**Pielęgniarstwo
Neurologiczne i Neurochirurgiczne**

THE JOURNAL OF NEUROLOGICAL AND NEUROSURGICAL NURSING

Original

Analysis and Evaluation of Subjective Quality of Life in a Group of Patients after Ischemic Stroke

Analiza i ocena subiektywnej jakości życia w grupie chorych po udarze niedokrwiennym mózgu

Sylwia Krzemińska, **Agnieszka Bekus**, **Adriana Borodzicz**, **Marta Arendarczyk**

Department of Clinical Nursing Faculty of Health Sciences, Wroclaw Medical University, Poland

Abstract

Introduction. Ischemic stroke, as a sudden onset of a syndrome is the first cause of a varying degree of disability that results in lower quality of life.
Aim. The aim of the study is to analyze the quality of life of people after ischemic stroke in terms of their performance in basic areas of life.
Material and Methods. Evaluation of the quality of life was carried out, studying a 50-person group of patients aged 42–91 years who had an ischemic stroke within a period longer than 6 months. Their subjective evaluation of the quality of life was aeesessed by our own survey and the SF-36 questionnaire in the Polish version. The collected data, including the biopsychosocial sphere of the respondents were used to analyze the quality of life in eight key areas and were used to determine the significance of the impact of socio-demographic factors on the assessment of the quality of life.
Results. Since both quality of life and its assessment are subject to constant change, and the current measurement is really only at time of the study, it has been shown however, that the quality of life in patients after stroke was significantly reduced. This is particularly evident in the area of physical functioning and felt in connection with the constraints resulting from physical health. Such a condition triggers consequences associated with the mental sphere, including the reduction of functioning. Moreover, there has been examined the impact of socio-demographic factors on the quality of life of patients after ischemic stroke and it has been found that they affect only as a set of dependencies. Although being in isolation they are not significantly dependent, however, for an individual they may not be indifferent, and when occurring in appropriate configurations they might affect one's quality of life.
Conclusions. In order to improve the quality of life of patients after ischemic stroke, the accessibility of post-stroke education is recommended for the patients after stroke, and what is salso important for their families, which has a significantly positive impact on the quality of life of both parties. If however, society can be persuaded to changes in the functioning and will prefer a healthy lifestyle through active life and healthy diet, then it will probably be possible to reduce the number of stroke incidents which in an aging society is particularly desirable. **(JNNN 2016;5(2):58–68)**
Key Words: ischemic stroke, the quality of life

Streszczenie

Wstęp. Udar niedokrwienny mózgu, jako nagle pojawiający się zespół chorobowy jest pierwszą przyczyną różnego stopnia niesprawności, który skutkuje obniżeniem jakości życia.
Cel. Celem pracy jest analiza, jakości życia osób po udarze niedokrwiennym mózgu pod kątem ich funkcjonowania w podstawowych dziedzinach życia.
Materiał i metody. Ocenę jakości życia podjęto badając 50-osobową grupę osób w wieku 42–91 lat, które przebyły udar niedokrwienny mózgu w okresie dłuższym niż 6 miesięcy. Ich subiektywnej oceny jakości życia dokonano za pomocą ankiety własnej oraz kwestionariusza SF-36 w wersji polskiej. Zebrane dane, obejmujące sferę biopsychospołeczną tychże osób, posłużyły do analizy jakości ich życia w podstawowych ośmiu sferach oraz zostały użyte do określenia istotności wpływu czynników społeczno-demograficznych na ocenę jakości życia.

Wyniki. Jako, że zarówno jakość życia jak i jego ocena podlegają ciągłym zmianom, a pomiar aktualny jest tak naprawdę jedynie w momencie badania, wykazano jednakże, iż jakość życia u osób po przebytym udarze mózgu uległa istotnemu obniżeniu. Szczególnie widoczne jest to w sferze funkcjonowania fizycznego i odczuwane w związku z ograniczeniami z powodu zdrowia fizycznego. Taki stan rzeczy ponosi za sobą konsekwencje związane ze sferą mentalną, w tym obniżeniem funkcjonowania. Zbadano ponadto wpływ czynników społeczno-demograficznych, na jakość życia osób po udarze niedokrwiennym mózgu i stwierdzono, iż mają one wpływ jedynie, jako zbiór zależności. Choć w izolacji nie są istotnie zależne, to jednak dla jednostki mogą być nieobojętne, a zaistniałe w odpowiednich konfiguracjach wpływać na jej jakość życia.

Wnioski. W celu podniesienia jakości życia osób po udarze niedokrwiennym mózgu, zalecana jest powszechność edukacji poudarowej wśród osób po udarze mózgu i co ważne ich rodzin, co ma znacząco korzystny wpływ na jakość życia obu stron. Jeśli natomiast społeczeństwo da się przekonać do zmian w funkcjonowaniu i preferować będzie zdrowy styl życia poprzez aktywny tryb życia i zdrowy styl żywienia, zapewne możliwe będzie zmniejszenie ilości incydentów udarowych, co w starzejącym się społeczeństwie jest szczególnie pożądane. **(PNN 2016;5(2):58–68)**

Słowa kluczowe: udar niedokrwienny, jakość życia

Introduction

Ischemic stroke, a disease which is one of the main causes of death is also alternatively a threat to the efficiency of patients after the stroke. There is a huge probability that the patients will live with significant symptoms of neurological and functional deficit, resulting in the acquisition of various degrees of psychomotor disability disorder, which has a significant impact on their quality of life.

The functioning ability of patients after ischemic stroke is limited both in terms of physical, psychological as well as social speres.

Assessing the quality of life of patients after stroke in the dimension of their psychological well-being, the authors of many studies have observed that the quality of life after stroke, compared to that from period before the illness, has decreased [1]. The first study of the quality of life after a stroke was published in world literature in the journal "Age and Ageing" in 1979. Viitanen et al., using a 6-step scale of satisfaction reported the largest decrease in satisfaction in self-service, forms of leisure and in sex life [2]. Also, in the functional dimension "all previous studies indicate a significant deterioration in the quality of life of patients compared with those who had not suffered a stroke. (…) It was stated that the greatest limitations in functioning related to body hygiene, household management, moving and speaking" [3].

Since the elderly are the group who most often suffer from ischemic brain stroke, therefore its course due to frequent problems related to circulatory incapacity is different and associated with a plurality of complications. A high rate of age also favours the existence of other illnesses, which makes pharmacological treatment more difficult. In addition, generally with age human overall functional condition decreases, which, combined with the stroke experienced, results in a significant deterioration in functioning and in the necessity of constant care [4]. In this situation, the quality of life of patients after ischemic stroke is steadily deteriorating with age.

Monitoring the quality of life of patients after ischemic stroke may be useful both in the modification of treatment, physical rehabilitation as well as in the improvement of forms of psychosocial influence in relation to patients and their families.

Due to the fact that there is a general need for the quality of life assessment, it should be assumed that there should be adopted, even only in the case of chronic diseases, a uniform definition, and therefore the same research tools should be applied allowing for reliable interpretation. There are a lot of terms for the quality of life concepts and exploratory research in this area is being continually carried out.

For the measurement of the quality of life there is a variety of research techniques applied and their evaluation is multidimensional. They could be studies of a qualitative nature, the final result of which can be point indicators, being an element of the quantitive assessment. This type of research requires a lot of research tools, therefore it is very laborious.

For the evaluation of the quality of life questionnaires are widely applied, which results in a quantitative assessment based on the number of points on the scale. They have a form of a global, non-specific and specific quality of life assessment [5].

Global scales (global) usually refer to one or more dimensions of the quality of life in general, the questions are asked in the verbal or graphic form, and also have a general nature. They take into account both their overall well-being, as well as their experience with the disease. It can be exemplified by Cantrill ladder or the Quality of Life Index (QOL Quality of Life) by Ferrans and Powers in the version of 1992. Cantrill ladder has a ten-point scale, where 0 means the worst situation in life, whereas 10 stands for the best one. It allows to assess life satisfaction before the disease occurred, current life and the future one, thus it constitutes an indicator of the patient's hope for his future.

In contrast, non-specific scales (general) most frequently refer to a few dimensions of the quality of life

and they can be applied to evaluate and compare the quality of life of various groups of respondents or larger populations obtaining a global or partial measurement on this scale, it is also possible to measure the impact of patients' condition related to adisease on their welfare. Its advantage is as the term itself suggests globality and breadth of the measurement of the tested area in both the sphere of life as well as functioning of the respondents, whereas the disadvantage is low sensitivity in the study of the specificity of changes of a specific disease unit [5].

The non-specific scales include: Sickness Impact Profile 136 (SIP), Short Form Health Survey (SF-36), Quality of Life Index (QOL) Ferrans and Powers in generic version or WHO Quality of Life Instrument (WHOQOL) [5].

For example, Sickness Impact Profile 136 (SIP) allows to self-assess health condition, as well as determines the effect of the disease on physical and psychosocial functioning and on independent activities. On the other hand, the Short Form Survey (SF-36) allows to study the global quality of life, including the assessment of physical and mental condition.

A characteristic feature of specific scales (disease or dimention specific) is the ability to assess with their use the quality of life of people with a specific disease unit, where these scales can be used in the study of the course of various diseases. They are mostly applied to monitor the patients who have taken up treatment as well as to evaluate its effectiveness and the possibility of applying alternative therapies. Specific scales unlike the aforementioned (non-specific) ones are very sensitive to changes, it is more difficult however, to indicate, with their use, the quality of life evaluations. For the assessment of the quality of life after stroke the Sickness Impact Profile 136 (SIP), Short Form Health Survey (SF-36), the Quality of Life After a Stroke Scale, as well as the Frenchay Activities Index are most commonly applied.

For the evaluation of the quality of life various questionnaires are used and adopted to current needs of their modification, and therefore the assessments also vary [5].

The aim of the study was to analyse the impact of the disease on the biopsychosocial condition of the respondents in order to isolate these domains of life, which are perceived by the respondents as particularly projecting on the change of their quality of life so that an attmpt could be made to look for the reasons for such a situation and for solutions, allowing to make significant changes in this respect.

Therefore, there have been selected the main research problems:

1. How is the quality of life assessed by respodents after ischemic stroke in the global aspect in functioning in fundamental areas of life — the effect of the disease on their quality of life?
2. What is the relationship between the global assessment of the quality of life of patients after ischemic stroke and the physical, mental and social condition experienced by them?
3. How has the disease affected changes in these people's lives from the point of view of satisfaction ezperienced by them in selected areas of life?
4. Is the post-stroke education commonly carried out with the patients after stroke?

To assess the research material, the following variables were applied: quality of life (global, quality of life scales), physical condition — paralysis side, basic diseases determining ischemic stroke, socio-demographic factors (age, gender, level of education, place of residence, marital status and occupational status).

Material and Methods

The surveys were anonymous and referred to subjective evaluation of life from the perspective of patients after ischemic stroke.

The original questionnaire consisted of three open-ended questions and 25 closed questions, including 5 questions of an alternative nature, 10 disjunctive, whereas the remaining 10 are conjunctive questions. The survey included questions regarding patients' neurological, functional, emotional condition as well as socio-demographic data. It includes, among others, information concerning the time and the frequency of stroke occurrence in them, the side of paralysis and other post-stroke deficits, secondary education, and the overwhelming number of questions relates to the subjective assessment of the changes that have occurred in biopsychosocial spheres of life that person from the perspective of the experienced stroke and various problems related to it.

The second research tool applied is a Polish version of the SF-36 (Short Form Health Survery) that allows to make a self-assessment of health condition in the eight spheres of human life and refers to the measurement of health condition within a six-month period preceding the survey. Here are 11 questions containing 36 statements, allowing for the evaluation of the quality of life in the following categories/scales:

1. Physical functioning — allows for the assessment of limitations in functioning caused by health restrictions (question 3).
2. Restrictions arising from physical health — allows for the assessment of the limitations in physical activity arising from health problems (question 4).
3. Social functioning (questions 6,10).
4. Pain perception (questions 7,8).
5. Mental health (questions 9 b, c, d, f, h).

6. Emotional functioning (question 5).

7. Vitality (questions 9 a, e, g, i).

8. General health status (questions 1,2,11).

The evaluation of the physical dimension of the quality of life in the aforementioned questionnaire is the sum of scales 1, 2, 4 and 8 (maximum 103 pts), whereas and mental dimension is expressed by the sum of the other categories (maximum 68 pts). The index of quality of life is the sum of points obtained from the evaluation of both dimensions, the evaluation of all eight categories. Answers to each question are appropriately scored. Having been summed up, the results are referred to the quality of life in the range from 0 to 171 pts. According to the Polish version of the questionnaire the highest point value means the lowest level in the quality of life assessment and vice versa, at the lowest point value, the quality of life is the highest [6].

The measurement covered the period of 6 months from August 2013 to January 2014. Font size was adapted to the needs of the elderly.

The data obtained were subjected to statistical analysis using Microsoft Office Excel 2007, the STATISTICA programme. Statistical description was carried out by calculating the arithmetic mean. Qualitative data (nominal scale) are expressed as the mean value using percentages or the indicator of quality of life in points. The comparison of the two variables was performed using Student's t test.

The research was carried out in Lubuskie (Zielona Góra) and Lower Silesia (Wrocław) province.

In Zielona Góra the research was carried out in the following places:

— in the Rehabilitation Ward with the the Neurological Rehabilitation Unit, located at the Regional Hospital — Independent Public Healthcare named after Karol Marcinkowski,

— in the Neurological Rehabilitation Ward of the Independent Public Health Care Unit the of Ministry of Internal Affairs,

— in the Nursing Home for Veterans named after Jan Lembas,

— in the home environment.

Whereas in the area of Wroclaw the survey covered home environment.

The study included 51 randomly selected patients after ischemic stroke according to the following eligibility: recognized stroke (in the home environment — submitting an extract from the hospital certifying the ischemic stroke experienced, the other — on the basis of information obtained from the ward nurse), at least a six-month period after the stroke, lack of other diseases that could affect the functional sphere, for example. Previously acquired physical disability, possible verbal and logical contact and the consent of the respondent to participate in the study. One person was excluded from the study, because during the completion of the questionnaire there appeared indications that the person did not fully understand the questions, hence the total number of the participants was 50.

The respondents meeting the aforementioned conditions were informed about the purpose and manner of conducting the study. Under the research they filled out the questionnaire of the survey on their own. The research was anonymous and was performed better in home environment.

Results

The group of respondents included 27 women and 23 men after ischemic stroke aged 42–90 years.

The female respondents constituted 54% of patients participating in the research, whereas the remaining 46% of the surveyed were men. The participation of women and men in the study is quite balanced considering the fact that in Poland in the population over 60 years of age quantitatively women are in majority.

The respondents were numerically prevailed by people aged between 61–70 years, whereas the gender was dominated in that group by men — 26%, and by women aged up to 60 years — 20%. Among the respondents, aged over 70 the vast majority are women, and in the group aged over 80 the were no men which complies with the statistics on life expectancy of the two genders. The average age of the study group of patients after ischemic stroke is 64 years.

Significant parts of the study group are persons residing in the city — amounting for 70% of the group, whereas 30% of them are from rural areas. However, considering the size of the urban area, 28% of those residing in the urban areas come from cities with the population ranging from 100 to 500 thousand residents, 22% from the cities with the population smaller than 100 thousand, and 20% are residents from large agglomerations with the number of residents exceeding 500 thousand.

The largest group of respondents, approximately 37% consisted of those with secondary education, and the lowest — 16% of respondents with primary education. There were 20% of patients with higher education, whereas the group of patients with vocational education amounted for 27%.

The largest group in the research consisted of married respondents — 58%, and the smallest group consisted of those unmarried — 16%. 26% of the respondents are widowed.

More than half of the respondents are people whose source of income are pension benefits (56%), which is obvious, taking into consideration the average age of the group — 64 years. 21% receive pension benefits,

whereas for 18% of the surveyed professional work is the main source of their income, of which 10% of the overall number of respondents returned to work performed before the stroke incident. 6% of respondents receive social benefits, none of the respondents, however is left without financial resources.

In the group of respondents there were much more patients in whom the ischemic stroke occurred for the first time, which amounts for 78% of all respondents. The occurrence of the second and also the fourth stroke occurred in 10% of patients included in the research.

Among the respondents, the highest percentage regard people who had an ischemic stroke within the 6 months (and slightly earlier), which represents 44% of respondents, whereas another 22% had ischemic stroke within the period exceeding 5 years.

Among the study group as a result of ischemic stroke there occurred various deficits (Table 1), among which dominated: paresis in 90% of the patients, gait disorders in 62%, in 56% speech disorders, sensory disturbances in 48%, and 46% had problems with keeping balance. Also, there occurred less severe vision problems, depression, cardiac, swallowing and breathing disorders, loss of sphincter control as well as disorders referring to the cognitive function.

Table 1. Deficits occurring as a result of ischemic stroke in the study group of patients

Type of deficit	Percentage
Paresis	90%
Gait disorders	62%
Speech disorders	56%
Sensory disturbances (numbness)	48%
Balance disorders	46%
Sight disorders	26%
Depression	24%
Cardiac disorders	22%
Dysphagia	22%
Breathing disorders	20%
Dysfunction of the sphincter	16%
Cognitive disorders	8%

In the respondents there strongly dominated manifestation of the left-sided paralysis — 66% of the group, whereas in 30% of patients there appeared right-sided paresis. Only 4% of people in the study group did not experience paralysis.

In the group of patients after ischemic stroke 48% of respondents declared significant activity in the treatment process, 34% — the average, and only 2% of respondents did not manifest any activity in the process of recovery.

There were carried out comparative studies on the prevalence of diseases belonging to the modifiable risk factors for stroke before and after ischemic stroke incydent — Table 2. The percentage changes presented indicate activity on the part of many patients or those who care for them, aimed at the improvement of health probably by applying appropriate pharmacology and by activity in the pursuit of health.

Table 2. Modifiable risk factors for stroke in the study group

Modifiable risk factors for stroke	Before stroke incident	After stroke incidence
Hypertension	86%	47%
Diabetes	41%	24%
Atherosclerosis	35%	35%
Obesity	41%	22%
Ischemic heart disease	47%	38%

64% of respondents said they had not been educated in the field of stroke secondary prevention. 90% of patients after stroke in the field of rehabilitation, 70% of whom on the stationary rehabilitation (ward/rehabilitation holiday), 32% of patients were rehabilitated at home, whereas 22% of respondents were treated as outpatients, wherein in the case of some patients two forms of rehabilitation were applied.

In connection with the incident of ischemic stroke in 66% of the respondents, it was necessary to adapt housing to meet their needs, which included the elimination of architectural barriers.

The analysis of the study group of patients after ischemic stroke in the scope of self-service activities before and after the stroke (Table 3) indicates visible negative changes in each of the activity examined. The general independence in self-service activities before the stroke was declared on average by 91% of respondents, whereas in the period following the stroke the percentage of independent patients decreased on average to 42% of the study group.

The respondents were also assigned to assess their physical fitness in the period before and after the stroke (in the present tense). Spearman correlation coefficient is negative (-0.7529), indicating a negative correlation. Before the stroke the respondents showed good physical condition, whereas after the stroke their fitness dramatically decreased. It arises from Table 4 that in the group there was a significant deterioration in the physical condition: no condition was declared by 2% → 24% of the respondents, poor condition by 10% → 40% or the good condition by 40% → 10%.

The survey also included questions regarding the status of sexual activity before and after ischemic stroke. Before the stroke 36% of respondents were satisfied with

Table 3. Operations in the field of self-service activities

	Activities	Lack of independence	Independence
Before stroke	Mobility	70%	30%
	Having meals	38%	62%
	Change of underwear	62%	38%
	Body hygiene	62%	38%
After stroke	Mobility	16%	84%
	Having meals	6%	94%
	Change of underwear	4%	96%
	Body hygiene	10%	90%

Table 4. Assessment of physical fitness in the study group

Activities	Before stroke	After stroke
No conditio	2%	24%
Poor conditio	10%	40%
Moderate conditio	18%	20%
Good conditio	40%	10%
Very good conditio	30%	6%

Table 5. Problems with communicating in the study group

	Problems with communnicating	Yes	No
Before stroke	Problems in pronouncing words	52%	30%
	Problems in understanding words	10%	62%
	Speech slowing down	54%	38%
	Hypoacusia	30%	38%
	Slurred speech	54%	–
After stroke	Problems in pronouncing words	16%	84%
	Problems in understanding words	6%	94%
	Speech slowing down	4%	96%
	Hypoacusia	10%	90%
	Slurred speech	–	–

44% of them did not observe negative relationships in this regard. In the case of the remaining 56% of the respondents the disease adversely affected family and professional life, the most common cause being — according to 40% of respondents the inability to leave their homes because of physical condition and in 28% of the surveyed there occurred problems in communicating. In contrast, 22% of the patients felt loneliness or isolation (16%), and 12% of the respondents felt being rejected. There a was possibility of multitude of answers.

Analyzing the results of research on problems in communicating with the environment (Table 5) it can be observed that in the post stroke period there occurred deficits associated with speech disorder in the form of slurred speech and its slowdown (in 54% of patients) and problems with the pronunciation of words (52% respondents). Undeniably, the discomfort caused by impaired manner of communicating in the group of patients affected inhibiting both family as well as social life.

For the need of the study, the survey included questions about the degree of satisfaction from different aspects of life, affecting their quality of life. Questions were of comparative nature and the results show the level of satisfaction experienced by the respondents in various spheres of life — retrospectively and current.

100% of respondents before the disease were satisfied with their performance of self-service activities, including 82% of the satisfied and 18% of respondents who were medium satisfied, whereas after the incidence of stroke satisfaction was drastically reduced (10%), with an average satisfaction of 33% of the respondents, and there appeared higher dissatisfaction (total 57%).

The second highest assessment regarded the manner of organizing free time before the stroke — 74% of the respondents were satisfied and 23% medium satisfied, which was subject to a considerable change to 22% and 37% respectively, whereas dissatisfaction increased. Before the incidence of stroke, 69% of the respondents were satisfied with social contacts, and there were 22% of the medium satisfied, which also deteriorated in the opinion of respondents among whom 31% were satisfied in the period following the stroke.

As regards family life, the respondents do not feel a big change, although there was a small group of very unhappy with this sphere of life (8%) who felt a big difference in reference to family life in the period following the stroke.

It should be also noted that there were changes in the assessment of satisfaction of the quality of life — 96% of the respondents assessed the quality of life before the occurrence of stroke as satisfactory (58%) or medi-

their sexual lives, and currently after the stroke only 10%, lack of sexual activity before the stroke was declared by 34%, and after the stroke by up to 62%, whereas 16% of the study group did not respond.

Certainly, considering the age range of the study group, it should be assumed that not only the stroke incidence affected respondents' sexual realm, but also natural aging processes play a significant role in this mater, the disease contributed to the acceleration of those changes. Furthermore, according to previous analyses lack of sexual activity may result from the concern that another stroke incident might follow.

As far as the impact of stroke on family and professional life is concerned, according to the respondents

um satisfactory (38%), whereas currently 52%, wherein 8% of the respondents assessed it as satisfactory whereas 46% were medium satisfied, and there also appeared a group of those very unhappy with the quality of life after stroke (from 0% to 12%).

According to the respondents, there were minor changes in marriage relationships where 53% of respondents were satisfied (out of 69%), although at the same time there are more patients who are very dissatisfied (3% → 13%) with these relationships.

As for the financial status, the degree of satisfaction decreased from 39% of those satisfied to 13% in the study group, while the percentage of dissatisfied respondents increased (8% → 29%). As far as the professional status after a stroke is concerned, there was a slight decrease in the degree of satisfaction and contentment was declared by 21% of respondents (before the stroke — 37%), whereas the degree of a dissatisfaction mong the respondents increased (7% → 26%).

It has been noted that in each of the spheres of life in the surveyed there occurred a decline in satisfaction, and in most areas there also appeared (from 0% or 1% to 13%) a condition defined as very unsatisfactory. However, it should be noted that the satisfaction with basic areas of life before the stroke was evaluated quite high and although it has been reduced, it still remains at a good level.

In the study group, 44% of the respondents experienced ischemic stroke approximately 6 months before the survey, therefore, it should be noticed that compared to the entire study group they similarly assessed their current satisfaction with the quality of life, however, there is a noticeable lack of highest assessed response — satisfactory (Table 6).

Table 6. Life satisfaction assessment

Life satisfaction assessment of patients who experienced stroke 6 months before	
Satisfactory	–
Medium satisfactory	59%
Non-satisfactory	27%
Very unsatisfactory	14%

There were observed patients' health conditions resulting from ischemic stroke and it turned out that 44% of respondents had felt discouragement associated with having too little physical activity, 38% had felt disorder of concentration, whereas 26% of the patients experienced a feeling of being burden for the family/close ones. Only 8% of respondents complained about apathy, and the aforementioned conditions had not been experienced by 24% of the respondents. As a result of having an incident of stroke, 18% of the respondents became

mutually emotionally closer to the family, whereas 20% felt the opposite situation — isolation. There was a multitude of answers.

A comparison of the phenomenon of depression in the period before the stroke and in the current situation was made. As many as 90% of respondents had not felt depression before the stroke, whereas after the stroke the percentage of those patients decreased to 46%. In the study group one can observe a significant effect of the disease on the occurrence of depressive conditions.

These data present a retrospective and current biopsychosocial situation of the study group of patients after ischemic stroke and are the basis to review the quality of life in the basic areas of its functioning (scales).

Based on the SF-36 questionnaire a subjective assessment of health status has been made and on this basis the average assessment of the quality of life for the study group of patients after ischemic stroke was determined in correlation with the factors that may have an impact on the quality of their lives.

The highest score value — a QoL indicator (quality of life) — 171 pts — means the lowest assessment of the quality of life, and the lowest score value stands for the highest level of the quality of life, wherein the maximum score value in the physical dimension is 103 pts, whereas in the mental dimension it is 68 pts.

The study shows that the average global quality of life in the study group is 101 pts (Table 7) out of 171 possible to score, of which in the physical sphere the research group achieved on average 69.64 pts out of 103 pts possible, whereas in the mental sphere the average value of QoL is 31.44 pts out of 68 pts possible. It should be noted that significantly lower quality of life is perceived in the physical dimension.

Table 7. Average quality of life after stroke

Average quality of life of patients after stroke	Points
Global quality of life	101.08
of life in the physical sphere	69.64
Quality of life in the mental sphere	31.44

Below, there is a figure presented, which shows the average quality of life of patients after ischemic stroke, divided into eight indicators/scales.

In the study group, in each area there were achieved the following (average) results:
1. physical functioning QoL index was 35.42 pts/ max 50 pts possible to score — the higher the index, the worse quality of life,
2. restrictions due to the physical health → 15.08,
3. social functioning → 5 pts/8 pts,
4. pain perception → 4 pts/9 pts,

5. mental health → 10.94 pts/25 pts,
6. emotional functioning → 5.9 pts/15 pts,
7. vitality → 9.6 pts/20 pts,
8. general feeling of health → 14.18 pts /24 pts.

Respondents after ischemic stroke felt very a low quality of life in the area of physical functioning and limitations due to physical health, which is inextricably linked with each other, and therefore had the impact on the negative assessment of general health perception (Figure 1).

The study also attempted to determine whether the participation of the respondents in the post-stroke education affects their quality of life. Although there is no statistically significant relationship between the quality of life and post-stroke education (p=0.0892), it can be noted that in the study group the educated respondents assessed their quality of life higher — the average rate of QoL was 85 pts, whereas in the case of the non-educated patients the average rate of the quality of life reached 102 pts, which means that the educated respondents assessed their quality of life higher.

Following the impact of post-stroke education on the quality of life after the stroke it can be noted that non-educated respondents worse assessed the physical dimension of life, and this dependence is visible in the first two QoL scales. The respondents who participated in the post-stroke education, which accounts for 24% of all respondents, far better assessed their QoL in the physical functioning → 29.41 pts and in the sphere of limitations due to physical health → 10.83 pts, whereas those non-educated (64% of the study group) achieved significantly higher rates (respectively 35.12 and → 17.5 pts), which indicates a much lower assessment in the aforementioned spheres of life (Figure 2).

An analysis aimed at clarifying whether there is a relationship between carrying out post-stroke education for patients after ischemic stroke and the incidence of stroke, and it turned out that among the respondents who had more than one stroke up to 82% had not educated. In addition, statistical calculations show that there is a significant statistical relationship between post-stroke education, and the next occurrence of stroke (p=0.0482). The aforementioned test results, obtained for the purposes of this study indicate that the incydent of stroke affected in a fundamental way further life as well as biopsychosocial functioning of the respondents. They felt the consequences of the disease by reduction of the quality of their lives in many areas, mainly due
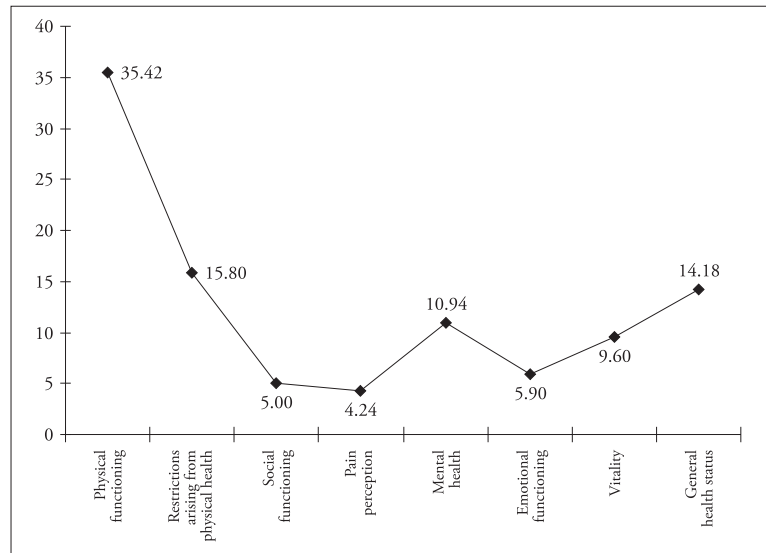

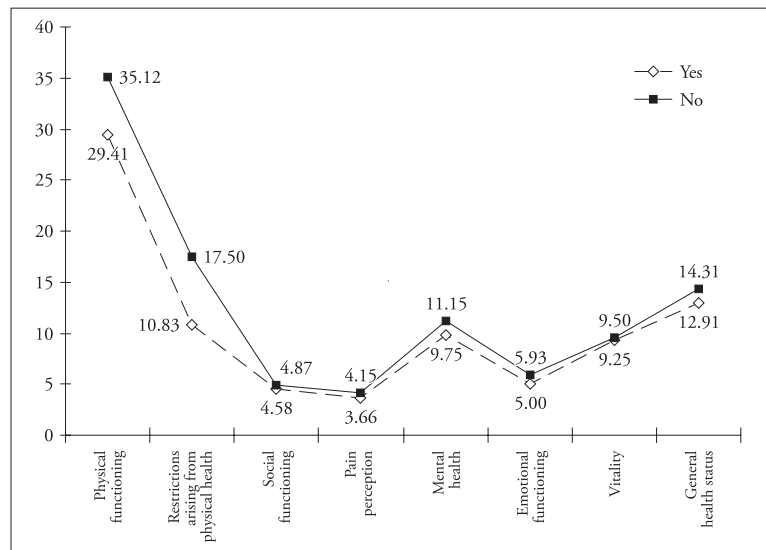Figure 1. Global quality of life of patients after stroke according to scales

Figure 2. Post-stroke education and quality of life scales

to the changes in functional capacity and not without effect on the psychosocial sphere.

Discussion

Experiencing ischemic stroke is a huge experience for both the patient and their close environment. Consequences entailed by the incydent of stroke, which is most commonly life-threatening condition, and certainly health threatening are described in the second chapter of the work. The aforementioned effects change the situation of patients in different areas of their lives and have a substantial impact on the widely understood quality of life.

It arises from the analysis of the research that the quality of life of patients after ischemic stroke has deteriorated in most areas of life. The global quality of life in the study group has been assessed at a relatively low

level, which does not differ from the results of other authors, including Jaracz/Kozubski, Jarosławska/Błaszczyk or Jucha [6–8]. Assessing the quality of life according to domains, the results obtained indicate a low quality of life in the functional dimension, whereas in the mental dimension it is more favourable.

The largest decrease in the quality of life of respondents was observed in the following areas: physical functioning, limitation due to physical health and general sense of health.

Comparing the results of other authors it can be concluded that at these levels they are similar [7,8]. This is justified, as the patients with functional limitations, problems with self-service and mobility have a poorer quality of life [9–11].

The first Polish studies assessing the quality of life of patients after ischemic stroke by means of the SF-12 were carried out by Jarosławska/Błaszczyk (in English). The results obtained by these authors as well as those in this study are similar in the physical realm as well as in each of its components with the exception of the realm of pain perception, where our research showed a much higher quality of life of respondents in this sphere.

According to our research, the patients aged 71–80 years assessed their own physical health as the worst, whereas in the case of Jarosławska/Błaszczyk research it was assessed as the worst by patients aged 45–64 years. Low assessment in the physical realm made by these people is justified, because apart from the health consequences resulting from, a stroke, elderly patients are faced also with other burdens [11].

Independence in the performance of self-service activities is essential for the ischemic stroke patients, and it is here that negative changes occurred and resulted in a low assessment of physical functioning and limitation due to physical health. Similar to the analysis of our research, other authors also showed low scores in this area [7,8,12], where mobility problems occurred in 2/3 of patients in the studies carried out by Jarosławska/Błaszczyk [8] and in those by Rosińczuk-Tonderys et al. [12]. Also, in the case of self-service, approximately half of the respondents had problems, which is also consistent with the results obtained by other authors.

The analysis of sexual activity in turn, indicates negative changes in this sphere of life, which is confirmed both in the studies by Viitanen et al. as well as by King [13,14]. According to our research as many as 62% (out of 36%) of the respondents declared a lack of this activity, and 16% did not respond, whereas in the studies by Rosińczuk-Tonderys et al., it was a an irritable question for 58% of the respondents, and 30% of them had experienced a change in this matter.

Physical problems have a negative effect on functioning both in the family and in society. Worsened physical functioning and the limitations resulting from it had a negative impact on active leisure time spending.

The quality of life in the psychosocial dimension turned out to be higher than in the physical realm, which is consistent with the results of other authors [13]. As far as mental health of patients after ischemic stroke is concerned, there also occurs deterioration of the quality of life in this area, however it is much better assessed — 31.44 pts, out of 68 pts possible. Comparable results in mental dimension were obtained by Jarosławska/Błaszczyk [8], although there is a noticeable difference in the results of research in each of the spheres. In this study we achieved slightly higher results. The reason for slightly higher scores in our studies may have resulted from the fact that in the study group examined by Jarosławska/Błaszczyk up to 94% of the patients (out of 172 participants) were after their first ischemic stroke, and when there was a breakthrough in the disease, and their physical functioning improved, psychosocial problems, as suggested by Jaracz/Kozubski [7] come to the fore.

In the assessment of social functioning lower scores were obtained in our studies than in those by Jarosławska Błaszczyk. Comparing the retrospective studies and the changes that have occurred in various areas of respondents' lives, there is a visible negative impact of the disease on social functioning.

When analyzing the quality of life of patients after ischemic stroke in the dimension of mental, the analysis of our research indicates a clear decrease in the quality of life in the area of vitality (VT) which is also consistent with the results of the research carried out by Bejer et al. [15]. Fatigue, which often accompanies patients with a history of ischemic stroke, is associated by many authors with depressive states, which accompany it [16].

Bejer et al. in their studies indicated a strong correlation between fatigue and depression. Our research showed a significant increase of post-stroke depression, which occurred in 54% of the respondents (from 10% before the stroke), wherein "the so called different caliber weight" was perceived by 88% of respondents, whereas in the studies by Jarosławska/Błaszczyk [8] as many as 2/3 of respondents felt anxiety/depression. That had a significant impact on the assessment of the quality of life of these people in both the physical and mental sphere, which is confirmed in the research by Jaracz/Kozubski [3]. At the same time these authors associate the coexistence of depression and paralysis as a factor lowering the quality of life [17].

Although the average quality of life index in the mental sphere came at the secondary level, however, the low assessment can be observed on the scale regarding emotional functioning, so important for everyone, and for the patient in particular. Emotional disorders

intensify the feeling of discomfort. Moreover, low mobility triggers negative emotions, which in turn generate a decrease of the quality of life. Indicators, slightly higher than in our study, were obtained by Jarosławska/Błaszczyk in their studies [8].

Although the assessment of the global quality of life in the study group was quite low, as it reached a high rate of 101/171 maximum points, however in the mental dimension the quality of life reached the rate of 31.44 pts on 68 pts possible, therefore it was at an average level. This is reflected in the assessment of the degree of general satisfaction with the quality of life as a whole. In our study, the mental dimension extracted from the result of the global quality of life was assessed slightly higher than that indicated in the literature, whereas our retrospective studies have shown that satisfaction has been subject to a decisive decrease in almost all the areas of life surveyed.

The study shows that 54% of the respondents felt satisfaction, which in comparison with 24% of those satisfied in a 25-person group of Tasiemski et al. [18] is a much more favorable result. However, in the Israeli study by Hartman–Maeir et al. [19] in a numerically comparable group (56 patients), 39% of the respondents were satisfied with life, which also represents a lower percentage than that obtained in this work.

Despite relatively high results of the satisfaction evaluation, but also noticeable negative changes in their assessment it can be assumed that patients after stroke experience a decline of satisfaction in various areas of life.

Our study however, points to the unfavorable change in the quality of life and low assessment of QoL in each domain of respondents' lives. Undoubtedly, the incident of stroke affects the biopsychosocial sphere of the patiens who have been affected by this problem, which is confirmed also in the comparative retrospective and current scores of the respondents in the context of the global quality of life. At the same time, according to some authors, these seemingly incompliances are a regularity because high satisfaction with various aspects of life experienced by patients can coexist with the low quality of life.

Post-stroke education is very important for the improvement of the quality of life of patients after ischemic stroke. Our study has shown that non-educated patients assessed their quality of life slightly lower both in physical functioning, as well as on the scale regarding restriction of physical health, therefore the two domains that have the greatest impact on the quality of life of these people. It was also examined that 82% of patients who had experienced a stroke again and had not been included in the post-stroke education.

Therefore, there arise conclusions to improve the secondary post-stroke prevention for these people. At the same time Jaracz/Kozubski [20] noted that it is important to educate both patients and their caretakers, wherein educating the latter has a more favorable impact on the quality of life after stroke. They are the ones who can observe whether the recommendations of the secondary stroke education are being followed.

In our study it is the family, then the physiotherapist and the doctor that were pointed out as the persons who most favourably affected their recovery. Therefore, there should be taken the advantage of the potential of the next, supported by appropriate knowledge on the improvement of the quality of life of patients — the people who survived the ischemic stroke.

If the society however, can be persuaded to implement changes in the functioning and prefer a healthy lifestyle by living actively and applying healthy diet, it will probably be possible to reduce the number of stroke incidents, which is particularly desirable in an aging society.

The results presented, which were developed based on the research material gathered for the needs of this study, in fact, do not differ from the information contained in medical literature.

The problems faced by patients after ischemic stroke affect their quality of life, if they are not left alone with their problems, they have a chance for a decent life in the society.

Conclusions

The quality of life in itself, as well as in patients after ischemic stroke is a dynamic state, and its assessment is subject to many influences and is constantly changing in time and space, therefore one should look for solutions so that the man, despite various constraints, could sustain their dignity and satisfaction.

1. The quality of life in patients after ischemic stroke is reduced particularly in the functional field.
2. Reduced quality of life in the physical sphere does not exclude achieving satisfaction in many areas of life.
3. Appropriate socio-emotional support may favourably affect the quality of life, including an increase of satisfaction with different aspects of life.
4. Socio-demographic factors only as a set of interdependencies affect the quality of life of patients after ischemic stroke.
5. Commonness of post-stroke education is recommended with patients after stroke and, what is important with their families, which has a significant impact on the quality of life of both parties.

Implications for Nursing Practice

The article presents issues related to the quality of life of patients after ischemic stroke. Important information for nursing practice is that functioning in physical and mental spheres deteriorate, which affects the overall quality of life in these patients. In order to improve the quality of life of patients after ischemic stroke, commonness of post-stroke education is recommended with patients after stroke and their families, which has a significant favourable impact on the quality of life of both parties.

References

[1] Broda G. Jakość życia — ważny pomiar zdrowia. *Kardiologia Polska*. 2009;67(10):1086–1087.

[2] Lawrence L., Christie D. Quality of life after stroke: a three-year follow-up. *Age Ageing*. 1979;8(3):167–172.

[3] Jaracz K., Kozubski W. Jakość życia chorych po udarze mózgu w świetle badań empirycznych. *Aktualności Neurologiczne*. 2001;2(1):35–45.

[4] Świat M. Udar w wieku podeszłym — odmienności. *Postępy Nauk Medycznych*. 2010;4:277–281.

[5] Jaracz K. Sposoby ujmowania i pomiaru jakości życia. Próba kategoryzacji. *Pielęgniarstwo Polskie*. 2001;2(12):219–226.

[6] Tylka J., Piotrowicz R. Kwestionariusz oceny jakości życia SF-36 — wersja polska. *Kardiologia Polska*. 2009;67(10):1166–1169.

[7] Jaracz K., Kozubski W. Jakość życia po udarze mózgu. Część I — badanie prospektywne. *Udar mózgu*. 2001;3(2):55–62.

[8] Jarosławska B., Błaszczyk B. Jakość życia chorych po przebytym udarze niedokrwiennym mózgu leczonych w rejonie szpitala powiatowego. *Studia Medyczne*. 2012;26(2):19–29.

[9] Jucha R. Stan funkcjonalny oraz jakość życia po przebytym udarze niedokrwiennym mózgu u chorych zamieszkałych na terenach wiejskich oraz w małych miastach. *Przegląd Lekarski*. 2012;69(3):98–102.

[10] Czarnecka D., Zabojszcz M. Nadciśnienie tętnicze a udar mózgu. *Choroby Serca i Naczyń*. 2004;1(1):19–25.

[11] Żmudzka-Wilczek E., Opara J., Mehlich K. Ocena jakości życia osób po udarze mózgu przy pomocy skali SIP S.A.-30 — cz. I. *Zeszyty Metod.-Naukowe AWF*. Katowice 2006;20:71–84.

[12] Rosińczuk-Tonderys J., Żerkowska U., Aleksandrowicz K., Siepiela P. Problemy życia codziennego chorych po udarze niedokrwiennym mózgu. W: Rosińczuk-Tonderys J., Uchmanowicz I. (Red.), *Chory przewlekle — aspekty pielęgnacyjne, rehabilitacyjne, terapeutyczne*. Med-Pharm Polska, Wrocław 2011;1–14.

[13] Viitanen M., Fugl-Meyer K.S., Bernspång B., Fugl-Meyer A.R. Life satisfaction in long-term survivors after stroke. *Scand J Rehabil Med*. 1988;20(1):17–24.

[14] King R.B. Quality of life after stroke. *Stroke*. 1996;27(9):1467–1472.

[15] Bejer A., Probachta M., Sochacki A., Lenart-Domka E. Kliniczne uwarunkowania zmęczenia po udarze mózgu. *Молода Спортивна Наука України*. 2010;3:17–23.

[16] Klocek M. Jakość życia po udarze mózgu. W: Kawecka-Jaszcz K., Klocek M., Tobiasz-Adamczyk B. (Red.), *Jakość życia w chorobach układu sercowo-naczyniowego. Metody pomiaru i znaczenie kliniczne*. Wydawnictwo Termedia, Poznań 2006;219–225.

[17] Jaracz K., Kozubski W. Jakość życia po udarze mózgu. Część II — uwarunkowania kliniczne, funkcjonalne i społeczno-demograficzne. *Udar Mózgu*. 2001;3(2):63–70.

[18] Tasiemski T., Knopczyńska A., Wilski M. Jakość życia po udarze mózgu — badania pilotażowe. *Gerontologia Polska*. 2010;18(3):128–133.

[19] Jatczak-Stańczyk A., Nowakowska K., Kocur J. Jakość życia u osób z organicznym uszkodzeniem mózgu w przebiegu choroby Alzheimera oraz udaru mózgu. *Kwartalnik Ortopedyczny*. 2012;3:361–371.

[20] Jaracz K., Kozubski W. Znaczenie wsparcia społecznego dla jakości życia chorych po udarze mózgu. Przegląd wybranych badań eksperymentalnych. *Neurologia i Neurochirurgia Polska*. 2006;40(2):140–150.

Corresponding Author:
Sylwia Krzemińska
ul. Czereśniowa 10, 55-093 Brzezia Łąka, Poland
e-mail: sylwia.krzeminska@umed.wroc.pl