

The Impact of Caregiver Burden on the Emotional State of a Stroke Patient

Wpływ obciążenia opiekuna na stan emocjonalny pacjenta po udarze mózgu

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Abstract

Introduction. Globally, the incidence of stroke varies considerably. However, the majority of stroke survivors are able to continue their daily activities only with the assistance of others. Both patients and their families may experience psychological problems as a consequence.

Aim. The aim of this study was to investigate the impact of caregiver burden on the mental state of individuals caring for patients after stroke.

Material and Methods. The study was conducted between 2024 and 2025 and included 108 patient–caregiver pairs. A diagnostic survey method was employed. Data were collected using a questionnaire-based survey.

Results. All domains of the caregiver burden scale, including high levels of general burden, social isolation, disappointment, emotional involvement, environmental burden, and total burden, had a statistically significant impact on the emotional state of caregivers, who demonstrated symptoms of depression.

Conclusions. Increased caregiver burden was associated with significantly poorer mental health among informal caregivers of stroke survivors. As caregiver burden increases, caregivers are more likely to experience depression. (JNNN 2026; 15(1):3–10)

Key Words: caregiver burden, depression, ischemic stroke

Streszczenie

Wstęp. Na świecie częstość występowania udaru mózgu znacznie się różni. Jednak większość osób, które przeżyły udar, jest w stanie wykonywać codzienne czynności jedynie przy pomocy innych osób. Zarówno pacjenci, jak i ich rodziny mogą doświadczać problemów psychologicznych będących konsekwencją udaru.

Cel. Celem badania była ocena wpływu obciążenia opiekuna na stan psychiczny osób sprawujących opiekę nad pacjentami po udarze mózgu.

Materiał i metody. Badanie przeprowadzono w latach 2024–2025 i objęto nim 108 par pacjent–opiekun. Zastosowano metodę sondażu diagnostycznego. Dane zebrano za pomocą kwestionariuszy ankietowych.

Wyniki. Wszystkie domeny skali obciążenia opiekuna, obejmujące wysoki poziom ogólnego obciążenia, izolację społeczną, rozczarowanie, zaangażowanie emocjonalne, obciążenie środowiskowe oraz całkowite obciążenie, miały istotny statystycznie wpływ na stan emocjonalny opiekunów, u których stwierdzano objawy depresji.

Wnioski. Większe obciążenie opiekuna wiązało się ze znacząco gorszym stanem zdrowia psychicznego nieformalnych opiekunów osób po udarze mózgu. Wraz ze wzrostem obciążenia opiekunowie byli bardziej narażeni na występowanie objawów depresji. (PNN 2026;15(1):3–10)

Słowa kluczowe: obciążenie opiekuna, depresja, udar niedokrwienny mózgu

Introduction

In recent years, advances in modern medicine have considerably reduced stroke mortality rates; however, cerebrovascular disease remains the second leading cause of death and disability worldwide. Globally, the incidence of stroke varies significantly [1]. Nevertheless, the majority of individuals who survive a stroke are able to continue their daily activities only with dependence on others. Consequently, both patients and their families may experience a wide range of physical, psychological, social, economic, and spiritual problems [2,3].

Care provided by caregivers to stroke patients includes healthcare-related activities (such as purchasing medication, administering treatment, and monitoring the patient's condition), personal care (bathing, feeding, toileting, and dressing), coordination of social services, shopping, housework, financial management, physical assistance, and often cohabitation with the patient [3]. Caregiving responsibilities are frequently assumed by a family member and, in addition to positive outcomes — such as increased emotional closeness, personal growth, development of close relationships, social support, self-esteem, and psychosocial satisfaction — may also result in negative consequences and significant hardship [4].

Caregiver strain may be perceived differently depending on the characteristics of both patients and caregivers, as well as the availability and organization of social services in the home environment [5]. Moreover, as caregivers' coping abilities and patients' functional status change over time, the impact of caregiving may vary at different stages of the disease trajectory [6]. There is a need for more longitudinal studies conducted in diverse social settings and healthcare systems to better identify the challenges associated with caring for stroke patients and to determine predictors of caregiver burden.

Previous studies have reported inconsistent findings. One study that followed spouses of stroke survivors from hospital discharge to three years post-stroke found that although caregiver burden decreased over time, depression scores initially declined but subsequently increased after the second or third year post-stroke [7]. Another study demonstrated that depressive symptoms and caregiver burden persisted one year after stroke [8]. Conversely, other research suggests that caregiver burden may decrease in the long term, with a reported 13% reduction between six months and five years post-stroke [9]. These discrepancies indicate the need for further investigation

into caregiver outcomes throughout the entire stroke caregiving trajectory.

The aim of this study was to investigate the impact of caregiver burden on the mental health of individuals caring for patients after stroke.

Material and Methods

This study was conducted at the Neurological Rehabilitation Department of the Beskid Treatment and Rehabilitation Hospital Complex in Jaworze, Poland, and the Neurological Rehabilitation Department of the Railway Hospital in Wilkowice-Bystra, Poland. The study included post-stroke patients and their family caregivers. Data were collected during hospital visits. A total of 108 patient–caregiver pairs participated in the study.

Patients were eligible if they had been diagnosed with ischemic stroke at least six months prior to the study, were aged over 35 years, lived in the same household as their caregiver, and provided informed consent to participate in the study. Patients were excluded if they were under 35 years of age, had experienced an ischemic stroke less than six months prior to the study, or did not provide consent to participate.

Caregivers were eligible if they were aged over 20 years, had been living in the same household as the patient for at least six months following the stroke, provided informed consent to participate in the study, and presented with no depression or only mild to moderate depressive symptoms according to clinical assessment. Caregivers were excluded if they were under 20 years of age, did not live in the same household as the patient, did not provide consent to participate, or presented with severe depressive symptoms according to clinical assessment.

Careiver burden was assessed using the Caregiver Burden Scale (CBS), a 22-item instrument developed in Sweden [10]. Based on prior factor analysis, the scale comprises five subscales: general strain, isolation, disappointment, emotional involvement, and environment. Each item is rated on a 4-point Likert scale ranging from 1 (*never*) to 4 (*always*). The scale assesses various aspects of caregiving, including caregivers' physical health, psychological well-being, interpersonal relationships, social networks, physical workload, and environmental conditions. The total caregiver burden

score is calculated as the mean score of all 22 items, with higher scores indicating greater perceived burden. In accordance with the recommendations of the scale's authors, three levels of caregiver burden were distinguished: low (1.00–1.99 points), moderate (2.00–2.99 points), and high (3.00–4.00 points). The CBS demonstrates satisfactory psychometric properties. Adequate internal consistency has been reported for all subscales, with Cronbach's alpha values ranging from 0.70 to 0.87. Jaracz et al. reported an overall Cronbach's alpha of 0.92 for the Polish version of the scale [11]. In the present study, internal consistency was excellent, with a Cronbach's alpha coefficient of 0.96.

Beck Depression Inventory (BDI)

Depressive symptoms among caregivers were assessed using the Beck Depression Inventory (BDI). The BDI is a widely used 21-item self-report questionnaire designed to evaluate the severity of depressive symptoms. Each item is scored on a scale from 0 to 3, yielding a total possible score ranging from 0 to 63. The BDI has been standardized and validated for use in the Polish population and is frequently employed in clinical and research settings to assess mood disorders [12]. In the present study, the BDI demonstrated high internal consistency, with a Cronbach's alpha coefficient of 0.92.

The Modified Rankin Scale (mRS) was used to assess the level of disability among post-stroke patients. The scale consists of six categories ranging from 0 (*no symptoms*) to 5 (*severe disability*) [13]. It is a standardized method for evaluating functional status, focusing on a patient's ability to perform activities of daily living and identifying limitations in self-care. The Modified Rankin Scale is a simple and widely accepted instrument with good validity for measuring functional recovery after stroke. It is commonly used to assess the degree of disability and dependence in daily activities following cerebrovascular events.

Sociodemographic data of the participants and clinical information of the patients were collected from medical records and complemented by a semi-structured questionnaire.

Continuous variables were expressed as means, standard deviations, and quartiles, whereas categorical variables were presented as counts and percentages. Kendall's tau correlation coefficient was used to assess relationships between variables measured on an ordinal scale. Associations between nominal variables were analysed using the chi-square test or Fisher's exact test, as appropriate. All statistical analyses were performed using the R statistical software package

Results

A total of 108 patient–caregiver pairs (108 post-stroke patients and 108 family caregivers) participating in late neurological rehabilitation after ischemic stroke were included in the study. All participants were treated in neurological rehabilitation units. Among the patients, the most frequently reported comorbidities were hypertension (N=104), atherosclerosis (N=62), hypercholesterolemia (N=40), type 2 diabetes mellitus (N=34), atrial fibrillation (N=24), and nicotine dependence (N=24). Clinical characteristics related to stroke included the affected hemibody (right: N=27; left: N=47), speech disorders (dysarthria; N=38), difficulties in performing activities of daily living (N=69), and swallowing difficulties (dysphagia; N=16). Among caregivers, the most common comorbidities were hypertension (N=55), diabetes mellitus (N=17), myasthenia gravis (N=11), and neuroses (N=11).

Detailed characteristics of patients and caregivers are presented in Tables 1 and 2.

The mean total caregiver burden score according to the Caregiver Burden Scale (CBS) was 2.37, indicating a moderate level of burden. The highest scores were observed in the “general strain” subscale, whereas the lowest scores were found in the “emotional involvement” and “environment” subscales. Detailed results are presented in Table 3.

High levels of burden across all domains of the Caregiver Burden Scale, including general strain, social isolation, disappointment, emotional involvement, environment, and total burden, showed a statistically significant association with the emotional state of caregivers presenting with depressive symptoms. Detailed results are presented in Table 4.

Table 1. Sociodemographic characteristics of caregivers and patients depending on the level of caregiver burden

Characteristics	Caregivers (N=108)				Patients (N=108)			
	Caregiver burden level, including:				Caregiver burden level, including:			
	Total	Low	Moderate	High	Total	Low	Moderate	High
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Gender								
Women	81 (75.0)	27 (75.0)	34 (77.3)	20 (71.4)	63 (58.3)	22 (61.1)	26 (59.1)	15 (53.6)
Men	27 (25.0)	9 (25.0)	10 (22.7)	8 (28.6)	45 (41.7)	14 (38.9)	18 (40.9)	13 (46.4)
Age								
Under 50 year	31 (28.7)	13 (36.2)	11 (25.0)	7 (25.0)	5 (4.6)	3 (8.3)	1 (2.3)	1 (3.6)
51–60 years	35 (32.4)	12 (33.3)	15 (34.0)	8 (28.6)	6 (5.6)	3 (8.3)	3 (6.8)	0 (0.0)
61–70 years	25 (23.1)	7 (19.4)	12 (27.3)	6 (21.4)	25 (23.1)	11 (30.6)	10 (22.7)	4 (14.3)
71–80 years	15 (13.9)	3 (8.3)	5 (11.4)	7 (25.0)	35 (32.4)	11 (30.6)	16 (36.4)	8 (28.5)
Over 80 years	2 (1.9)	1 (2.8)	1 (2.3)	0 (0.0)	37 (34.3)	22 (22.2)	14 (31.8)	15 (53.6)
Education								
Primary	2 (1.9)	1 (2.8)	0 (0.0)	1 (3.7)	17 (15.7)	6 (16.7)	5 (11.4)	6 (21.4)
Vocational	37 (34.2)	13 (36.1)	15 (34.1)	9 (32.1)	48 (44.4)	18 (50.0)	21 (47.7)	9 (32.1)
Secondary	29 (26.9)	9 (25.0)	11 (25.0)	9 (32.1)	29 (26.9)	9 (25.0)	11 (25.0)	9 (32.1)
Higher	40 (37.0)	13 (36.1)	18 (40.9)	9 (32.1)	14 (13.0)	3 (8.3)	7 (15.9)	4 (14.3)
Marital status								
Single	21 (19.4)	9 (25.0)	8 (18.2)	4 (14.3)	50 (46.3)	16 (44.4)	24 (54.6)	10 (35.7)
In a relationship	87 (80.6)	27 (75.0)	36 (81.8)	24 (85.7)	58 (53.7)	20 (55.6)	20 (45.4)	18 (64.3)
Place of residence								
Village	47 (43.5)	15 (41.7)	19 (43.2)	13 (46.4)	46 (42.6)	14 (38.9)	20 (45.4)	12 (42.9)
City up to 150,000 inhabitants	33 (30.6)	9 (25.0)	17 (38.6)	7 (25.0)	35 (32.4)	12 (33.3)	16 (36.4)	7 (25.0)
City over 150,000 inhabitants	28 (25.9)	12 (33.3)	8 (18.2)	8 (28.6)	27 (25.0)	10 (27.8)	8 (18.2)	9 (32.1)
Source of income								
Professional work	67 (62.0)	25 (69.4)	26 (59.1)	16 (57.1)	–	–	–	–
Pension	37 (34.3)	10 (27.8)	17 (38.6)	10 (35.7)	100 (92.6)	33 (91.6)	40 (90.9)	27 (96.4)
Other (allowance; no income)	4 (3.7)	1 (2.8)	1 (2.3)	2 (7.1)	8 (7.4)	3 (8.4)	4 (9.1)	1 (3.6)
Financial situation (mean±SD)	3.49±0.62	3.67±0.59	3.43±0.59	3.36±0.68	3.33±0.63	3.43±0.51	3.32±0.75	3.23±0.60

Table 2. Characteristics of Stroke Patients and Their Caregivers

Characteristics	Total	Caregiver burden level			p
		Low	Moderate	High	
	N (%)	N (%)	N (%)	N (%)	
Caregivers (N=108)					
Duration of care					
0.5 years	17 (15.7)	6 (16.7)	9 (20.4)	2 (7.1)	0.0187*
0.5–1 years	20 (18.5)	11 (30.6)	6 (13.6)	3 (10.7)	
1–2 years	20 (18.5)	5 (13.9)	7 (15.9)	8 (28.6)	
2–5 years	21 (19.5)	7 (19.4)	9 (20.5)	5 (17.9)	
>5 years	30 (27.8)	7 (19.4)	13 (29.6)	10 (35.7)	
Average time spent per day on care					
1–2 h	26 (24.1)	19 (52.7)	5 (11.4)	2 (7.1)	<0.0001*
3–5 h	27 (25.0)	5 (13.9)	14 (31.8)	8 (28.6)	
5–10 h	26 (24.1)	6 (16.7)	14 (31.8)	6 (21.4)	
>10 h	29 (26.8)	6 (16.7)	11 (25.0)	12 (42.9)	
Relationship					
Husband or wife	38 (35.1)	14 (38.9)	15 (34.1)	9 (32.1)	0.7360**
Mother or father	52 (48.2)	17 (47.2)	20 (45.4)	15 (53.7)	
Mother-in-law/father-in-law	5 (4.7)	2 (5.6)	1 (2.3)	2 (7.1)	
Other family relationship	13 (12.0)	3 (8.3)	8 (18.2)	2 (7.1)	
Patients (N=108)					
Duration of care					
0.5 years	17 (15.7)	6 (16.7)	8 (18.2)	3 (10.7)	0.0469*
0.5–1 years	22 (20.4)	9 (25.0)	8 (18.2)	5 (17.8)	
1–2 years	14 (13.0)	5 (13.9)	5 (11.4)	4 (14.3)	
2–5 years	22 (20.4)	9 (25.0)	9 (20.4)	4 (14.3)	
>5 years	33 (30.5)	7 (19.4)	14 (31.8)	(42.9)	
Degree of disability					
None	11 (10.2)	6 (16.7)	4 (9.1)	1 (3.6)	<0.0001*
Mild	14 (13.0)	7 (19.4)	7 (15.9)	0 (0.0)	
Moderate	12 (11.1)	6 (16.7)	4 (9.1)	2 (7.1)	
Severe	71 (65.7)	17 (47.2)	29 (65.9)	25 (89.3)	

*Kendall's tau correlation coefficient, **Fisher's exact test

Table 3. Caregiver burden according to CBS scale

Caregiver Burden Scale	M	SD	Me	Min	Max
General burden	2.63	0.81	2.75	1.00	4.00
Socialisolation	2.40	0.96	2.50	1.00	4.00
Disappointment	2.39	0.80	2.60	1.00	4.00
Emotional involvement	2.02	0.85	2.00	1.00	4.00
Environment	2.01	0.70	2.00	1.00	3.67
Total	2.37	0.73	2.43	1.00	3.73

M — mean, SD — standard deviation, Me — median, Min — minimum value, Max — maximum value

Table 4. The relationship between the occurring depressive state and the degree of caregiver burden

Caregiver Burden Scale	Level of burden	Caregivers (N=108)			p
		Total	Depression (according to Beck's scale)		
			No (0–11 pts)	Yes (≥12 pts)	
General burden	Low	26 (24.1)	22 (40.7)	4 (7.4)	<0.0001*
	Medium	34 (31.5)	18 (33.4)	16 (29.6)	
	High	48 (44.4)	14 (25.9)	34 (63.0)	
Socialisolation	Low	39 (36.1)	27 (50.0)	12 (22.2)	0.0001*
	Medium	28 (25.9)	17 (31.5)	11 (20.4)	
	High	41 (38.0)	10 (18.5)	31 (57.4)	
Disappointment	Low	36 (33.3)	26 (48.2)	10 (18.5)	0.0002*
	Medium	43 (39.8)	22 (40.7)	21 (38.9)	
	High	29 (26.9)	6 (11.1)	23 (42.6)	
Emotional involvement	Low	49 (45.4)	32 (59.2)	17 (31.5)	0.0136*
	Medium	37 (34.2)	13 (24.1)	24 (44.4)	
	High	22 (20.4)	9 (16.7)	13 (24.1)	
Environment	Low	48 (44.4)	32 (59.3)	16 (29.7)	0.0006*
	Medium	44 (40.8)	20 (37.0)	24 (44.4)	
	High	16 (14.8)	2 (3.7)	14 (25.9)	
Total	Low	36 (33.3%)	27 (50.0)	9 (16.7)	0.0001*
	Medium	44 (40.8%)	21 (38.9)	23 (42.6)	
	High	28 (25.9%)	6 (11.1)	22 (40.7)	

*test chi-kwadrat

Discussion

Caregiver burden among individuals caring for stroke survivors has a statistically significant impact on their emotional state. According to the results of the present study, as many as 50% of caregivers reported symptoms of depression. These findings highlight the urgent need for interventions aimed at improving caregiver well-being, particularly those focusing on better preparation and support for managing behavioral and psychological symptoms associated with post-stroke care.

Caregiver burden was found to be a strong predictor of depressive symptoms, with large effect sizes observed in relation to depression severity. A recent meta-analysis reported that the global prevalence of depressive symptoms among caregivers of stroke patients was approximately 40.2% [14], which is consistent with, though slightly lower than, the prevalence observed in the present study. Depression among caregivers may further impair both cognitive and physical functioning, emphasizing the importance of recognizing and monitoring caregivers' emotional states. Therefore, evaluating depression among

caregivers of stroke survivors remains a highly relevant and important research area.

Morimoto et al. [15] reported that 52% of family caregivers of stroke survivors exhibited depressive symptoms, with some studies indicating even higher levels of depression in caregivers than in the stroke survivors themselves. Their findings demonstrated that increased caregiver burden was significantly associated with poorer health-related quality of life among caregivers. Moreover, the prevalence of depressive symptoms in caregivers was reported to be twice as high as that observed in community-dwelling older adults. These findings are consistent with the results of the present study.

Depression, particularly in later life, is a complex condition with multifactorial etiology, including biological, psychological, social, and spiritual factors. Caregivers of stroke survivors are at increased risk of developing major depression. Depressive disorders in caregivers can be debilitating and may adversely affect both the caregiver and the patient, leading to poorer mental and physical health outcomes. The significance of this issue is supported by the study of Epstein-Lubow et al. [16], which found that 41% of caregivers experienced

clinically significant depressive symptoms following a family member's stroke.

As caregiver burden increases, the likelihood of depression among caregivers also rises. Difficulty performing caregiving-related tasks appears to be a key predictor of depressive symptoms. In a study by Denno et al. [17], depressive symptoms were observed in 55.6% of caregivers providing home-based care to stroke patients. These findings closely align with the results of the present study.

Hung et al. [18] reported that nearly 50% of caregivers experienced substantial strain, and that interventions aimed at reducing caregiver strain should focus on enhancing the functional and emotional status of stroke patients, preventing recurrent stroke, and effectively managing depressive symptoms in caregivers. In their study, depressive symptoms were observed in 57% of caregivers, a figure comparable to that obtained in the present research.

Similarly, McLennon et al. [19] examined baseline data from family caregivers involved in a stroke intervention during the first weeks following hospital discharge. Among 242 caregivers, 47% reported mild to severe depressive symptoms, which closely corresponds with the current findings, where 50% of caregivers experienced depressive symptoms.

Conclusions

Increased caregiver burden was associated with significantly poorer mental health among informal caregivers of stroke survivors. As caregiver burden increases, caregivers are more likely to experience depression. Further evaluation of the clinical significance of caregiver depression and its impact on caregiver lifestyle is essential. Addressing caregiver mental health may have important implications not only for caregivers themselves but also for stroke survivors, as caregiver well-being directly influences the quality of care provided.

Implications for Nursing Practice

The findings of this study have important implications for nursing practice as well as for future research. The prevalence of depressive symptoms in the general population has been estimated at 17.8%, whereas the prevalence among caregivers of stroke survivors reaches 40.2%, which is almost twice as high. This clearly indicates that caregivers of individuals after stroke are at a substantially increased risk of developing depression compared with the general population.

Given their heightened vulnerability, caregivers should be routinely screened for depressive symptoms and other coexisting mental health conditions. Early identification of psychological distress may allow timely intervention and prevent the progression of depression.

To reduce caregiver burden, alleviate depressive symptoms, improve caregivers' quality of life, and enhance the quality of care provided to stroke patients, healthcare professionals — particularly nurses — play a crucial role. Nursing interventions should include comprehensive caregiver support, education, and training provided in the early post-stroke period. In addition, regular mental health screening, psychoeducation, and access to psychological counseling should be integrated into standard post-stroke care. Such multidisciplinary and proactive approaches may contribute to better outcomes for both caregivers and stroke survivors.

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