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**Original Research Article**

# Anxiety and Coping as Key Predictors of Quality of Life in Post-Stroke Patients: A Cross-Sectional Study

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**Abstract:** Stroke is a leading cause of long-term disability that greatly affects patients' quality of life. Sociodemographic factors and psychological aspects, such as coping strategies and anxiety, are important determinants of quality of life among post-stroke patients. This study aimed to examine the relationship between sociodemographic characteristics, coping strategies, and anxiety levels with the quality of life of post-stroke patients. This study used a quantitative cross-sectional design. A total of 89 post-stroke patients were recruited through purposive sampling. Data were collected via questionnaires covering respondent characteristics, coping, anxiety levels, and quality of life. The data were analyzed using both bivariate and multivariate statistical tests. The results showed that age and education level were significantly linked to quality of life ($p < 0.05$), while gender, marital status, employment status, and duration of stroke were not significantly linked ($p > 0.05$). Coping and anxiety levels were significantly associated with quality of life ($p < 0.001$), with anxiety identified as the most influential factor. The quality of life for post-stroke patients is affected by both sociodemographic and psychological factors, especially coping mechanisms and anxiety. Nursing interventions should focus on a holistic approach by improving adaptive coping skills and managing anxiety to enhance patients' quality of life.

**Keywords:** Post Stroke, Anxiety, Coping, Quality of Life.

## 1. INTRODUCTION

Stroke is a cardiovascular disease with a rising incidence each year and remains a leading cause of death and long-term disability worldwide (Murray, *et al*., 2020; Feigin, *et al*., 2022;WHO, 2024). In Indonesia, the prevalence of stroke has grown due to population increase and aging, along with the rising rates of hypertension, heart disease, diabetes, smoking, obesity, and unhealthy lifestyle changes (Tombong *et al*., 2022;Amin & Alfira, 2023). According to data from the Basic Health Research, the prevalence of stroke in Indonesia increased from 7.0 per 1,000 population in 2013 to 10.9 per 1,000 population (Kemenkes, 2018).

Stroke patients face a wide range of challenges, including physical, psychological, and social problems. These conditions lead to significant changes in daily life, ultimately resulting in a decline in patients' quality of life (Wulansari Putri Yunita, *et al*., 2020). The quality of life for post-stroke patients is influenced by multiple multidimensional factors. Sociodemographic factors such as age, gender, education level, marital status, and socioeconomic status have been reported to significantly impact the quality of life of post-stroke patients (Sun *et al*., 2023).

In addition to sociodemographic factors, coping mechanisms are crucial in the adaptation process for post-stroke patients. Coping strategies help individuals adjust to the changes caused by stroke (Iryanidar & Irwan, 2023). Several studies have shown that active coping and social support are associated with a higher quality of life (Arafat *et al*., 2018) Disability and limitations in daily activities are also associated with increased levels of depressive (Bartoli, *et al*., 2018;

Pucciarelli *et al*., 2019). Beyond physical impairments, patients often face psychological distress, such as anxiety and stress, which greatly impact their quality of life (Cox *et al*., 2023).

Patients may also experience decreased attention, impaired memory, irritability, and other emotional disturbances, which can lessen adherence to treatment and rehabilitation programs (Riba *et al*., 2019).. More seriously, some patients may develop self-rejection, leading to increased psychological distress (C. Li *et al*., 2021). A study by Liu *et al*., (2023) reported that approximately 30–60% of stroke patients experience anxiety disorders at different levels. As a result, many stroke patients face a decline in quality of life related to their health conditions (Ramos-Lima *et al*., 2018).

Quality of life is a key indicator for assessing the success of rehabilitation and management in post-stroke patients. An individual's perception of their health condition is shaped by multiple aspects of quality of life, including physical, psychological, social, and spiritual domains. Previous research has indicated that the quality of life for post-stroke patients generally tends to be lower than that of patients with other conditions, due to a variety of contributing factors (Pucciarelli *et al*., 2020; Amin *et al*., 2024).

Preliminary observations suggest that many post-stroke patients receiving treatment or follow-up care at this hospital experience varying levels of anxiety and use different coping strategies to manage their condition. However, no systematic study has explored the relationship between coping, anxiety levels, and quality of life among post-stroke patients at this hospital. Therefore, this research is important to provide empirical data on the coping strategies and anxiety levels in a local setting, as well as to examine how these factors relate to patients' quality of life.

## 2. METHODOLOGY SECTION

This study used an observational analytic design with a cross-sectional approach, where both independent and dependent variables were measured at a single point in time (Creswell & Creswell, 2017) The study population included all post-stroke patients receiving outpatient care at the Neurology Clinic of RSUD H.A. Sulthan Daeng Radja Bulukumba, with a total of 89 participants.

The sample was chosen through consecutive sampling. The inclusion criteria were: (1) patients diagnosed with ischemic stroke in the post-acute phase (>3 months after onset), (2) age over 30 years, (3) ability to communicate effectively, and (4) willingness to participate in the study. The exclusion criteria included: (1) patients with cognitive impairment, (2) those with severe comorbid conditions like chronic kidney failure or advanced heart disease, and (3) patients with aphasia.

The instruments used in this study included: (1) a sociodemographic characteristics questionnaire, (2) the Brief COPE Inventory (BCI), (3) the Hospital Anxiety and Depression Scale (HADS), and (4) the Stroke-Specific Quality of Life Scale (SS-QOL), which comprises 12 domains (Abdul Rahman *et al*., 2021; Alotaibi *et al*., 2021; Abuadas *et al*., 2023)].

This study received ethical approval from the Ethics Committee of STIKES Panrita Husada Bulukumba (No: 000335/KEP Stikes Panrita Husada Bulukumba/2023). Data collection was conducted after obtaining permission from the Research Ethics Committee of RSUD H.A. Sulthan Daeng Radja and informed consent from all participants. Eligible respondents were interviewed using structured questionnaires at the Neurology Clinic. Data collection took place from July to September 2023.

Data analysis involved univariate analyses to describe respondents' demographic features and bivariate analyses to explore relationships between variables. The bivariate analysis was performed using the Chi-square test with SPSS version 22. Multivariate analysis was carried out with multiple logistic regression to determine the main factors influencing the quality of life of post-stroke patients, with a significance level of $\alpha = 0.05$.

## 3. RESULTS

### a. Respondent Characteristics

A total of 89 respondents receiving outpatient care at the Neurology Clinic of RSUD H.A. Sulthan Daeng Radja Bulukumba were included in this study. The distribution of respondent characteristics is shown in Table 1.

**Table 1: Frequency Distribution of Respondent Characteristics (n = 89)**

| Characteristics | Frequency (f) | Percentage (%) |
|---|---|---|
| **Age:** | | |
| - < 55 years | 35 | 39,3 |
| - ≥ 55 years | 54 | 60,7 |

| Characteristics | Frequency (f) | Percentage (%) |
|---|---|---|
| **Gender:** | | |
| - Male | 49 | 55,1 |
| - Female | 40 | 44,9 |
| **Education Level:** | | |
| - Low | 53 | 59,6 |
| - High | 36 | 40,4 |
| **Marital Status:** | | |
| - Married | 69 | 77,5 |
| -Unmarried/Widowed/ Divorced | 20 | 22,5 |
| **Occupation:** | | |
| - Employed | 31 | 34,8 |
| - Unemployed | 58 | 65,2 |
| **Duration of Stroke:** | | |
| - < 2 years | 42 | 47,2 |
| - ≥ 2 years | 47 | 52,8 |
| Total | 89 | 100 |

Based on Table 1, most respondents were aged ≥55 years (60.7%), male (55.1%), had a low level of education (59.6%), were married (77.5%), unemployed (65.2%), and had experienced a stroke for more than 2 years (52.8%).

**b. Distribution of Coping, Anxiety, and Quality of Life.**

**Table 2: Distribution of Coping, Anxiety, and Quality of Life (n = 89)**

| Variable | Frequency (f) | Percentage (%) |
|---|---|---|
| **Coping:** | | |
| - Adaptive | 40 | 44,9 |
| - Maladaptive | 49 | 55,1 |
| **Anxiety Level:** | | |
| - Normal-Mild | 37 | 41,6 |
| - Moderate-Severe | 52 | 58,4 |
| **Quality of Life:** | | |
| - Good | 33 | 37,1 |
| - Poor | 56 | 62,9 |
| Total | 89 | 100 |

Table 2 indicates that most respondents used maladaptive coping strategies (55.1%), experienced moderate to severe anxiety (58.4%), and reported a poor quality of life (62.9%).

**c. Bivariate Analysis**

**Table 3: Association between Sociodemographic Factors, Coping, Anxiety, and Quality of Life (n = 89)**

| Variabel | Quality of Life | | | | Total | | p-value | OR (95% CI) |
|---|---|---|---|---|---|---|---|---|
| | Good | % | Poor | % | n | % | | |
| **Age** | | | | | | | | |
| < 55 years | 19 | 54,3 | 16 | 45,7 | 35 | 100 | 0,011* | 3,27 (1,38-7,76) |
| ≥ 55 years | 14 | 25,9 | 40 | 74,1 | 54 | 100 | | |
| **Gender** | | | | | | | | |
| Male | 19 | 38,8 | 30 | 61,2 | 49 | 100 | 0,731 | 1,17 (0,50-2,73) |
| Female | 14 | 35 | 26 | 65 | 40 | 100 | | |
| **Education Level** | | | | | | | | |
| Low | 12 | 22,6 | 41 | 77,4 | 53 | 100 | 0,003* | 4,55 (1,85-11,20) |
| High | 21 | 58,3 | 15 | 41,7 | 36 | 100 | | |
| **Marital Status** | | | | | | | | |
| Married | 27 | 39,1 | 42 | 60,9 | 69 | 100 | 0,485 | 1,50 (0,53-4,20) |
| Unmarried/Widowed/ Divorced | 6 | 30 | 14 | 70 | 20 | 100 | | |
| **Occupation** | | | | | | | | |
| Employed | 14 | 45,2 | 17 | 54,8 | 31 | 100 | 0,242 | 1,65 (0,69-3,92) |

| Variabel | Quality of Life | | | | Total | | p-value | OR (95% CI) |
|---|---|---|---|---|---|---|---|---|
| | Good | % | Poor | % | n | % | | |
| Unemployed | 19 | 32,8 | 39 | 67,2 | 58 | 100 | | |
| **Duration of Stroke** | | | | | | | | |
| < 2 years | 13 | 31 | 29 | 69 | 42 | 100 | 0,254 | 0,60 (0,26-1,40) |
| ≥ 2 years | 20 | 42,6 | 27 | 57,4 | 47 | 100 | | |
| **Coping:** | | | | | | | | |
| Adaptive | 25 | 62,5 | 15 | 37,5 | 40 | 100 | 0,001* | 6,94 (2,75-17,54) |
| Maladaptive | 8 | 16,3 | 41 | 83,7 | 49 | 100 | | |
| **Anxiety:** | | | | | | | | |
| Normal-Mild | 24 | 64,9 | 13 | 35,1 | 37 | 100 | 0,001* | 7,69 (3,00-19,71) |
| Moderate-Severe | 9 | 17,3 | 43 | 82,7 | 52 | 100 | | |
| Total | | | | | 89 | 100 | | |

According to Table 3, variables significantly linked to quality of life were age (p = 0.011), education level (p = 0.003), coping (p = 0.001), and anxiety level (p = 0.001). In contrast, gender (p = 0.731), marital status (p = 0.485), occupation (p = 0.242), and duration of stroke (p = 0.254) were not significantly related to quality of life.

**d. Multivariate Analysis**

Variables with p < 0.05 in the bivariate analysis were included in the multivariate model using multiple logistic regression. The results are presented in Table 4.

**Table 4: Results of Multiple Logistic Regression Analysis**

| Variable | B | SE | Wald | Df | p-value | Exp(B) | 95% CI |
|---|---|---|---|---|---|---|---|
| Age ≥ 55 years | 0,891 | 0,423 | 4,442 | 1 | 0,035 | 2,44 | 1,06-5,58 |
| Low education level | 1,025 | 0,465 | 4,856 | 1 | 0,028 | 2,79 | 1,12-6,94 |
| Maladaptive coping | 1,179 | 0,423 | 7,763 | 1 | 0,005 | 3,25 | 1,42-7,45 |
| Moderate-severe anxiety | 1,56 | 0,41 | 14,461 | 1 | <0,001 | 4,76 | 2,13-10,62 |
| Constant | -3,234 | 0,771 | 17,592 | 1 | <0,001 | 0,04 | |

## 4. DISCUSSION

**a. Sociodemographic Factors and Quality of Life in Post-Stroke Patients**

The results of this study show that among all sociodemographic variables, only age and education level are significantly linked to the quality of life in post-stroke patients. This emphasizes that not all sociodemographic factors have equal predictive power, as quality of life is mainly affected by clinical and psychosocial factors.

Patients aged 55 and older had a 2.44 times higher risk of experiencing poor quality of life compared to those under 55 after accounting for other variables. Older patients tend to show more severe neurological deficits and lower recovery rates than younger individuals (Ohya *et al*., 2023). Increasing age also correlates with a higher risk of multiple chronic conditions (Amin *et al*., 2025). This result aligns with Ayasrah *et al*., (2024), who noted that older stroke patients generally have a lower quality of life compared to younger patients. Similarly, (Rajan *et al.,* 2019) observed that individuals under 60 years old tend to have better quality-of-life outcomes. Therefore, age is a key biological factor influencing post-stroke quality of life.

In contrast, gender was not significantly linked to quality of life. Recent research indicates that gender differences in quality of life tend to decrease after accounting for factors like disability and social support (Adigwe *et al.,* 2024). International studies have shown that although women might have slightly lower quality-of-life scores, these differences are often not statistically significant and are affected by differences in comorbidities and disability status (Matérne *et al*., 2025). This implies that gender is not an independent predictor but interacts with other variables. Supporting this, research on health-related quality of life (HRQoL) in stroke patients shows that gender does not significantly impact QoL outcomes, despite the broad physical and psychological effects of stroke (Apriliyanti *et al*., 2022).

Educational level was significantly linked to quality of life. Patients with lower education were 2.79 times more likely to have a poor quality of life than those with higher education. This may be due to limited health literacy and reduced access to healthcare services. Education is a well-known factor influencing health-related quality of life, as it affects people's ability to adjust to and manage their health conditions effectively (Braadt *et al*., 2022). Study by Marasine *et al.,* (2025), also highlight that socioeconomic factors, including education, are essential social determinants of stroke outcomes.

Meanwhile, marital status, employment status, and stroke duration were not significantly linked to quality of life. These results align with recent studies indicating that such variables are not primary factors once other elements are considered, and that quality of life is more strongly affected by functional status, psychological health, and social support (Sun *et al*., 2023; Zhu *et al*., 2025). Other research also shows that gender and social factors, such as marital status, are not consistently strong predictors of HRQoL, whereas factors such as age, disability level, and length of hospitalization tend to have greater influence (Alotaibi *et al*., 2021;Segerdahl *et al*., 2023).

In this study, stroke duration was not associated with quality of life, indicating that disease duration is not a primary predictor, especially after the early recovery phase. Multicenter studies show that changes in quality of life are more strongly influenced by stroke severity, baseline functional status, and psychosocial factors than by the time since stroke onset (Butsing *et al*., 2025). This suggests that post-stroke quality of life is flexible and more influenced by individual adaptation than by disease duration. Supporting this, a recent study in Nepal found that sociodemographic factors such as age, income, and comorbidities are more closely related to quality of life than to how long someone has been ill (Marasine *et al.,* 2025).

Overall, this study confirms that age and education are key sociodemographic factors affecting quality of life in post-stroke patients. Therefore, nursing efforts should focus on older adults and those with lower levels of education through tailored educational and adaptive rehabilitation strategies. Additionally, family involvement is essential for supporting patients' independence in daily activities (Amin *et al.,* 2024).

**b. Coping and Quality of Life in Post-Stroke Patients**

The findings show that coping mechanisms are strongly linked to the quality of life of post-stroke patients. People using maladaptive coping strategies were 3.25 times more likely to have a poor quality of life than those using adaptive strategies. This highlights the importance of an individual's ability to manage stress and adjust to post-stroke conditions as a key factor influencing quality of life.

Adaptive coping strategies, such as acceptance, problem-solving, and seeking social support, help improve psychological well-being and support the rehabilitation process. On the other hand, maladaptive coping strategies, like denial and social withdrawal, can worsen psychological distress and slow recovery. Recent studies show that cognitive and behavioral coping strategies are generally associated with better quality of life, as they help patients manage emotional burdens and enhance psychological health during recovery (Tsiakiri *et al*., 2023; Butsing *et al*., 2025).

Furthermore, coping mechanisms can act as mediators between clinical conditions and psychosocial outcomes. Evidence indicates that effective coping reduces the negative effects of stress and boosts resilience in patients experiencing post-stroke disability (Lumbantobing *et al*., 2025). Therefore, coping serves not only as a response to stress but also as a protective factor in preserving quality of life. Overall, these findings emphasize that psychosocial and functional factors are key determinants of quality of life in post-stroke patients (Poulus *et al.,* 2020; Cardile *et al*., 2025).

**c. Anxiety and Quality of Life in Post-Stroke Patients**

Anxiety was the most influential factor affecting the quality of life in post-stroke patients. Those with moderate to severe anxiety were 4.76 times more likely to have a poor quality of life compared to individuals with normal or mild anxiety levels. This result aligns with recent studies by W. Liu *et al*., (2023) danNelsone *et al*., (2023), which found that post-stroke anxiety is linked to lower quality of life across various areas.

Anxiety in post-stroke patients can stem from various factors, such as fear of having another stroke, physical limitations, dependence on others for daily tasks, and uncertainty about the future. Previous studies have indicated that anxiety negatively affects physical, psychological, and social aspects of quality of life (Abuadas *et al*., 2023). If not addressed, anxiety can hinder active participation in rehabilitation, impair cognitive functions, and decrease motivation for daily activities (Matos *et al*., 2024).

Reducing psychological distress in stroke patients is crucial for enhancing emotional health and decreasing functional impairments (Y. Li *et al*., 2025). Previous studies have also shown that higher levels of anxiety and depression are linked to ineffective partner support, such as hostility or overprotection (Rapelli *et al*., 2021) These findings emphasize the importance of early detection and proper nursing interventions, including patient education, relaxation therapy, psychosocial support, and psychotherapeutic techniques, which have been proven to reduce anxiety and improve quality of life (Knapp *et al*., 2017).

## 5. CONCLUSION

This study shows that age and education level are significantly associated with quality of life, with older patients and those with lower educational attainment experiencing worse outcomes. In contrast, gender, marital status, employment, and stroke duration were not significantly related to quality of life.

Quality of life is more strongly affected by coping mechanisms and anxiety levels. Patients with maladaptive coping strategies and moderate to severe anxiety are at higher risk of experiencing a lower quality of life. These findings indicate that post-stroke care should adopt a holistic approach, focusing on improving adaptive coping strategies, managing anxiety, and providing personalized educational interventions tailored to patient characteristics to enhance overall quality of life.

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