

The factors that influence the adaptation process

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ORIGINAL ARTICLE

The factors that influence the adaptation process 6 months after a stroke: A path analysis[☆]

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KEYWORDS

Self-efficacy;
Physiological adaptation;
Psychological adaptation;
Quality of life;
Stroke rehabilitation

Abstract

Objective: The purpose of this study was to identify the determinant factors that influence the adaptation process and quality of life after a stroke.

Methods: This study is an observational study using a cross-sectional design. Respondents were patients who were 6 months post-discharge after non-hemorrhagic stroke and their family caregivers. Information about respondents was taken from medical record data at two regional general hospitals in West Kalimantan Province, Indonesia. A total of 80 patients were selected using a consecutive sampling method. Theoretical models of patient and caregiver factors that influence adaptation responses and post-stroke quality of life were tested using path analysis.

Result: Caregiver coping, self-efficacy, and illness acceptance had a direct effect on the post-stroke psychosocial adaptation response by 58.1%, with self-efficacy contributing the most ($\beta = 0.668, P < .0001$). Self-efficacy, illness acceptance, and healthy behavior had a direct effect on the physiological adaptation response by 24.3%, where self-efficacy also contributed the most ($\beta = 0.272, P < .014$). Psychosocial adaptation and physiological adaptation had a direct effect on the quality of life by 54.6%, where psychosocial adaptation showed the largest contribution ($\beta = 0.63, P < .0001$).

Conclusion: Self-efficacy contributes the most to both psychosocial and physiological adaptations 6 months after stroke. Psychosocial adaptation and self-efficacy have been proven to be the determinant factors that contribute the most to the quality of life of patients 6 months after stroke.

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PALABRAS CLAVE

Autoeficacia;
Adaptación
fisiológica;
Adaptación
psicológica;
Calidad de vida;
Rehabilitación de
accidentes
cerebrovasculares

Los factores que influyen en el proceso de adaptación 6 meses después de un ictus: un análisis de trayectoria**Resumen**

Objetivo: El propósito de este estudio fue identificar los factores determinantes que influyen en el proceso de adaptación y calidad de vida después de un ictus.

Métodos: Este estudio es un estudio observacional utilizando un diseño transversal. Se encuestaron pacientes 6 meses después de su alta tras un accidente cerebrovascular no hemorrágico y sus familiares cuidadores. La información sobre los encuestados se obtuvo de los datos de registros médicos en dos hospitales generales regionales en la provincia de Kalimantan Occidental, Indonesia. Se seleccionó un total de 80 pacientes mediante un método de muestreo consecutivo. Los modelos teóricos de los factores del paciente y del cuidador que influyen en las respuestas de adaptación y la calidad de vida posterior al accidente cerebrovascular se probaron mediante análisis de ruta.

Resultados: El afrontamiento, la autoeficacia y la aceptación de la enfermedad del cuidador tuvieron un efecto directo en la respuesta de adaptación psicosocial posterior al ictus en un 58,1%, siendo la autoeficacia la que más contribuyó ($\beta = 0,668$, $P < ,0001$). La autoeficacia, la aceptación de la enfermedad y el comportamiento saludable tuvieron un efecto directo en la respuesta de adaptación fisiológica en un 24,3%, donde la autoeficacia también contribuyó más ($\beta = 0,272$, $P < ,014$). La adaptación psicosocial y la adaptación fisiológica tuvieron un efecto directo en la calidad de vida en un 54,6%, donde la adaptación psicosocial presentó la mayor contribución ($\beta = 0,63$, $P < ,0001$).

Conclusión: La autoeficacia contribuye más a las adaptaciones psicosociales y fisiológicas 6 meses después del accidente cerebrovascular. La adaptación psicosocial y la autoeficacia han demostrado ser los factores determinantes que más contribuyen a la calidad de vida de los pacientes 6 meses después del ictus.

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What is known?

Self-efficacy, illness acceptance, and caregiver coping are determinants of psychosocial adaptation 6 months after stroke. Self-efficacy, illness acceptance, and a healthy lifestyle are determinants of physiological adaptation 6 months after stroke.

What it contributes?

Psychological interventions for post-stroke patients that are focused on increasing self-efficacy and illness acceptance are needed to achieve optimal adaptation after stroke.

Introduction

Post-stroke patients experience long-term disability due to nerve cell damage. They need a long time to reintegrate into the community life. Some patients also experience self-care dependence, anxiety, and depression. Research shows that 26% of patients have a disability in performing basic daily activities, and 50% of patients have decreased phys-

ical mobility due to hemiparesis, which causes them to depend on their family or others for self-care.¹ Patients also experience post-stroke depression, which can slow down the recovery process.² Disability and depression reduce the productivity and quality of life of post-stroke patients.³ Adaptation to disability is a key factor in achieving an optimal quality of life and accelerating the process of reintegration into community life after a stroke. Effective physiological and psychosocial adaptations can improve the quality of life in post-stroke patients. Caregivers of stroke patients also experience a moderate level of burden that can reduce their quality of life.⁴ An increase in the burden and a decrease in the quality of life of caregivers will impact the quality of care they provide to patients.

The greater impact of post-stroke disability is the increasing cost of healthcare. Research on the economic burden of a stroke shows that post-stroke outpatient care per patient per month is quite large in several countries, the highest in the United Kingdom at \$883 and the lowest in Malaysia at \$192.⁵ The cost of ischemic stroke care per person throughout life, including hospitalization, rehabilitation, and follow-up care, is \$140,048 in the United States. Stroke care comprises 3%–4% of total health financing in Western countries.¹ Disability and its consequences are the causes of the high cost of post-stroke care. To reduce the burden, patients have to adapt to disability conditions. For this reason, it is important to identify the factors influencing the post-stroke adaptation response.

92 Patient factors such as self-efficacy and illness accep- 150
 93 tance are important factors that influence adaptation 151
 94 responses in dealing with post-stroke disability conditions. 152
 95 Self-efficacy is an individual's assessment of the ability 153
 96 to organize and carry out actions.⁶ Positive self-efficacy 154
 97 encourages patients to carry out effective adaptation behav- 155
 98 iors to achieve optimal quality of life after a stroke. Patients 156
 99 use their reflective thinking, knowledge, and skills to decide 157
 100 what course of action they will take.⁶ Self-efficacy and 158
 101 self-management encourage patients to use adaptive cop- 159
 102 ing strategies to deal with the problems after a stroke. 160
 103 Coping mechanisms have a direct positive impact on adapta- 161
 104 tion responses to disability conditions.⁷ The control process 162
 105 carried out by the individual produces adaptive behav- 163
 106 ior consisting of three modes of psychosocial adaptation 164
 107 (self-concept, role function, and interdependence) and one 165
 108 physiological mode. Adaptive control processes result in 166
 109 effective adaptation behavior or vice versa.⁸

110 The adaptation response of post-stroke patients is not 167
 111 only influenced by patient factors but also by family care- 168
 112 giver factors such as burden and coping strategy. There is a 169
 113 relationship between caregiver burden with coping strate- 170
 114 gies they use to deal with problems and the adaptation 171
 115 responses when caring for patients.⁹ The burden felt by 172
 116 caregivers in caring for post-stroke patients affects their 173
 117 ability to cope with stressful situations.⁹ The caregiver's 174
 118 coping strategies have a direct impact on the quality of 175
 119 care they provide to patients, which will affect the patient's 176
 120 adaptation process.

121 Our hypothesis is that patient factors such as self- 177
 122 efficacy, illness acceptance, and healthy life behavior, as 178
 123 well as caregiver factors such as caregiver's burden and 179
 124 caregiver's coping, affect the patient's adaptive response 180
 125 (psychosocial and physiological) to various post-stroke dis- 181
 126 ability conditions. The adaptive response then affects the 182
 127 patient's quality of life. So far, we have not found an empir- 183
 128 ical model that integrates patient and family factors that 184
 129 influence adaptation in post-stroke patients. This study aims 185
 130 to identify the patient and caregiver factors that contribute 186
 131 to the adaptation process and quality of life of post-stroke 187
 132 patients.

133 Materials and methods

134 Study design and participants

135 This research is an analytic observational study with a cross- 188
 136 sectional design. We identified patient factors that influence 189
 137 the adaptation process, including illness acceptance, self- 190
 138 efficacy, and healthy behavior, as well as caregiver factors, 191
 139 including caregiver burden and caregiver coping.

140 The population in this study was post-stroke patients 192
 141 and their caregivers at home. Eligibility criteria for patients 193
 142 included 6 months post-discharge after non-hemorrhagic 194
 143 stroke, no complications from other chronic diseases (such 195
 144 as heart disease, diabetes mellitus, and kidney failure), 196
 145 and experiencing physical disabilities that require caregiver 197
 146 assistance. Meanwhile, the eligibility criteria for caregivers 198
 147 included the patient's nuclear family (husband/wife, par- 199
 148 ents, children/in-laws, and siblings), aged 30–50 years, and 200
 149 living with the patient. The number of samples used in this 201

study was calculated using the sample size formula for cross 202
 sectional studies with quantitative variables¹⁰:

$$n = \frac{Z_{1-\alpha/2}^2 SD^2}{d^2}$$

Standard Deviation (SD) of the dependent variable (qual- 203
 ity of life) based on the previous study was 4.06 with an 204
 absolute error of precision of 0.89.¹¹ With a normal stan- 205
 dard variate of 1.96 (5% type 1 error/alpha 0.5), the sample 206
 size was 80 patients and their caregivers. We selected sam- 207
 ples based on eligibility criteria until this number was met. 208
 We conducted a home visit to collect data. The respon- 209
 dent's biodata and addresses were obtained from medical 210
 records at two regional general hospitals in West Kaliman- 211
 tan, Indonesia.

212 Data collection

213 This study was conducted over 9 months, from February 2020 214
 to October 2020. Data collection was carried out by trained 215
 observers (professional nurses). The observers determined 216
 physiological adaptation using the Barthel index and gave 217
 the respondents instructions on how to fill out the question- 218
 naire. We trained them on how to use the instruments and 219
 collect data. According to the research objectives and rele- 220
 vance for measuring the variables, we used the following 221
 instruments:

- 222 1 Short version of the Stroke Specific Quality of Life Scale 223
 (SSQOL): Measured the quality of life of post-stroke 224
 patients. The construct validity of the short version 225
 SSQOL using confirmatory factor analysis proves that two 226
 domains of quality of life (psychosocial and physical) 227
 are validly structured. Item factor loading for the psy- 228
 chosocial domain ranges from 0.46 to 0.63, while for the 229
 physical domain, it ranges from 0.68 to 0.88.¹² The reli- 230
 ability test for this instrument in three different places 231
 ranged from 0.78 to 0.89.¹³
- 232 2 Psychosocial adaptation scale: Measured the psychosocial 233
 adaptation of post-stroke patients. This instrument was 234
 adopted from the Quality of Life in Epilepsy Inventory 235
 (QOLIE-89). We adopted and used items related to psy- 236
 chosocial adaptation responses, including self-concept, 237
 role function, and interdependence.¹⁴
- 238 3 Barthel Index (BI): Measured the physiological adaptation 239
 of post-stroke patients. The BI psychometric test to mea- 240
 sure daily living activity in stroke patients showed good 241
 results. The internal consistency of the BI in four mea- 242
 surements (14 days, 30 days, 90 days, and 180 days after 243
 stroke) showed an alpha value range of 0.89–0.92. Inter- 244
 rater reliability had a total kappa value score of 0.94.¹⁵
- 245 4 Caregiver Burden Scale (CBS): Measured caregiver bur- 246
 den of caring for post-stroke patients, including physical 247
 burden, emotional burden, family relationships, financial 248
 burdens, and free time. The internal consistency of the 249
 CBS using Cronbach's alpha showed a total alpha coef- 250
 ficient of 0.91, in which the sub-scale coefficient was 251
 0.75–0.93.¹⁶
- 252 5 Stroke Caregiver Coping Scale (SCCS): Measured the care- 253
 giver's coping while caring for the post-stroke patient. 254

The SCCS validity test showed that the score of each item was correlated with its total score with a correlation coefficient range of 0.54–0.83. The internal consistency test showed a Cronbach alpha of 0.81.

6 Stroke Illness Acceptance Scale (SIAS): Measured the patient's self-acceptance of various post-stroke disability conditions. The SIAS validity test uses item-total correlation, and proved that all items were significantly correlated with a total value in the range of 0.59–0.73. The internal consistency test showed a Cronbach alpha value of 0.743.

7 The Stroke Self Efficacy Questionnaire (SSEQ): Measured self-efficacy in post-stroke patients, and consisted of self-management and activities. The SSEQ has a good psychometric value, so it is appropriate to measure the self-efficacy of post-stroke patients.¹⁷ The internal consistency test showed good results with a Cronbach alpha value of 0.90.¹⁸

8 The Simple Lifestyle Indicator Questionnaire (SLIQ): Measured a healthy lifestyle. The psychometric test of this instrument using test-retest showed the correlation coefficient for each question had a range of 0.63–0.97.¹⁹ The SLIQ is a valid instrument when compared to other standard instruments for every aspect of lifestyle.²⁰

Procedure

We took patient data from the medical records of two regional general hospitals in West Kalimantan Province, Indonesia. Patients who met the eligibility criteria were used as samples. We then contacted patients or their families by telephone to convey the aims of the study. If patients and their families consented to participate in the study, we made an appointment to make a home visit for data collection.

Data analysis

The theoretical model of the determinants of adaptation response and post-stroke quality of life was tested using path analysis. We analyzed the data in the following stages: testing the normal distribution of data on all numerical variables, conducting collinearity tests between independent variables, conducting screening to determine candidate independent variables to be included in the model, calculating the path coefficient of each substructure using linear regression analysis (standardized coefficient), developing an empirical model based on path analysis results, and performing a goodness of fit test to determine whether the research data and empirical model meet the criteria of good fit. The good fit criteria we used included a minimum goodness fit index (GFI) of 0.95, an adjusted goodness fit index (AGFI) of at least 0.90, and a root mean square error of approximation (RMSEA) of less than 0.07.²¹

Ethical consideration

We upheld ethical principles in this study by maintaining the confidentiality of respondents, filling out the questionnaire when the respondent was in a stable medical condition, and considering that the benefits exceeded the possible risks.

Table 1 Characteristic of participants.

Characteristics	n (%)	Mean (SD)
Patient's age (years)		58.64 (5.22)
Patient's sex		
Male	42 (52.5)	
Female	38 (47.5)	
Hemiparesis side		
Right	39 (48.8)	
Left	41 (51.3)	
Caregiver's age (years)		42.74 (9.68)
Caregiver-patient relationship		
Husband/wife	29 (36.3)	
Child	34 (42.5)	
Son/daughter in law	8 (10.0)	
Brother/sister	9 (11.3)	

Table 2 Caregiver factors, patient factors, adaptation responses, and quality of life 6 months after stroke.

Characteristics	Mean (SD)	CI 95%
Quality of life	31.53 (4.52)	30.52–32.53
Psychosocial Adaptation	34.81 (5.83)	33.51–36.11
Physiological Adaptation	62.13 (10.33)	59.82–64.43
Caregiver burden	34.03 (5.29)	32.85–35.20
Caregiver coping	117.36 (9.80)	115.18–119.54
Illness acceptance	34.20 (6.40)	32.78–35.62
Self-efficacy	24.73 (3.92)	23.85–25.60
Healthy life behavior	21.74 (3.15)	21.04–22.44

The research protocol was reviewed and obtained an ethical clearance statement from the Health Research Ethics Committee (HREC) of the Health Polytechnic of the Ministry of Health Pontianak Indonesia, with the number No. 195.1/KEPK-PK.PKP/V/2019.

Results

Demographic and clinical characteristics of participants

Table 1 shows that the mean age of the caregivers (42.74 years) was younger than the mean age of the patients (58.64 years). This was possible because more than half of the caregivers were the son/daughter (42.5%) or son/daughter-in-law (10%) of patients. The number of male and female respondents was almost equal. Similarly, the hemiparesis on the right side was almost the same as that on the left side. The bivariate statistical test proved that there was no significant relationship between all participant characteristics with psychosocial adaptation, physiological adaptation, and quality of life 6 months after stroke.

Table 2 shows the mean score and standard deviation of caregiver factors, patient factors, adaptation responses, and quality of life 6 months after stroke.

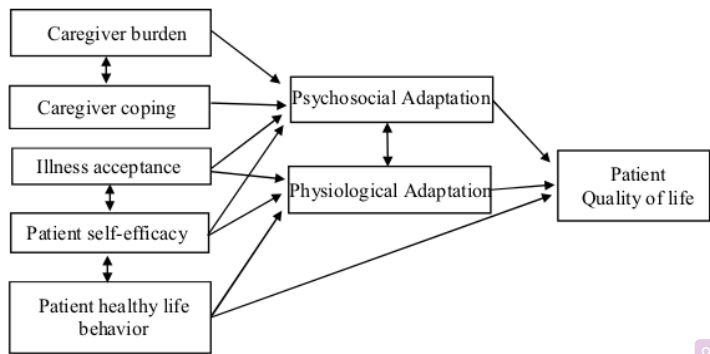


Figure 1 The theoretical model of patient and caregiver factors influencing adaptation response and quality of life after stroke.

281 **Determinant of adaptation process and quality of**
282 **life after stroke**

283 We integrated three theories to explain patient and family caregiver factors related to the adaptation process of post-stroke patients, including caregiver stress theory, self-efficacy theory, and Roy's adaptation model (RAM) (Fig. 1). Caregiver stress theory can be used to explain the relationship between caregiver burden and their coping and adaptive responses when caring for post-stroke patients.⁹ Self-efficacy theory can be used to explain improving behavior or self-management to achieve optimal adaptation and quality of life in post-stroke patients.⁶ Meanwhile, RAM can be used to explain the process of adaptation of post-stroke patients, which consists of the stimuli they experience post-stroke, the coping mechanisms they use to deal with those stimuli, and the adaptation responses they show to disability conditions.⁷

288 The empirical causal relationship between the independent and dependent variables based on the calculation of the path coefficients in the three sub-structures is shown in Fig. 2.

292 Table 3 shows that psychosocial and physiological adaptations have simultaneous and significant direct effects on the quality of life after stroke. These two variables explained 54.6% of all variance in the quality of life of patients. Psychosocial adaptation had the greatest direct effect on the quality of life of post-stroke patients ($\beta = 0.63, P < .0001$). Caregiver coping, illness acceptance, and patient self-efficacy had a simultaneous and significant direct effect on psychosocial adaptation. These three variables explained 58.1% of all variance in psychosocial adaptation. The patient's self-efficacy had the greatest direct effect on psychosocial adaptation ($\beta = 0.668, P < .0001$). Illness acceptance, self-efficacy, and a healthy lifestyle had direct and significant effects on physiological adaptation. These three variables explained 24.3% of all variance in physiological adaptation. Self-efficacy had the greatest direct effect on physiological adaptation ($\beta = 0.272, P < .014$). Patient self-efficacy had the greatest indirect effect on the quality of life 6 months after stroke through both psychosocial and physiological adaptations, with a contribution of 22.66%.

283 **The goodness of fit test of the model**

284 The results of the goodness of fit test included GFI = 0.963, AGF = 0.936, and RMSEA = 0.068. These results indicated that all tests met the specified criteria. This proved that the research data and empirical models met the criteria of good fit.

289 **Discussion**

290 Path analysis proves that caregiver coping, patient illness acceptance, and patient self-efficacy influence the psychosocial adaptation of patients, in which self-efficacy contributes the most compared to the other variables. Perceived self-efficacy is a person's belief about his/her ability to produce a level of performance that has effects on important life events. Self-efficacy beliefs determine how they feel, think, motivate themselves, and behave.²² Self-efficacy can increase the patient's confidence in his/her ability to carry out activities in the same way as before the stroke. Self-efficacy beliefs will increase the patient's goal setting based on his/her ability to adapt after stroke. It can motivate and direct patients to carry out positive activities that will increase their adaptability and quality of life. On the other hand, self-efficacy beliefs will increase positive thoughts about their abilities, which can reduce anxiety. Positive self-efficacy can ultimately prevent post-stroke depression.

298 Self-efficacy plays an important role in maintaining psychological conditions and increasing post-stroke psychosocial adaptation. A longitudinal study of the relationship between general self-efficacy and depression 6 months to 2 years after stroke proved that a decrease in general self-efficacy led to an increase in depression. In the process of social reintegration 6 months after stroke, it is important to implement a program that focuses on increasing self-efficacy to prevent post-stroke depression in the future.²³ There was a significant decrease in the level of depression in patients with high self-efficacy, whereas there was no significant change in patients with low self-efficacy at the end of post-stroke rehabilitation. There was an effect of self-efficacy on the psychological condition and the psychosocial adaptation response of the patient, which

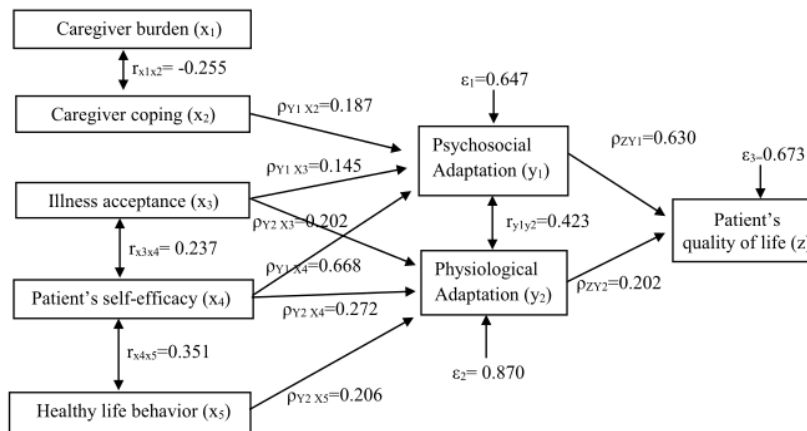


Figure 2 An empirical model of caregiver factors and patient factors that influence adaptation responses and quality of life 6 months after stroke.

Table 3 Standardized direct, indirect, and total effects of patient and caregiver factors on quality of life six months after stroke.

Variables	Direct effects	Indirect effects through Psychosocial Adaptation	Indirect effects through Physiological adaptation	Total effect
Caregiver coping	–	0.118	–	0.118
Illness acceptance	–	0.091	0.041	0.132
Self-efficacy	–	0.421	0.055	0.476
Healthy life behavior	–	–	0.042	0.042
Psychosocial adaptation	0.630	–	–	0.630
Physiological adaptation	0.202	–	–	0.202

Contribution of each variable = (path coefficient)² × 100%.

is indicated by a decrease in the level of depression.²⁴ High self-efficacy, no history of pre-stroke depression, and high perception of social support are strong protective factors against depressive symptoms.

Illness acceptance is also an important factor in post-stroke psychosocial adaptation. A mixed prospective cohort study demonstrated that patients who did not accept their disability 1 month after a stroke developed depression 9 months after a stroke. Stroke patients who are depressed often say that they are useless, whereas patients who are not depressed generally accept their post-stroke disability.²⁵ Illness acceptance, apart from having a direct effect on psychosocial adaptation, is also related to self-efficacy. A low level of illness acceptance is associated with low efficacy in post-stroke rehabilitation.²⁶ Patients without an increase in self-efficacy after 3 weeks of rehabilitation showed a low level of illness acceptance.²⁷ Increased general self-efficacy and dispositional optimism contribute to increased illness acceptance in patients with polycystic ovary syndrome (PCOS) with their disease.²⁸ Stroke patients who accept disability conditions will have high confidence in their ability to carry out activities, which then affects the recovery process.

The support system from the family caregiver plays an important role in increasing the adaptation response of post-stroke patients.⁷ The family caregiver is the closest person who accompanies, facilitates, and helps patients fulfill their basic needs and carry out rehabilitation at home. Caregiver burden increases when caring for patients, which affects the self-control coping they use.²⁹ This study proves that caregiver coping has an effect on the psychosocial adaptation of post-stroke patients, whereas caregiver burden does not show a significant effect. In contrast, previous studies stated that stroke patients who experience depression and anxiety had caregivers that experienced a high burden.³⁰ The burden felt by the caregiver has no impact on the patient's psychosocial adaptation, as long as the caregiver has a good coping mechanism.

This study proves that illness acceptance, self-efficacy, and healthy life behavior simultaneously affect physiological adaptation, in which patient self-efficacy contributes the most. Self-efficacy beliefs encourage patients to do positive activities that can improve functional capacity and physical recovery after a stroke. Adequate and routine physical exercise will improve motor function recovery and the ability to perform basic daily activities. The results of this study con-

407 firm previous studies that prove the effect of self-efficacy on
408 physiological adaptation in post-stroke patients. Research
409 on the effectiveness of stroke self-management programs
410 proves that self-efficacy is a mediating factor that improves
411 the ability of post-stroke patients to work.³¹ The better the
412 self-efficacy is, the better the self-care ability of post-stroke
413 patients. Self-care self-efficacy is related to the level of
414 independence of chronic stroke patients in performing basic
415 activities of daily living (BADL). The higher the self-care self-
416 efficacy is, the more independent the patient with regard
417 to BADL.³² Patients 3 weeks post-stroke rehabilitation with-
418 out increased self-efficacy showed low functional status in
419 performing BADL.²⁷

420 A healthy lifestyle improves post-stroke physiologi-
421 cal adaptation, prevents recurrent stroke, and increases
422 functional capacity and BADL. Post-stroke patients who per-
423 form regular physical activity have good general health
424 outcomes.⁷ The caregiver empowerment program based on
425 the adaptation model (CEP-BAM) improves a healthy lifestyle
426 and functional capacity after stroke.¹¹ Lifestyle before the
427 stroke was correlated with quality of life, especially 6
428 months to 2 years after a stroke. Patients with a low quality
429 of life appear to have had a less healthy lifestyle before they
430 had a stroke.³³

431 The path analysis in this study proves that psychosocial
432 adaptation and self-efficacy are the two biggest factors that
433 influence the quality of life 6 months after a stroke. The
434 psychological problem is important for predicting the risk of
435 low quality of life after a stroke. Adequate self-efficacy can
436 improve the quality of life after a stroke. Previous research
437 has proven that self-efficacy training programs increase self-
438 efficacy and the quality of life of post-stroke patients.³⁴
439 Self-efficacy has also been shown to increase community
440 reintegration after a stroke.

441 **Limitations**

442 This study was only conducted on patients with non-
443 hemorrhagic strokes. Different types of stroke cause
444 different symptoms and disabilities, which affect the quality
445 of life after a stroke. As a result, the empirical model from
446 this study cannot be applied to patients with hemorrhagic
447 strokes. In addition, this study only involves caregivers who
448 come from the patient's family (family caregiver). Fam-
449 ily caregivers have a better psychological closeness with
450 patients than caregivers who are not the patient's family.
451 This causes differences in stress levels, burdens, and coping
452 mechanisms for family caregivers as compared to non-family
453 caregivers. As a result, this empirical model cannot be gen-
454 eralized to patients who are cared for by caregivers who are
455 not the patient's family.

456 **Conclusion**

457 We conclude that self-efficacy, illness acceptance, and care-
458 giver coping are determinants of psychosocial adaptation 6
459 months after a stroke. Self-efficacy, illness acceptance, and
460 a healthy lifestyle are determinants of physiological adap-
461 tation 6 months after a stroke. Self-efficacy contributed
462 the most to both the psychosocial and physiological adapta-
463 tions 6 months after a stroke. Psychosocial and physiological

464 adaptations directly affect the quality of life 6 months after
465 a stroke, where psychosocial adaptation contributes the
466 most. Nurses need to carry out psychological interventions
467 for post-stroke patients that are focused on increasing self-
468 efficacy and illness acceptance, as well as integrating family
469 caregiver interventions to reduce the burden and improve
470 caregiver coping, to achieve optimal adaptation responses
471 and good quality of life after a stroke.

472 **Conflict of interest**

473 None declared.

474 **Acknowledgments**

475 We would like to say thank you very much to the respondents
476 who participated in this study.

477 **References**

478 1. Katan M, Luft A. Global burden of stroke. *Semin Neurol.* 2018;38(02):208–11, <http://dx.doi.org/10.1055/S-0038-1649503>.
479
480 2. Medeiros GC, Roy D, Kontos N, Beach SR. Post-stroke depression: a 2020 updated review. *Gen Hosp Psychiatry.* 2020;66:70–80, <http://dx.doi.org/10.1016/J.GENHOSPPSYCH.2020.06.011>.
481
482 3. White J, Magin P, Attia J, Sturm J, McElduff P, Carter G. Predictors of health-related quality of life in community-dwelling stroke survivors: a cohort study. *Fam Pract.* 2016;33(4):382–7, <http://dx.doi.org/10.1093/FAMPRA/CMW011>.
483
484 4. Caro CC, Costa JD, Da Cruz DMC. Burden and quality of life of family caregivers of stroke patients. *Occup Ther Health Care.* 2018;32(2):154–71, <http://dx.doi.org/10.1080/07380577.2018.1449046>.
485
486 5. Rajsic S, Gothe H, Borba HH, Sroczynski G, Vujicic J, Toell T, et al. Economic burden of stroke: a systematic review on post-stroke care. *Eur J Heal Econ.* 2019;20(1):107–34, <http://dx.doi.org/10.1007/S10198-018-0984-0/TABLES/6>.
487
488 6. Smith MJ, Liehr Patricia R. *Middle Range Theory for Nursing: Theory of Self-Care of Chronic Illness.* United States of America: Springer Publishing Company; 2018.
489
490 7. Dharma KK, Rahayu H. The effective post-stroke adaptation behavior model requires a family support system. *Enferm Clin (English Ed).* 2022;32(2):123–30, <http://dx.doi.org/10.1016/J.ENFCLE.2020.11.006>.
491
492 8. Peterson SJ, Bredow TS. *Middle Range Theories: Application to Nursing Research.* third edition Philadelphia: Wolters Kluwer Health, Lippincott Williams & Wilkins; 2011.
493
494 9. Tsai PF. A middle-range theory of caregiver stress. *Nurs Sci Q.* 2003;16(2):137–45, <http://dx.doi.org/10.1177/0894318403251789>.
495
496 10. Charan J, Biswas T. How to calculate sample size for different study designs in medical research? *Indian J Psychol Med.* 2013;35(2):121–6, <http://dx.doi.org/10.4103/0253-7176.116232>.
497
498 11. Dharma KK, Damhudi D, Yarden N, Haeriyanto S. Increase in the functional capacity and quality of life among stroke patients by family caregiver empowerment program based on adaptation model. *Int J Nurs Sci.* 2018;5(4):357–64, <http://dx.doi.org/10.1016/j.ijnss.2018.09.002>.
499
500 12. Chou CY, Huang CY, Huang YJ, Lin GH, Huang SL, Lee SC, et al. Comparison of construct validity of two short forms of Stroke-Specific Quality of Life scale. *PLoS One.* 2017;12(12):e0188478, <http://dx.doi.org/10.1371/journal.pone.0188478>.
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521

- 522 13. Post MWM, Boosman H, Van Zandvoort MM, Passier PECA, 566
523 Rinkel GJE, Visser-Meily JMA. Development and valida- 567
524 tion of a short version of the Stroke Specific Quality of 568
525 Life Scale. *J Neurol Neurosurg Psychiatry*. 2011;82(3):283-6, 569
526 <http://dx.doi.org/10.1136/jnnp.2009.196394>. 570
- 527 14. Saburi GL, Mapanga KG, Mapanga MB. Perceived 571
528 family reactions and quality of life of adults 572
529 with epilepsy. *J Neurosci Nurs*. 2006;38(3):156-65, 573
530 <http://dx.doi.org/10.1097/01376517-200606000-00004>. 574
- 531 15. Hsueh IP, Lee MM, Hsieh CL. Psychometric characteristics of the 575
532 Barthel activities of daily living index in stroke patients. *J Formos 576
533 Med Assoc*. 2001;100:526-32. 577
- 534 16. Kao HFS, Acton GJ. Conceptualization and psychome- 578
535 tric properties of the Caregiver Burden Scale in 579
536 Taiwan. *Issues Ment Health Nurs*. 2006;27(8):853-66, 580
537 <http://dx.doi.org/10.1080/01612840600840802>. 581
- 538 17. Riazi A, Aspden T, Jones F. Stroke self-efficacy ques- 582
539 tionnaire: a Rasch-refined measure of confidence 583
540 post stroke. *J Rehabil Med*. 2014;46(5):406-12, 584
541 <http://dx.doi.org/10.2340/16501977-1789>. 585
- 542 18. Jones F, Partridge C, Reid F. The Stroke Self-Efficacy 586
543 Questionnaire: measuring individual confidence in functional 587
544 performance after stroke. *J Clin Nurs*. 2008;17(7B):244-52, 588
545 <http://dx.doi.org/10.1111/j.1365-2702.2008.02333.x>. 589
- 546 19. Godwin M, Streight S, Dyachuk E, Hooven ECV, Ploemacher J, 590
547 Seguin R, et al. Testing the Simple Lifestyle Indicator Ques- 591
548 tionnaire initial psychometric study. *Can Fam Physician • Le Médecin 592
549 Fam Can*. 2008;54:76-7. Accessed June 1, 2021 www.cfp.ca 593
- 550 20. Godwin M, Pike A, Bethune C, Kirby A, Pike A. Concur- 594
551 rent and convergent validity of the Simple Lifestyle 595
552 Indicator Questionnaire. *ISRN Fam Med*. 2013;2013:1-6, 596
553 <http://dx.doi.org/10.5402/2013/529645>. 597
- 554 21. Hooper D, Coughlan J, Mullen M. Structural equation modelling: 598
555 guidelines for determining model fit. *Articles*. 2008;6(1):53-60, 599
556 <http://dx.doi.org/10.21427/D7CF7R>. 600
- 557 22. Bandura A. Self-efficacy. *Encycl Hum Behav*. 1994;4:71-81. 601
- 558 23. Volz M, Voelkle MC, Werheid K. General self-efficacy 602
559 as a driving factor of post-stroke depression: a longi- 603
560 tudinal study. *Neuropsychol Rehabil*. 2019;29(9):1426-38, 604
561 <http://dx.doi.org/10.1080/09602011.2017.1418392>. 605
- 562 24. Torrisi M, De Cola MC, Buda A, Carioti L, Scaltrito 606
563 MV, Bramanti P, et al. Self-efficacy, poststroke depres-
564 sion, and rehabilitation outcomes: is there a correlation?
565 *J Stroke Cerebrovasc Dis*. 2018;27(11):3208-11, <http://dx.doi.org/10.1016/j.jstrokecerebrovasdis.2018.07.021>.
25. Townend E, Tinson D, Kwan J, Sharpe M. Feeling sad 566
and useless: an investigation into personal accep- 567
tance of disability and its association with depression 568
following stroke. *Clin Rehabil*. 2010;24(6):555-64, 569
<http://dx.doi.org/10.1177/0269215509358934>. 570
26. Kobylanska M, Kowalska J, Neustein J, Mazurek J, Wójcik 571
B, Betza M, et al. The role of biopsychosocial factors in 572
the rehabilitation process of individuals with a stroke. *Work*. 573
2018;61:523-35, <http://dx.doi.org/10.3233/WOR-162823>. 574
27. Szczepańska-Gieracha J, Mazurek J. The role of 575
self-efficacy in the recovery process of stroke sur- 576
vivors. *Psychol Res Behav Manag*. 2020;13:897-906, 577
<http://dx.doi.org/10.2147/PRBM.S273009>. 578
28. Rzońca E, Iwanowicz-Palus G, Bień A, Wdowiak A, Szymański 579
R, Chotubek G. Generalized self-efficacy, dispositional opti- 580
mism, and illness acceptance in women with polycystic ovary 581
syndrome. *Int J Environ Res Public Health*. 2018;15(11):1-10, 582
<http://dx.doi.org/10.3390/ijerph15112484>. 583
29. Alnazly EK. Burden and coping strategies among Jordanian 584
caregivers of patients undergoing hemodialysis. *Hemodial Int*. 585
2016;20(1):84-93, <http://dx.doi.org/10.1111/hdi.12318>. 586
30. Arwert HJ, Meesters JLL, Boiten J, Balk F, Wolterbeek R, Vliet 587
Vlieland TPM. Poststroke depression: a long-term problem for 588
stroke survivors. *Am J Phys Med Rehabil*. 2018;97(8):565-71, 589
<http://dx.doi.org/10.1097/PHM.0000000000000918>. 590
31. Nott M, Wiseman L, Seymour T, Pike S, Cuming T, Wall G. Stroke 591
self-management and the role of self-efficacy. *Disabil Rehabil*. 592
2019, <http://dx.doi.org/10.1080/09638288.2019.1666431>. 593
32. Frost Y, Weingarden H, Zeilig G, Nota A, Rand D. Self- 594
care self-efficacy correlates with independence in basic 595
activities of daily living in individuals with chronic 596
stroke. *J Stroke Cerebrovasc Dis*. 2015;24(7):1649-55, 597
<http://dx.doi.org/10.1016/j.jstrokecerebrovasdis.2015.03.054>. 598
33. Kowalczyk B, Zawadzka B. Lifestyle and 599
quality of life in working-age people after 600
stroke. *Acta Clin Croat*. 2020;59(1):30-6, 601
<http://dx.doi.org/10.20471/acc.2020.59.01.04>. 602
34. Abolfathi N, Dalvandi A, Rahgoi A, Rahgozar M. The effect of 603
training based on the self-efficacy model on the quality of life 604
of patients with stroke. *Crit Care Nurs J*. 2018;11(3):85342, 605
<http://dx.doi.org/10.5812/ccn.85342>. 606

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