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The Relationship Between Mental Health and Quality of Life in Stroke Patients in the Context of the Local Wisdom of the Four Tribes of Kadatuan Tana Luwu

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ABSTRACT

Background: Stroke continues to rank among the primary causes of death and persistent disability globally, frequently resulting in physical, cognitive, and psychological impairments that significantly compromise quality of life (QoL). Post-stroke depression (PSD) and anxiety are among the most common psychological complications, exerting a significant negative impact on recovery and functional outcomes. Early detection and effective management of these conditions are essential to optimizing QoL among stroke survivors.

Methods: This study adopted a cross-sectional design and recruited 206 stroke patients from the Kadatuan Tana Luwu region of Indonesia through purposive sampling. Inclusion criteria were: stroke duration of more than one month, membership in one of four indigenous sub-ethnic groups (*To Ugi, Toraja, To Rongkong, To Wotu*), accompaniment by a primary caregiver, and no history of stem cell therapy. Depression, anxiety, and quality of life were measured using the BDI-II, GAD-7, and WHOQOL-BREF (Indonesian version), respectively, with associations tested by Chi-square ($p < 0.05$).

Results: The majority of respondents experienced severe depression (94.2%), very severe anxiety (74.8%), and poor quality of life (QoL) (56.8%). Statistical analysis identified significant associations between depression and QoL ($p < 0.001$), as well as between anxiety and QoL ($p < 0.001$). Participants with severe psychological distress consistently reported lower QoL across the physical, psychological, and social domains.

Conclusion: Depression and anxiety are strongly associated with poorer QoL among stroke patients. Integrating mental health care into stroke rehabilitation, together with culturally rooted community support systems, may improve recovery outcomes and promote overall well-being.

Keywords: *Stroke; Quality of Life; Post-Stroke Depression; Anxiety; Mental Health.*

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1. INTRODUCTION

Stroke is a major global cause of mortality and long-term disability [1], [2], [3], [4]. Stroke survivors frequently experience impairments that diminish quality of life (QoL) [5], [6], [7]. Post-stroke depression (PSD) is a common psychological disorder that significantly compromises QoL among stroke survivors [8], [9]. Evidence from a Chinese study demonstrated that PSD reduces QoL, underscoring the importance of early interventions to mitigate its adverse effects on the daily lives of stroke survivors [8], [9]. This condition is further exacerbated by low social support, limited daily activities, and high levels of anxiety [10], [11], [12]. Young adult stroke survivors with comorbid depression and anxiety have been shown to report significantly lower HRQoL scores [13]. A review of young ischemic stroke patients emphasized that favorable early functional outcomes, combined with minimal psychological distress, are associated with improved long-term QoL [5]. PSD is highly prevalent and exerts a profound impact on patient recovery [14], [15]. A systematic meta-analysis of 77 studies reported PSD prevalence ranging from 24% based on clinical diagnosis to 29% based on rating scales, with onset most frequently occurring within the first three months after stroke, and approximately 53% of patients experiencing persistent depression [16]. Another longitudinal study estimated that about one-third of stroke survivors develop depression, with contributing factors including prior mental health disorders, stroke severity, physical disability, cognitive capacity, and social support [17]. Furthermore, advanced age, female sex, lower educational attainment, greater disability, and heightened psychological distress have consistently been associated with poorer QoL [18], [19].

Post-stroke anxiety is a significant psychological factor that contributes substantially to the decline in health-related quality of life (HRQoL) among stroke survivors [20]. Symptoms such as excessive worry, tension, and impaired concentration can hinder participation in rehabilitation, exacerbate perceptions of physical limitations, and restrict social interactions [13], [21]. Recent studies consistently indicate that stroke patients with high levels of anxiety exhibit poorer HRQoL across both physical and mental domains compared to those without anxiety, even when the severity of physical disability is similar [5], [14], [22].

Five years after experiencing a stroke, approximately 79% of survivors continue to report significant impairments in HRQoL, particularly in relation to pain and discomfort, mobility limitations, and reduced independence in self-care [23]. This finding illustrates that the effects of stroke on HRQoL are extensive, encompassing physical, psychological, and social dimensions over the long term [24], [25]. Research on the association between mental health and HRQoL in stroke patients has predominantly focused on individual psychological domains, such as depression or anxiety examined in isolation. Only a few investigations have addressed both variables simultaneously, particularly within the context of local cultural settings in Indonesia. Moreover, limited research has incorporated perspectives of local wisdom, including the values of solidarity and social support from the four ethnic groups of Kadatuan Tana Luwu, into the analytical framework for understanding stroke survivors' HRQoL

The originality of this study lies in its simultaneous analysis of depression and anxiety in relation to stroke patients' HRQoL, incorporating the perspective of local wisdom from the four ethnic groups of the Kadatuan Tana Luwu as a contextual variable that may influence both physical and mental recovery. This approach is expected to provide a scientific basis for more comprehensive interventions that not only address medical rehabilitation but also strengthen social and cultural support systems.

2. MATERIALS AND METHODS

Study Design

This study employed a quantitative analytical approach with a cross-sectional design to investigate the association between mental health (depression and anxiety) and HRQoL among stroke survivors. The design was selected to measure the independent variables (mental health: depression and anxiety) and the outcome variable (HRQoL) within a single time frame, thereby facilitating the identification of potential associations between them.

Instument

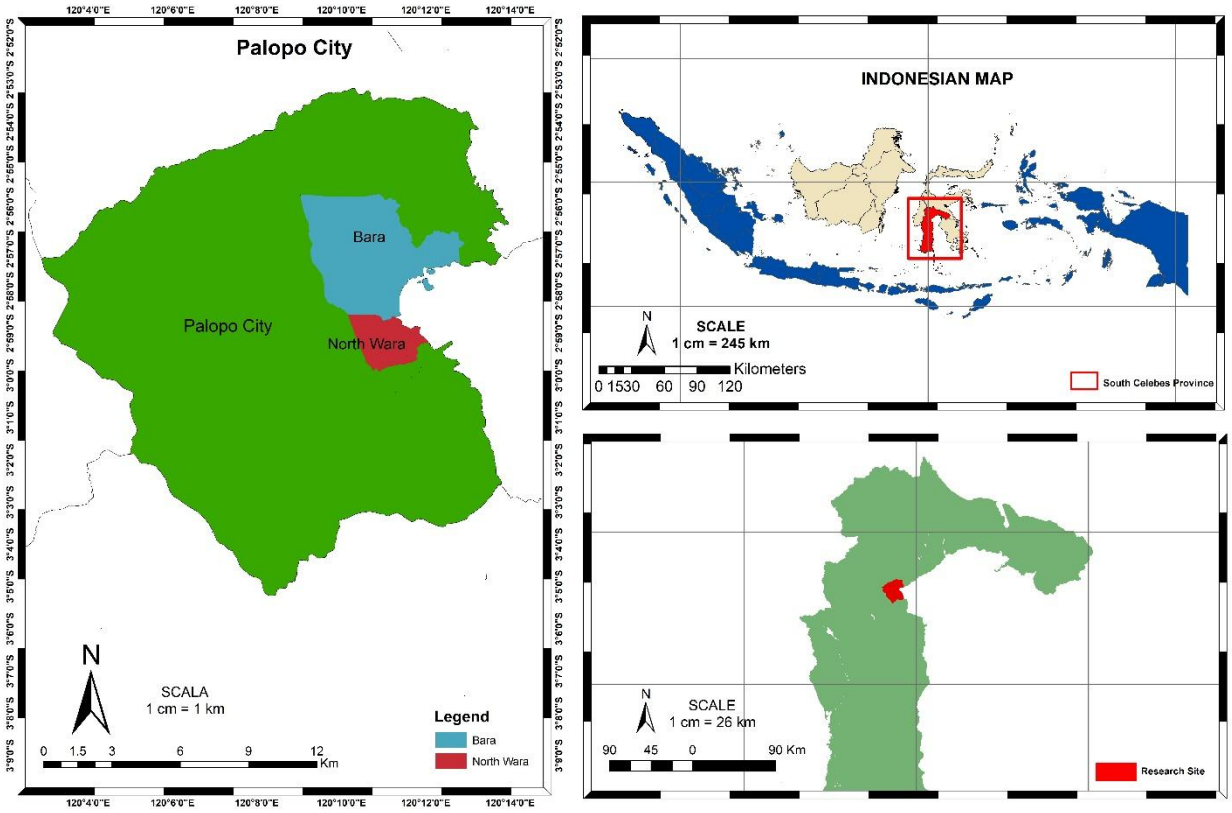
Depressive symptoms were assessed using the Beck Depression Inventory-II (BDI-II), anxiety was measured with the Generalized Anxiety Disorder-7 (GAD-7) scale, and HRQoL was evaluated using the Indonesian version of the WHOQOL-BREF.

Data Collection

Data collection was conducted using structured questionnaires administered to the primary caregivers of stroke patients in a hospital setting. The study was carried out from June to December at Sawerigading Hospital in Palopo, located in the Kadatuan Tana Luwu region. It focused on the four major indigenous sub-ethnic groups in Kadatuan Tana Luwu, namely the To Ugi, To Wotu, To Rongkong, and Toraja communities. Respondents were selected through purposive sampling, with inclusion criteria comprising stroke patients who had experienced a stroke for more than one month, belonged exclusively to one of the specified sub-ethnic groups (To Wotu, To Ugi, To Rongkong, or Toraja), were accompanied by an immediate family caregiver, and had no history of receiving stem cell therapy for stroke. The map of Palopo City,

showing the location of the Kedatuan Tana Luwu Palace marked in red and Sawerigading Hospital marked in blue, is presented below.

Figure 1 The map of Palopo City, indicating the location of the Kedatuan Tana Luwu Palace



Source: Rupa Bumi Indonesia, 2025

Statistical Analysis

Data were analyzed using SPSS version 22. Univariate analysis was conducted to describe respondent characteristics, while bivariate analysis employing the Chi-square test was used to assess the association between mental health (depression and anxiety symptoms) and patients' HRQoL. Statistical significance was set at $p < 0.05$.

3. RESULTS AND DISCUSSION

Univariat Analysis

Respondent Characteristics

Tabel 1 Characteristics of Respondents

Characteristics		Frequency (n)	Percentage (%)
Age	18–30 years	9	4.4
	31–45 years	20	9.7
	46–59 years	70	34.0
	60–69 years	67	32.5
	> 70 years	40	19.4
Sex	Male	116	56.3
	Female	90	43.7

Ethnicity	To Ugi	100	48.5
	Toraja	66	32.0
	To Rongkong	22	10.7
	To Wotu	18	8.7
Income	> Provincial Minimum Wage (PMW)	31	15.0
	Equal to PMW	18	8.7
	< PMW	92	44.7
	None (Housewife)	65	31.6
Duration of Stroke	< 3 months	82	39.8
	3–6 months	66	32.0
	6–12 months	31	15.0
	1–5 years	20	9.7
	> 5 years	7	3.4
Length of Hospital Stay	≤ 14 days	155	75.2
	> 14 days	51	24.8
Barthel Index	Independent	80	38.8
	Mild dependency	106	51.5
	Moderate dependency	20	9.7
Total		**206**	**100%**

Source: Primary Data, 2025

Based on the characteristics of 206 stroke patients, the majority were aged 46–59 years (34.0%) and 60–69 years (32.5%), indicating that stroke is more prevalent among older adults. Most patients were male (56.3%) and belonged to the To Ugi ethnic group (48.5%), followed by Toraja (32.0%), To Rongkong (10.7%), and To Wotu (8.7%). In terms of income, most respondents earned below the provincial minimum wage (44.7%) or had no income at all (31.6%). The most common stroke duration was less than three months (39.8%) and three to six months (32.0%), suggesting that the majority of patients were still in the acute to subacute phase. Most patients were hospitalized for 14 days or less (75.2%). Regarding independence based on the Barthel Index, most patients had mild dependence (51.5%) or were independent (38.8%), while only a small proportion had moderate dependence (9.7%). These findings indicate that stroke predominantly affects older adults, is more common in males, and is often accompanied by significant economic challenges and functional limitations.

Research Variable Characteristics

Table 2 : Research Variable Characteristics

Variable	Category	Frequency	Percent
Depression	Moderate	12	5.8
	Severe	194	94.2
Anxiety	Moderate	17	8.3
	Severe	35	17.0
	Very Severe	154	74.8
Stroke Patients' QoL	Very Good	2	1.0
	Good	20	9.7

	Fair	59	28.6
	Poor	117	56.8
	Very Poor	8	3.9
Total		206	100

Source: Primary Data, 2025

The analysis showed that the majority of respondents experienced severe depression (94.2%), with only 5.8% classified as having moderate depression. Anxiety levels were predominantly in the very severe category (74.8%), followed by severe (17.0%) and moderate (8.3%). In terms of quality of life, most stroke patients fell into the poor (56.8%) and fair (28.6%) categories, with only a small proportion classified as good (9.7%), very poor (3.9%), and very good (1.0%).

Bivariate Analysis

Table 3 Association of Mental Health With HRQoL in Stroke

Post-Stroke Mental Health			**Quality of Life of Stroke**					**Total**	**p-value**
			Very Good	Good	Fair	Poor	Very Poor		
Depression	Moderate	n	1	4	5	1	1	12	0,000
		%	50,0%	20,0%	8,5%	0,9%	12,5%	5,8%	
	Severe	n	1	16	54	116	7	194	
		%	50,0%	80,0%	91,5%	99,1%	87,5%	94,2%	
Anxiety	Moderate	n	1	4	9	1	2	17	0,000
		%	50,0%	20,0%	15,3%	0,9%	25,0%	8,3%	
	Severe	n	0	5	18	12	0	35	
		%	0,0%	25,0%	30,5%	10,3%	0,0%	17,0%	
	Very Severe	n	1	11	32	104	6	154	
		%	50,0%	55,0%	54,2%	88,9%	75,0%	74,8%	
Total		n	2	5	26	22	1	56	
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	

Source: Chi-square test results, Primary Data 2025

Based on Table 4, a significant association was found between the mental health status of stroke patients, specifically depression and anxiety levels, and their HRQoL ($p = 0.000$). A similar pattern was observed for anxiety, with most patients experiencing very severe anxiety (74.8%) reporting poorer HRQoL, whereas those with moderate anxiety were more likely to report improved HRQoL (8.3%). These findings indicate that higher levels of depression and anxiety are strongly associated with reduced HRQoL among stroke patients.

4. DISCUSION

1. Association Between Mental Health: Depression Levels and HRQoL Among Stroke Survivors

The results revealed a highly significant association between depression levels and HRQoL among stroke survivors ($p = 0.000$). Most participants with severe depression reported poor HRQoL, with nearly all classified in the "fair" (99.1%) and "moderate" (91.5%) categories. In contrast, patients with moderate depression were more likely to report improved HRQoL, with a higher proportion classified in the "very good" and "good" categories. These results align with findings from cross-sectional research demonstrating that post-stroke depression significantly reduces HRQoL, particularly in the physical and mental domains [26]

In addition, another study confirmed that even with similar levels of physical disability, stroke patients with depression had significantly lower HRQoL scores compared to those without depression [5]. This finding highlights that post-stroke quality of life is influenced not only by physical factors but also by psychological factors, particularly depression.

Moreover, factors such as low social support, a history of mental disorders, and limited participation in daily activities have been reported to exacerbate depression and further reduce the quality of life among stroke survivors [5], [27], [28].

These findings have important clinical implications. Stroke rehabilitation should not only focus on physical recovery but also incorporate systematic evaluation and management of depression. An integrated approach that combines psychological therapy, counseling, social support, and pharmacological interventions has been shown to significantly improve HRQoL in stroke patients. Therefore, the early detection and management of depression may serve as crucial strategies for comprehensively improving HRQoL among post-stroke patients.

These findings are consistent with the local wisdom of the Kadatuan Tana Luwu community, expressed in the saying, "*In sorrow, they unite; in joy, they unite*" *(jaknauru, deceng nauruk*) [29]. This philosophy emphasizes solidarity, togetherness, and social support as fundamental values in facing hardships as well as celebrating happiness. Another guiding principle upheld by the Kadatuan Tana Luwu people is *"Mutual Preservation of Sirik"* (*siasirik-i*), in which *sirik* is understood not only as personal dignity but also as encompassing honor, respect, and a sense of responsibility to protect oneself and others. *Siasirik-i* reflects the collective commitment to safeguarding dignity and shared well-being, particularly when a member of the community is experiencing difficulties or illness.

In the context of stroke rehabilitation, strong social support from family, neighbors, and the broader community can act as a protective factor against depression, enhance motivation to participate in rehabilitation programs, and accelerate both physical and mental recovery. This principle is consistent with scientific evidence indicating that adequate social support reduces the risk of post-stroke depression and significantly improves patients' HRQoL [27].

2. Association Between Mental Health: Anxiety Levels and HRQoL Among Stroke Survivors

The results demonstrate that greater severity of anxiety is significantly correlated with reduced HRQoL among stroke survivors. Most patients with severe anxiety were classified in the lower QoL categories ("fair" and "poor"), whereas those with moderate anxiety more frequently reported better QoL ("very good" and "good"). These findings are supported by a longitudinal study from Sweden, which showed that post-stroke anxiety was significantly associated with poorer perceived recovery at both 3 and 12 months after the stroke event ($p < 0.001$ at 3 months; $p = 0.002$ at 12 months), an important indicator of HRQoL [18].

This longitudinal study highlights the prevalence and impact of anxiety and depression up to 12 months after a stroke. It found that post-stroke anxiety was significantly associated with lower perceived recovery, indirectly indicating a diminished quality of life [30]. Furthermore, another study found that anxiety or depression was more than twenty times more common among individuals who did not receive rehabilitation services compared to those who did [31].

These findings align with the local wisdom of the Kadatuan Tana Luwu community, expressed through the principles "In sorrow they unite, in joy they unite" (*jaknauru, deceng nauruk*) and "Mutual Preservation of Sirik" (*siasirik-i*) [29]. In this culture, *sirik* is understood not only as self-esteem but also as encompassing dignity, honor, and a sense of responsibility to care for oneself and others. *Siasirik-i* signifies that every individual and the community collectively safeguard dignity and shared well-being, particularly when a member experiences hardship or illness. This philosophy emphasizes the importance of solidarity, togetherness, and social support as fundamental values in both overcoming challenges and celebrating joy.

The findings indicate a significant association between depression severity and HRQoL in stroke survivors ($p < 0.001$). In this context, the application of the *jaknauru, deceng nauruk* principle is particularly relevant, as it underscores that in times of sorrow, community members unite to provide moral, physical, and emotional support, whereas in times of joy, they collectively celebrate the patient's achievements and progress [29]. The social support derived from this collective spirit may function as a protective factor against depression, enhance motivation to engage in rehabilitation programs, and accelerate the recovery of both physical and mental functions [19], [20]. Solidarity in facing sorrow helps to alleviate the patient's emotional burden, while unity in joy fosters optimism that sustains the continuity of recovery.

5. CONCLUSION

The study found a highly significant association between mental health, particularly depression and anxiety, and HRQoL among stroke patients. Severe depression and anxiety were observed to be significantly associated with reduced HRQoL across physical, psychological, and social domains. Additional factors, including limited social support, a history of mental disorders, and restricted participation in daily activities, were identified as contributors that further exacerbate this condition.

These findings emphasize that stroke management should not focus solely on physical recovery but should also incorporate early screening, assessment, and psychological interventions to address depression and anxiety. Strong social support from family, neighbors, and the community was found to contribute significantly to enhanced motivation, accelerated recovery, and improved HRQoL among stroke survivors.

The incorporation of local wisdom from the Kadatuan Tana Luwu community, such as the principles *"In sorrow they unite,*

in joy they unite" (*jaknauru, deceng nauruk*) and *"Mutual Preservation of Sirik"* (*siasirik-i*), can serve as an effective approach to strengthen solidarity, uphold dignity, and foster mutual support throughout the rehabilitation process. By integrating medical interventions with culturally grounded support, the quality of life of stroke survivors can be enhanced in a holistic and sustainable manner.

6. LIMITATIONS OF THE STUDY

The research employed a cross-sectional approach, which can only demonstrate associative relationships and cannot establish a causal link between mental health factors, including depression and anxiety, and health-related quality of life (HRQOL) among stroke patients. Data were collected through questionnaires that relied on the perceptions and recollections of respondents or their families, which may be subject to recall bias and social desirability bias. The study population was limited to stroke patients from four sub-ethnic groups in Kadatuan Tana Luwu who were treated at a single hospital, thereby restricting the generalizability of the findings to other settings with diverse socio-cultural contexts. In addition, the study did not examine other factors that may influence quality of life, such as stroke severity, comorbidities, adherence to rehabilitation, and access to healthcare services.

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8. ETHICAL CONCIDERATIONS

This research obtained ethical clearance from the Hasanuddin University Ethics Committee, reference number 1396/UN4.14.1/TP.01.02/2024

9. CREDIT AUTHOR STATEMENT

Lestari Lorna Lolo: Conceptualization; Methodology; Software; Validation; Project administration. **Atjo Wahyu**: Conceptualization; Data management; Original draft writing; Methodology; Validation; Project administration. **A. Ummu Salmah**: Conceptualization; Methodology; Formal analysis; Visualization; Investigation; Software; Validation. **Syamsiar S. Russeng and Ariyanti Saleh**: Conceptualization ; Supervision. **Syamsuar Manyullei**: Conceptualization; Supervision; Writing - Reviewing and Editing.

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