Analysis of the Quality of Life of Stroke Patients with the EQ-5D-5L Method at the Tlogosari Kulon Health Center

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Abstract. Background: The EQ-5D-5L measures a profile of health conditions based on reports from patients, which consists of 5 dimensions, namely mobility, self-care, usual activity, pain/discomfort, and depression/anxiety as well as a visual analog scale (EQ-VAS) and has been developed by EuroQoL Group to improve sensitivity and psychometric properties.

Aim: This study aimed to analyze the relationship between stroke patients' quality of life and sociodemographic factors at the Tlogosari Kulon Health Center. A total of 44 ischemic stroke patients were included in this study.

Methods: The study was conducted over one month, starting October 5–29, 2022. The patient's quality of life was examined using the EQ-5D-5L questionnaire. Statistical analyses were performed using the Mann-Whitney U test and the Kruskal-Wallis test.

Results: The characteristics of the research subjects showed that most of the patients in this study were women (77.3%), aged 56–65 years (43.2%), marital status (93.2%), high school education and above (54.5%)), and not working (63.6%). The results showed that age and occupation significantly affected utility scores ($p < 0.05$), whereas gender, marital status, and education did not. The results of the Visual Analog Scale (VAS) test stated that patient characteristics did not affect the VAS value ($p > 0.05$).

Conclusion: The results of this study can be used in determining health policy, health insurance, and pharmacoeconomic data sources.

Keywords: Stroke · utility · VAS · EQ-5D-5L

1 Introduction

The main goals of comprehensive stroke management are: (1) to minimize the number of damaged cells through tissue repair and prevention of further bleeding in intracerebral haemorrhage, (2) to prevent early medical complications, and (3) to accelerate neurological function recovery. Overall. If the overall stroke management is successful, the patient is expected to have a better prognosis [1].

Stroke is the third most common cause of death after heart disease and cancer and ranks first as a cause of disability [2]. Stroke sufferers often require further treatment and long-term rehabilitation. According to the American Heart Association's policy statement, the cost of stroke treatment will double by 2030, and the incidence of stroke will increase in Americans aged 45–64 years. This increase occurred for several reasons, including the cost of stroke management in the US, which increased in 2010 from $71.55 billion to $183.13 billion, the cost of lost productivity increased by $33.65 billion to $56.54 billion annually, the increase in the prevalence of stroke in the US population by 5.1% [3]. Stroke also has the highest mortality rate in Indonesia, according to Riskesdas 2013. Treatment of stroke due to disability and recurrent stroke requires a reasonably high cost to deal with these conditions. In 2007, the average total cost of therapy for ischemic stroke was Rp. 4,340,000 and Rp. 5,300,000 for hemorrhagic stroke at Sardjito Hospital, Yogyakarta. The average cost of ischemic stroke medication is Rp 1,728,450, and hemorrhagic is Rp 2,121,590.

Quality of life is an individual's perception of their position in life, which is related to the culture and values in which they live and the relationship with goals, expectations, standards, and other things that concern the individual [4]. Several factors determine a person's quality of life, such as mental health, mobility, depression and anxiety. These three factors can be measured objectively and expressed as health status [5]. A person's quality of life is closely related to subjective health status assessments in assessing the quality of life. Quality of life includes a sense of security, tranquillity, well-being, happiness, and overall life satisfaction. Healthy people have a good quality of life. On the other hand, sick people have a poor quality of life [6].

Cost of Illness analysis measures the economic burden of disease and estimates the maximum potential amount that could be saved or saved if the disease could be prevented. Many studies on the Cost of Illness have been conducted over the last 30 years [7]. The critical role of Cost of Illness studies can be seen from the frequent use by policymakers of the National Health Insurance Program (JKN). Most of these studies have played a role in public health policy debates because they highlight the magnitude of the impact of disease on society [8].

The goals of stroke therapy are to reduce ongoing neurological injury, mortality, and long-term disability, prevent complications secondary to immobility and neurological dysfunction and prevent recurrent stroke drugs. There are two specific treatment principles: treatment to restore brain circulation in the area affected by stroke and action to restore circulation and perfusion of brain tissue, called reperfusion/thrombolytic therapy. Moreover, drugs that can destroy emboli or thrombi in blood vessels are used for specific purposes. The therapy includes supportive therapy, antiplatelet therapy, anticoagulant therapy, and neuroprotection therapy. Pharmacological therapy and management of acute stroke therapy to obtain maximum clinical outcomes, among others: (1) reduce the progression of neurological damage and reduce mortality, (2) prevent secondary complications, namely neurological dysfunction and permanent immobility, (3) prevent stroke recurrence. The therapy given depends on the type of stroke experienced (ischemic or hemorrhagic) and based on the period of therapy (therapy in the acute phase and secondary preventive therapy or rehabilitation) [9].

This study is different from other studies because in addition to describing the relationship between patient characteristics and the quality of life of stroke at the Tlogosari Kulon Public Health Center.

2 Methods

This study used a type of analytic observation research with a cross-sectional design. This study was conducted for a certain period (1 month) to see the consequences. The research subjects were ischemic stroke patients totalling 44 patients. The research was carried out over one month and divided into 3 stages of data collection—stage 1 on 5-10-2022, stage 2 on 12-10-2022 and stage 3 on 19-10-2022. The data sources used were medical records and the EQ-5D-5L questionnaire. Statistical analysis of the relationship between quality of life - VAS (Visual Analog Scale) based on a patient's sociodemographic characteristics was performed using Mann-Whitney analysis for 2 groups and Kruskal-Wallis for more than 2 groups. The preparatory research stages of the literature study were followed by data collection.

3 Results and Discussion

Patient's Sociodemography
This study added 10% of the research sample to anticipate dropout. The level of physical and mental disability in post-stroke patients can affect the patient's quality of life. As the death rate from stroke decreases, more patients have to live with various limitations and disorders. Long-term disability caused by stroke is a common problem in all countries, and its incidence is increasing significantly, especially in elderly patients. Stroke is also a significant cause of functional impairment, where 20% of survivors still require treatment at a health facility after 3 months and 15–30% of sufferers experience permanent disability [10]. In Indonesia, 55–60% of people with stroke symptoms suffer from mild to severe disabilities, 25% die, and 10–15% of sufferers survive. As a result of this functional disorder, stroke sufferers lose their productivity and have to pay a hefty amount for rehabilitation treatment. Quality of life is defined as an individual's perception of their position in life as seen from the context of the culture and value system in which they live and about their goals, expectations, standards and other matters of concern to the individual [10]. Three factors determine the quality of life: mobility, pain and psychology, and depression or anxiety. These three factors can be measured objectively and expressed as health status [11]. Stroke patients were measured for sociodemographics, including patient characteristics based on age, gender, marital status, education, and occupation.

Table 1 presents the relationship between the characteristics of the utility value and the value of the VAS (Visual Analog Scale). The results showed that most patients were 56 - 65 years (43.2%). This is similar to the study of Ağasıoğlu et al. (2017) in Turkey, that the older the age, the higher the comorbidity and the severity of the stroke, increasing stroke incidence. Jennum et al. (2015) reported that the age of the patients most affected by ischemic stroke was 40–69 years, as much as 38.80% [12]. According

to study in Malaysia in 2012, the main factor influencing the cost of stroke was age [13]. Previous study in Singapore stated that age affected the real cost of stroke. In addition, the treatment length also significantly influences the cost of treating ischemic stroke patients in hospitals.

This study showed that 77.3% of the ischemic stroke patients were women, which contradicted this study's results. A higher incidence of stroke risk factors in the form of hypertension was found in 14 men. Stroke patients were dominated by men with an age range of 46 to 55 years. This is in accordance with the study of hypertension as the most significant risk factor for stroke in men [14]. Strokes are more common in men than in women. Stroke in women is lower than in men due to estrogen, which protects the atherosclerosis process.

Table 1 shows that most of the patients were married (93.2%), and the economic burden in the family probably caused the stroke. The incidence of stroke occurs in people with high education (54.5%) because the higher the stress level, the higher the possibility of a stroke attack. Patients who do not work (63.6%) occupy a large percentage compared to those who work (36.4%) because the result of not having a job will result in the emergence of many diseases, one of which is stroke. Survivors' Quality of Life During Subacute stated that the factors that influence the quality of life of post-stroke patients are age ($p < 0.001$), gender ($p = 0.042$), level of education ($p = 0.014$), type of stroke ($p = 0.014$) and comorbidities ($p = 0.049$) (Nichols-Larsen et al., 2005). The increasing number of stroke incidents and the impact caused by a stroke can affect the quality of life of post-stroke patients. However, the description of the quality of life of post-stroke patients in the Tlogosari Kulon Health Center is not yet known.

Relationship of Characteristics to Utility and VAS Value (Visual Analog Scale)
Health-related quality of life (HRQol) is a recognized and essential outcome after stroke. Increased survival and the presence of moderate long-term impairment in stroke survivors will have an impact on their quality of life. Stroke is the leading cause of long-term disability in western countries. Specific HRQol scales have been developed in recent years, such as the stroke impact scale, stroke-specific quality of life scale, stroke HRQol and aphasia scale, and stroke burden scale. Poststroke disability and depression were other determinants, including female gender, coping strategies, and social support. Poststroke depression affects HRQol, functional recovery, cognitive function, and the use of health services in stroke survivors. Physical and psychosocial well-being greatly influences the HRQol of stroke survivors and their caregivers [10].

Stroke remains a critical disease for public health in the 21st century despite advances in understanding some of the important areas of this disease, such as epidemiology, quality of life, and pathophysiology. In both developed and developing countries, ischemic stroke is currently the dominant subtype. Hypertension remains a major risk factor for stroke in developed and developing countries despite racial differences in stroke risk factors. As the burden of stroke is expected to increase significantly in the future, there is a need for a better understanding of the factors associated with high blood pressure, especially in countries with high stroke risk. Little is known about the HRQoL of stroke survivors globally, and the HRQoL domain affected in stroke patients appears to vary

Table 1. Relationship of Characteristics to Utility and VAS Value (Visual Analog Scale)

NO	Subject's characteristics	Range	Frequency	Persentase	Mean Of Utilitas	P Value	Mean VAS	P Value
1	Age (Years)	45–55	9	20.5	0.806	0.040	86.963	0.477
		56–65	19	43.2	0.845		86.544	
		66–75	15	34.1	0.882		85.356	
		≥ 75	1	2.3	0.828		95.000	
2	Sex	Male	10	22.7	0.859	0.719	87.000	0.558
		Female	34	77.3	0.847		86.245	
3	Marital status	Married	41	93.2	0.846	0.320	86.154	0.307
		No. Married	3	6.8	0.889		90.000	
4	Education	$\leq$SMP	20	45.5	0.833	0.106	85.667	0.651
		$\geq$SMA	24	54.5	0.863		87.042	
5	Profession	Work	16	36.4	0.890	0.009	88.375	0.146
		No Work	28	63.6	0.826		85.298	

Source: Primary Data

geographically or culturally. In developing countries with limited rehabilitation facilities, it is vital to identify and modulate factors influencing the HRQoL of stroke survivors to promote maximal HRQoL increase in these patients [15].

Table 1 shows that age and occupation significantly affected the utility value ($p < 0.05$). In contrast, gender, marital status, and education did not significantly affect the utility value.

The goal of long-term treatment in stroke survivors is to achieve the highest possible HRQol score. Variables that predict HRQol are age, gender, stroke severity, physical disorders, functional status, and mental disorders [16].

Table 1 shows that as age increases, the utility index value of the EQ-5D-5L and the EQ-VAS score decreases. Males had a lower quality of life than females with low utility and EQ-VAS values. The lower level of education also decreases the quality of life of stroke patients because they did not get knowledge about stroke prevention earlier. Patients who did not work will have utility and VAS values more minor than those who work. Patients with widowed/widow status showed a low value of the EQ-5D-5L utility index.

4   Conclusion

The results showed that age and occupation significantly affected utility scores. However, gender, marital status, and education did not significantly affect the utility value. The results of the VAS test stated that patient sociodemographic characteristics did not affect the VAS value. The results of this study can be used in determining health policies, health insurance and pharmacoeconomic data sources.

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