



The correlations between demographic factors, self-efficacy, and quality of life among Indonesian patients with ischemic stroke: A cross-sectional study

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Abstract

Background: Ischemic stroke is the primary cause of neurological disability and can lead to psychological issues that affect self-efficacy. Changes in self-efficacy, in turn, influence the overall quality of life. Although many studies have examined factors that affect self-efficacy, quality of life, or both, few have specifically explored the role of demographic factors in shaping the quality of life in patients with ischemic stroke.

Objective: This study aimed to identify the correlations between demographic factors, self-efficacy, and quality of life Indonesian in patients with ischemic stroke.

Methods: This study employed a quantitative approach with a cross-sectional design. A total of 143 participants were recruited between February and April 2024 based on defined inclusion criteria. The research instruments included a demographic questionnaire, the Stroke Self-Efficacy Questionnaire, and the Specific Stroke Quality of Life Questionnaire. Data were analyzed using descriptive statistics, logistic regression, and Spearman rank test.

Results: The findings revealed that females were 2.213 times more likely (95% CI = 1.128–4.341; $p = 0.031$) to achieve high self-efficacy compared to males. Occupational status significantly influenced self-efficacy, with employed individuals being 6.333 times more likely (95% CI = 3.134–16.599; $p < 0.001$) to achieve high self-efficacy. The duration of stroke experienced by respondents also had a significant impact, with an odds ratio (OR) of 1.908 (95% CI = 0.980–3.715; $p = 0.025$). Additionally, occupational status significantly affected the quality of life, as employed respondents were 7.213 times more likely to achieve a good quality of life (OR = 7.213; 95% CI = 3.134–16.599; $p < 0.001$). There was a significant positive correlation between self-efficacy and quality of life ($r = 0.898$, $p < 0.001$).

Conclusion: The results of this study provide valuable insights for nursing practice, emphasizing the importance of interventions to enhance patients' self-efficacy. By increasing patients' confidence in managing their condition, such interventions can lead to improved quality of life and better recovery outcomes. Strategies including health education, psychological support, and patient empowerment during rehabilitation are essential for strengthening self-efficacy and improving overall care outcomes. These findings highlight the need for healthcare professionals and families to address the psychological aspects of care in patients with stroke. Enhancing self-efficacy is critical in helping patients achieve a better quality of life and more successful recovery.

Keywords

Indonesia; self-efficacy; ischemic stroke; psychological issues; quality of life; nursing

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Background

Stroke is a non-communicable disease that remains a topic of discussion in the health sector, as it is the second leading cause of death worldwide (De Havenon et al., 2023). Stroke directly affects health systems, leading to significant expenses, and is regarded as a global public health issue because of the severe disabilities, functional impairments, and compromised quality of life (QoL) (Ramos-Lima et al., 2018).

In 2019, a total of 101.5 million people globally had experienced a stroke, including 77.2 million with ischemic strokes (Alshehri & Muhammad, 2023). Global forecasts indicate that for individuals aged over 25 years, the lifetime risk of experiencing any stroke is 24.9%, while the risk specifically for ischemic stroke is 18.3% (Pu et al., 2023). Disability resulting from stroke presents a new challenge for patients in their daily lives, including during the rehabilitation phase (Dewilde et al., 2020).

The rehabilitation phase for patients with stroke is prolonged. Rehabilitation benefits patients with stroke by maximizing bodily functions for independent performance of basic activities and preventing complications (Bindawas & Vennu, 2016). Despite this, many patients with stroke still face difficulties in performing basic daily activities, even while undergoing rehabilitation (Brouwer-Goossensen et al., 2018). The duration of rehabilitation and the presence of disability in patients with stroke can lead to psychological issues, including anxiety and depression (Brouwer-Goossensen et al., 2018). Many stroke survivors often feel that disability leads to feelings of low self-esteem, worry, and dissatisfaction with their lives (Volz et al., 2019). Therefore, high self-efficacy is required to achieve well-being for patients with stroke (Brouwer-Goossensen et al., 2018). Prior studies suggest that successfully boosting self-efficacy in individuals results in enhanced skills, greater confidence, and increased independence in managing their illness. Furthermore, these improvements have lasting benefits that improve the overall quality of life (Rui & Lirong, 2023).

Self-efficacy in patients with stroke is a crucial factor in the ability to choose behaviors and enhance independence in performing self-care activities to achieve desired goals (Lo et al., 2022). Previous research indicates that individuals with high self-efficacy can improve self-management, including independent activity fulfillment (Lo et al., 2022). The impact on patients with high self-efficacy tends to be more cautious in decision-making (Honado et al., 2023). Additionally, self-efficacy can influence patients such as thinking, motivation, and behavior related to health (Jia et al., 2021). With high self-efficacy, patients with stroke can effectively manage their health and undergo rehabilitation. Success in self-management in patients with stroke is closely related to improving their quality of life. Patients with strokes with high self-efficacy are also closely associated with a better quality of life (Tielemans et al., 2015).

Quality of life is crucial as it relates to health conditions for patients with stroke (Bártlová et al., 2022). Quality of life reflects health status, including physical well-being, cognitive function, psychological state, rehabilitation phase, and assessing treatment effectiveness from the patient's perspective (Wong et al., 2021). Previous research has explored how the correlation between self-efficacy and quality of life in patients with stroke. Tielemans et al. (2015) found a strong relationship between self-efficacy and quality of life, with high self-efficacy correlating with better quality of life. Consistent with this, van Mierlo et al. (2014) noted that improving self-efficacy is essential for achieving a good quality of life. However, some studies indicate that sociodemographic factors also affect the quality of life (Wróblewska et al., 2019). Other research suggests that psychological factors can mediate quality of life in patients with stroke (Trochimczyk et al., 2017).

Additionally, identifying aspects influencing quality of life is essential for developing effective management strategies, and these factors include demographic factors (Kariyawasam et al., 2020). In Sri Lanka, research indicated that younger age, higher income, and better health infrastructure were linked to a higher quality of life before experiencing a stroke. In contrast, younger age, female gender, limited health infrastructure, lower education levels, greater disability, and

hypercholesterolemia were associated with a lower quality of life across various domains after a stroke (Mahesh et al., 2018). Kariyawasam et al. (2020) also found that demographic factors significantly related to the quality of life in patients with stroke included marital status, monthly income, occupation, gender, and education level.

Research on quality of life is essential as it impacts an individual's social life. However, research in Asia, particularly in Indonesia, remains limited regarding the relationship between self-efficacy and quality of life in stroke patients, as well as the impact of demographic factors on quality of life in patients with stroke ischemic as potential risk factors. This gap highlights the need for a deeper understanding of the risk factors affecting quality of life.

Thus, our study aimed to analyze the correlations between demographic factors, self-efficacy, and quality of life in patients with ischemic stroke.

Methods

Study Design

The study utilized a cross-sectional design to investigate demographic factors, self-efficacy, and quality of life. This design allowed researchers to assess outcomes and exposures concurrently among the participants, providing a snapshot of the relationships between variables at a single point in time.

Samples/Participants

Patients with ischemic stroke were recruited from the outpatient neurology clinic at K.R.M.T Wongsonegoro General Hospital in Indonesia between February 2024 and April 2024. The inclusion criteria for the study encompassed all patients with ischemic stroke attending the outpatient clinic, aged 18 to 65 years, and without cognitive impairment, as assessed by the MMSE (Mini-Mental State Examination) with a score greater than 22. The exclusion criteria involved patients with disabilities unrelated to ischemic stroke and those with comorbid conditions, including renal failure, coronary heart disease, and diabetes mellitus. The sample size was calculated by the G*Power program, yielding a total of 143 participants selected from the population using a consecutive sampling technique.

Instruments

Three instruments were utilized and authorized by the authors of the original research and Indonesian versions. Initially, the demographics questionnaire was created by the researchers and included questions about education level, gender, marital status, age, occupational status, years with stroke, and number of attacks.

The Stroke Self-Efficacy Questionnaire (SSEQ) was utilized to assess self-efficacy related to functional status and self-management during the recovery process for post-stroke patients (Muina-Lopez & Guidon, 2013). This scale, created by Jones et al. (2008), includes 13 items rated on a Likert scale from 0 to 3, where 0 signifies no confidence and 3 denotes full confidence, yielding a total score between 0 and 39. The Indonesian version of the SSEQ has undergone validity and reliability testing with 31 stroke patients, demonstrating a calculated *r*-value equal to or exceeding the table *r*-value

(0.355) in content validity testing, while reliability was confirmed with a Cronbach's alpha of 0.916 (Nurjihan et al., 2022).

The Short Version of the Stroke-Specific Quality of Life scale (SSQ-12), consisting of 12 items, was used to assess quality of life. This scale covers aspects such as upper limb function, cognitive abilities, self-care, work, social roles, upper extremity function, language, mobility, vision, family roles, energy, mood, and personality (Post et al., 2011). It employs a Likert scale from 1 to 4, with total scores ranging from 12 to 48. The validity and reliability of this questionnaire were assessed in a study involving 30 stroke patients. The validity was established through construct validity, with all items scoring between 0.393 and 0.717 ($r > 0.30$), and the reliability test indicated a Cronbach's alpha of 0.882 (Dharma, 2015). Permission to use the instruments was obtained from the original developers.

Data Collection

Data collection was conducted after obtaining ethical approval and research permission from KRMT Wongsonegoro Hospital, Semarang. The research was carried out directly by the researcher without the assistance of enumerators. The study was conducted after the respondents left the neurology outpatient clinic room, where they were presented with an informed consent form for research approval. The researcher assisted respondents in completing the questionnaire to help them respond to the questions more easily. The data collection process was conducted every Monday through Friday from February to April 2024., while observing health protocols in accordance with applicable regulations. Research focusing on these three variables is limited; hence, this study was conducted with an alpha error probability of 0.05, a power ($1 - \beta$ probability) of 0.8, and an effect size of 0.3 (Cohen's f). Consequently, the minimum required sample size was 107 respondents. Ultimately, from the total population, 143 patients consented to participate in this study.

Data Analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 23.0. The statistics assessed the frequency and percentage of demographic characteristics, including marital status, gender, employment status, age, education level, years with stroke, and number of stroke occurrences. The standard deviation (SD), minimum, maximum, mean, and median were calculated for age. Logistic regression, including Confidence Intervals (CI) and Odds Ratios (OR), was applied to determine the likelihood of high self-efficacy and good quality of life-based on demographic factors. Spearman rank correlation was utilized to examine the relationship between self-efficacy and quality of life because none of the variables were normally distributed.

Ethical Considerations

The study protocols obtained ethics approval from the ethics committee of RSD K.R.M.T Wongsonegoro Semarang with number 019/Kom.EtikRSWN/II/2024. Before distributing the questionnaires, the research objectives were communicated to the participants, who were assured of information

confidentiality and provided with informed consent. To adhere to ethical guidelines, the questionnaires were distributed anonymously. The questionnaires were distributed while participants were waiting in the outpatient neurology clinic waiting area and were completed within 10-15 minutes. The completed questionnaires were then returned to the researcher. It is important to note that all questionnaires were utilized with permission from the original developers, ensuring that the research adhered to proper usage and copyright protocols.

Results

As shown in Table 1, 72% of the participants were aged between 18 and 59 years, with a mean of 55.17 (SD= 7.067; min = 25; max = 65). Males comprised over half of the participants (53%), and nearly all were married (97.2%). Most of the participants had a low level of education (97.2%) and were predominantly unemployed (65%). Over half of the participants had suffered a stroke less than one year ago (51%), with the majority experiencing their first stroke (84.6%).

Table 1 Participants' demographic characteristics

Characteristics	n	%
Gender		
Male	77	53.8
Female	66	46.2
Age		
Mean = 55.17, SD = 7.067, Min = 25, Max = 65		
≥ 60 years	40	28
18-59 years	103	72
Marital status		
Unmarried	4	2.8
Married	139	97.2
Education level		
Lower education	103	72
Higher education	40	28
Occupational status		
Unemployed	93	65
Employed	50	35
Years with stroke		
≥1 year	70	49
<1 year	73	51
Number of attacks		
Recurrent stroke	22	15.4
Primary stroke	121	84.6

Table 2 shows that females had a 2.213 times greater likelihood (95% CI = 1.128–4.341; $p = 0.031$) of achieving high self-efficacy compared to males. Occupational status significantly influenced self-efficacy, with employed individuals being 6.333 times more likely (95% CI = 3.134–16.599; $p < 0.001$) to achieve high self-efficacy. The large CI value obtained was likely due to the variability within the data.

The duration of stroke experienced by respondents also had a significant impact, with an OR of 1.908 (95% CI = 0.980–3.715; $p = 0.025$). However, the characteristics of age, marital status, education level, and type of stroke attack did not have a significant influence on the self-efficacy of patients with ischemic stroke.

Table 2 Correlations of the respondents' characteristics of their self-efficacy (N = 143)

Characteristics	n (%)	Self-efficacy level		OR (95% CI)	p
		Low n (%)	High n (%)		
Gender					
Male	77 (53.8%)	43 (55.8%)	34 (44.2%)	Ref	-
Female	66 (46.2%)	24 (36.4%)	42 (63.6%)	2.213 (1.128-4.341)	0.031*
Age					
≥60 years	40 (28%)	22 (55%)	18 (45%)	Ref	-
18-59 years	103 (72%)	45 (43.7%)	58 (56.3%)	1.575 (0.756-3.284)	0.303
Marital status					
Unmarried	4 (2.8%)	3 (75%)	1 (25%)	Ref	-
Married	139 (97.2%)	64 (46%)	75 (54%)	3.516 (0.357-34.634)	0.525
Education level					
Lower education	103 (72%)	52 (50.5%)	51 (49.5%)	Ref	-
Higher education	40 (28%)	15 (37.5%)	25 (62.5%)	1.6999 (0.805-3.589)	0.226
Occupational status					
Unemployed	93 (65%)	57 (61.3%)	36 (38.7%)	Ref	-
Employed	50 (35%)	10 (20%)	40 (80%)	6.333 (2.821-14.221)	<0.001**
Years with stroke					
≥1 year	70 (49%)	40 (57.1%)	30 (42.9%)	Ref	-
<1 year	73 (51%)	27 (37%)	46 (63%)	1,908 (0.980-3.715)	0.025*
Number of attacks					
Recurrent stroke	22 (15.4%)	15 (68.2%)	7 (31.8%)	Ref	-
Primary stroke	121 (84.6%)	52 (43%)	69 (57%)	2.843 (1.081-7.476)	0.052

Note: *significant level (<0.05); **significant level (<0.001)

Table 3 shows that occupational status had a significant impact on the quality of life of patients with ischemic stroke, with employed respondents being 7.213 times more likely to

achieve a good quality of life compared to unemployed respondents (OR = 7.213; 95% CI = 3.134–16.599; $p < 0.001$).

Table 3 Descriptive characteristics of quality of life of patients with stroke (N = 143)

Characteristics	n (%)	Quality of life level		OR (95% CI)	p
		Low n (%)	High n (%)		
Gender					
Male	77 (53.8%)	40 (51.9%)	37 (48.1%)	Ref	-
Female	66 (46.2%)	26 (39.4%)	40 (60.6%)	1.663 (0.854-3.238)	0.183
Age					
≥60 years	40 (28%)	23 (57.5%)	17 (42.5%)	Ref	-
18-59 years	103 (72%)	43 (41.7%)	60 (58.3%)	1.888 (0.901-3.953)	0.131
Marital status					
Unmarried	4 (2.8%)	2 (50%)	21 (50%)	Ref	-
Married	139 (97.2%)	64 (46%)	75 (54%)	1.172 (0.160-8.557)	1.000
Education level					
Lower education	103 (72%)	53 (51.5%)	50 (48.5%)	Ref	-
Higher education	40 (28%)	13 (32.5%)	27 (67.5%)	2.202 (1.023-4.737)	0.064
Occupational status					
Unemployed	93 (65%)	57 (61.3%)	36 (38.7%)	Ref	-
Employed	50 (35%)	9 (18%)	41 (82%)	7.213 (3.134-16.599)	<0.001*
Years with stroke					
≥1 year	70 (49%)	38 (54.3%)	32 (45.7%)	Ref	-
<1 year	73 (51%)	28 (38.4%)	45 (61.6%)	1,908 (0.980-3.715)	0.081
Number of attacks					
Recurrent stroke	22 (15.4%)	14 (63.6%)	6 (36.4%)	Ref	-
Primary stroke	121 (84.6%)	52 (43%)	69 (57%)	2.322 (0.907-5.946)	0.120

Note: *significant level (<0.05); **significant level (<0.001)

The result of the bivariate analysis using Spearman rank, according to **Table 4**, showed a significant positive correlation between self-efficacy and quality of life in patients with ischemic stroke ($r = 0.898$, $p < 0.001$). This indicates that as self-efficacy levels increase, patients' quality of life also improves.

Table 4 Correlation between self-efficacy and quality of life of patients with stroke (N = 143)

	SSQ-12	p
SSEQ	0.898	<0.001**

Note: *significant level (<0.05); **significant level (<0.001)

Discussion

This study found a significant correlation between self-efficacy and factors like gender, employment status, and stroke duration. Additionally, a notable correlation was found between quality of life and employment status. Previous studies have suggested that gender and employment status may influence self-efficacy and could serve as risk factors for changes in self-efficacy (Thomet et al., 2018). In this study, there are differences in perceptions of male and female abilities. We found that women are more likely to have higher self-efficacy than men. This finding contrasts with an earlier study, which suggested that men generally exhibit higher self-efficacy than women (Thomet et al., 2018). Additionally, the duration of a stroke can impact an individual's self-efficacy, as a longer duration often leads to a decline in self-efficacy. This decline is attributed to ongoing physical deterioration, increased dependency on others, and growing feelings of hopelessness or frustration. Previous studies have demonstrated that patients with stroke who have been living with the condition for more than two years tend to have lower self-efficacy compared to those who have experienced a stroke more recently (Long et al., 2020). In this study, self-efficacy was also found to be influenced by employment status. This aligns with previous studies, which found that employment status affects self-efficacy (Thomet et al., 2018). Employment status emerged as the most significant risk factor influencing self-efficacy in this study.

The results of this study found that there is no relationship between self-efficacy and age, marital status, education level, or the number of strokes. This suggests that self-efficacy may not be significantly associated with these variables in stroke patients, emphasizing the importance of addressing psychological support in rehabilitation programs instead (Maujean & Davis, 2013). The result also found a wide confidence interval in analyzing the relationship between marital status and self-efficacy, indicating high uncertainty in the estimate. This may reflect significant variability in the sample. It is essential to highlight that such variability may arise from heterogeneity in the participants' characteristics, such as cultural differences in how marital status influences psychological outcomes or measurement inconsistencies.

In examining the correlation between demographic characteristics and quality of life, employment status was found to impact quality of life and act as a risk factor for its changes. These results differ from other studies that have identified marital status, gender, education level, age, and socioeconomic status as the demographic factors influencing quality of life (Wang & Langhammer, 2018). However, individuals who are unemployed and lack a primary source of income may face challenges in accessing healthcare services, which can negatively impact their quality of life. Unemployment can lead to financial uncertainty, adversely affecting mental and physical well-being, thus lowering socioeconomic status and, consequently, quality of life. Conversely, low income can be an obstacle to accessing necessary follow-up care. Patients with higher income levels may have improved access to healthcare services and transportation. Thus, health education programs designed to raise patients' awareness of treatment options and follow-up care may help improve or maintain their quality of life (Kariyawasam et al., 2020). The

study's results revealed that age and educational status are not associated with the quality of life of stroke patients. This finding is consistent with previous research, which also found no relationship between age, educational status, and the quality of life of patients with ischemic stroke (Ramos-Lima et al., 2018).

This study also revealed a notable positive correlation between self-efficacy and quality of life. Earlier research has shown that patients with lower self-efficacy tend to experience higher levels of depression within one to six months following a stroke, with low self-efficacy being strongly linked to a diminished quality of life (Szczepanska-Gieracha & Mazurek, 2020). Additionally, previous studies found that participants who did not experience an improvement in self-efficacy after three weeks of treatment reported worse well-being, less acceptance of their illness, and decreased functional ability (Tielemans et al., 2015).

A sudden change in life following a stroke can bring about various adverse psychological and behavioral effects, such as a sense of helplessness, mood disorders, anxiety, and decreased self-efficacy (Szczepanska-Gieracha & Mazurek, 2020). Self-efficacy represents patients' confidence in their ability to handle challenges they may face in the future successfully. It is shaped by mastery experiences, observing others' experiences, verbal encouragement, and emotional and physical conditions (Linge et al., 2021). Patients with high self-efficacy are more likely to be motivated to participate actively in rehabilitation programs (Gangwani et al., 2022). They believe their efforts will yield positive results, enhancing their functional abilities. This belief is part of the emotional and physiological state of patients. This confidence enables them to better adapt to the physical and psychological changes following a stroke, improving their quality of life.

Self-efficacy is another critical factor affecting the quality of life and the recovery process in stroke patients (Topçu & Oğuz, 2017). In addition to rehabilitation efforts to improve quality of life, self-efficacy significantly impacts the physical health dimension of quality of life in these patients. Self-efficacy is a primary factor influencing health behaviors, as it is directly connected to expected actions and outcomes (Brouwer-Goossensen et al., 2018). Therefore, self-efficacy can help enhance quality of life, particularly regarding physical health. Research has also shown a strong correlation between self-efficacy and the psychosocial components of quality of life, as stroke patients with lower self-efficacy often exhibit traits like neuroticism, pessimism, helplessness, and passive coping styles (van Mierlo et al., 2014). Self-efficacy can enhance the psychosocial aspects of patients with stroke (Mohammed Weheida et al., 2019).

Implication for Nursing Practice

The main implications highlight the significance of psychological factors in the well-being of patients with ischemic stroke. Nurses should focus on both the physical and psychological health of their patients. Additionally, attention should be given to other influencing factors, such as demographic characteristics, affecting patients' psychological state and quality of life. Nurses can implement interventions designed to boost patients' self-efficacy, making them feel more confident in their recovery process and ultimately leading to an improved quality of life. Furthermore, the results can

provide foundational data for the development of new policies and strategies in nursing practice aimed at enhancing patients' overall health, including physical and psychological dimensions. By addressing the comprehensive needs of patients, it is anticipated that their health outcomes will significantly improve.

Limitations

This study has several limitations. First, it relies on self-reported data from participants, which may introduce response bias and inaccuracies in their self-efficacy and quality-of-life assessments. Participants might provide answers they believe are socially acceptable or inadvertently misreport their behaviors, leading to discrepancies between what they report and their actual behaviors. Such factors could affect the validity of the study's conclusions. Future research could address these limitations by increasing the sample size and ensuring more homogeneous sampling to improve the precision of the estimates. Furthermore, the cross-sectional design restricts its ability to establish a causal correlation between the variables. While associations were identified, the order of events remains unclear. Experimental or longitudinal studies are necessary to draw stronger cause-and-effect inferences. Lastly, the predefined variables in the study may exclude other significant factors, limiting a comprehensive understanding in patients with ischemic stroke of self-efficacy, quality of life, and their determinants.

Conclusion

The findings of this investigation demonstrated that among Chinese patients with CHD, self-efficacy mediated the association between self-management behaviors and family functioning. The findings provide insightful information for future studies aimed at creating efficient treatments to promote the self-management practices of CHD patients. Health professionals who engage with patients in this capacity, such as nurses, should emphasize the value of self-efficacy and implement plans to assist patients in boosting it. This approach is designed to strengthen family functioning, ultimately leading to improved self-management behaviors.

Declaration of Conflicting Interest

There are no conflicts of interest to declare.

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Authors' Contributions

The first author contributed to designing the research, reviewing the literature, collecting data, performing data analysis, drafting the article, and writing the manuscript. The second and third authors contributed by supervising the research development and critically reviewing and revising the manuscript. All authors were responsible for each step of the research and read and approved the final draft of the manuscript.

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Data Availability

The datasets produced and analyzed in this study are available from the corresponding author upon reasonable request.

Declaration of Use of AI in Scientific Writing

In this study, AI tools were utilized to enhance language clarity. Nevertheless, the authors reviewed all interpretations afterward to verify their accuracy.

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