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Research Article

Depression, activities of daily living and quality of life in elderly stroke patients

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Abstract. Aim: The aim of the present study is to examine the relationship between the activity of daily living performances and degree of after stroke depression, as well as, the quality of life (QOL) in Romanian elderly stroke survivors. Material and Method: For this study, 75 patients with stroke were recruited at the Hospital of Psychiatry and Neurology Oradea. The patients were evaluated using Mini Mental State Examination, The Beck Depression Inventory, ADL scale, IADL scale and The WHOQOL-BREF. Results: The results showed significant negative correlations between depression IADL, ADL and quality of life in patients with stroke. Conclusion: The findings in our study add to the already vast literature on depression in stroke patients, and further demonstrate its continuous association with unfavorable outcomes on quality of life.

Key Words: stroke patients, depression, quality of life.

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Introduction

Stroke or cerebrovascular accident (CVA) is a complicated, heterogeneous condition with complex and enduring sequelae (Hill et al 2009). Stroke is one of the most prevalent disorders of old age. It is increasing in incidence mainly as a consequence of the growing population of elderly people (Rothwell et al 2004). Improvements in acute stroke care have helped more people to survive the initial event but, while mortality has been reduced, stroke remains a major cause of disability (Hill et al 2009). Half the survivors of the initial stroke event (about one third of all acute strokes) are left with some degree of physical disability, which can range in effect from moderate to severe. Stroke often results in major changes in a person's life: a stroke survivor can suffer loss of health, occupation, social role, and independence (Whyte&Mulsant 2002). Stroke has a huge impact on the patient's capacity to perform activities of daily living (ADL) (Haghgoo et al 2013). Prevalence of patients who survived stroke and who required care in at least one activity of daily living (ADL) has been estimated in 173/100000 (Bonita et al 1997). ADL involves activities of self-care, such as eating, washing and dressing, and are usually defined as physical self-maintenance tasks.

Depression is an important contribution to poor quality of life. It occurs in about a third of stroke survivors in the first months after stroke (Hackett et al 2006). There is no agreement in the prevalence rates for depression after stroke, the reports of various studies range from 18% to 61% (Nydevik et al 1991; Astrom et al 1993; Robinson et al 1982; Mayo et al 2002)

Dependence in activity of daily life, alteration of emotional and psychological status, and deterioration in social communication can influence the quality of life (QoL) in patients with stroke (Clarke et al 2000). Various studies have shown a reduced QoL in patients with stroke compared with healthy individuals (Gunaydin et al 2011).

There are a number of studies who revealed the relation between depression in stroke patients and ADL or QOL (Haghgoo et al 2013; Kwok et al 2006; Herrmann et al 1998; Chong 1995; Carod-Artal et al 2009). Depression has negative effects on the QOL (Kwok et al 2006). Significant relations were also reported between depression and ADL (Herrmann et al., 1998), and between ADL and QOL (Chong, 1995). Ability to perform ADL and suffering from depression were considered as important factors influencing QOL in patients with stroke (Carod-Artal et al 2009).

The aim of the present study is to examine the relationship between the activity of daily living performances and the level of depression, as well as, the quality of life (QOL) in Romanian elderly stroke survivors.

Material and methods

Participants

For this study, 75 out-patients with stroke were recruited at the Hospital of Psychiatry and Neurology Oradea between September 2014-June 2015.

Participants were selected based on the inclusion criteria that consisted of: stroke diagnosis by a neurologist according to the WHO (1983)-criteria and confirmed by clinical history, neurological examination, and imaging via computed tomography or magnetic resonance imaging, age over 65 year old, absence

of acute disorders such as cancer and/or tumors; scoring 11 or more in the Mini Mental State Examination (MMSE), absence of depression prior to stroke; absence of intellectual disability; and no history of drug abuse.
We excluded patients with bilateral hemiplegia, lack of motor involvement, severe cognitive impairment, history of depression and intellectual disability.

Instruments
There were six tools for collecting data including:
1. A socio-demographic questionnaire who collected data on age, gender, years of education, number of stroke episodes, marital status and history of psychological disorders prior to stroke.
2. Mini Mental State Examination (MMSE) an instrument who consist in 30 items with 6 subscales for orientation, registration, attention, calculation, recall, and language and praxis tests was used to estimate the severity of cognitive impairment and to classify patients as having a clinical level of cognitive impairment (Folstein et al 1975).
3. The Beck Depression Inventory (BDI) was used to assess depression among patients (Beck 1961). BDI is a questionnaire who consisted of 21 questions about how the subject has been feeling in the last week. Each question has four possible answer choices based on intensity, including the following scores: zero (''I do not feel sad''), 1 (''I feel sad''), 2 (''I am sad all the time and I can't snap out of it''), and 3 (''I am so sad or unhappy that I can't stand it''). The total score is calculated to determine the depression's severity. The BDI-II has the standard cut-off points as below: 0–9 no depression, 10-15 minimal depression; 16–19 mild depression; 20–28 moderate depression; and 29–63: severe depression.
4. The Activity of Daily Living -ADL scale (Katz et al 1963) is a career-rated instrument consisting of six daily-living abilities including basic tasks of personal care in everyday life, including bathing, continence, transfers, feeding, dressing and transferring. For this study, the questionnaire responses were made on to a Likert scale ranging from 0 (completely dependent) to 2 (independent).
5. The Instrumental Activities of Daily Living -IADL scale (Lawton&Brody 1969) measures the activities related to independent living. It is a career-rated instrument consisting of seven daily-living abilities includes items related to using the telephone, preparing meals, taking medicine, traveling, shopping for groceries or personal items, performing light or heavy housework and managing money. In a similar way to the ADL, every activity is rated on a scale that includes three choices: person is independent, person requires assistance and person is completely dependent on others. For this study, the questionnaire responses were made using a Likert scale ranging from 0 (completely dependent) to 2 (independent).
6. The WHOQOL-BREF is a 26-item instrument consisting of four domains: physical health (7 items), psychological health (6 items), social relationships (3 items), and environmental health (8 items); and two overall QOL and general health items. The physical health domain includes items on mobility, daily activities, functional capacity and energy, pain, and sleep. The psychological domain measures self-image, negative thoughts, positive attitudes, self-esteem, mentality, learning ability, memory and concentration, religion, and the mental status. The social relationships domain contains questions on personal relationships, social support, and sex life. The environmental health domain covers issues related to financial resources, safety, health and social services, living physical environment, opportunities to acquire new skills and knowledge, recreation, general environment (noise, air pollution, etc.), and transportation (World Health Organization's Quality of Life group 1996).
All the questionnaire are translated and validated in Romanian language.

Procedure
Written consent was obtained from the participants. Completion of the questionnaires was voluntary. Permission was obtained from Ethical Committee of University of Medicine and Pharmacy Oradea prior to the start of the study.

Statistical analysis
Data were analyzed using Statistical Package for Social Sciences (SPSS) version 20. Distributions of the studied variables were examined using Shapiro-Wilk's tests. Statistical significance was assumed at $\alpha \leq 0.05$. Because the data wasn't normally distributed we used non-parametric statistics - Mann-Whitney U and Spearman Rho.

Results

The main demographic characteristics of the study sample are reported in Table 1.

Table 1. Demographic characteristics of the study sample (N=75).

Variables	Stroke Patients with depression (N=50)	Stroke Patients without depression (N=25)
Gender male N(%)/ female N(%)	22 (44%)/48 (56%)	12 (48%)/13 (52%)
Mean age ± SD (years)	67.96 ± 7.74	67.98±10.68
Mean number of years in school ± SD (years)	11.2 ± 3.68	10.6 ±3.52

We assessed the level of depression using BDI. Based on the cut point in the BDI score we found that 50 (66.7%) patients had moderate to severe depression and the remaining 25 (33.3%) were not depressed. Mean score on the BDI was 20.33±13.04. At the time of inclusion in the study the patients were not treated with antidepressant medication.

Table 2 showed the scores on the MMSE in stroke patients (with and without depression).

Table 2. MMSE scores in stroke patients with and without depression

Variable		Median	Minim	Maxim	p
MMSE	**without depression**	26	9	30	0.025
	with depression	20.76	14	24	

Table 3 showed the scores on the daily activities in stroke patients (with and without depression)

Table 3. Daily activities in stroke patients with and without depression

Variables		Median	Minim	Maxim	p
ADL	without depression	27	17	50	0.04
	with depression	33.5	15	48	
IADL	without depression	5	0	7	0.04
	with depression	2	1	7	

Table 4 showed the scores on quality of life in stroke patients (with and without depression). Depressed patients had significantly lower WHO Qol bref scores on social relationship, environmental health domain. Also, the total score for WHO-QoL bref is lower on depressed patients

Table 4. WHOQOL-BREF scores in stroke patients with and without depression

Variables		Median	Min	Max	p
Physical health	without depression	10.28	6.86	14.29	0.08
	with depression	10.9	6.88	14.86	
Psychological health	without depression	12.16	8.67	14.67	0.03
	with depression	11.73	7.33	16	
Social relationship	without depression	13.33	10.67	16	<.0001
	with depression	10.66	4	17.33	
Environmental health	without depression	16	12	17.71	<.0001
	with depression	12.57	7.43	17.71	
WHO-QoL bref total score	without depression	53	44.86	58.48	<.0001
	with depression	45.81	30.86	60.48	

We found a significant negative correlation between depression and QOL (Spearman rho=-0.303, $p<0.01$).
There was a significant negative correlation between ADL and QOL (Spearman rho=-0.652, $p<0.01$) and between IADL and QOL (Spearman rho=-0.244, $p<0.05$)

Discussions

ADL performance, depression, and the QOL among stroke survivors were studied in this research. Mood disorders and especially depression are complications that occur after stroke (Obembe et al 2013; House 1987). Depression manifests itself as a combination of negative emotions: sadness, cognitive symptoms: hopelessness, guilt, worthlessness which are accompanied by numerous physical symptoms (Ghose et al 2005).
Depression is the most common psychiatric problem after stroke (Ghose et al 2005) and is associated with slower recovery, lower level of functioning, lower quality of life (Guajardo et al 2015; William et al 2004; Matsuzaki et al 2015; Singhpoo 2012) and increased mortality (Hornsten et al 2012).
There are numerous studies that have shown the relationship between depression and quality of life after stroke (Kwok et al 2006; Herrmann et al 1998; Chong 1995; Gaete&Bogousslavsky 2008).
Comparing the results of studies about quality of life in stroke patients is sometimes difficult because they use different assessment tools (Gunaydin et al 2011).
In our study, 66.7 % of stroke patients had depression. The mean score of depression assessed by BDI patients in our study was 20.33 that correspond to a moderate level of depression.
The use of BDI as assessment instrument (originally developed for patients who are suffering from clinical depression) is also suitable for patients with stroke (Lerdal et al 2014).
Our study showed negative correlations between depression and quality of life (social relationship and environment health domains), the quality of life is lower if the score of the depression is higher. The results are similar to those of the study done by Kwok et al 2008.
Patients who are non-depressed have a higher level of execution of daily activities than depressed patients, our results are similar with those of Carod-Artal et al 2009 and Gaete&Bogousslavsky 2008.
Another study had showed that a high score for depression after stroke leads to a higher degree of dependence in performing the daily activities and to a decrease in the quality of life (Jia et al 2006). Other studies involving elderly patients showed a significant negative correlation between quality of life and depression (Jonkman et al 1998; Kauhanen et al 2000; Espárrago Llorca et al 2015; Park et al 2015).

Conclusions

The results showed significant negative correlations between depression, IADL, ADL and quality of life in patients with stroke. The findings in our study add to the already vast literature on depression in stroke patients, and further demonstrate its continuous association with unfavorable outcomes on quality of life.

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