Table 3. Linear correlation between dimension of the SSQOI and SF-36, Barthel Index and Beck Depression Inventory in patients with stroke, in rehabilitation

SSQOL	SF36								BI	BDI
	FC	PA	P	GHS	V	SA	EA	MH		
Personal care	0.55	0.26	0.15	0.25	0.33	0.61	0.28	0.16	077	-0.31
Vision	0.14	0.14	0.15	0.13	0.20	0.22	0.11	0.27	0.11	-0.26
Language	0.24	0.19	0.17	0.22	0.37	0.31	0.13	0.28	0.17	-0.27
Mobility	0.65	0.35	0.27	0.37	0.39	0.60	0.29	0.23	0.79	-0.37
Work	0.64	0.40	0.14	0.28	0.39	0.52	0.43	0.25	0.57	-0.36
UL function	0.55	0.27	0.20	0.35	0.35	0.49	0.26	0.19	0.60	-0.34
Mode of thinking	0.22	0.27	0.24	0.34	0.47	0.35	0.22	0.43	0.18	-0.47
Behavior	0.05	0.20	0.20	0.16	0.34	0.19	0.10	0.55	0.01	-0.43
Mood	0.29	0.26	0.26	0.34	0.56	0.40	0.19	0.54	0.23	-0.68
Family relationship	0.43	0.29	0.30	0.42	0.47	0.56	0.23	0.43	0.42	-0.59
Social relationship	0.42	0.37	0.22	0.33	0.40	0.51	0.32	0.34	0.36	-0.50
Energy	0.28	0.28	0.30	0.36	0.59	0.29	0.17	0.52	0.23	-0.54
SSQOL total	0.58	0.41	0.33	0.45	0.61	0.65	0.34	0.51	0.60	-0.64

Legend: SSQOL - Stroke Specific Quality of Life Scale; SF-36 - Medical Outcome Study 36-Item Short-Form Health Survey; BI – Barthel Index; BDI – Beck Depression Inventory; FC – Functional Capacity; PA – Physical Aspects; P – Pain; GHS – General Health State; V – Vitality; SA – Social Aspects; EA – Emotional Aspects ; MH – Mental Health; UL – Upper Limb

Table 4. Linear regression analysis between the total score of the SSQOL and significant variables of patients with stroke, in rehabilitation

	Coefficient	p-value
Constant	245.0	< 0.001
Level of dependence on caregiver	-34.8	< 0.001
Number of stroke	-10.8	< 0.001
Elementary school	19.6	< 0.001
Middle school	23.2	< 0.025
Female gender	-11.0	< 0.051
Individuals dependent on income	-2.8	< 0.053

Legend: $r^2 = 0.362$

Discussion

The inexistence of research about the theme in the northeast region of the country limited comparisons with the findings of this study. The state of Alagoas presented poor health indicators and was marked by social inequality, along with high indexes of functional incapacity, primarily among the elderly.

The evaluation of QoL, in individuals with various pathologies, has frequently been studied in the area of health, since the struggle and achievements attained by increased survival have not yet been capable of satisfactorily resolving the maintainance of its quality.

One of the events that can substantially compromise the life of individuals and the satisfaction of living is the occurrence of a stroke, because it presents a potential limitation in all physical as well as emotional aspects.

The occurrence of a stroke predominantly impacts individuals of the male gender, which also occurred in this study, however when affected, women presented a lower QoL, possibly due to the functional impairments present that limited their domestic activities.[8,15,16]

This type of pathology affects for the most part, black individuals with an average age greater than 65 years. In the current study, the incidence was higher in people with brown skin and with an average age lower than that reported in the literature, 59.4 years, which may reflect the population characteristics of the study location and the inclusion of younger people.[17]

Low educational level has been linked to the high incidence of stroke, especially when combined with socioeconomic and cultural factors and difficulty of access to information, in addition to impairing the awareness of health care, treatment adherence and maintenance of lifestyle, while higher education points to increased survival, better control of risk factors for cardiovascular disease and greater ability to return to work. In this study, 86.4% of patients did not surpass primary school and 79.1% had income below the poverty level, corroborating the associations made earlier.[3,5,18,19]

The incidence of ischemic disease in question, varies between 62.2% and 85.0%, consistent with our findings (83.5%), while the survival rate is related to age, health service used, type and recurrence of stroke, resulting disability, and associated diseases.[18]

There is a need for family involvement in the disease process, which may account for the high prevalence of patients who had a caregiver in this study, 97%.[16]

The completion of rehabilitation activities is essential for successful treatment after a stroke. In this study the majority of patients performed two to three rehabilitation therapies, twice per week. The type of rehabilitation therapy most commonly used was physiotherapy (86.3%). Another study found a higher percentage of patients who performed physiotherapy, with a frequency of up to five times weekly, and good results.[20]

The analyzed by means of some dimensions or domains that were part of the context of the human being was affected and generally tended to be compromised in the presence of chronic diseases and acute diseases and their consequences. In this study the most compromised domains, according to the SF-36, were: functional capacity, physical aspects, general state of health, social aspects and emotional aspects. Studies conducted with the same type of patients and questionnaires, revealed that all of the scores were below 50, before the initiation of activities of rehabilitation and became improved after these activities. The compromise of these dimensions generated negative consequences for the evolution of the state of health of the patients.[3,8,15,21]

According to the SSQOL, the specific domains most affected in the study, which are those that could be triggered in the presence of the disease or its consequences, were: mobility, work, upper limb function, behavior, family and social relationships, and energy. Other authors also encountered scores below 40 in the domains: energy and work, upper limb function and social relationship, and scores below 60 in energy, mobility, social relationship, upper limb function and work, and behavior, demonstrating that the consequences directly related to stroke are numerous and cause an impact of significant proportions.[8,10, 20,22]

Functional status is identified as one of the determining areas of the of patients, so the utiliization of strategies to improve physical function is a useful differential capable of positively improving life after stroke. However, the strategies mentioned directly depend on social support or the lack thereof. In some aspects of this study, this could partially explain the low of the patients analyzed.[20]

The scores of the family relationship proved low, which could reflect aspects of the disease that caused caregiver role strain and patient dissatisfaction in relation to the care received from the family. Another researcher showed that good social support and quality family assistance maintained, and in some cases even improved, the of the patients.[20,23]

The presence of sequelae after stroke, generated dependence on the part of the patients for the performance of activities of daily living. In this study, 49.6% of patients had moderate to severe dependency, consistent with findings in the literature ranging between 31% and 62%.[20]

Psychiatric disorders are identified as determinant factors of the disabilities in patients after stroke, and depression is the most prevalent and is associated with a poorer prognosis, due to the significant compromise of motor and cognitive rehabilitation.[24]

Functional and cognitive disorders, previous history of depression, previous stroke and their neuroanatomical characteristics, a precarious social support network and severe disability are risk factors associated with the occurrence of depression. Some authors pointed to consequences of depression such as prolonged hospitalization, greater functional and cognitive impairment, limitation in performing daily activities, reduction of survival and lack of functional response during rehabilitation.[25,26] In the present study, 49.7% of the patients presented evident dysphoric or depressive symptoms. In other studies a percentage of patients with depressive symptoms was 40% after the event, 23% in the third month and 18% in the sixth month, and during the rehabilitation and incidence of depression was 16.6%. With the presence of depression and dependency on a caregiver for completing activities of daily living, a significant decrease in all of the SF-36 domains occurred.[5,27,28]

The patients of this study that depended on caregivers for activities of daily living presented lower QoL in the specific domains of SSQOL. A linear correlation of the total SSQOL score and SF-36, Barthel Index and the Beck Depression Inventory showed a moderate to strong level of correlation. Another study encountered correlation values of SSQOL of 0.85, 0.79 and 0.68, respectively.[17]

This study showed a strong association between the Barthel Index, and two domains of the SSQOL, personal care (0.77) and mobility (0.79). A multiple regression analysis between the total score of the SSQOL and the variables, degree of dependence on the caregiver, number of stroke, elementary/middle school, female gender and number of people who depended on income identifed a r^2 = 0.362. The r^2 between the Beck Depression Inventory and the sociodemographic, economic, clinical and the total SSQOL was 0.729.

The degree of dependency on the caregiver for the performance of activities of daily living, the number of stroke and the presence of signs of depression were the variables largely responsible for altering the specific , measured by SSQOL, of patients in this study.

The presence of caregivers is considered essential for the treatment of patients who have had a stroke, however, their intervention needs to be positive in order to influence the recovery and rehabilitation of patients, by means of incentives, neither underestimating nor overestimating the patient's capacity.[29]

The study about in patients with stroke showed that variables such as physical function deficit, presence of depression or its symptoms, being of female gender, and advanced age could negatively influence . Women with stroke had lower , especially, in the mental health domain, regardless of age, severity and etiology of stroke, and presence of other comorbidities.[15,30]

Conclusion

The general and specific of patients with stroke, in rehabilitation, is diminished and correlated to the limitations in performing activities of daily living. The presence of dysphoric or depressive symptoms, major degree of dependence on the caregiver, higher number of stroke, lower level of education, female gender, and the higher number of people dependent on income interfered negatively in the specific .

Collaborations

Rangel ESS; Belasco AGS and Diccini S declare that they contributed to the concept and design of the project, analysis and interpretation of the data; drafting of the article, critical revision related to intellectual content and approved the final version to be published.

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