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Evaluation of the quality of life of patients after ischemic stroke

Ocena jakości życia pacjentów po udarze niedokrwiennym mózgu

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Abstract

Aim. *The aim of the study was to assess the quality of life and determine deficits in activities of daily living in patients after ischemic stroke.* ***Material and methods.*** *The study group (n = 120) included patients after ischemic stroke receiving outpatient care at the Neurology Department of the Jan Biziel University Hospital No 2 in Bydgoszcz. WHOQOL-Bref questionnaire designed to assess patients' quality of life and authors' own survey questionnaire were standardized research tools used in the study. The mean age of study participants was 68 years.* ***Results.*** *Mean quality of life scores in each domain were as follows: physical domain 13.01±3.372; psychological domain 12.06±3.336; social relationships 11.80±2.821 and the environment 13.10±2.844. Age and educational attainment of study participants had a significant impact on the quality of life results in each domain. Patients up to one year since the stroke demonstrated the best functioning level. The most common comorbidities were: Hypertension (99/120), atherosclerosis (51/120) and excess body weight (41/120) were the most common comorbidities. More than half of the study participants (58%) required help in carrying out daily activities.* ***Conclusion.*** *Patients after ischemic stroke showed the largest deficits in terms of the social relationships and the psychological domain. Older adults and people with lower level of education should receive stronger psychological support. Stroke prevention should be strengthened in the group with the lowest level of education. (Gerontol Pol 2019; 27; 106-111)*

Key words: *quality of life, ischemic stroke, socio-demographic factors*

Streszczenie

Cel. *Ocena jakości życia i wykazanie deficytów w codziennym funkcjonowaniu chorych po przebytym udarze niedokrwiennym mózgu.* **Materiał i metoda.** *Grupę badawczą (n = 120) stanowili pacjenci po udarze niedokrwiennym mózgu objęci opieką ambulatoryjną w Poradni Neurologicznej Szpitala Uniwersyteckiego im. dr. Biziela w Bydgoszczy. Narzędziem badawczym był standaryzowany kwestionariusz do badania jakości życia WHOQOL – Bref oraz autorski kwestionariusz ankiety. Średnia wieku badanych – 68 lat.* **Wyniki.** *Średnie wyniki jakości życia w poszczególnych dziedzinach ukształtowały się na poziomie: dziedzina fizyczna 56,39±21,077; psychologiczna 50,42±20,805; relacje społeczne 48,73±17,629 i środowiskowa 56,97±17,747. Na wyniki jakości życia we wszystkich dziedzinach jakości życia istotny wpływ miał wiek i poziom wykształcenia badanych. Najlepiej funkcjonowali chorzy do jednego roku od wystąpienia udaru. Najczęstszymi schorzeniami współistniejącymi były: nadciśnienie tętnicze (99/120), miażdżyca tętnic (51/120) i nadmierna masa ciała (41/120). Ponad połowa badanych (58%) wymagała pomocy przy wykonywaniu codziennych czynności.* **Wnioski.** *Chorzy po przebytym udarze niedokrwiennym mózgu wykazywali największe deficyty w zakresie relacji społecznych i w dziedzinie psychologicznej. Osoby starsze i z niższym poziomem edukacji powinno się otoczyć większym wsparciem psychologicznym. Profilaktykę p/udarową należałoby wzmocnić w grupie osób najniżej wykształconych. (Gerontol Pol 2019; 27; 106-111)*

Słowa kluczowe: *jakość życia, udar niedokrwienny mózgu, czynniki socjo-demograficzne*

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Introduction

Ischemic stroke is one of the major causes of death in highly developed countries [1-5]. It ranks third after myocardial infarction and malignant cancer [3,6]. This problem concerns around 15 million people around the world [7].

It is possible to observe an upward trend of stroke incidence increasing with age [4]. Older age is the main unmodifiable risk factor of the stroke occurrence. [2]. In times of ongoing demographical changes, this problem is going to constitute a major challenge for healthcare and social care for the next decades. Scandinavian reports indicate that in a few dozen years the risk of stroke in people over 60 years of age can increase even up to 50%. This shows the scope of the problem in the population of older adults for the coming years [4]. Stroke incidence and mortality rates are especially going to rise among women in advanced old age. Feminism is still the main characteristic of aging in the global aspect.. It will seriously increase the problem of disability in the contemporary world. A demand for financial resources related to disability and institutional care provided to older people is going to increase, especially that a multi--generation family model is gradually disappearing.

Reports indicate that women after stroke demonstrate a worse functional status than men and are more likely to be disabled. An overview of scientific reports indicates that the likelihood of experiencing a stroke in men is higher below the age of 85, while in women – over the age of 85 [7].

Ischemic stroke is one of the main causes of disability and dependence on caregivers and health care facilities [1-3,5,7-9]. This condition has a negative impact on the quality of life [5,6,8,1-17]. It limits the patient's autonomy.

It is worth quoting the definition of health-related quality of life by Schipper et al., who defines it as the "functional effect of an illness and its consequent therapy upon a patient, as perceived by the patient" [18]. Massive stroke, disability, female sex, lack of support and recurrent stroke are significant determinants of a low quality of life especially in the physical health and psychological domains [19]. Better prognoses for functional status improvement are predicted for patients after first-ever stroke [14]. Quality of life of patients after stroke is impaired by coexisting depression [10,14,20-22]. Furthermore, low quality of life is connected with older age [10,14,16,20-22].

Aim

The aim of the study was to assess the quality of life of patients after ischemic stroke and determine the highest deficits in their activities of daily living. The impact of socio-demographic factors and time since the occurrence of ischemic stroke on the sense of quality of life was investigated.

Material and methods

The study involved 120 patients after ischemic stroke receiving outpatient care at Neurology Department of the Jan Biziel University Hospital No 2 in Bydgoszcz, Poland.

The study group included 66 women and 54 men. Main inclusion criteria were the diagnosis of a prior ischemic stroke and informed consent for the participation in the study. The patients were divided into groups according to age: up to 59 years old (19), 60-74 years old (70) and 75-89 years old (31). The study involved mostly married (47), widowed (38) and divorced people (26). The majority of the study participants declared secondary education (43) and vocational education (41), slightly fewer (29) primary education and the fewest (7) – higher education.

A Standardized World Health Organization questionnaire – the Polish version of WHOQOL-Bref by L. Wołowicka and K. Jaracz – was used to conduct interview surveys. It allows to measure the quality of life in four domains – physical, psychological, social relationships and environment, as well as two questions analyzed separately: question 1 concerning their general perception of the quality of life and question 2 concerning the perception of their own health status. Each question is scored between 1 and 5, where digit 1 stands for the lowest quality of life and digit 5 – the highest. Obtaining a higher score by a patient signifies higher quality of life and better perception of own health status. The transformation method allows to convert the results so that they remain in the range between 4-20 [23].

Due to the fact that the said questionnaire is a general tool designed to assess the quality of life, authors' own questionnaire focusing on specific questions related to the functioning of patients after ischemic stroke was additionally applied.

The study was approved by the Bioethics Committee of the Nicolaus Copernicus University Collegium Medicum in Bydgoszcz, Poland.

Statistical analysis was made using the Statistica 10.0 (StatSoft, Cracow, Poland). Calculations were made using the Microsoft Excel spreadsheet. In the descrip-

tive analysis of the results obtained, numbers and percentages were shown. The mean values with standard deviation were also calculated. Correlation between 2 variables was calculated using the Spearman's rank correlation coefficient. For assessment of differences in one feature between two populations, the Mann-Whitney *U* test was also used. In the present study the non-parametric Kruskal-Wallis test was also used in order to compare many independent samples. In the present study the non-parametric Kruskal-Wallis test was also used in order to compare many independent samples. Using the test, up to 10 groups can be compared.

The statistical significance of all tests was set at $p \leq 0.05$.

Results

The mean time since the occurrence of ischemic stroke in the study population was approximately 8 years (min. 5 months, max. 33 years), including 22 patients (18.3%) up to one year since stroke, 34 patients (28.3%) 2-5 years, 22 patients (18.3%) 6-10 years, and 42 patients (35.0%) over 10 years after stroke.

The largest percentage of patients (42.5%) reported the occurrence of left-sided paresis/ or hemiplegia and in 28.3% of patients the conditions were right-sided. Occasionally, (2.5%), bilateral paresis/ or tetraplegia were reported. The remaining patients (26.7%) did not report any paresis or hemiplegia.

The most common disorders were: vision and hearing impairment (22.6%), mobility problems (21.2%), problems with reading, writing and counting (15.4%), sudden mood swings (10.6%), speech comprehension impairment (9.6%), dysphagia (8.7%), difficulties in pronouncing words (7.7%), and urinary and fecal incontinence (4.3%). The biggest difficulties in daily living concerned doing exercise (43.1%), mobility (31.0%), dressing up (12.5%) and maintaining personal hygiene (11.6%).

The most common comorbidities were: hypertension (99 people), atherosclerosis (51 people), and excess body weight (41 people). Every second participant of the study was a smoker before their stroke occurred.

Half of the study participants (50.8%) required some level of help in performing daily activities. The family was the major source of support for nearly all the patients (110 people).

Table I presents a summary of statistics related to particular quality of life domains, an individual's overall perception of their quality of life (question 1 of WHOQOL-Bref questionnaire) and overall perception of their health (question 2 of WHOQOL-Bref questionnaire). Perception of their quality of life and self-rated health were analyzed in the context of socio-demographic factors and time since the occurrence of stroke. Mean scores for the quality of life and the own health perception were comparable (mean: 3.23 vs. 3.20).

Age of the study participants correlated with the quality of life results ($r = -0.295$; $p = 0.001$) and their satisfaction with health ($r = -0.280$; $p = 0.002$). Scores for quality of life and satisfaction with health were the lowest in the group of 75-89 year olds and the highest in the group of over 59 year olds.

The level of education of the study participants also showed a significant correlation both with the quality of life results ($r = 0.257$; $p = 0.005$) and with the perception of their own health ($r = 0.291$; $p = 0.001$). In this regard, the highest results were noted among patients with higher and secondary education, and the lowest among those with primary education.

In the physical quality of life domain, the highest deficits were found in the work capacity facet (mean 3.01). Physical domain results statistically significantly corre-

Table I. Summary of statistics for overall perception of the Quality of Life and own health perception

	Position	Mean ± SD	Confidence -95.0%	Confidence +95.0%	Median	Minimum	Maximum
Question 1	Overall perception of QoL	12.90 ± 3.299	12.30	13.50	12.0	8.0	20.0
Question 2	Overall perception of own health	12.80 ± 3.424	12.18	13.42	12.0	4.0	20.0
D.1. QoL	Physical domain	13.01 ± 3.372	12.40	13.62	13.0	5.0	19.0
D.2. QoL	Psychological domain	12.06 ± 3.336	11.46	12.66	11.5	4.0	18.0
D.3. QoL	Social relationships	11.80 ± 2.821	11.29	12.31	12.0	4.0	20.0
D.4. QoL	Environment domain	13.10 ± 2.844	12.59	13.61	13.0	5.0	19.0

Abbreviations: D1, Domain; D2, Domain 2; D3, Domain 3; D4, Domain 4; QoL, Quality of Life; SD, Standard deviation

lated with age (r = -0.351; p = 0.000) and level of education (r = 0.394; p = 0.000).

In the psychological domain, the highest deficits were found in the positive feelings facet (mean 2.61). Psychological domain results correlated with age (r = -0.369; p = 0.000) and level of education (r = 0.421; p = 0.000).

Patients after ischemic stroke demonstrated the lowest level of life quality (table 1) in the social relationship domain (mean 11.80). The highest deficits in this domain were associated with the facet related to sexual activity (mean 2.46).

In the social relationships domain, similarly to the physical health and psychological domains, correlations with age (r = -0.242; p = 0.008) and level of education (r = 0.285; p = 0.002) were found.

In the environment domain, patients after ischemic stroke received the lowest score for the facet related to health and healthcare in terms of accessibility and quality (mean 2.66). Environmental functioning was associated with age of the study participants (r = -0.207; p = 0.024) and their level of education (r = 0.364; p = 0.000).

The remaining socio-demographic factors, such as sex and marital status, did not show statistically significant correlations with any of the quality of life domains in patients after ischemic stroke.

Time since the stroke occurrence correlated with physical (r = -0.217; p = 0.018), psychological (r = -0.293; p = 0,001), social relationships (r = -0.279; p = 0.002), and environment domain (r = -0.245; p = 0.007).

Detailed mean results of the quality of life and the own health perception and the mean of each quality of life domain with reference to individual variables are included in table II and table III.

Table II. Mean results of quality of life and the perception of own health status with reference to individual variables

Subscale		Quality of Life	Perception of own health status
Variable	Position	Mean ± SD	Mean ± SD
Age	Up to 59 years	14.53 ± 3.58	14.95± 3.49
	Up to 60-74 years	13.09 ± 3.33	12.74 ± 3.36
	Up to 75-89 years	11.48 ± 2.47	11.61± 2.99
Level of education	Primary education	11.85 ± 3.03	11.56 ± 3.20
	Vocational education	12.47 ± 3.17	12.37 ± 3.36
	Secondary education	13.67 ± 3.52	13.58 ± 3.51
	Higher education	14.86 ± 1.95	15.43 ± 1.51
Time since the occurrence of ischemic stroke	Up to 1 year	14.91 ± 3.31	14.73 ± 3.35
	Up to 2-5 years	12.59 ± 3.29	12.47 ± 3.08
	Up to 6-10 years	13.27 ± 3.12	13.09 ± 3.94
	More than 10 years	11.90 ± 2.99	11.90 ± 3.12

Abbreviations: SD, Standard deviation

Table III. Mean results of quality of life domains with reference to individual variables

Domain OoL		Physical domain	Psychological domain	Social relationships	Environment domain
Variable	Position	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Age	Up to 59 years	14.26 ± 3.33	14.16 ± 3.53	12.74 ± 2.75	13.89 ± 2.51
	Up to 60-74 years	13.60 ±3.27	12.29 ± 3.34	11.96 ± 2.94	13.33 ± 2.95
	Up to 75-89 years	10.90 ± 2.72	10.26 ± 2.18	10.87 ± 2.38	12.10 ± 2.60
Level of education	Primary education	11.41± 2.87	10.33 ± 2.09	10.48 ± 2.52	11.74 ± 2.54
	Vocational education	12.33 ± 3.31	11.44 ± 3.34	11.67 ± 2.78	12.84 ± 2.84
	Secondary education	14,23 ± 3.31	13.21 ± 3.46	12.65 ± 2.98	13.81 ± 2.82
	Higher education	15.86 ±1.21	15.43 ± 0.98	12.43± 0.79	15.57 ± 0.79
Time since the occurrence of ischemic stroke	Up to 1 year	14.64 ± 3.95	14.00 ± 3.72	13.14 ± 2.57	14.32 ± 2.73
	Up to 2-5 years	12.85 ± 3.21	12.21 ± 2.98	12.18 ± 2.82	13.29 ± 2.28
	Up to 6-10 years	13.18 ± 3.29	12.45 ±3.04	11.45 ± 2.39	13.3 6 ± 2.70
	More than 10 years	12.19 ± 3.01	10.71 ± 3.06	10.98 ± 2.93	12.17± 3.16

Abbreviations: OoL, Quality of Life; SD, Standard deviation

Discussion

The present study involving patients after ischemic stroke demonstrated the highest quality of life deficits in the social relationships and psychological domains. Quality of life in those domains was within the lower range of average results. In a study by Weber-Rajek et al., those quality of life domains of patients after ischemic stroke received higher scores [9].

As the present study shows, hypertension is a common comorbidity and risk factor for the stroke, which corresponds with the findings by other researchers [4,8,10,24].

From among the analyzed socio-demographic factors, age and education level were found to be significant determinants for the life quality of life patients after ischemic stroke. Furthermore, older age correlated with lower quality of life parameters in each domain. The strongest association was found for the physical and psychological domains. A study by Nichols-Larsen also showed a negative correlation between age and the physical domain [25]. From among the analyzed socio-demographic factors, age and level of education were found to be significant determinants for the life quality of patients after ischemic stroke. Furthermore, older age correlated with lower quality of life parameters in each domain.

Medical condition of patients after stroke is impaired by progressive age-related involution. In the said study by Weber-Rajek et al., age correlated with the psychological domain [9]. Reports from other researchers confirmed a negative correlation between age and quality of life of patients after stroke [3,11,14,16,21,22,25].

Level of education was found to be a significant quality of life determinant for patients after ischemic stroke, which was also reported by other authors [3,5,8,16]. This shows how crucial self-development and lifelong learning is for a better functioning in old age and for a higher quality of life.

In the present study, other socio-demographic factors, such as sex and marital status were found to be statistically insignificant in the context of their impact on the quality of life of patients after ischemic stroke.

Study results by Dębińska and Mraz did not show any significant differences in the quality of life of patients after stroke between women and men either [26]. However, many investigators point to a lower quality of life among women, especially in terms of physical and psychological functioning [3,13,17,19]. This issue requires further analysis and research.

The present research did not show any impact of marital status on the quality of life of patients after ischemic stroke. However, some reports show that being married constitutes a determinant for a low quality of life [15]. It should be assumed that it could be associated with an overprotective approach of family members towards a patient. On the other hand, a Nigerian study indicates that marital support has a positive impact on the quality of life [21]. It should be emphasized that in the present study family was the main source of support.

Ischemic stroke is associated with high psychological stress, which has a negative impact on the overall quality of life [17]. Social support mitigates the negative impact of this disease.

Furthermore, the present research demonstrated a negative correlation of time since the occurrence of stroke with the quality of life in each domain, which is also evidenced in other scientific reports [16]. This could be explained by the fact that progressive age-related involution further worsens the health status of patients after stroke.

Conclusion

The present study has demonstrated that quality of life of patients after ischemic stroke is the lowest in the social relationships and psychological domains. Older age and low education level of patients after ischemic stroke significantly decrease their overall functioning level. This is why such people should be provided with more psychological support and the role of education for successful aging, including the shaping of health-seeking behaviors, should be emphasized. Health awareness of patients with hypertension, especially those with a lower level of education, should constantly be increased with the aim of minimizing the existing risk factor. In the progressive aging process of contemporary societies, stronger emphasis should be placed on stroke prevention in order to minimize the problem of disability.

Conflict of interest
None

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