

Jędrych Marian, Kulik Teresa B., Jędrych Tomasz, Barańska Agnieszka, Kanecki Krzysztof, Bogdan Magdalena, Kmieć Paweł. An evaluation of the impact of rehabilitation on the quality of life in patients after cerebral stroke. *Journal of Education, Health and Sport*. 2018;8(12):245-254. eISSN 2391-8306. DOI <http://dx.doi.org/10.5281/zenodo.2171461> <http://ojs.ukw.edu.pl/index.php/ohs/article/view/6366>

The journal has had 7 points in Ministry of Science and Higher Education parametric evaluation. Part b item 1223 (26/01/2017).  
1223 Journal of Education, Health and Sport eissn 2391-8306 7

© The Authors 2018;

This article is published with open access at Licensee Open Journal Systems of Kazimierz Wielki University in Bydgoszcz, Poland  
Open Access. This article is distributed under the terms of the Creative Commons Attribution Noncommercial License which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author (s) and source are credited. This is an open access article licensed under the terms of the Creative Commons Attribution Non commercial license Share alike. (<http://creativecommons.org/licenses/by-nc-sa/4.0/>) which permits unrestricted, non commercial use, distribution and reproduction in any medium, provided the work is properly cited.

The authors declare that there is no conflict of interests regarding the publication of this paper.

Received: 30.10.2018. Revised: 20.11.2018. Accepted: 10.12.2018.

## **An evaluation of the impact of rehabilitation on the quality of life in patients after cerebral stroke**

**Marian Jędrych<sup>1</sup>, Teresa B. Kulik<sup>2</sup>, Tomasz Jędrych<sup>3</sup>, Agnieszka Barańska<sup>1</sup>,  
Krzysztof Kanecki<sup>4</sup>, Magdalena Bogdan<sup>4</sup>, Paweł Kmieć<sup>5</sup>**

<sup>1</sup>**Department of Informatics and Medical Statistics, Medical University of Lublin, [agnieszkabaranska@umlub.pl](mailto:agnieszkabaranska@umlub.pl)**

<sup>2</sup>**The Chair of Public Health, the Faculty of Health Science, Medical University of Lublin**

<sup>3</sup>**Department of Foreign Languages, Medical University of Lublin**

<sup>4</sup>**Department of Social Medicine and Public Health, Medical University of Warsaw**

<sup>5</sup>**Medical University of Lublin alumna**

### **Abstract**

Cerebral stroke is the third most frequent cause of death in the human population, and one of leading causes of long-lasting disability. Medical rehabilitation has proven to be an indispensable element in stroke management.

The aim of this study is to evaluate the quality of life in patients after a cerebral stroke, before and after rehabilitation. This analysis was based on data obtained from an empirical study conducted on 70 people after a stroke. The research was performed with the use of an original survey questionnaire.

Due to their conditions, respondents perceived varying degrees and extents of changes in their organisms and environments pertaining to their physical, psychological, social, and professional spheres of life. In the vast majority of the patients, applied rehabilitation had a positive influence on their quality of life. There was an improvement in their physical and psychological conditions, as well as in various other aspects of life, while the intensity of emerging disorders decreased.

Key words: cerebral stroke, rehabilitation, quality of life

## **Introduction**

Vascular cerebral diseases have always been portrayed as one of the major health problems in society. They include cerebral stroke, which, due to its prevalence and high costs of treatment, poses a serious problem for contemporary medicine. It frequently leads to patients' impairment; in the majority of cases it significantly reduces their quality of life in both the physical and psychological fields, and frequently also in the social and professional domains [1].

Cerebral stroke is the third most common cause of death in the population. It is estimated that one in six people will suffer a stroke in their life [2]. The number of deaths worldwide amounts to 4.6 million per year. The stroke incidence rate in Poland is 177/100,000 in males and 125/100,000 in females. The stroke incidence increases to 300/100,000 for individuals aged between 55 and 65 years [3].

Medical rehabilitation is an essential element in post-stroke management. It should be introduced as soon as possible in order to prevent any increase in dysfunctions already existing [4]. In the acute phase of stroke, rehabilitative procedures are combined with intensive medical and nursing care. The initial period following stroke is characterised by decreased muscle tone. Therefore, it is essential to continually stimulate the motor activity of healthy limbs, retain the full range of motion in joints, and prevent spasticity. Thus, particular

attention should be paid to the patient's positioning to prevent bedsores and muscle contractures [5, 6].

The occurrence which has a substantial impact on a post-stroke patient's rehabilitation process and prognosis is complications. Patients after cerebral stroke are extremely susceptible to developing many complications - general medical as well as neurological. The factors which increase the risk of developing complications include old age, low physical and mental activity prior to stroke, pre-stroke impairment, co-existing diseases, and the severe course of the stroke. Accordingly, it becomes extremely important to attempt to prevent their development, in both the acute and chronic phases of brain stroke.

Progress in medicine has contributed to an increase in life expectancy in patients with various conditions. At the same time it has been stated that the patient's length of life has proven an inadequate measure of treatment efficiency. Medicine now faces another challenge – that of improving the quality of life. Epidemiological and functional indicators applied to date have become insufficient for the evaluation of the consequences of diseases; as a result, an assessment of the quality of life has been introduced with regard to this issue. The quality of life, along with clinical and functional assessment, are today indicators of therapeutic effectiveness, and, consequently, of the patients' state of health [7, 8].

### **Objective**

The objective of this study is to assess the quality of life in cerebral stroke survivors before to and after rehabilitation.

### **Material and methods**

For the purpose of the present research, the diagnostic survey method was applied, in which an original survey questionnaire was used as a research tool. The survey questionnaire study was carried out via the Internet by means of the app *survio.pl* on a group of 70 individuals in late July and early August 2017. The collected data underwent statistical analysis using STATISTICA v.12.0.

## **Research sample characteristics**

This study consisted of 70 people who took part voluntarily, comprising 38 women and 32 men, who fulfilled the criteria for qualifying for the research. The respondents were between 33 and 78 years old. Among the 70 studied respondents, the most numerous group was people in the 50-60 age group – 25 individuals (35.7%); next were people in the 60-70 age group – 20 individuals (28.6%), followed by 40-50 year olds – 11 individuals (15.7%), then 30-40 year olds – 9 individuals (12.9%). The smallest group was represented by people aged 70-80 – 5 individuals (7.1%).

## **Results**

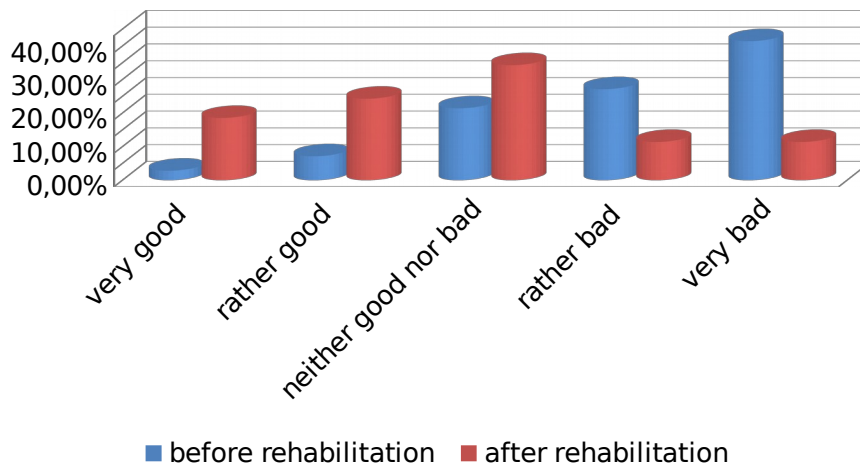
### **The quality of life of respondents in the physical sphere**

Significant differences were observed between the quality of life of the analysed post-stroke patients in the physical domain before and after rehabilitation ( $p < 0.001$ ).

In the patients after their first-ever cerebral stroke, their quality of life in the physical sphere before rehabilitation scored very good at 3.39% of the respondents, rather good in 5.08%, neither good nor bad in 8.47%, rather bad in 50.85%, and very bad in 32.2%. In the patients who had suffered two cerebral strokes, the quality of life in the physical area prior to rehabilitation was evaluated as rather good in 11.11%, rather bad in 66.67% and very bad in 22.22%. In the patients who had survived three or more cerebral strokes the quality of life in the physical sphere before rehabilitation was assessed as very bad by all the respondents.

In the patients who had suffered one cerebral stroke, their quality of life in the physical sphere after rehabilitation was evaluated as very good in 6.78%, rather good in 52.54%, neither good nor bad in 23.73%, and rather bad in 16.95%. The patients who had suffered two cerebral strokes reported their quality of life in the physical domain after rehabilitation as rather good in 66.67%, neither good nor bad in 22.22% and rather bad in 11.11%. Half the patients after more than two strokes reported rather good quality of life in the physical sphere, and the other half of the respondents – very bad.

## quality of life



Graph 1. A comparison of the post-stroke respondents' quality of life in the physical sphere before and after rehabilitation.

In the number of post-stroke respondents there was an increase in the quality of life characterised as very good by 2.85% (an increase from 2.86% to 5.71%), rather good by 48.58% (an increase from 5.71% to 54.29%), neither good nor bad by 15.72% (an increase from 7.14% to 22.86%), and a decrease in the number of patients with rather bad quality of life by 35.72% (a fall from 51.43% to 15.71%) and very bad by 31.43% (a fall from 32.86% to 1.43%) (Graph 1).

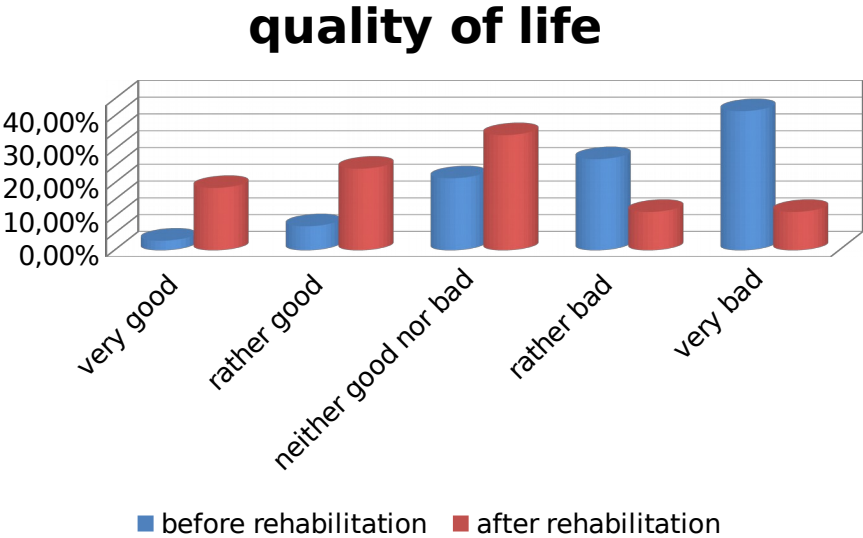
### **The quality of life of respondents in the psychological sphere**

Considerable differences were noted in the post-stroke respondents' quality of life in the mental sphere before and after rehabilitation ( $p < 0.001$ ). A significant correlation was observed between the post-stroke respondents' quality of life in the mental domain before rehabilitation and the number of strokes they had suffered ( $p < 0.045$ ).

In the patients after their first-ever stroke, 3.39% described their quality of life in the mental sphere before rehabilitation as very good, 5.71% as rather good, 22.03% as neither good nor bad, 40.68% as rather bad, and 27.12% as very bad. In the patients who had suffered two cerebral strokes, their quality of life in the psychological area before rehabilitation was evaluated as rather good in 1.43%, rather bad in 22.22% and very bad in 66.67%. All the patients who had survived three or more strokes assessed their quality of life in the mental sphere as very bad.

In the patients who had suffered one cerebral stroke, their quality of life in the psychological sphere after rehabilitation was evaluated as very good in 15.25%, rather good in

50.85%, neither good, nor bad in 16.95%, rather bad in 13.56%, and very bad in 3.39%. The patients who had suffered two strokes assessed their quality of life in the psychological domain following rehabilitation as rather good in 55.56%, and rather bad in 44.44%. All the respondents who survived more than two strokes described their quality of life in the mental sphere after rehabilitation as neither good nor bad.



Graph 2. A comparison of the post-stroke respondents' quality of life in the psychological sphere before and after rehabilitation.

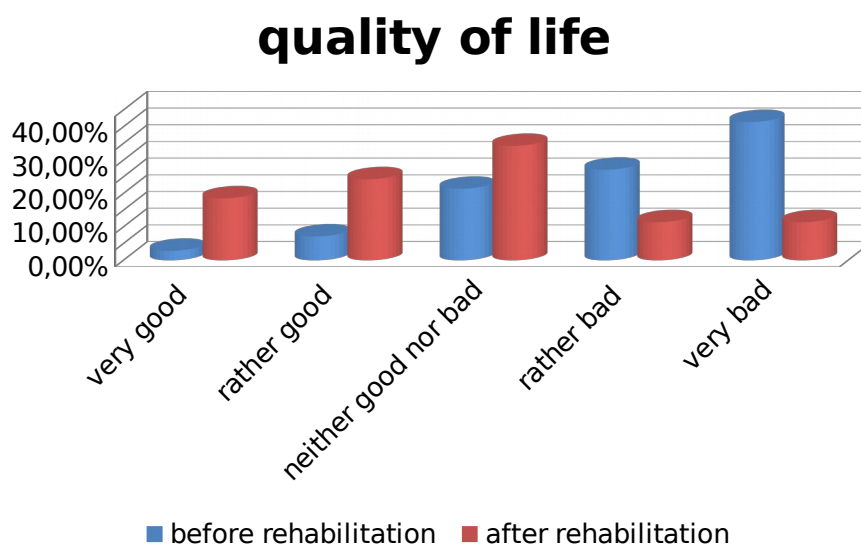
The rehabilitation of the patients who had suffered cerebral stroke yielded an increase in the percentage of respondents reporting a very good quality of life by 10% (an increase from 2.86% to 12.86%), rather good by 42.86% (an increase from 7.14% to 50%), and a fall in the percentage of respondents describing their quality of life as neither good nor bad by 1.43% (a decrease from 18.57% to 17.14%), rather bad by 20% (a decrease from 37.14% to 17.14%), and very bad by 31.43% (a decrease from 34.29% to 2.86%) (Graph 2).

## The quality of life of respondents in the social sphere

Considerable differences were observed in the post-stroke respondents' quality of life in the social sphere before and after rehabilitation ( $p < 0.001$ ).

6.78% of the patients after their first-ever cerebral stroke described their quality of life in the social sphere before rehabilitation as very good, 8.47% as rather good, 35.39% as neither good nor bad, 40.68% as rather bad, and 8.47% as very bad. In the patients who had suffered two strokes, their quality of life in the social area before rehabilitation was evaluated as very good in 11.11%, rather good in 11.11%, neither good nor bad in 22.22%, and rather bad in 55.56%. All the patients who had suffered three or more strokes assessed their quality of life in the social sphere as very bad.

In the patients who had suffered one cerebral stroke, their quality of life in the social sphere after rehabilitation was described as very good in 20.34%, rather good in 50.85%, neither good nor bad in 20.34%, rather bad in 6.78%, and very bad in 1.69%. The patients who had suffered two strokes assessed their quality of life in the social domain following rehabilitation as very good in 22.22%. One in three respondents described their quality of life in this aspect as rather bad and neither good nor bad, while nearly every tenth patient surveyed characterised it as rather bad. Half the respondents after more than two strokes evaluated their quality of life in the social sphere after rehabilitation as neither good nor bad, and the other half as rather bad.



Graph 3. A comparison of the post-stroke respondents' quality of life in the social sphere before and after rehabilitation.

The rehabilitation of the patients who had suffered cerebral stroke brought about an increase in the percentage of respondents reporting a very good quality of life by 12.86% (an increase from 7.14% to 20%), rather good by 38.57% (an increase from 8.57% to 47.14%), and a fall in the percentage of respondents describing their quality of life as neither good nor bad by 10% (a decrease from 32.86% to 22.86%), rather bad by 32.86% (a decrease from 41.43% to 8.57%), and very bad by 8.57% (a decrease from 10% to 1.43%) (Graph 3).

### **The quality of life of respondents in the professional sphere**

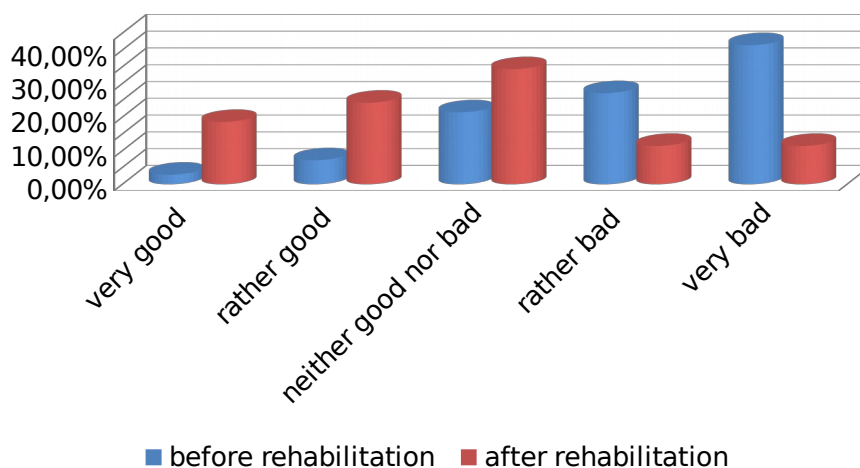
Significant differences were noted in the post-stroke respondents' quality of life in the professional sphere before and after rehabilitation ( $p < 0.001$ ).

3.39% of the patients after first-ever cerebral stroke described their quality of life in the professional sphere before rehabilitation as very good, 8.47% as rather good, 20.34% as neither good nor bad, 28.81% as rather bad, and 38.98% as very bad. In patients who had suffered two strokes the quality of life in the professional domain before rehabilitation was evaluated by one third of the respondents as neither good nor bad, nearly a quarter stated it was rather bad, and the highest percentage evaluated it as very bad (44.44%). All the patients after more than two strokes assessed their quality of life in the professional sphere as very bad.

In the patients who had suffered their first-ever cerebral stroke the quality of life in the professional sphere after rehabilitation scored very good in 20.34%, rather good in 23.73%, neither good nor bad in 33.90%, rather bad in 11.86%, and very bad in 10.17%. The patients who had suffered two cerebral strokes reported their quality of life in the professional domain after rehabilitation as very good in 11.11%, rather good in 33.33%, neither good nor bad in 44.44% and very bad in 11.11%. Half the patients after more than two strokes reported their quality of life in the professional sphere as rather bad, and the other half of the respondents as very bad.



## quality of life



Graph 4. A comparison of the post-stroke respondents' quality of life in the professional sphere before and after rehabilitation.

The rehabilitation of the patients who had suffered cerebral stroke brought about an increase in the percentage of respondents reporting very good quality of life by 15.71% (a rise from 2.86% to 18.57%), rather good by 17.15% (an increase from 7.14% to 24.29%), neither good nor bad by 12.86% (an increase from 21.43% to 34.29%), and a fall in the percentage of respondents who characterised their quality of life as rather bad by 15.71% (a decrease from 27.14% to 11.43%), and very bad by 30% (a decrease from 41.43% to 11.43%) (Graph 4).

### Conclusions

On the basis of the analysis of the undertaken research and the collected data, the following conclusions were formulated.

1. The quality of life of post-stroke patients after rehabilitation is better than before rehabilitation. An improvement in the quality of life in the physical, psychological, social and professional spheres after rehabilitation is observed in most cases.
2. The respondents' life-related aspects after the application of rehabilitative care improve significantly. At the same time, the intensity of patients' dysfunctions – fatigue, joint pains, respiratory and cardiovascular disorders, and urinary incontinence – are reduced.
3. The duration of rehabilitation has a significant influence on its effectiveness. The longer the rehabilitation is applied, the better are its effects.

4. The number of strokes suffered has little bearing on the effectiveness of rehabilitation. In persons who have experienced more than one stroke, the effectiveness of rehabilitation is slightly lower than in people after just one stroke.

#### **References:**

1. Drużbicki M.: Ocena funkcji chodu chorych z niedowładem połowicznym po udarze mózgu w okresie przewlekłym. W: Przegląd Medyczny Uniwersytetu Rzeszowskiego, 2010, 2, 145-151.
2. Mazurek J., Blaszkowska A., Rymaszewska J.: Rehabilitacja po udarze mózgu - aktualne wytyczne. W: Nowiny Lekarskie, 2013, 82 (1), 83-88
3. Czerczak E., Kuliński W.: Udar mózgu problemem współczesnej cywilizacji - analiza postępowania fizykalnego. W: Fizjoterapia Polska, 2016, 16 (1), 24-35.
4. Klimkiewicz P., Kubsik A., Woldańska-Okońska M.: Metoda NDT-Bobath stosowana w rehabilitacji pacjentów po przebytych udarach niedokrwiennych mózgu. W: Wiadomości Lekarskie, 2012, 65 (2), 102-107.
5. Nyka W., Jankowska B.: Zasady wczesnej rehabilitacji chorych z udarem niedokrwiennym mózgu. W: Forum Medycyny Rodzinnej, 2009, 3 (2), 85-91.
6. Piskorz J. (i in.): Wczesna rehabilitacja pacjentów po udarze niedokrwiennym mózgu. W: Medycyna Ogólna i Nauki o Zdrowiu, 2014, 20 (4), 351-355.
7. Papuć E.: Jakość życia - definicje i sposoby jej ujmowania. W: Current Problem of Psychiatry, 2011, 12 (2), 141-145.
8. Tasiemski T., Knopczyńska A., Wilski M.: Jakość życia osób po udarze mózgu - badania pilotażowe. W: Gerontologia Polska, 2010, 18 (3), 128-13.