

## Research Article

# Disability and Quality of Life in Stroke Patients in a Rural Area

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**Abstract.** Stroke often causes disability in the patients who survive. This condition may affect the quality of life. The purpose of this study was to examine the relationship between disability and the quality of life in stroke patients at Poly Neurology Kraton Hospital of Pekalongan. This study used the Modified Rankin Scale to measure body function (disability) and the short version of the Stroke-Specific Quality of Life Scale (SS-QOL-12) to measure the quality of life. This cross-sectional study used convenience sampling to recruit 78 respondents. Simple linear regression was used to analyse the data. The R<sup>2</sup> produced was 0.126 and the beta score was -0.122, meaning that every increase of one unit in the Modified Rankin Scale decreased the quality of life by 0.122 units. This study therefore revealed that physical function was significantly correlated with quality of life among stroke patients.

**Keywords:** Modified Rankin Scale, Stroke-Specific Quality of Life Scale, stroke

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## 1. Introduction

Stroke is one of the most lethal diseases among other neurological diseases, which often causes death or physical impairment, or disability [1]. In the United States, every 40 seconds there is one person who gets a stroke and every four minutes someone dies because of a stroke [2]. Meanwhile, in Indonesia, around 10.9 out of 1000 people have a stroke. According to The Indonesian Stroke Foundation (YASTROKI), Indonesia became one of the most significant numbers of strokes in Asia and estimated it would increase twofold [3].

Stroke often causes disability for patients who are able to survive. Stroke patients may experience physical impairment and emotional change such as loss of enthusiasm, memory, and concentration [4]. These conditions will affect their social roles and decrease their Quality of life [5]. The Quality of life among stroke patients has different results in many kinds of literature. [6] state that the average score of Quality of life among stroke patients in Pakistan is better (mean SSQOL score =  $164.18 \pm 32.30$ ) than Nigeria and Brazil, which is 7 and 24 points higher respectively [7, 8].

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[9] summarized four essential aspects of the Quality of life of patients affected by stroke encompassed the inability to do daily activities, changes in the meaning of life, psychological disorders, and decreased social contact. Therefore, it is paramount to investigate whether physical function changes will affect the Quality of life among patients. Quality of life is important outcome after stroke. Recreational and social activities are reduced for most stroke survivors after they return home, regardless of whether they have made a complete functional recovery. In a large systematic review including 43 studies from the western.

The measurement of QOL typically encompasses physical, functional, psychological, cognitive, and social aspects of life and generally reflects an individual's subjective perception of their current function and overall health. Since patient perceptions are key elements in the current health care environment where patient-centered care is emphasized, documenting self-reported Quality of life should be an integral component of post-stroke assessment and intervention [10]. Functional disability, the lack of ability to perform an activity or task in the range considered normal for an individual, is an essential outcome after a non-fatal stroke [11].

Quality of life as a scientific outcome is defined by patients' perceptions of performance in four areas: Physical and occupational function, psychological state, social interaction, and somatic or bodily state. The International Classification of Impairments, Disabilities and Handicaps (ICIDH) was published in 1980. It illustrates how disease can engender impairment, defined as a loss or abnormality of psychological, physiological, or anatomic structure or function. Impairment, in turn, may lead to disability, defined as a restriction or inability to perform an activity in a way considered normal for a human being. Handicap may arise either directly owing to impairments or because of disability after interaction with the physical or social environment. Handicap is defined as a disadvantage that restricts or prevents the performance of a role deemed normal. QOL is said to lie beyond the disease-handicap continuum. Although the ICIDH offers an important theoretical perspective, it neglects broader QOL issues. However, the handicap is the most relevant clinical outcome for patients and impairment the least relevant, QOL may be even more pertinent from the patient's point of view [12].

## 2. Materials And Methods

This cross-sectional study used convenience sampling from a patient who attended the Neurologic outpatient department of Kraton Hospital Pekalongan, Central Java, Indonesia. The inclusion criteria encompassed: (1) diagnosis of stroke based on the

TABLE 1: Characteristics of Patients (n = 78)

Characteristics	n	%
<b>Age</b> 45-59 60-70 70-90	42 33 3	53.8 42.3 3.8
<b>Education</b> Elementary School Junior High Senior High	4 40 28 30	20.5 5.1 64.1 35.9
University	48	38.5
<b>Sex</b> Male Female	72 6	92.3 7.7
<b>Work</b> Yes No	20 58	25.6 74.4
<b>Stroke</b> First Second		
<b>Duration of Stroke</b> Less than one year More than one year		

TABLE 2: Mean scores *Modified Rankin Scale* (mRs) and *Short version of stroke-specific Quality of life scale* (SS-QOL-12)

Variables	Mean	SD	Min-Max
mRs Total	2.27	0.848	1-4
SS-QOL-12 Physical domain	37.9	2.458	31-43
SS-QOL-12 Psychological domain	19.42	1.883	15-24
	18.47	1.170	15-21

medical record of Kraton Hospital; (2) having physical impairments; (3) age more than 18 years; (4) stable condition; (5) capable of reading and/or listening to fill the questionnaire and able to follow simple instructions; (6) willing to be a participant and fulfill informed consent.

This study used two questionnaires, namely: the modified Rankin scale (mRS) to measure disability after a stroke [13][14] and the Short version of stroke-specific Quality of life scale (SS-QOL-12) to measure the Quality of life among stroke patients . Data were analyzed using SPSS. Descriptive statistics to identify percentage, mean, and standard deviation (SD) were used. Simple linear regression was conducted to identify the relationship between disability scale (mRs) and Quality of life (total SS-QOL-12). Ethical was approved by Research and Development Planning Agency (BAPPEDA) No. 070/487 in Batang Regency, Central Java, Indonesia.

### 3. Results

There were 78 respondents eligible in this study. The descriptive statistics of stroke patients were summarized in Table 1, while Table 2 shows the mean of total SS-QOL-12.

### 4. Discussion

The relationship between disability and Quality of life was analyzed by using simple linear regression. The R<sup>2</sup> showed .126 which means that 12.6% of the variability in the Quality of life can be explained by the disability scale (mRs), while 87.4% is explained by other variables. Based on this model, it can be concluded that each increase of 1-unit of disability scale will decrease the Quality of life by .122 units (p-value <0.01). In other

TABLE 3: Correlation between disability and Quality of life (N = 78)

	B	$\beta$	T	R <sup>2</sup>	Sig	F
(Constant)	6.900			.126	.000	10.908
QOL (Total)	-.122	-.354	-3.303		.001	

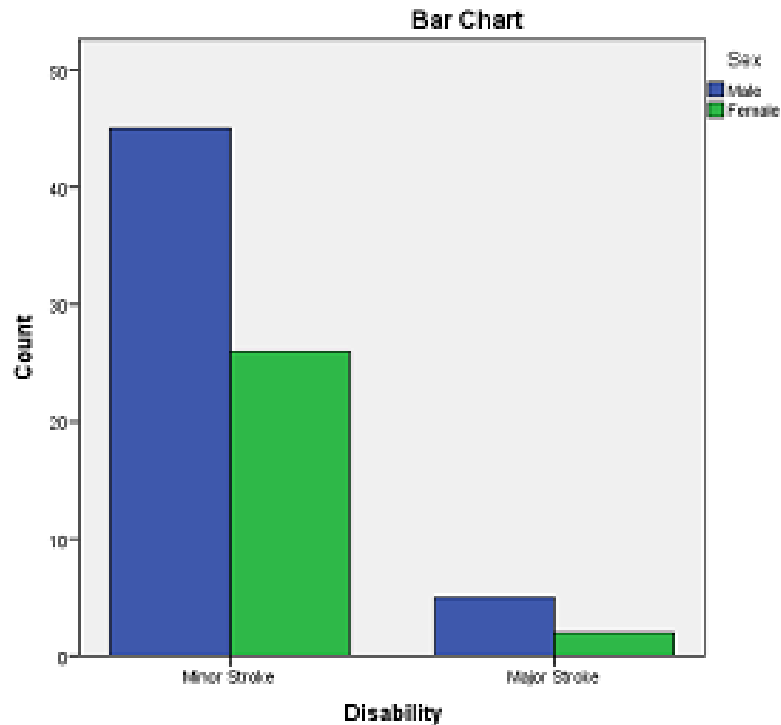


Figure 1: Disability vs Gender.

words, the higher the level of disability of patients after stroke will reduce the Quality of life.

This study is in line with other studies [6, 15], which show that men are more dominant among stroke patients. In addition, when the level of disability is divided into two according to [16], namely minor strokes (mRs scale 1 and 2) and major strokes (mRs scale 3-5) are depicted in Figure 1. The picture illustrates that men have a level of disability (mRs), which are higher than women. However, after being analyzed using an independent t-test to identify the difference mean between disability and the Quality of life, the result did not show any significant difference ( $p\text{-value} > 0.05$ ).

In terms of Quality of life, this study revealed that a lower level of disability (smaller value of mRs) would improve the Quality of life among stroke patients. A similar study was reported by [17] in Malawi, which concluded that a low mRs score would significantly improve the Quality of life of stroke patients.

Stroke often leads to disability to patients who are able to survive. Disability in stroke patients is caused by organ dysfunction such as hemiparesis, aphasia, and dysarthria, as well as cognitive disorders [18, 19]. Other disabilities experienced by stroke patients include the inability to walk, communicate, and inability to self-care . These conditions will affect social roles and eventually will reduce the Quality of life among patients [20].

Disability affects 75% of stroke survivors enough to decrease their employability. Stroke can affect patients physically, mentally, emotionally, or a combination of the three. The results of stroke vary widely depending on the size and location of the lesion. Dysfunctions correspond to areas in the brain that have been damaged. Some physical disabilities that can result from stroke include paralysis, numbness, pressure sores, pneumonia, incontinence, apraxia (inability to perform learned movements), difficulties carrying out daily activities, appetite loss, vision loss, and pain. If the stroke is severe enough or in a specific location, such as parts of the brainstem, coma or death can result [21].

Several impairments and functional limitations may occur after a stroke. Weakness involving the upper or lower extremity, or both, is one of the most common impairments that may need to be addressed by occupational therapists and physiotherapists. Patients may also experience sensory loss or altered sensation in the body area affected by a stroke. Other common impairments include decreased balance, visual and perceptual deficits, impaired cognition, impaired communication, decreased coordination, increased tone and spasticity (a condition characterized by involuntary muscle activation and stiffness), reduced motor control, and impaired swallowing. These problems often lead to functional limitations such as difficulty moving in bed, transfers (change position, such as rising to the standing position from sitting). Improving physical function plays an important role in the Quality of life after a stroke. Decreased physical abilities have the greatest effect on the Quality of life after stroke. Loss of hand function is reported as the most disabling [22].

## 5. Conclusions

This study concludes that a better physical function of the patient will improve the Quality of life of stroke patients. However, this study still has several limitations, including the statistical test used only simple linear regression, which can only explain 12.6%, while the majority of the predictors are not explained in this model. All respondents are outpatient patients who may have an awareness of health status. The result may be different among stroke patients who were only treated at home by their families without

a health care professional. It is recommended for nurses to provide Rang of Motion interventions to improve the physical function of stroke patients.

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