

DOI: 10.15225/PNN.2019.8.2.3

Health-related Quality of Life in 5-year Stroke Survivors Assessed with EQ-5D-3L

Jakość życia uwarunkowana stanem zdrowia według EQ-5D-3L u chorych w okresie 5 lat po udarze mózgu

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Abstract

Introduction. In recent decades prognoses for stroke survivors regarding the risk of death or serious disability have improved, primarily due to stroke units, thrombolytic therapy and mechanical thrombectomy. Long-term research concerning the course of recovery and the consequences of strokes, which apart from clinical and functional indices would also include the quality of life, is relatively scarce. For this reason it is necessary to constantly update our knowledge of various aspects of the long-term process of recovery of stroke survivors.

Aim. The aim of the present study was to assess health-related quality of life in a prospective manner over a period of up to five years following a stroke.

Material and Methods. The study sample consisted of 27 patients (18 men and 9 women) aged between 53 and 82, mean age of 68.77 years (SD 8.16), 3 months, 12 months and 5 years after suffering from an ischaemic stroke. Quality of life was assessed using the Euro-Quality of Life Questionnaire (EQ-5D-3L), which covers five quality of life dimensions, the summary quality of life index (EQ — index), and self-assessment of health using the VAS scale (EQ VAS).

Results. Quality of life impairment in various dimensions and at various time points of the study concerned from 8% to 60% of patients. Problems occurred mainly in the “pain/discomfort” dimension, and applied to more than 40% of patients during the observation period. The lowest intensity of problems was found in the “self-care” dimension, these referred to from 7% to 14.8% of patients. Mean levels of the EQ index were rather high in all assessments (>0.80), while those of EQ VAS were moderate (between 60 and 70 points). They did not change significantly over the period of observation.

Conclusions. The quality of life of the majority of stroke patients is relatively good, although it differs for various dimensions. The quality of life in the “non-physical” dimensions is lower than in the physical dimensions. Also the quality of life of patients 3 months after a stroke does not change significantly over the next few years. (JNNS 2019;8(2):62–68)

Key Words: stroke, recovery, quality of life, EQ-5D-3L

Streszczenie

Wstęp. W ostatnich dekadach rokowanie w udarze mózgu w znaczeniu ryzyka zgonu i ciężkiej niepełnosprawności uległo poprawie, głównie dzięki funkcjonowaniu oddziałów udarowych, stosowania leczenia trombolitycznego i trombektomii mechanicznej. Badań długoterminowych dotyczących przebiegu zdrowienia i następstw udaru, obejmujących obok wskaźników klinicznych i funkcjonalnych, również jakość życia jest stosunkowo mało. Dlatego istnieje potrzeba uaktualniania wiedzy na temat różnych aspektów długoterminowego procesu zdrowienia chorych po przebytych udarze mózgu.

Cel. Celem niniejszego badania była prospektywna ocena jakości życia uwarunkowanej stanem zdrowia w okresie do pięciu lat po przebytych udarze mózgu.

Materiał i metody. Badaniem objęto 27 chorych, (18 mężczyzn i 9 kobiet) w wieku od 53 do 82 lat, średnia wieku 68,77 lat (SD 8,16) po upływie 3 miesięcy, 12 miesięcy i 5 lat po udarze niedokrwiennym. Do oceny jakości życia wykorzystano Euro-Quality of Life Questionnaire (EQ-5D-3L) obejmujący pięć dziedzin jakości życia, sumaryczny wskaźnik jakości życia (EQ — index) oraz samoocenę zdrowia na skali VAS (EQ VAS).

Wyniki. Ograniczenia jakości życia w różnych dziedzinach i różnych punktach czasowych badania dotyczyły od 8 do 60% chorych. Problemy występowały głównie w dziedzinie „ból/dyskomfort”, dotyczyły to ponad 40% chorych w okresie obserwacji. Najmniejsze nasilenie problemów odnotowano w dziedzinie „samoopieka”, dotyczyły one od 7 do 14,8% pacjentów. Średnie poziomy wskaźnika EQ index we wszystkich ocenach były dość wysokie (>0,80), a EQ VAS — średnie (od 60–70 pkt). Nie uległy one istotnym zmianom w okresie obserwacji.

Wnioski. Jakość życia większości chorych po udarze jest dość dobra, aczkolwiek różna w różnych dziedzinach. Jakość życia w dziedzinach „nie fizycznych” jest niższa aniżeli w dziedzinach fizycznych. Jakość życia chorych po upływie 3 miesięcy od udaru nie zmienia się istotnie w okresie kolejnych kilku lat. (PNN 2019;8(2):62–68)

Słowa kluczowe: udar mózgu, zdrowienie, jakość życia, EQ-5D-3L

Introduction

At the moment, strokes are the second most common cause of death and the third most frequent cause of disabilities in the adult population [1]. The highest mortality occurs in the acute stage of the illness, however the increased risk of death has been maintained in successive years, mainly due to cardiovascular diseases, stroke recurrence and complications. It is estimated that after five years approximately 60% of stroke survivors are still alive [2,3]. Similarly to the issue of mortality, the problem of disability is most pronounced in the early period following the stroke, when the percentage of patients with a functional deficit amounts to approximately 80% [4,5]. Over time, the number of patients with disabilities is reduced due to further mortality and the natural process of recovery and rehabilitation, particularly in the first three months following a stroke. Nevertheless, the percentage of persons with disabilities is considerable, exceeding 30% after 5 years [6].

In recent decades (as opposed to earlier periods of time) prognoses for stroke patients regarding the risk of death or serious disability have improved, primarily due to the functioning of stroke units and the application of thrombolytic therapy and mechanical thrombectomy. The majority of studies on the topic have been conducted for periods of up to 1 year following a stroke.

Long-term research concerning the course of recovery and the consequences of strokes, which apart from clinical and functional indices would also include the quality of life, is relatively scarce. For this reason, it is necessary to constantly update our knowledge of various aspects of the process of recovery of stroke survivors.

A prospective assessment of the health related quality of life over a period of up to five years following a stroke was the purpose of the present study was.

Material and Methods

The study is a part of a broader research project that was commenced in 2012 with the objective of arriving at a prospective assessment of the multidimensional

consequences of strokes (neurological, functional and health related quality-of-life) among patients who had suffered an ischaemic stroke, taking into consideration thrombolytic therapy. Research was conducted amongst patients consecutively admitted to the stroke unit of the Hospital of the Ministry of Internal Affairs and Administration in Poznań. Patients were assessed at the admission, shortly before being discharged, and after the period of 3 and 12 months. 225 patients took part in the final assessment [7,8]. In successive years, a decision was made to conduct a longer-term assessment of the previously examined patients. Attempts were made to contact 64 patients five years after they had suffered a stroke. In 27 instances, the attempt proved unsuccessful, 3 persons refused to participate in the study, 1 informed of a change of his/her place of residence, while in 6 instances we were informed that the patient in question was deceased. Finally, after 5 years, 27 patients were assessed, of whom 12 (44%) were patients treated with thrombolysis.

Quality of life was assessed using the EuroQoL five dimensions-three level-questionnaire (EQ-5D-3L) [9]. An official permission to use this instrument was obtained from the EuroQoL Foundation (The Netherlands). The EQ-5D-3L consists of two parts: the EQ-5D descriptive system and the EQ visual analogue scale (EQ VAS). The descriptive system includes five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each of these dimensions has three levels indicating the severity of perceived problems: no problems — 1, some problems — 2, extreme problems — 3. A combination of one level from each of the five dimensions defines the health state of an individual (i.e. quality of life) [10]. Each health state is described by a five digit code. This code can be converted into a single summary index (EQ index). EQ index=1 indicates full health (i.e. state 11111). A set of 245 possible health states and relevant index values for the general Polish population have been elaborated and published by Golicki et al. [11].

The EQ VAS is a vertical, visual analogue scale. A respondent is asked to indicate his/her own health state by drawing a line across the scale where the end points are labelled as “the best imaginable health state” — 100 and “the worst imaginable health state” — 0 [10].

A neurological status of the patients at baseline was assessed. To this end, the National Institutes of Health Stroke Scale (NIHSS) was used. The NIHSS score ranges from 0 to 42, with higher scores indicating a more severe neurological deficit [12,13]. Social, demographic and clinical information was gathered using own questionnaire.

The data were analysed using descriptive statistics. In order to find differences between dependent groups, the repeated measures ANOVA Friedman's test was used, and in order to determine the relationships between continuous variables, the Pearson's correlation coefficient was applied. The statistical significance of differences was assumed as a confidence index of $p < 0.05$. The analyses were performed using the Stat Soft STATISTICA version 13.3.

The study was approved by the Bioethics Committee of Poznań University of Medical Sciences (no. 283/12).

Results

The study group included 18 men and 9 women aged between 53 and 82 years of age, with a mean age of 68.8 (SD 8.2). The majority were married, had a vocational or secondary education, resided in cities and were retired. The neurological status of patients at the time of discharge was good (median NIHSS=2). Table 1 presents the detailed characteristics.

Table 1. Demographic and clinical characteristics at 5 years after stroke

Variable		
Age (Mean, SD)	68.8	8.2
Gender (N, %)		
Woman	9	33.3
Man	18	66.7
Marital status (N, %)		
Married	21	77.8
Single	6	22.2
Education (N, %)		
Primary	7	25.9
Vocational	10	37.0
Secondary	7	25.9
Higher	3	11.1
Place of residence (N, %)		
City	20	74.1
Country	7	25.9
Working status (N, %)		
Retired	16	59.3
Pensionner	7	25.9
Employed	6	22.2
Rehabilitation after 12 m (N, %)		
Yes	12	44.4
Stroke severity (Median, Range NIHSS score)		
Admission	5	1–12
Discharge	2	0–19

Assessment of Self-reported Quality of Life in 5 Dimensions According to EQ-5D-3L

As far as the “mobility” domain is concerned, 22.2% of patients reported problems 3 months after the stroke (18.5% — some problems, 3.7% — extreme problems), 22.2% — 12 months and 37% — 5 years after the stroke (Figure 1).

In the “self-care” domain, the percentage of patients reporting problems 3 months after the stroke was 14.8% (11.1% some problems, 3.7% extreme problems), while during the assessment at 12 months and 5 years after the stroke that figure amounted to 7.4%, and 14.8%, respectively (Figure 2).

With regard to “usual activities”, patients who reported problems during the assessment at 3 months after the stroke accounted for 25.9% of the total (18.5% — some problems, 3.7% — extreme problems), 12 months after the stroke — for 7.4% of the total, and 5 years after the stroke — for 22.2% of the total (Figure 3).

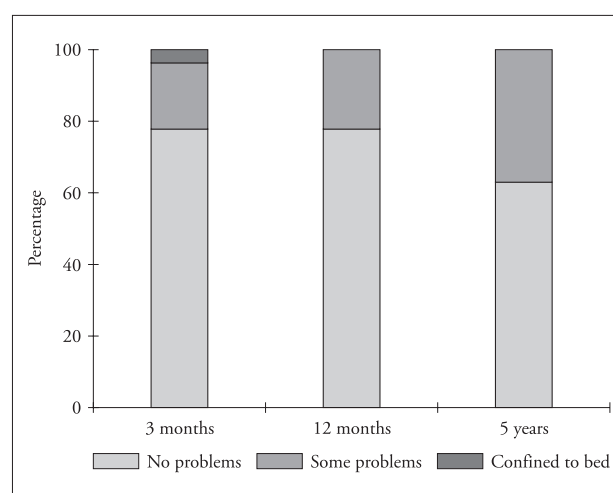


Figure 1. Frequency of reported problems in the “mobility” dimension at three time points of the study

In the “pain/discomfort” domain, the percentage of persons reporting problems amounted to 59.3% at 3 months after the stroke, 48.1% — 12 months after the stroke, and 40.7% — 5 years after the stroke (Figure 4).

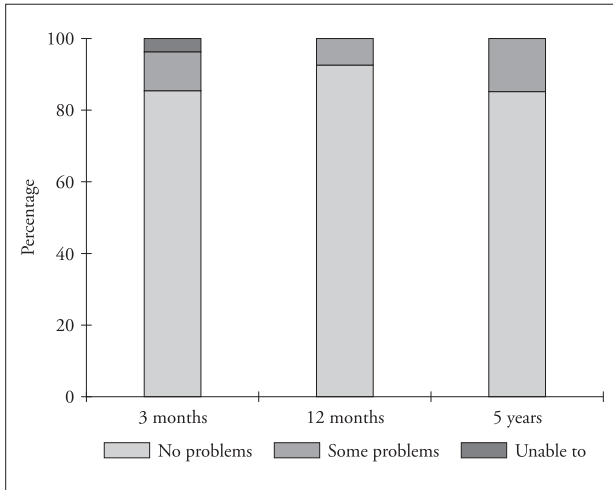


Figure 2. Frequency of reported problems in the “self-care” dimension at three time points of the study

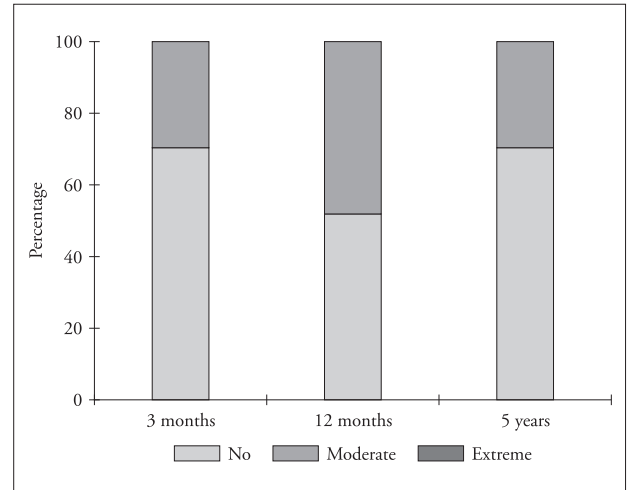


Figure 5. Frequency of reported problems in the “anxiety/depression” dimension at three time points of the study

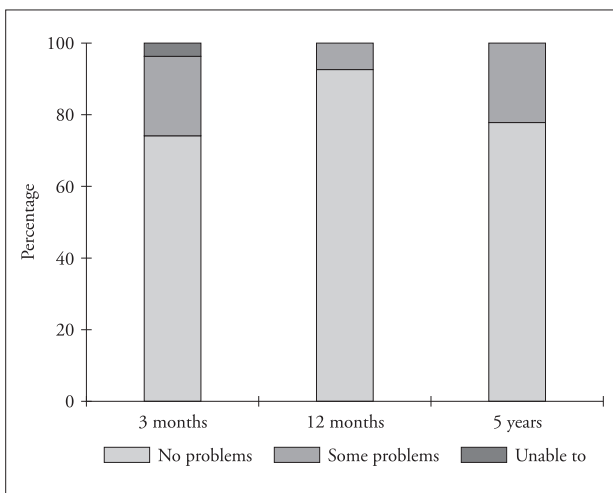


Figure 3. Frequency of reported problems in the “usual activities” dimension at three time points of the study

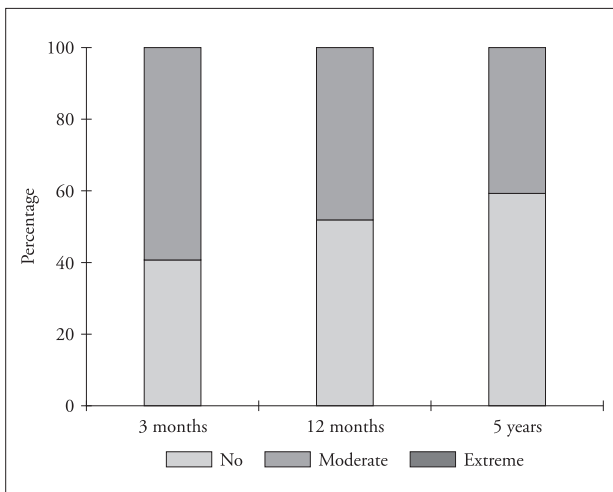


Figure 4. Frequency of reported problems in the “pain discomfort” dimension at three time points of the study

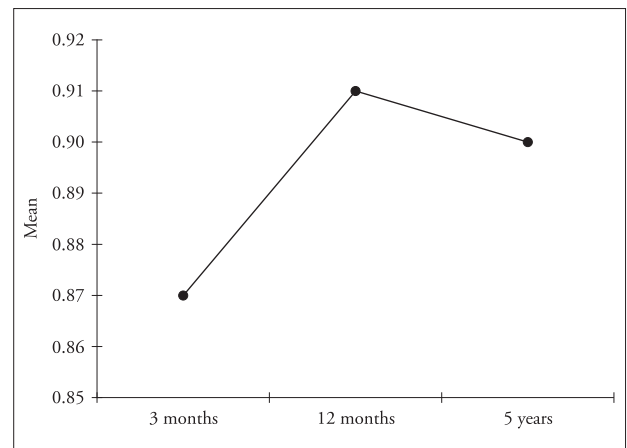


Figure 6. EQ-5D-3L index at three time points of the study

Table 2. Frequency of the particular index values at 5 year assessment

EQ-5D-3L index	Status severity	N	%
1	Full health	11	40.7
0.925	Very mild	2	7.4
0.899	Very mild	2	7.4
0.894	Very mild	3	11.1
0.842	Mild	2	7.4
0.827	Mild	1	3.7
0.816	Mild	1	3.7
0.796	Mild	1	3.7
0.716	Moderate	3	11.1
0.768	Moderate	1	3.7

In the “anxiety/depression” domain, the corresponding percentages were as follows: 29.6%, 48.1% and 29.6% (Figure 5).

Assessment of Self-evaluated Health Using EQ VAS

Figure 7 presents mean scores of the EQ VAS at the three time points of the study. The scores were as follows: 64.5, 64.0, 69.0, $p=0.28$. Correlation between the EQ index and EQ VAS scores was moderate ($r=0.50$, $p<0.05$).

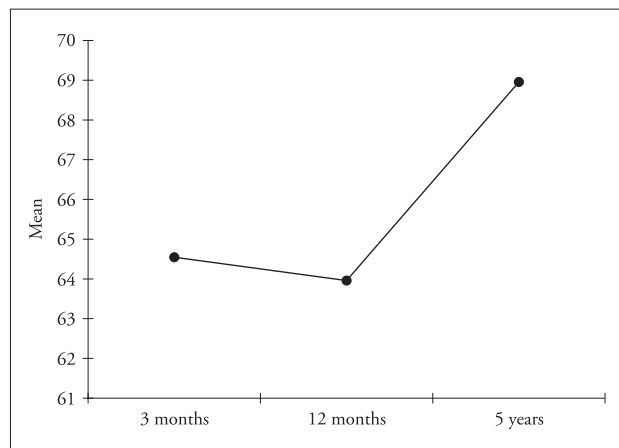


Figure 7. EQ VAS at three time points of the study

Discussion

This prospective longitudinal study, carried out using EQ-5D-3L, demonstrated that the quality of life of stroke survivors was relatively good, however between 8% and 60% of patients reported problems in various quality of life dimensions at different time points of the study. These problems were particularly intense for the “pain/discomfort” domain, concerning at least 40% of patients, and nearly 60% during the first assessment. These results are similar to those obtained by Golicki et al. [14], who noted problems in this dimension for more than 70% of patients during the first 4 months after a stroke. Pain following a stroke — both central and nociceptive pain — is a frequent albeit intermittently neglected symptom, also in nursing care [15,16]. According to various authors, chronic pain following a stroke is experienced by a few to up to 50% of patients, while approximately 70% have pain complaints associated with their daily functioning [17,18]. Pain has a negative impact on the functioning and overall quality of life of patients, as has been demonstrated in numerous publications [19,20]. Findings from additional analyses of our data (not presented in this paper) indicate that the self-assessment of health of examined patients using the VAS scale for persons with pain and discomfort was 10 points lower than for persons not suffering from pain/discomfort.

The second dimension in which considerable limitations of the quality of life were determined was that of “anxiety/depression”. In the early (3 months) and late

(5 years) period following a stroke, problems concerned 1/3 patients, and nearly 1/2 of patients after a year. In literature on the subject, the frequency of occurrence of depression and anxiety is estimated at approximately 30%, with it being stressed that these disorders continue to be insufficiently diagnosed and treated [21,22]. Depression and anxiety are consistently identified by authors as negative predictive factors for the quality of life and health state of stroke survivors [23,24]. Similarly as in the case of the “pain/discomfort” dimension, the subjective assessment of health of the examined patients using the VAS for persons with problems in the “anxiety/depression” dimension was lower (by 15 points) than for persons not experiencing these problems.

The study showed that as opposed to the aforementioned “non-physical” dimensions, the quality of life in physical dimensions was relatively good. Problems in this domain concerned from 7 to 37% of patients at various time points of the study. Most often, limitations concerned the “mobility” dimension, and the “self-care” dimension least often. In comparison with previous reports concerning the percentage of stroke survivors with disabilities (see Introduction) and with other Polish studies conducted using the EQ-5D, the limitations of the quality of life determined in the present study were less frequent. For example, in the study performed by Golicki et al. problems in the “mobility” assessed at 4 months after a stroke were 20% less frequent [14]. The above discrepancy may be due to the fact that we — as opposed to that cited above — excluded patients with cognitive disorders, severe aphasia, those who were unable to cooperate, and also persons with haemorrhagic strokes. It should be added that nearly one half of our patients were treated with thrombolysis, and this could have contributed to a good functional effect. First and foremost, however, we should stress that the study sample was small and included only those patients with whom we were able to establish contact after five years, and this necessitates the continuation of research. It is also worth mentioning that patients may tend to overrate their health states and independence because of coping strategies or/and reduced functional needs [25].

Regarding the EQ summary index at the three assessment time points, the results showed no significant changes between the first and the last assessment. This may indicate that in the period following the attainment of functional stability, which usually occurs within the first three months after a stroke, and in the successive years there are no radical changes in the health — state and quality of life of those who survived.

The study has further demonstrated that the relationship between the EQ index score and the EQ VAS score was moderate, but statistically significant. This confirms the regularity known from the literature on the subject, namely that the dependence between

the objective and the subjective assessment of the quality of life is only partial, and for this reason both these indices should be taken into consideration in research [26].

We are aware that this study is mainly limited by its small sample size. However, we believe that this work provides interesting and useful clinical information about long term quality of life of post-stroke survivors, defined as health state according to the EQ-5D-3L.

Conclusions

1. The quality of life of the majority of stroke patients is relatively good, although it differs for various dimensions.
2. The quality of life in the physical dimensions is better than in the “non-physical” dimensions.
3. The quality of life of patients 3 months after a stroke does not change significantly over the next few years.

Implications for Nursing Practice

The results obtained show that in the nursing care of patients who have suffered a stroke it is necessary to turn greater attention to the occurrence of emotional disorders and pain ailments, which may be obscured by other neurological symptoms and functional deficits.

Acknowledgments

We wish to thank Aleksandra Jackowska, a Master's degree student at the University of Medical Sciences in Poznań, for her contribution in the data collection.

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Conflict of Interest: None

Funding: None

Author Contributions: Barbara Grabowska-Fudala^{A-F}, Krystyna Jaracz^{A, C-H}, Anna Smelkowska^{E, F}, Krystyna Górna^{C, G} (A — Concept and design of research, B — Collection and/or compilation of data, C — Analysis and interpretation of data, D — Statistical analysis, E — Writing an article, F — Search of the literature, G — Critical article analysis, H — Approval of the final version of the article)

Received: 01.05.2019

Accepted: 28.05.2019