

**PSYCHOEDUCATIONAL PROGRAMME AS AN APPROACH TO IMPROVE THE QUALITY OF LIFE IN PATIENTS AFTER STROKE:  
A PILOT RANDOMIZED CONTROLLED TRIAL  
PSYCHOEDUKAČNÍ PROGRAM JAKO PŘÍLEŽITOST KE ZVÝŠENÍ KVALITY ŽIVOTA  
U PACIENTŮ PO CÉVNÍ MOZKOVÉ PŘÍHODĚ:  
PILOTNÍ RANDOMIZOVANÁ KONTROLOVANÁ STUDIE**

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#### ABSTRACT

*Theoretical background:* Quality of life, which is deteriorated in patients after stroke (cerebrovascular accident, further on referred to as CVA), especially in the first years after stroke, is not only affected by the disease but is closely related to dignity and the satisfaction of human needs, including educational needs.

*Objectives:* The primary aim of this study was to test the hypothesis that the use of psychoeducation leads to improved quality of life in patients after CVA. The secondary aim was to assess the impact of self-dignity and selected sociodemographic and clinical factors on their perceived quality of life.

*Method:* The design of the present study was a pilot randomized controlled trial.

*Results:* It was proved that patients with the intervention reached a statistically greater improvement in the quality of life than patients without the intervention ( $p = 0.005$ ). Patient dignity has a statistically significant impact on current health status, and thus the health-related quality of life ( $r = -0.325$ ,  $p = 0.014$ ). There is a moderately strong negative correlation between HRQoL and mobility ( $r = -0.546$ ,  $p < 0.001$ ), which is more pronounced than in the case of self care ( $r = -0.497$ ,  $p < 0.001$ ), but lower compared to ADL ( $r = -0.562$ ,  $p < 0.001$ ). For depression, only a weak correlation is present ( $r = -0.285$ ,  $p < 0.032$ ).

*Conclusions:* The results of the study suggest that psychoeducation in patients after CVA represents most likely an effective and basic method of supporting optimal quality of their life. The team continues the research investigation building on this pilot study.

**Key words:** Stroke. Quality of life. Dignity. Psychoeducation.

#### ABSTRAKT

*Východiska:* Kvalita života, která se u pacientů po cévní mozkové příhodě (dále jen CMP) zhoršuje zejména v prvních letech po jejím proděláním, není ovlivněna pouze nemocí, ale úzce souvisí s důstojností a uspokojováním lidských potřeb včetně educačních.

*Cíl:* Primárním cílem práce bylo otestovat hypotézu, že použití

psychoedukace vede ke zkvalitnění života pacientů po CMP. Sekundárním cílem bylo zhodnotit vliv vlastní důstojnosti a vybraných sociodemografických a klinických faktorů na vnímanou kvalitu jejich života.

*Metodika:* Designem předkládané práce byla pilotní randomizovaná kontrolovaná studie.

*Výsledky:* Bylo prokázáno, že u pacientů s intervencí došlo ke statisticky většímu zlepšení v kvalitě života než u pacientů bez intervence ( $p = 0,0005$ ). Na současnou úroveň zdravotního stavu, a tedy na kvalitu života související se zdravím působí statisticky významně důstojnost pacienta ( $r = -0,325$ ,  $p < 0,014$ ). Mezi HRQoL a mobilitou existuje středně silná negativní korelace ( $r = -0,546$ ,  $p < 0,001$ ), která je výraznější než v případě sebeděče ( $r = -0,497$ ,  $p < 0,001$ ), ale nižší ve srovnání s ADL ( $r = -0,562$ ,  $p < 0,001$ ). U deprese je přítomna pouze slabá korelace ( $r = -0,285$ ,  $p < 0,032$ ).

*Závěr:* Výsledky naznačují, že psychoedukace u pacientů po prodělané CMP představuje s největší pravděpodobností efektivní a elementární metodu pro podporu optimální kvality jejich života. Vzhledem k tomu, že se jedná o studii pilotní pokračujeme nadále ve výzkumném šetření.

**Klíčová slova:** Cévní mozková příhoda. Kvalita života. Důstojnost, Psychoedukace.

#### INTRODUCTION

Despite numerous advances in diagnosing procedures, treatment and prevention, stroke (cerebrovascular accident, further on referred to as CVA) is considered a significant cause of long-term disability in the adult population (Verberne et al., 2022). The quality of life that is worse in patients after CVA, especially in the first years after the condition (Kainz et al., 2021), may not be influenced by the disease itself. It may be related to patient dissatisfaction in terms of the services provided as well as

the quality and availability of information, including problem-solving strategies, which these individuals consider to be very important aspects for their recovery and inclusion in the community (Baumann et al., 2014). According to Paulík (2017), it can also depend on personality characteristics and the level of satisfaction of human needs. The most serious form of deterioration in quality of life may be (Nemčková, 2004) the so-called existential crisis, which is characterized by the absence of hope, loss of self-esteem and disrespect for human dignity, which the individual may experience as absolute worthlessness and emptiness.

The term "Health-Related Quality of Life" (HRQoL) is used in the scientific literature as a criterion of change for medical purposes. It is an indicator of health service needs (Mavaddat et al., 2018). A suitable self-evaluation tool HRQoL is the generic European Quality of Life Questionnaire, which has been validated in CVA patient population. It contains 5 dimensions: (1) mobility, (2) self-care, (3) ADL, (4) pain and (5) anxiety/depression states (Kainz et al., 2021).

Many authors state that psychoeducation can be applied in medical and nursing practice as intervention that can improve and/or maintain HRQoL, especially when provided to patients without significant cognitive deficits. Psychoeducational programmes can be defined as didactic-therapeutic interventions that serve to provide information about the disease, emotional and social support (Kontou et al., 2020; Novák, 2019).

The primary aim of the study was to test the hypothesis that the use of psychoeducation leads to improved quality of life in patients after CVA. The secondary aim was to assess where factors such as human dignity, self-care, mobility, ADL, depression, comorbidity, pain, age, sex, education and/or family status exert any influence over the perceived HRQoL.

## RESEARCH SAMPLE

Inclusion criteria: adult with a clinical diagnosis of CVA in his/her medical history, lasting at  $\geq 6$  months and  $\leq 3$  years since the primo-attack, first hospitalized in a specialized medical institution, partial self-sufficiency, signed informed consent.

Exclusion criteria: non-cooperation, recurrent CVA, severe depression with BDI-II score  $\geq 40$ , dementia with MMSE score  $\leq 25$ , presence of cancer and/or the end-stage of the disease.

## METHODOLOGY

A quantitative research design was proposed and organized as a prospective randomized controlled pilot trial to determine the effectiveness of the non-pharmacological intervention.

The study lasted for 8 months (March to October 2021) and included two phases of research: (1) Patients were prospectively included in the study after meeting entry and exclusion criteria and completing the Czech version of the assessment tools for the quality of life – European Quality of Life Scale (EQ-5D-5L); dignity – the Patient Dignity Inventory (PDI); self-sufficiency ADL – Barthel Index (BI); depression – Beck Depression Inventory (BDI-II); pain – Visual Analogue Scale (VAS) and personal data (age, sex, education and marital status) including clinical data (actual and past illnesses and pain) were recorded.

(2) No later than 24 h after inclusion in the study, patients were randomized into an intervention group (A) and a control group (B). Both received usual rehabilitation care, which did not differ from that of patients not included in the study. In addition, psychoeducation was provided to the intervention group. Control measurements were taken in both groups at 2.5 months after the inclusion in the study.

The applied research was conducted in accordance with the Declaration of Helsinki and was initiated after registration of the study on clinicaltrials.gov and obtaining the consent of the Ethics Committee of the Faculty of Health Sciences of Palacký University in Olomouc and the top management of the selected rehabilitation institute in CR that participated in the research.

Patients were randomized in a predefined 1:1 ratio into two parallel groups using the Randomizer for Clinical Trials Tool (Randomizer, 2020).

## Intervention group

In addition to the usual neurorehabilitation treatment, patients were provided face-to-face group psychoeducation for 1.5 months, once a week for 45 minutes. The psychoeducation programme was led by independent experienced experts, trained to do so through an e-learning course that reflected CVA issues (Ssoft, b.r.). The psychoeducation protocol was based on the long-term specific needs of patients after CVA, identified in an earlier study by Andrew et al. (2014). Topics were discussed based on the defined professional competencies of each member of the psychoeducation team: Education

Nurse (understanding the disease, secondary CVA prevention, healthy lifestyle, treatment compliance, risk of falls), Clinical Psychologist (autonomy support, use of effective tension reduction techniques including relaxation Schultz autogenic training, adaptive types of behaviour with emphasis on own emotions or other stressful situations), Health and Social Worker (socio-legal counselling in relation to CVA).

### Control group

The standard neurorehabilitation treatment was drawn from the accredited standards of the institution. The personnel which were responsible for providing the treatment were not involved in the study itself. The individualized rehabilitation schemes contained the following areas: 1 physiotherapeutic treatment aimed at postural and locomotive as well as balance functions, 2 ergotherapeutic treatment aimed at enhancements in functional motoric abilities of upper limbs, in substitutional mechanisms and in activities of daily living (ADL).

Apart from the aforementioned elements, when necessary, in some cases psychosocial and logopedic rehabilitation was provided, too.

### Statistical analysis

Shapiro-Wilk normality tests verified that most quantitative variables do not have a normal distribution. Variables were presented using medians and minimum and maximum values. Mann Whitney U-test was used to compare two independent samples. All tests were carried out at the level of statistical significance  $\alpha = 0.05$ . Fisher's exact test was used for qualitative data analysis. The correlation

between quantitative and ordinal traits was determined using Pearson's correlation coefficient. The biserial correlation coefficient was used for dichotomous variables.

### RESULTS

A total of 57 respondents (33 male and 24 female) who met the selected criteria for the inclusion in the study were randomized to interventional treatment ( $n = 31$ ), 16 (51.6 % male) and 15 (48.4 % female) and conventional treatment ( $n = 26$ ), 17 (65.4% male) and 9 (24.6 %). The median age in the intervention group was 57 years. In the control group, the median age was 62 years (age range from 30 to 80 years). The groups differed statistically significantly only in the social situation,  $p = 0.009$  and in the incidence of comorbidities,  $p = 0.008$ .

There were no statistically significant differences among the groups in the aspects of mobility, self-care, coping ADL, pain, and depression assessed at the beginning,  $p > 0.05$ . The results of the questionnaires were compared between the comparison groups before and after the therapy. The difference in scores before and after therapy was calculated. A positive difference indicates an increase in the scores. It was proved that patients with the intervention experienced statistically greater improvements in the quality of life than patients without the intervention,  $p = 0.0005$ . The median difference (improvement) in HRQoL scores for patients with the intervention was 10 points, whereas the median improvement for the group without the intervention was only 5 points,  $p = 0.017$ . It can be concluded that the overall HRQoL in the intervention group was significantly better than in the control group in Table 1.

**Table 1** The impact of psychoeducation on the evaluation of HRQoL

Parameters	Group										P
	With intervention (n = 31)					Without intervention (n = 26)					
	Mean	SD	Median	Min	Max	Mean	SD	Median	Min	Max	
Score before	43.3	15.7	41.0	25.0	94.0	50.3	19.3	44.0	29.0	95.0	0.149
Score after	36.7	11.8	33.0	25.0	76.0	42.6	17.3	38.0	25.0	91.0	0.208
PDI difference	6.6	6.6	5.0	0.0	28.0	7.7	8.0	4.5	0.0	28.0	0.891
HRQoL score before	12.4	4.0	12.0	5.0	20.0	11.9	3.5	11.5	5.0	19.0	0.562
HRQoL score after	9.7	3.1	10.0	5.0	16.0	10.6	3.2	10.0	5.0	18.0	0.402
Difference in HRQoL	2.7	1.6	3.0	0.0	6.0	1.3	1.0	1.5	0.0	3.0	0.0005 ***
Current health level before	53.4	20.2	50.0	15.0	95.0	57.3	20.7	52.5	10.0	95.0	0.469
Current health level after	66.4	19.4	70.0	30.0	95.0	62.3	20.5	60.0	15.0	95.0	0.547
Difference in levels HRQoL	13.0	12.8	10.0	-5.0	45.0	5.0	4.0	5.0	0.0	15.0	0.017* *

Legend: \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

The current HRQoL is statistically significantly affected by the dignity of the patient (PDI score),  $r = -0.325$ ,  $p = 0.014$ .

There is a moderately strong negative correlation between HRQoL and mobility ( $r = -0.546$ ,  $p < 0.001$ ), which is more pronounced than in the case of self care ( $r = -0.497$ ,  $p < 0,001$ ), but lower compared to ADL ( $r = -0.562$ ,  $p < 0.001$ ). For depression, only a weak correlation is present ( $r = -0.285$ ,  $p < 0.032$ ) (Table 2).

Dignity (PDI score) had a significant impact on the current level of health status assessed before the intervention, standardized beta =  $-0.320$ . In addition, mobility had a significant effect with standardized beta =  $-0.526$ . Mann-Whitney U-tests proved that patients with the intervention improved more in self-sufficiency (mean improvement of 17 points vs 8 points in patients without the intervention),  $p = 0.001$ . Mann-Whitney U-tests proved that the patients with intervention suffered from depression less after the intervention than the control group,  $p = 0.011$ .

## DISCUSSION

Identification of factors that affect HRQoL was carried out in the first measurement. Significant indicators reducing HRQoL were human dignity, self-care, coping with ADL, depression, and mobility. Analysis of other parameters such as age, gender, education, social background, pain and the burden of comorbidities or acute problems did not reach levels of statistical significance. In the second phase of the research, it was shown that patients who had psychoeducational intervention added to their usual care experienced statistically greater improvement in HRQoL than patients in the control group. Patients in the intervention group suffered less depression and achieved greater improvement in self-sufficiency compared to the control group.

Variables closely related to HRQoL in our monitored patient population include worsened perception of self-dignity. Currently, there are no published international studies assessing dignity in relation to HRQoL in such patients. The degree of self-sufficiency in ADL, including the performance of usual activities, significantly influences the quality of life in our set of patients, similarly to the research of other authors (Peixoto et al., 2017; Rachpukdee et al., 2013). In our study, HRQoL is also significantly worse due to the impact of depression,

**Table 2** Influence of monitored variables on HRQoL in all patients together before therapy

Influencing factors	Current HRQoL (how the person feels) before
Sex (m-f)	0.169
	0.209
Age (years)	-0.125
	0.353
Education	-0.143
	0.289
Social background (alone x not alone)	-0.081
	0.549
Comorbidity (yes-no)	0.196
	0.145
Current problems (yes-no)	0.149
	0.270
PDI score before	-0.325
	<b>0.014</b>
Mobility	-0.546
	<b>&lt; 0.001</b>
Self-care	-0.497
	<b>&lt; 0,001</b>
ADL coping	-0.562
	<b>&lt; 0.001</b>
Pain	-0.139
	0.303
Depression	-0.285
	<b>&lt; 0.032</b>

which is consistent with the findings of Hamid et al. (2017) and Robinson et al. (2016).

The mobility deficit significantly reduces HRQoL in our target population. In an earlier study, Boyington et al., (2008), came to the same conclusion. On the other hand, in their study, Mavaddat et al., (2018) came to the opposite results. Since HRQoL is a multifactorial concept, its perception may be strongly dependent on the perspective of the evaluator. In terms of gender dependence of total HRQL score, there were found no statistically significant differences within the scope of our study. This fact is consistent with the work of Bártlová et al., (2022), while Solgajová et al. (2017) and Sadlonová et al., (2021) state the opposite. Although both the studies were carried out in countries neighbouring CR, and thus having a similar socio-cultural environment, it can be assumed that the differences may have been influenced by the size of the population and the fact that HRQoL was measured by different instruments. While the impact of age was not confirmed in our group of patients, some studies re-

sulted in worsening of the HRQoL after CVA depending on age (Bártlová et al., 2022; Sadlonova et al., 2021; Solgajová et al., 2017; Rachpukdee et al., 2013). This may result from the fact that the samples may have been age heterogeneous. It has not been confirmed that HRQoL affects the level of educational attainment in stroke patients. However, study Bártlová et al. (2022) and Ramos-Lima et al., (2018) disagree with this conclusion. The difference can be explained by the greater heterogeneity of the research set in relation to age, cognitive and functional limitations than in our study. In our study, however, the perception of pain does not worsen HRQoL, which has not been confirmed, for example, in the population of patients from Luxembourg (Baumann et al., 2014). Just as there was no evidence of a statistically significant effect of somatic comorbidities and current acute problems on HRQoL. However, many studies claim the opposite (Hilari et al., 2012; López Varela et al., 2013). It is possible that the intensity of the pain currently experienced and the severity of secondary diagnoses may have played a role in the discrepancy in the results. In our group of patients, the dependence of the social situation (i.e. living alone or sharing with a partner or family etc.) on the HRQoL evaluation was not detected. This does not correspond to the results of earlier studies (Ho, 2018; Rachpukdee et al., 2013), in which it is stated that a well-functioning family or partnership is gaining in importance in terms of security, social and psychological support. Probably, the reason for the differences may have been the fact that the evaluation in these dimensions improves with time.

To compare the effectiveness of psychoeducation on HRQoL after CVA (second phase of research), the study published by Brouns et al. (2021), Olukolade et al. (2017), Ostwald et al. (2013), Robinson-Smith et al. (2016) and Verberne et al. (2022) appears to be of critical importance. Similar to our study, positive changes were found in different dimensions of HRQoL in favour of the intervention group. A limiting factor in confronting the results with ours may be the fact that not all work had a randomized methodology.

### Study limitations

The present study was designed as a pilot study, therefore its main limitation is the small number of patients included. The limit is also the fact that the evaluation of HRQoL did not take into account

a more detailed specification of CVA subtypes, including treatment methods, which could have overestimated the result.

### CONCLUSION

Due to the fact that this was a pilot study, we continue our research with the intention of integrating psychoeducation in stroke patients in CR as an effective and elementary method into common clinical practice in decision-making on the principle of EBM. Our findings may be useful in strategic community care planning both at national and international levels which may enable nurses as well as other members of the multidisciplinary team to better meet the often neglected educational and psychological needs of patients, which in turn may mitigate the negative impact of CVA on their quality of life.

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