Research Article

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Quality of Life, Self-Efficacy, Disease Acceptance and Support in Stroke Patients

Edyta Laska

Collegium Medicum, Faculty of Health Sciences, Andrzej Frycz Modrzewski University, Krakow, Poland

ABSTRACT

Introduction: Stroke is a cerebrovascular disease that is the second cause of death and the leading cause of disability worldwide.

The aim of this study was to evaluate quality of life, independence, disease acceptance and social support in stroke patients, taking into account the analysis of chronic diseases - hyper-tension and diabetes and obesity.

Material and Methods: The study was carried out in 83 stroke patients from May 2024 to January 2025 at the Neurology Department with Stroke Treatment Subdivision of the Stefan Żeromski Specialist Hospital in Krakow. Approval from the bioethics committee was ob-tained.
The study was conducted using standardized survey instruments: The World Health Organi-zation Quality of Life (WHOQOL)-BREF, Lawton scale, AIS and the Multidimensional Per-ceived Social Support Scale.

Statistical analysis was developed in IBM SPSS software. Differences were assessed using the Mann-Whitney test. Spearman's correlation coefficients were used to assess relationships between quantitative variables. A p<0.05 was used as the limit of significance level.

Discussion: Quality of life after stroke depends on a comprehensive view of subjective health, including measures of perceived physical, mental and social well-being and functioning. De-mographic factors, comorbidities, patient self-efficacy and psychosocial factors and social support are important predictors of quality of life in stroke survivors and have a significant impact on the rehabilitation process and recovery.

Conclusions: The less support patients received from a significant other after a stroke, the lower the quality of life in terms of the psychological domain.

The more support post-stroke patients received from a significant person - a friend, the more independent the patients are.

Patients with hypertension definitely had a problem with stroke acceptance.

There is no relationship between quality of life in post-stroke patients and acceptance of the disease and independence.

*Corresponding author:
Edyta Laska, Collegium Medicum, Faculty of Health Sciences, Andrzej Frycz Modrzewski University, Krakow, Poland.

Abbreviations
IBM SPSS: Statistical Package for the Social Sciences
WHOQOL: The World Health Organization Quality of Life
MSPSS: Multidimensional Scale of Perceived Social Support
PSCI: Post-Stroke Cognitive Impairment
TR: Telerehabilitation
CSPS: Central Post-Stroke Pain
HSP: Hemiplegic Shoulder Pain
CRPS: Complex Regional Pain Syndrome
IASP: International Association for the Study of Pain
NFZ: National Health Fund

Introduction

Stroke is a global health problem that significantly affects mortality and causes long-term dis-ability. In Europe, stroke is the third most common cause of death and the leading cause of permanent disability in adults.

The European report shows that in 2017 alone, a total of 1.12 million Europeans suffered a stroke and 0.46 million died from it. The authors predict a 3% increase in the number of stroke incidents, a 27% increase in the incidence of cases and a 17% reduction in mortality by 2047. They also expect a reduction in the number of stroke cases in all age groups under 70 [1].

In Poland, the annual number of hospitalizations for acute ischemic stroke ranges from 70,000 to 74,000. Ischemic strokes account for more than 80% of all stroke cases, making them po-tentially eligible for highly effective reperfusion therapies [2].

The incidence of cerebrovascular accidents and dementia has increased significantly with the aging of the population. Statistically, stroke remains the second most common cause of death worldwide and ranks third as a cause of disability.

In addition to motor and sensory impairment, stroke can cause cognitive impairment. Post-stroke cognitive impairment (PSCI) is defined as any cognitive impairment, regardless of se-verity or cause, recorded after a clinically confirmed stroke and includes cognitive deficits ranging in severity from mild cognitive impairment to dementia [3].

Paradoxically, however, epidemiological studies have shown an increasing prevalence of stroke in young adults. The incidence of stroke in people aged < 45 years ranges from 5-15 per 100,000 person-years in Europe and up to 20 per 100,000 person-years in most European countries a, also 100,000 person-years in most North American and Australian populations [1].

Individuals who have suffered a stroke typically experience a wide range of symptoms, in-cluding impaired motor function, speech impairment, difficulty swallowing, cognitive deficits, visual impairment and sensory disturbances. The phases of recovery from stroke are defined as acute, subacute and chronic with clinical improvement and decrease with time after stroke, although in some patients the period of post-stroke rehabilitation can last many months, espe-cially for cognitive domains [4].

Risk factors for stroke that cannot be influenced are gender and age. Statistics from the Insti-tute of Public Health of the Republic of Serbia show that men are at higher risk and mortality is higher in women, while the risk of stroke increases with age.

People with hypertension have a threefold increased risk of stroke, while treatment of hyper-tension reduces this risk by up to 36-42% [5].

Pain is a common and highly disabling complaint in stroke survivors, more often in the chronic phase than in the acute phase. Several types of pain occur in about 19-74% of post-stroke pa-patients, with an average prevalence of 29.6%. These include central post-stroke pain (CSPS), hemiplegic shoulder pain (HSP), complex regional pain syndrome (CRPS), spasticity-related pain, myofascial pain and headache.

Chronic pain is a common symptom in post-stroke patients, which increases their disability and affects rehabilitation outcomes. To date, treating these patients has been a challenge in the neurorehabilitation setting. In fact, it is important to understand in-depth all the factors in-volved in the occurrence of pain, as well as its impact on disability and quality of life. As-sessment of specific clinical and psychological needs is unmet in post-stroke patients with chronic pain [6].

In this context, telerehabilitation (TR) is emerging as a viable solution to provide continuity of care in post-stroke symptom rehabilitation, while optimizing the timing, intensity and se-quence of interventions that are likely to have the greatest functional effect for the patient.

The use of TR is particularly useful in some areas of the world where there are geographic barriers to accessing rehabilitation centers for patients with mobility disabilities, and the de-velopment of feasible and easy-to-use TR systems is fundamental to ensuring some continuity of care and equal access to rehabilitation services.

At the same time, one of the main advantages of TR is the ability to provide therapy in the patient's home. Indeed, treatment provided in patients' social, educational and occupational settings can lead to better functional outcomes and increased family and community integra-tion. Thus, the possibility of treating a patient at home has positive effects not only in terms of time and costs associated with travel to rehabilitation centers, but also in terms of quality of life, which in turn can have a positive impact on functional improvement and quality of life in patients [4].

The purpose of this study was to assess quality of life, independence, acceptance of illness and social support in stroke patients, taking into account the analysis of the patients' chronic diseases - hypertension and diabetes and obesity.

Materials and Methods
The study was carried out in 83 stroke patients from May 2024 to January 2025 at the Neu-rology Department with Stroke Treatment Subdivision of the Stefan Żeromski Specialist Hos-pital in Krakow. Approval was obtained from the bioethics committee (KBKA 34/0/2024).

Patients gave written informed consent to participate in the study, which targeted post-stroke patients before discharge home.

The method of recruiting patients was that each post-stroke patient, before the patient was discharged home, who gave written informed consent to the study and the processing of per-sonal data was recruited into the study.

The inclusion criteria for the study group included patients who gave written, informed con-sent to participate in the study, and who completed the questionnaires correctly. On the other hand, the exclusion criteria included patients who refused to participate further in the study during the course of the study, as well as when the questionnaires were not complete or filled out correctly.

Calculations were performed using IBM SPSS software. Descriptive statistics were calculated for quantitative variables; for qualitative variables, counts were presented using percentages. Mann-Whitney tests were used to assess the significance of differences between two groups. Spearman's correlation coefficients were used to assess relationships between quantitative variables. Non-parametric methods were chosen because the distributions deviated from the normal distribution. A $p<0.05$ was used as the limit of the significance level.

The study was conducted by a diagnostic survey method using a self-administered survey questionnaire on past illnesses and treatment and the following standardized research tools:
- Abbreviated version of the quality-of-life assessment questionnaire - The World Health Organization Quality of Life (WHOQOL) -BREF
- Scale I - ADL according to Lawton
- AIS questionnaire
- Zimet's Multidimensional Scale of Perceived Social Support - MSPSS original version

Results
The relationship between the social support of post-stroke patients and quality of life, ac-ceptance of the disease and independence is shown in Table 1.
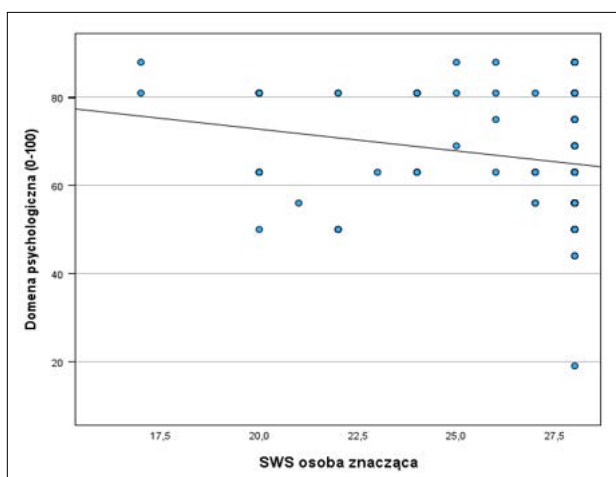
Table 1: Relationship Between Post-Stroke Patients' Social Support and Quality of Life, Disease Acceptance and Self-Efficacy

|			SWS Significant person	SWS friend	SWS family
Spearman rho	Physical Domain (0-100)	Correlation coefficient	-,004	,067	,110
		p	0,974	0,552	0,327
	Psychological Domain (0-100)	Correlation coefficient	-,230	-,073	-,014
		p	0,038	0,517	0,900
	Social Domain (0-100)	Correlation coefficient	,088	,036	,174
		p	0,430	0,749	0,118
	Environmental Domain (0-100)	Correlation coefficient	,126	,055	,186
		p	0,259	0,625	0,094
	AIS	Correlation coefficient	-,023	,042	-,046
		p	0,837	0,709	0,679
	I-ADL	Correlation coefficient	,106	,345	,154
		p	0,350	0,002	0,173

A statistically significant weak negative association was noted between social support from a significant person and the psychological domain of quality of life.

There is a positive average relationship between social support from a significant person - a friend, and patients' self-efficacy.

The relationships between the social support of post-stroke patients from a significant other - a friend - and the psychological domain quality of life and patients' self-efficacy are shown in Figures 1-2 below.

Figure 1: Relationships Between Post-Stroke Patients' Social Support from a Significant Per-son and Quality of Life in Terms of Psychological Domain
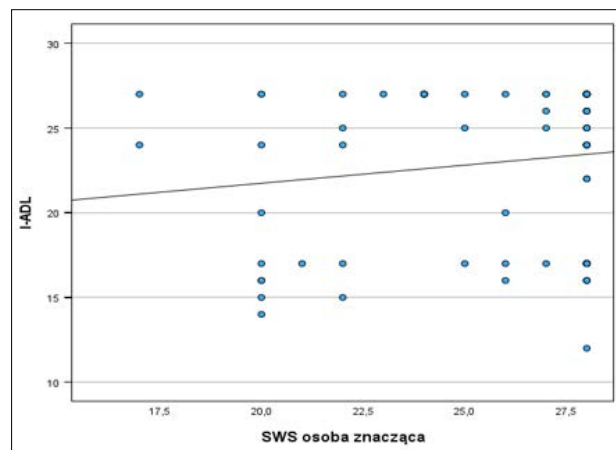
Legend: X-axis – Significant Person, Y-axis – Psychological Domain.

Figure 2: Relationships Between Post-Stroke Patients 'Social Support from a Significant Per-son - A Friend - and Patients' Self-Efficacy

Disease acceptance in post-stroke patients and the prevalence of chronic disease – hypertension is shown in Table 2.

Table 2: Disease Acceptance in Post-Stroke Patients and the Presence of a Chronic Dis-ease - Hypertension

AIS descriptive statistics

Chronic diseases: hypertension	Mean	Median	Standard deviation	N
No	33,56	36,50	7,594	18
Yes	29,06	31,00	8,289	65
Total	30,04	32,00	8,310	83

Value testeda

	AIS
Z	-2,159
p	0,031

Statistically significant differences were found between the groups (p = 0.031). Those with hypertension had lower AIS scale values.

The assessment of the quality of life of post-stroke patients and chronic diseases
- hypertension, obesity and diabetes is shown in Tables 3-5.

Table 3: Assessment of Quality of Life in Post-Stroke Patients and Chronic Disease - Hy-pertension

Statistics

		Physical Domain (0-100)	Psychological Domain 0-100)	Social Domain (0-100)	Environmental Domain (0-100)
N	-	83	83	83	83
Mean	-	57,90	67,10	74,86	88,13
Median	-	56,00	63,00	75,00	88,00
	-	13,202	13,978	18,302	10,687
	-	25	19	31	63
	-	88	88	100	100

Statystyki opisowe z podziałem na grupy

Descriptive statistics by group		Physical Domain (0-100)	Psychological Domain 0-100)	Social Domain (0-100)	Environmental Domain (0-100)
no	Mean	59,89	70,89	70,11	88,00
	Median	63,00	72,00	75,00	88,00
	Sd	12,750	12,295	18,676	9,707
	N	18	18	18	18
yes	Mean	57,35	66,05	76,17	88,17
	Median	56,00	63,00	75,00	88,00
	Sd	13,368	14,318	18,122	11,014
	N	65	65	65	65

Mann-Whitney Test

		Physical Domain (0-100)	Psychological Domain 0-100)	Social Domain (0-100)	Environmental Domain (0-100)
Z		-,846	-1,269	-1,076	-,187
p		0,398	0,204	0,282	0,852

There were no statistically significant differences between the groups.

Table 4: Assessment of Quality of Life of Post-Stroke Patients and Obesity

Descriptive statistics by group

Chronic diseases: obesity		Physical Domain (0-100)	Psychological Domain 0-100)	SocialDomain (0-100)	Environmental Domain (0-100)
no	Mean	56,92	67,68	74,12	87,62
	Median	56,00	63,00	75,00	88,00
	Sd	12,555	13,467	18,177	9,947
	N	50	50	50	50
yes	Mean	59,39	66,21	75,97	88,91
	Median	63,00	63,00	75,00	94,00
	Sd	14,193	14,887	18,716	11,838
	N	33	33	33	33
Mann-Whitney test results					
		Physical Domain (0-100)	Psychological Domain 0-100)	Social Domain (0-100)	Environmental Domain (0-100)

Z	-,920	-,142	-,427	-,754
p	0,358	0,887	0,669	0,451

Table 5: Quality of Life Assessment of Post-Stroke Patients and Chronic Disease-Diabetes Mellitus

Descriptive statistics by group

Chronic diseases: cu-diabetes		Physical Domain (0-100)	Psychological Domain 0-100)	Social Domain (0-100)	Environmental Domain (0-100)
no	Mean	57,88	66,90	75,57	87,61
	Median	56,00	63,00	75,00	88,00
	Sd	12,300	13,209	17,336	10,756
	N	67	67	67	67
yes	Mean	58,00	67,94	71,88	90,31
	Median	63,00	72,00	75,00	91,00
	Sd	16,943	17,303	22,292	10,442
	N	16	16	16	16
Mann-Whitney Test					
		Physical Domain (0-100)	Psychological Domain 0-100)	Social Domain (0-100)	Environmental Domain (0-100)
Z		-,451	-,675	-,489	-,929
p		0,652	0,500	0,625	0,353

There were no statistically significant differences between the groups.

The relationship between quality of life in post-stroke patients and patients' acceptance of the disease and independence is shown in Table 6.

Table 6: Relationship Between Quality of Life in Post-Stroke Patients and Disease Ac-ceptance and Self-Efficacy

Correlations

			Physical Domain (0-100)	Psychological Domain 0-100)	Social Domain (0-100)	Environmental Domain (0-100)
Spearman rho	AIS	Correlation coefficient	-,077	,043	-,071	-,127
		p	0,487	0,697	0,525	0,253
	I-ADL	Correlation coefficient	,138	,040	-,058	,086
		p	0,219	0,724	0,607	0,445

There were no statistically significant differences between the groups.

The independence of post-stroke patients and the prevalence of chronic diseases – hyper tension, diabetes and obesity are presented in Tables 7-9.

Table 7: Self-Efficacy of Post-Stroke Patients and Presence of a Chronic Disease - Hy-pertension

Statistics	
I-ADL	
N	81
Mean	23,01
Median	25,00
Standard deviation	4,702
Minimum	12
Maximum	27

I-ADL				
Chronic diseases: hypertension	**Mean**	**Median**	**Standard deviation**	**N**
No	25,18	27,00	3,005	17
Yes	22,44	24,50	4,918	64
Total	23,01	25,00	4,702	81

Manna-WhitneyTest

	I-ADL
Z	-1,754
p	0,079

There were no statistically significant differences between the groups.

Table 8: Autonomy of Post-Stroke Patients and Prevalence of Chronic Disease-Diabetes Mellitus

I-ADL

Chronic diseases: diabetes	Mean	Median	Standard deviation	N
No	23,14	25,00	4,667	65
Yes	22,50	25,50	4,967	16
Total	23,01	25,00	4,702	81

Mann-Whitney Test

	I-ADL
Z	-,328
p	0,743

There were no statistically significant differences between the groups.

Table 9: Self-Efficacy of Post-Stroke Patients and Prevalence of Obesity
I-ADL

Chronic diseases: obesity	Mean	Median	Standard deviation	N
No	23,41	25,00	4,467	49
Yes	22,41	25,50	5,054	32
Total	23,01	25,00	4,702	81

Manna-Whitney Test

	I-ADL
U Manna-Whitney	746,500
W Wilcoxon	1274,500
Z	-0,378
p	0,705

There were no statistically significant differences between the groups.

Discussion

Stroke is the third most common cause of death and the second most common cause of func-tional disability worldwide, according to the World Health Organization. The disease results in a high mortality rate and a high degree of functional disability. Physical disability, to a greater or lesser degree, can result in an inability to work and perform activities of daily living, resulting in a reduced quality of life for patients [5].

The risk of stroke increases with age and is highest in patients over 65. While the prevalence of some vascular risk factors decreases in the elderly population (e.g., smoking), the prevalence of such vascular risk factors, such as hypertension, smoking, obesity and dyslipidemia, is increas-ing among young adults.

Our own research showed that hypertensive patients definitely had a problem accepting the onset of the disease - stroke.

About 35% of young patients with ischemic stroke were diagnosed with hypertension, 50-60% had dyslipidemia, and 50% declared themselves smokers. The increased risk of stroke in young adults is associated not only with factors typical of older age groups, but also with those that are rare. such as genetic factors, autoimmune diseases, malignancies, atrial septal defect and drug abuse. Other risk factors such as the use of oral contraceptives can also increase the risk of is-chemic stroke [1].

Stroke is one of the leading causes of serious disability. The consequences of a stroke can be physical, social and psychological, and are devastating, as about 90% of stroke survivors suffer from some type of disability.

Stroke is a global public health problem because it results in severe non-disability, and function-al limitations reduce quality of life in patients.

Although emergency treatment and post-stroke care have improved significantly in recent times, the assessment of quality of life and social events associated with stroke should still be a priority in the care of such patients [7].

Stroke is one of the leading causes of morbidity, mortality and long-term disability, not only from a medical point of view, but also from a social point of view. Given the need for continu-ous care and rehabilitation of patients, it is a condition that generates very high costs for the treatment and rehabilitation of patients [8-14].

A study by Alexandrov et al. confirmed that patients with diabetes also have twice the risk of stroke, but shows that blood glucose control reduces this risk. Also, atrial fibrillation is a very important risk factor and is responsible for stroke in 50% of cases, with an annual risk of 3-5% [5].

Our study showed that there were no differences in quality of life and independence in post-stroke patients with diabetes.

According to the International Association for the Study of Pain (IASP), pain has been defined as "an unpleasant sensory and emotional sensation associated with or resembling that of actual or potential tissue damage."

According to this definition, the pain paradigm has shifted from a biomedical one, which only considered pain as an organic response to tissue damage, to a biopsychosocial one, which takes into account not only the aforementioned response, but also considers pain as a complex inte- mation of biological, psychological and social factors [6].

In a study by Gandolfi et al, post-stroke patients with chronic pain reported statistically signifi-cantly higher levels of disability and poorer quality of life.

This study confirms the negative impact of chronic pain on disability and HrQoL in post-stroke patients and provides preliminary insights into the relationship between chronic pain, disability, HrQoL, psychosocial suffering and the patient's approach to coping with personal difficulties and emotions. In particular, psychological suffering and pain showed bidirectional effects of similar magnitude. Psychological suffering is associated with the persistence and exacerbation of pain, mainly in chronic conditions, and it affects patients' prognosis, interfering with adhe-rence to the rehabilitation process and recovery from injury, affecting neurorehabilitation out-comes [6].

Our own research has shown there is no relationship between quality of life in post-stroke pa-tients and disease acceptance and independence.

Patients experiencing post-stroke pain appear to be more likely to have lower levels of health-related quality of life , poorer cognitive and functional performance, higher feelings of fatigue, post-stroke depression, anxiety symptoms and suicidal tendencies. Despite the serious burden, pain is often undiagnosed and under-treated in stroke survivors, and its clinical consequences are still inadequately understood. This may be due to the difficulty that patients with aphasia, neglect syndrome or dementia have in describing their pain experiences, or to the ability of cli-nicians to analyze pain and its treatment [6].

Stroke care goes beyond the hyperacute phase to include a well-functioning stroke unit, access to rehabilitation and long-term outpatient care. Therefore, optimizing and coordinating the entire chain of care is essential from a public health perspective. This poses a major challenge for any national healthcare system.

In the Polish healthcare system, it is mandatory to report each case of acute stroke directly to the electronic registry maintained by the National Health Fund (NFZ) immediately after discharge from the stroke unit. However, the registry still serves as a valuable tool for National Health Fund analysts to identify gaps in the quality of stroke care, assess overall performance and pro-vide assistance to decision makers.In addition to being a valuable resource for research purpo-ses, the national stroke registry has the potential to improve the quality of stroke care. The regis-try must provide convenient access to timely and processed information to all stakeholders, in-cluding individual hospitals and regional neurology consultants [2].

A better understanding of post-stroke determinants and conditions is needed to guide the care of such patients.

Functional independence in walking and activities of daily living with the help of physiotherapy, occupational therapy, together with psychological counselling and post-stroke retraining can lead to a significant reduction in quality of life in stroke patients [7].

People with post-stroke aphasia are less able or completely unable to express their pain due to impaired language, speech and cognitive function. This may also be due to difficulties with self-report pain rating scales, so it is important for clinicians to analyse and explore the problem of pain in aphasia in the post-stroke patient.

It is important to have an in-depth understanding of all the factors involved in the occurrence of pain and also its impact on the disability and quality of life of the post-stroke patient.
The adoption of standardised criteria for the diagnosis of mild and severe cognitive impairment and standards for assessing quality of life in post-stroke patients would be helpful in routine clinical and nursing practice [6].
Improved stroke care introduced in developed countries, greater capacity for rapid diagnosis and intervention, and better general knowledge of stroke symptoms may have improved diagnosis in a younger population and, therefore, resulted in a reduction in stroke among young adults [1].

Conclusions
The less support patients received from a significant other after stroke, the lower the quality of life in terms of the psychological domain.

The more support post-stroke patients received from a significant person - a friend - the more independent the patients are.

Patients with hypertension definitely had a problem accepting the onset of the disease - stroke.
There is no correlation between quality of life in post-stroke patients and the acceptance of the disease and independence.

There are no differences in quality of life and self-efficacy in post-stroke patients with chronic diseases - hypertension, diabetes and obesity.

Conflicts of Interest
None

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