BOGUSŁAWA MARIA BORKOWSKA[1], ELŻBIETA GRZYWACZ[2], JOLANTA CHMIELOWIEC[3],
JOLANTA MASIAK[4], STANISŁAW MANULIK[5], ROGER MACHNIK[1], KRZYSZTOF CHMIELOWIEC[3]

Disability of post-stroke patients in the context of self-care and self-nursing, taking into account their sex, place of residence and attitude towards rehabilitation

Abstract

Introduction. A stroke is considered a medical emergency. It is an occurrence of brain disorders lasting more than 24 hours. Survivors are likely to be permanently disabled in a variety of ways. It is for this reason that numerous measures have been taken to reduce the mortality and degree of disability of these patients. Rehabilitation is an integral and extremely important part of the treatment of people who suffered a stroke – both ischemic and hemorrhagic. It should be started as soon as possible, because how quickly and to what extent the patient recovers depends on it.

Aim. The aim of the study was to analyze and evaluate the deficit of self-care and self-nursing of 100 post-stroke patients at the Department of Neurology with the Stroke Sub-department of the University Hospital in Zielona Góra.

Material and methods. A self-study questionnaire was used prior to the study.

Results. Among the subjects of the study, ischemic stroke was the most common (84%). Almost half of the subjects had a physical disability that limited their freedom of movement to a minor degree (47%). A significant degree of limitation was reported by 32% of the subjects. Statistical analysis showed a significant increase in the frequency of moderate pain reported by individuals after physical rehabilitation that restored their mobility – $p<0.000001$. The strength of the observed effect was moderate (Cramer's V = 0.43, 95% CI (0.27; 0.56)).

Keywords: disability, stroke, self-care, rehabilitation.

INTRODUCTION

A stroke is considered a medical emergency. It is an occurrence of brain disorders lasting more than 24 hours [1]. Survivors are likely to be permanently disabled in a variety of ways. It is for this reason that numerous measures have been taken to reduce the mortality and degree of disability of these patients. In Poland, a statement representing the views of the American Heart Association has been issued and general principles of stroke management have been developed [2,3].

The etiology of stroke is a complex phenomenon that is dependent on many factors, and the risk of developing the condition increases with age. Based on epidemiological studies, it can be concluded that stroke is the most common cause of disability, and the second most common cause of dementia. In Poland, the morbidity rate of women and men is much higher than in Western European countries. This is due to the poorer health of Polish society which is more exposed to factors that increase the number of strokes. According to the WHO, the incidence of stroke per year amounted to about 15 million people in the world [4,5].

It should be noted that the highest incidence of stroke is between 8 and 12 a.m., while the lowest incidence of stroke is between 8 and 12 p.m. Stroke used to affect mostly the elderly. Today, unfortunately, it can no longer be considered a condition of the elderly, because it affects more and more middle-aged and even young people. This is due to their unhealthy lifestyle, which consists of constant stress, unhealthy diet, stimulants, and lack of exercise. All these factors cause destructive changes in the human body [6].

Stroke patients are in an extremely difficult health situation because, apart from severe pain, they experience fear of treatment and anxiety about their health. Therefore, it is important for the nurse to support the patient both physically and mentally and convince him or her of the need for treatment and rehabilitation [6]. During the patient's stay in the neurological ward, the key task of the nurse is to monitor vital signs and prevent complications of particular systems due to neurological deficits. Many stroke survivors have permanent neurological damage and are unable to return to their pre-stroke roles and social activities. Therefore, it is very important to start rehabilitation as soon as possible, which significantly contributes to the patient's improvement. The most significant improvement in neurological status occurs within

[1] Student Scientific Association "SALUS", Collegium Medicum, University of Zielona Góra, Poland
[2] Student Scientific Club of Department of Oral Surgery, Pomeranian Medical University in Szczecin, Poland
[3] Department of Hygiene and Epidemiology, Collegium Medicum, University of Zielona Góra, Poland
[4] II Department of Psychiatry and Psychiatric Rehabilitation, Medical University of Lublin, Poland
[5] Department of Clinical Nursing, Faculty of Health Sciences, Wroclaw Medical University, Poland

three months of stroke onset. Stroke rehabilitation should begin within 24-48 hours from stroke onset, according to guidelines. This therapy is intended to prevent bedsores, respiratory tract infections and other complications [4].

Rehabilitation is an integral and extremely important part of the treatment of people who suffered a stroke – both ischemic and hemorrhagic. It should be started as soon as possible, because how quickly and to what extent the patient recovers depends on it. Stroke rehabilitation includes prevention of pressure sores and spasticity, as well as speech therapy. Rehabilitation after a stroke should begin as soon as possible, after the patient's condition stabilizes. Stroke physiotherapy is divided into three phases. The first is the moment of return to function. This is called the 'acute phase' during which the patient is hospitalized in the neurology department. His or her stay in the ward usually lasts up to 2 weeks or longer [7].

The next stage of recovery is the rehabilitation phase. During this time, the patient is usually rehabilitated for a period of 2-3 weeks. It can even take one or two years. This is the time of recovery. Patients typically enter neurological rehabilitation units within a month and stay there for 12 up to 16 weeks. The last stage of post-stroke rehabilitation is adaptation. It lasts from 12 to 24 months or even 5 years. During this period, the patient is rehabilitated, and this stage is termed 'chronic'. The primary goal of stroke rehabilitation in its most early stages is to prevent pressure sores, spasticity and misalignment of the limbs. To prevent spasticity and misalignment of the body, the principles of neurological positioning of the patient are applied. Supine and lateral positions, aids, bolsters, and rolled towels are used to ensure proper limb positioning and linearity, and to avoid exacerbating the movement as well as postural patterns of the existing condition. Contact with patients is also important [8].

From the rehabilitation perspective, human social functioning is important, i.e. communication and the ability to move (speech and movement) are important for voluntary and reflex motor functions (posture, balance, gait). For several decades, attempts have been made to clinimetrically assess these conditions using scales and tests. The Barthel or Rankin scales (both used to assess the degree of disability) are popular. To date, no generally accepted single scale exists in Poland. Such a scale would enable observation of the dynamics of health improvement in post-stroke patients [9].

AIM

The aim of the study was to analyze and assess the deficit of self-care and self-nursing of post-stroke patients at the Department of Neurology in the Stroke Sub-Ward at the University Hospital in Zielona Góra. The analysis and assessment were carried out on the basis of research results obtained from the authors' interview questionnaires.

MATERIAL AND METHODS

A self-study questionnaire was used prior to the study. It included 17 closed questions and a metric consisting of 6 questions was also prepared. The subjects of the study answered the questions anonymously. All of them gave their informed consent to participate in the study. The questions in the birth certificate concerned gender, age, education, place of residence, type of livelihood, and marital status. The interview questionnaire included questions about the type of stroke, physical disability, medical history, subjective assessment of the quality of life, and reported pain.

The study material covered patients of the Clinical Department of Neurology with the Stroke Sub-department of the University Hospital in Zielona Góra. The study was conducted on post-stroke patients, from 1 to 14 days after they suffered a stroke. However, due to the inability of obtaining answers to the questions asked, not all individuals qualified for the study. Patients with complete aphasia and unconscious patients were excluded from the study. The study was approved by the Medical Director. In addition, the regulations on the protection of personal data and compliance with the Personal Data Protection Policy of Karol Marcinkowski University Hospital in Zielona Góra, limited liability company, were applied. The study began on June 15, 2022 and was completed on October 15, 2022. One hundred people participated in the study: 49 men and 51 women. Women aged 97 and 27 were the oldest and youngest, respectively. When it comes to 11 individuals (11%), they had higher education, while 40 individuals (40%) had secondary education, and the remaining 49 individuals (49%) had primary education. It should be noted that 75% of individuals were married and 25% were divorced. Regarding the place of residence, 55.6% of individuals reported that they lived in a village, and 44.4% reported that they lived in a town. In terms of socio-economic issues, 34.3% of individuals admitted that they were employed, while 59.6% were retired and the remaining 6.1% were unemployed.

Statistical Calculation Software, PQStat, was used for the statistical analysis of the research results. During the analysis, the assumed significance level was α=0.05. Contingency tables (cross tables) were used to show the distribution of variables. The analysis also used chi-squared tests of independence to determine whether the given variables were independent of each other, and to measure the degrees of freedom and the p value. Results of $p < 0.05$ were considered statistically significant.

RESULTS

Among the subjects of the study, ischemic stroke was the most common (n=84; 84%). Transient cerebral ischemia occurred in 10% of the subjects (n=10; 10%). In the remaining cases, hemorrhagic stroke was diagnosed (n=6; 6%). Among the subjects, right hemiparesis was the most common (n=43; 43%). Hemiparesis of the left side affected 36% of the subjects (n=36; 36%). In the remaining cases, the subjects were affected by paresis of one limb (n=18; 18%) or tetraplegia (n=3; 3%). Almost half of the subjects had a physical disability that limited their freedom of movement to a minor degree (47%). A significant degree of limitation was reported by 32% of the subjects. Some subjects were bedridden (totally dependent) (n=13; 13%) or had moderate mobility limitations (n=8; 8%). The largest proportion of subjects suffered from a mild degree of balance disturbance (n=45; 45%). The absence of such disturbance was reported by 26% of the subjects (n=26; 26%). In the remaining cases, the presence of significant balance disturbance (n=19; 19%) or the inability to move independently (n=10; 10%) was confirmed.

Most of the subjects of the study were able to go to the bathroom on their own (n=42; 42%). With some assistance, 41% of the subjects were able to go to the bathroom (n=41;

41%). In other cases, the subjects were unable to do so (n=17; 17%). More than half of the subjects required assistance to eat a meal on their own (n=52; 52%). Independence in this regard was reported by 36% of the subjects (n=36), while 12% were unable to eat a meal on their own (n=12; 12%). The majority of the subjects were able to change clothes on their own (n=61; 61%), while 22% of the them reported the need for partial assistance (n=22). The remaining subjects of the study were unable to change clothes on their own (n=17; 17%).

Most of the subjects did not suffer from speaking disorders (n=55; 55%). The ability to report basic needs was reported by 40% of the questionnaire respondents (n=40). In the remaining cases, the answers were: "I can't talk" (total aphasia) (n=4; 4%) or "I don't understand instructions" (n=1; 1%). As a result of stroke, the largest group of subjects had mild swallowing difficulties (n=50; 50%). In 40% of the subjects such conditions did not occur (n=40). In the remaining cases, severe swallowing problems or complete inability to swallow were confirmed (n=1; 1%).

The analysis using the χ^2 test to determine the relationship between gender and the occurrence of physical disability that limits free movement, independent use of the bathroom, and eating a meal independently, is presented in Table 1. The statistical analysis relating to emotions caused by the condition and motivation for rehabilitation, taking into account the place of residence, is presented in Table 2.

TABLE 1. Percentage distribution of answers referring to the presence of physical disability that limits free movement, independent use of the bathroom and eating a meal independently, taking into account the gender of the subjects.

	woman, n=51	man, n=49	test χ^2	p
If you have a physical disability, to what extent does it limit your free movement?				
I'm bedridden (totally dependent)	9 (17.6%)	4 (8.2%)		
mostly	15 (29.4%)	17 (34.7%)	2.53	0.469
moderately	3 (5.9%)	5 (10.2%)		
to a minor degree	24 (47.1%)	23 (46.9%)		
Can you go to the bathroom by yourself?				
I can't	10 (19.6%)	7 (14.3%)		
I can, with some assistance	17 (33.3%)	24 (49.0%)	2.54	0.280
I can	24 (47.1%)	18 (36.7%)		
Can you eat a meal by yourself?				
I am independent	20 (39.2%)	16 (32.7%)		
I need partial assistance	23 (45.1%)	29 (59.2%)	2.43	0.297
I can't	8 (15.7%)	4 (8.2%)		
Do you have balance disturbances?				
do not occur	13 (25.5%)	13 (26.5%)		
are present to a small extent	24 (47.1%)	21 (42.9%)	0.21	0.976
are present to a large extent	9 (17.6%)	10 (20.4%)		
I can't move on my own	5 (9.8%)	5 (10.2%)		
Can you change clothes by yourself?				
I can	31 (60.8%)	30 (61.2%)		
I need partial assistance	11 (21.6%)	11 (22.4%)	0.04	0.983
I can't	9 (17.6%)	8 (16.3%)		

TABLE 2. Percentage distribution of answers – referring to the emotions caused by the state of health and motivation for rehabilitation, taking into account the place of residence.

	village, n=55	town, n=44	test χ^2	p
What emotions does your current state of health evoke?				
helplessness	10 (18.2%)	15 (34.1%)		
mood swings	15 (27.3%)	9 (20.5%)		
anxiety	4 (7.3%)	3 (6.8%)	3.38	0.497
depressed mood	16 (29.1%)	10 (22.7%)		
fear	10 (18.2%)	7 (15.9%)		
Are you motivated to participate in intensive rehabilitation?				
I have no desire to rehabilitate	4 (7.3%)	5 (11.4%)		
I do not care	14 (25.5%)	13 (29.5%)		
Yes, I really want to exercise, because I want to return to partial fitness	37 (67.3%)	26 (59.1%)	0.86	0.651

TABLE 3. The relationship between physical rehabilitation that restores mobility and the level of pain sensation.

pain	patient more independent after rehabilitation, n=31	at the present stage of the condition, there are no indications for rehabilitation, n=25	I am not recovering after rehabilitation, n=44
hurts a lot	0 (0.0%)	0 (0.0%)	4 (9.1%)
it hurts moderately	26 (83.9%)	8 (32.0%)	37 (84.1%)
it does not hurt	5 (16.1%)	17 (68.0%)	3 (6.8%)

χ^2=37.516, df=4, p<0.000001

The analysis using the χ^2 test indicates the existence of a significant relationship between physical rehabilitation that restores mobility and the level of pain sensation p<0.000001 (Table 3). The strength of the observed effect was moderate (Cramer's V=0.43, 95% CI (0.27; 0.56)).

DISCUSSION

Cerebrovascular accidents are among the most common disabling neurological disorders in adults. Stroke is estimated to be the second leading cause of death worldwide, the third leading cause of death in developed countries after cardiovascular disease and cancer, and the leading cause of death in Asia. In Poland, stroke is the fourth leading cause of death [10]. In our study, the most common occurrence was ischemic stroke in 84% of the subjects, while hemorrhagic stroke accounted for 6% of cases, and 10% of the subjects suffered from transient cerebral ischemia. According to the literature and the results of our own research, people who have had a stroke need care and have deficits in various areas of life. There is no doubt that the condition in which a patient is unable to take care of him or her, is the condition following a stroke. Such a person is not independent and therefore needs help. Patients show deficits in many areas of functioning, primarily in the areas of movement, nutrition, communication, and, especially, in satisfying their physiological needs [6]. In addition to helping and supporting post-stroke patients, educational activities should also be undertaken to teach self-care and the risk of stroke recurrence (secondary prevention).

In our study, post-stroke patients at the neurology ward of the University Hospital in Zielona Góra are characterized by physical disability. In addition, patients, who have suffered

a stroke, have a deficit in self-care and self-nursing. The existing deficit is confirmed by their answers to the question about maintaining balance. The percentage distribution of the answers to the question whether they had balance disturbances is as follows: 45% "slightly", and 19% "significantly", 10% "unable to move", while 26% reported "no balance disturbances".

Research on self-care deficit was also conducted among patients of the neurological ward in Lublin. The study group included 102 post-stroke patients. The study used standardized tools to measure self-care deficits. It also used the authors' own tool to measure basic sociodemographic outcomes. Measurements were made using the Barthel Scale, and the average measurement result was 46.19 points. The study shows that the average measurement result qualifies patients for care. The population was dependent – the subjects of the study required assistance from third parties. The Functional Performance scale was also used in the study. The scale contains 18 items, including: assessment of awareness, movement, and communication. The study indicates the subjects' deficiencies in terms of independence, satisfaction of basic needs, e.g. hygiene, mobility. Eating meals and controlling physiological needs were the most independent among the subjects. The score for communication, in terms of contact with other people, was high compared to the memory function. Studies have shown that the main determinant of the patient's efficiency is the number of strokes that the subject has suffered [11].

In our study, the confirmation of motor function deficit is the assessment of independence in movement. Almost half of the subjects, or 47%, reported a mild physical disability, and 32% reported a significant disability. When it comes to 13% of the individuals, they were bedridden (totally dependent), 8% of the surveyed population reported a moderate restriction in terms of free movement. The assessment of independence in going to the bathroom also confirms the deficit of motor functions in our patients. As far as 42% of the subjects are concerned, they were able to use the bathroom independently, 17% were unable to do so, and 41% were able to use the bathroom with some assistance.

Grochulska et al. (2012) cite a study conducted on a group of 75 post-stroke patients in a neurological ward in Słupsk. Patients reported having the most problems maintaining personal hygiene, and they were the best at eating and getting in and out of bed. The cooperation of the entire team contributing to the intensive care of the patient was emphasized as important for achieving the best therapeutic and rehabilitative effects in the return to physical and mental fitness [12]. According to Witkowska (2021), similar results were obtained in a study conducted on a group of 100 people in the post-stroke rehabilitation ward in the hospital in Lipno. The following results were obtained: the largest number of subjects, 64%, reported limitations in everyday activities, bathing, dressing, and 26% reported significantly more limitations in maintaining hygiene than the group of 64, and 10% reported no problems [13]. According to Oliveira-Kumakura et al. (2021), self-care studies conducted in Brazil on 135 post-stroke patients confirmed deficits in self-care. They mainly concerned bathing in 23.5%, dressing alone in 18.5%, using the bathroom in 13.3% and eating meals in 7.5% (unable to eat a meal) [14].

Stasik-Rogalińska reports that a deficit of self-care was observed among patients who had suffered a stroke of the right hemisphere of the brain. The study was carried out on a population of 50 individuals (29 men and 21 women). Standardized scales were used for the assessment: the WHOQOL-BREF quality of life scale, the scale for assessing basic activities of daily living. The obtained results also indicate deficits in patients' self-care, both in everyday functioning and in the sphere of cognitive functioning [15].

Our study, conducted on a group of 100 people, confirms the deficit of self-care and self-nursing of patients in everyday functioning. In terms of independent eating, 52% required partial assistance, 36% were able to eat a meal independently, while 12% required complete assistance. With regard to independence in changing clothes, 61 subjects were able to change clothes, 22 needed partial assistance, and 17 individuals were unable to change clothes. Attention should be paid to our patients' discomfort caused by pain. Most individuals reported pain. When it comes to 4 individuals, they reported that 'it hurts a lot', 71 said that 'it hurts', and 25 reported no pain. In addition, statistical analysis showed that the level of pain experienced was statistically significantly dependent on whether the conducted rehabilitation restored mobility (<0.001).

The literature on the subject states that in addition to motor deficits, patients have swallowing and eating disorders. According to the International Classification of Diseases, dysphagia refers to problems with swallowing at various stages – from the moment of taking food into the mouth to the instance of swallowing when a problem with the movement of food is experienced [16,17]. In neurological wards, patients with suspected dysphagia are screened for swallowing. Such tests are performed by a speech therapist together with the attending physician [18]. American standards state that a patient with a suspected stroke must be tested for the possibility of dysphagia before administering oral fluids [19]. Depending on the research methods used, dysphagia is estimated to occur in 37%-78% of the population in the study [17,20]. In our study, dysphagia was mild in 50% of the patients, and 40% of the subjects did not report any problems. Swallowing problems occurred to a significant degree in 9% of the subjects, and 1% of the subjects were unable to swallow.

CONCLUSIONS

Patients ,who suffered a stroke, experienced the greatest decrease in quality of life in terms of limited mobility in daily activities. The history of stroke affected patients' quality of life in the emotional domain, with depressed mood being the most common and anxiety the least common. The decrease in quality of life after stroke did not depend significantly on the sex of the patients. The level of perceived pain is statistically significant and depends on the assessment of whether the performed rehabilitation restores mobility.

REFERENCES

1. Jabłońska R, Ślusarz R. Wybrane problemy pielęgnacyjne pacjentów w schorzeniach układu nerwowego. Wrocław: Continuo; 2012. p. 9-11.
2. Wnuk M, Słowik A. Udary mózgu na dyżurze. Poznań: Termedia; 2016. p. 9-11, 15-24, 90-98, 211-220.
3. Goldstein LB, Adams R, Alberts MJ., et al. Primary prevention of ischemic stroke: a guideline from the American Heart Association/American Stroke Association Stroke Council: cosponsored by the Atherosclerotic Peripheral Vascular Disease Interdisciplinary Working Group; Cardiovascular Nursing Council; Clinical Cardiology Council; Nutrition, Physical Activity, and Metabolism Council; and the Quality of Care and Outcomes Research Interdisciplinary Working Group: the American Academy of Neurology affirms the value of this guideline. Stroke. 2006;37(6):1583-633.

4. Ćwieląg J, Wodańska-Okońska M. Skuteczność wczesnej fizjoterapii u pacjentów po udarze niedokrwiennym ze współistniejącą depresją i/lub zespołem zaniedbywania. Wiad Lek. 2017;70(5):939-45.
5. Starosta M, Redlicka J, Brzeziański M, et al Udar mózgu – ryzyko niepełnosprawności oraz możliwości poprawy funkcji motorycznych i poznawczych. Pol Merkuriusz Lek. 2016;41(241):39-42.
6. Jaracz K, Domitrz I. Pielęgniarstwo neurologiczne. Warszawa: Wydawnictwo PZWL; 2019. p. 260-70.
7. Mazur R, Książkiewicz B, Nyka WM. Udar mózgu w praktyce lekarskiej. Gdańsk: Via Medica; 2010. p. 67-89.
8. Książkiewicz B. Leczenie we wczesnym okresie udaru mózgu. Choroby Serca i Naczyń. 2006;3:83-90.
9. Bosacka M, Bączyk G. Rola klinimetrii w pracy pielęgniarki z pacjentem po udarze mózgu. Piel Pol. 2014;(3):244-9.
10. Raciborski F, Gawińska E, Kłak A, et al. Udary mózgu – rosnący problem w starzejącym się społeczeństwie. Warszawa: Instytut Ochrony Zdrowia; 2016. p. 21-2.
11. Przychodzka E, Grudzień A, Celej-Szuster J, Turowski K. Ocena wydolności funkcjonalnej chorych po udarze mózgu. Gerenterol Pol. 2019;27:272-9.
12. Grochulska A, Jastrzębska M. Poprawa stanu funkcjonalnego osób po przebytym udarze mózgu – rola pielęgniarki. Probl Piel. 2012;20(3):300-9.
13. Witkowska K. Ocena jakości życia pacjentów po przebytym udarze mózgu. Innowacje w pielęgniarstwie i naukach o zdrowiu. Innowacje w Pielęgniarstwie i Naukach o Zdrowiu. 2021;3(6):7-14.
14. Oliveira-Kumakura ARS, Sousa CMFM, Biscaro JA, et al. Clinical Validation of Nursing Diagnoses Related to Self – Care Deficits in Patients with Stroke. Clin Nurs Res. 2021;30(4):494-501.
15. Stasik-Rogalińska D. Jakość życia po udarze prawej półkuli mózgu z perspektywy pacjentów oraz ich bliskich. Neuropsychiatr Neuropsychol. 2022;17(1/2):74-82.
16. Zielińska M, Hallmann M, Hałas M, Gąsecki D. Metodologia badania zaburzeń połykania we wczesnej fazie udaru mózgu. Neurol Prakt. 2019;19(1):30-5.
17. Obrębowski A. Wprowadzenie do neurologopedii. Poznań: Termedia; 2012. p. 369-74.
18. Czernuszenko A, Zaborski J. Zagęszczanie płynów zwiększa bezpieczeństwo połykania u chorych z dysfagią we wczesnym okresie po udarze mózgu. Neurol Prakt. 2016;16(5):9-12.
19. Hinchey JA, Shepard T, Furie K, et al. Formal dysphagia screening protocol sprevent pneumonia. Stroke. 2005;36(9):1972-6.
20. Martino R, Foley N, Bhogal S, et al. Dysphagia after stroke. Incidence, diagnosis and pulmonary complications. Stroke. 2005;36(12):2756-63.

Corresponding author
Krzysztof Chmielowiec
Department of Hygiene and Epidemiology, Collegium Medicum,
University of Zielona Góra
28 Zyty St.,65-046 Zielona Góra
e-mail: chmiele@vp.pl