

## MEDICAL REHABILITATION AND GERIATRIC DEPRESSION SCALE (GDS) SCORE IN THE POST STROKE GERIATRIC PATIENTS

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### ABSTRACT

**Introduction:** Post-stroke depression ranged between 11-68% depends on patient's diversity, diagnostic criteria, and duration between follow-ups after a stroke attack. Prevalence may increase due to the patient's age. Medical rehabilitation and psychotherapy are a necessary effort to help patients overcome their disability. Medical rehabilitation for post-stroke patients includes restoring body functions, handling comorbid dysfunction, exercising individual independence, increasing quality of life, and preventing stroke recurrence.

**Aim:** The objective of this research is to look for the correlation between medical rehabilitation and GDS Score in post-stroke geriatric patients.

**Methods:** This research is an analytical observational with 1 group cohort time approach. The population is post-stroke geriatric patients who go through medical rehabilitation in Primasatya Husada Citra Hospital Surabaya.

**Result:** Using the Chi-Square Test, the value of p is 1. After two weeks of medical rehabilitation, this shows that there is no significant correlation between medical rehabilitation and changes in the GDS score in post-stroke geriatric patients. The value of the odds ratio is 2,333.

**Conclusion:** there was no significant effect of medical rehabilitation on GDS scores in elderly patients after stroke.

**Keywords:** geriatric depression scale (GDS) score, geriatric patients, post stroke depression, medical rehabilitation.

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## INTRODUCTION

According to data from the World Health Organization (WHO), stroke is the second leading cause of death in the world. In 2012, 6.9 million people died due to stroke. The stroke itself results in the emergence of neurological and motor disorders, which are factors that cause a patient's disability to live independently.

Depression can affect anyone, but people with serious diseases such as stroke have a higher risk. The relationship between depressive symptoms and cerebrovascular disease has been widely reported. In general, strokes can occur in all age groups, even in fetuses that are still in the womb. But three-quarters of strokes occur in people who are 65 years or older, so strokes result in disability in older people. Of the approximately 600,000 American men and women who have had a stroke for the first time or in recurrence, 10-27% experience major depression. Generally, these depressive symptoms occur within 1-2 months after a stroke. Among the factors that contribute to the incidence and severity of post-stroke depression is the location of lesions in the brain, the presence of a family history of depression, and pre-stroke social life conditions.<sup>1</sup>

One of the treatments for stroke is medical rehabilitation. Medical rehabilitation plays a vital role in

improving functional status and minimizing the level of dependence on others.<sup>2</sup> The severity of neurological deficits is used by the National Institute of Heart Stroke Scale (NIHSS), and the level of depression is used by the Geriatric Depression Scale (GDS) which will be evaluated on admission to the hospital until Sunday 12<sup>th</sup> post-medical rehabilitation.

Psychotherapy and medical rehabilitation are substantial efforts to help sufferers cope with their illness. The purpose of medical rehabilitation is so that sufferers can learn and absorb (retain) new ways of carrying out activities of daily living. The progress and healing of sufferers are unique and individual because it depends on the will and spirit of each individual who is sick. Stroke rehabilitation typically includes several things, namely the recovery of bodily functions, management of comorbid diseases, maximum individual independence training, efforts to improve quality of life and prevention of recurrence of stroke.<sup>3</sup>

According to the Law of the Republic of Indonesia Number 13 of 1998 concerning Elderly Welfare article 1 paragraph (2), an older person is someone who has reached the age of 60 (sixty) and above. Meanwhile, according to WHO (World Health Organization), old age is

divided into the following four criteria: middle age is 45-59 years old, elderly is 60-74 years old, old age is 75-90 years, and very old age is above 90 years.<sup>4</sup>

Based on the 2011 United Nations report, in the 2000-2005 UHH (Life Expectancy) was 66.4 years (with the percentage of the elderly population in 2000 being 7.74%), this figure will increase in the year 2045-2050 which is estimated UHH is 77.6 years (with the percentage of the elderly population in 2045 being 28.68%). Likewise, the Central Statistics Agency (BPS) report showed an increase in UHH. In 2000 the UHH in Indonesia was 64.5 years (with the percentage of the elderly population being 7.18%). This figure increased to 69.43 years in 2010 (with the percentage of the elderly population being 7.56%) and in 2011 to 69.65 years (with the percentage of the elderly population being 7.58%).<sup>5</sup>

Based on this background, we are interested in finding out the relationship between GDS scores in elderly patients after a stroke before and after getting medical rehabilitation.

Based on the data that has been obtained and the results of several related studies, we wanted to know the effect of medical rehabilitation on changes in GDS scores in elderly patients after stroke.

## METHODS

The type of research study used is observational analytic research without intervention. The approach used is a cohort of 1 group research by comparing between independent variables and dependent variables on the subject. The independent variable in this study is medical rehabilitation. And the dependent variable is the Geriatric Depression Scale (GDS) score. While the confounding variables of this study were stroke type, lesion location, the severity of the stroke, duration of a stroke, length of medical rehabilitation, patient motivation, decreased body function, anti-depressant use, gender, mental disorders, social relations and family.

The research subjects used in this study were all post-stroke elderly patients who participated in medical rehabilitation and who met the inclusion and exclusion criteria. The research subject taking technique used in this study uses a total sampling method that is all those who meet the inclusion and exclusion criteria are used as research subjects.

Inclusion criteria in this study were patients aged  $\geq 60$  years, willing to participate in the study and signed informed consent, stroke, can understand and communicate well as well as complete medical record data and questionnaires while the exclusion criteria in this study

are having a cognitive impairment or other mental disorders, having speech/aphasia disorders, and using anti-depressants.

Data collection procedures in the study consisted of primary data obtained from questionnaires, namely: age, sex, marital status, occupation, initial GDS score, and final GDS score and secondary data collected from medical records, namely: type of stroke, duration of a stroke, weight lightness of stroke, location and side of the lesion. Data processing in this study was carried out through several stages, including editing, coding, data entry, and cleaning, which will be carried out before data analysis.

## RESULT

The study was conducted at Primasatya Husada Citra Hospital Surabaya, which is a type B Hospital. The Primasatya Husada Citra Hospital is located at Jalan Prapat Kurung Selatan number 1, Tanjung Perak, Surabaya. This research was conducted from 16 September 2017 to 8 November 2017. Data was collected through medical records and Geriatric Depression Scale (GDS) questionnaire scores. Retrieval of this data uses a population of post-stroke patients who conduct medical rehabilitation as many as 17 people. Researchers excluded five patients because they were not willing to fill out

the questionnaire, the patient data was incomplete, or the patient was not included in the inclusion criteria.

**Table 1.** Distribution based on sex in elderly patients after stroke at the Primasatya Husada Citra Surabaya Hospital.

Sex	Freq.	(%)
Men	8	66,7
Women	4	33,3
Total	12	100

Based on Table 1, it was found that most post-stroke elderly patients who were male respondents were 66.7%.

**Table 2.** Distribution based on Medical Rehabilitation Frequency in Post-Stroke Old Patients at Primasatya Husada Citra Surabaya Hospital.

Medic Rehabilitation	Freq	(%)
More than 1x / month	10	83,3
Less than 1x / month	2	16,7
Total	12	100

Based on Table 2, it was found that most post-stroke elderly patients who became respondents did medical rehabilitation more than once a month by 83.3%.

**Table 3.** Distribution of Interpretation of Early GDS Score in Older Post-Stroke Patients at Primasatya Husada Citra Surabaya Hospital.

GDS Interpretation	Freq	(%)
Depression (>9)	3	25
Possibility of Depression (5-9)	3	25
No Depression (<5)	6	50
Total	12	100

Based on Table 3, the results of screening of elderly patients after stroke using GDS are six patients having a GDS score <5 (50%).

**Table 4.** Distribution of Changes in GDS Score in Old-Post-Stroke Patients at Primasatya Husada Citra Surabaya Hospital.

GDS Score Change	Change	(%)
Increase	3	25
Decrease/Constant	9	75
Total	12	100

Based on Table 4, the screening results of elderly patients after stroke are nine patients who tend to have a decreased / permanent GDS score (75%) after two weeks of undergoing medical rehabilitation.

### Analysis of the Effect of Medical Rehabilitation on GDS Scores of Older Post-Stroke Patients at Primasatya Husada Citra Surabaya Hospital.

**Table 5.** Analysis of the Effects of Medical Rehabilitation on GDS Scores of Older Post-Stroke Patients at Primasatya Husada Citra Surabaya Hospital.

		GDS Score		Total	
		Increase	Decrease/Constant		
Medic Rehabilitation	Yes	Total	3	7	10
		% Medic Rehabilitation	30%	70%	100%
Medic Rehabilitation	No	Total	0	2	2
		% Medic Rehabilitation	0%	100%	100%
<b>Total</b>			3	9	12

Based on Table 5, it was found that three people (30%) experienced an increase in GDS scores from patients undergoing regular medical rehabilitation. While those who do not conduct proper medical rehabilitation, as many as zero people experience an increase in GDS scores.

The confidence interval shows a result of 0.95. The fisher's exact value is one, and the odds ratio is 2.333. So, it can be concluded that there is no significant effect of medical rehabilitation on GDS scores in elderly patients after a stroke at Primasatya Husada Citra Surabaya Hospital

## DISCUSSION

In this chapter, a discussion is conducted on the subject of research, namely, elderly patients after a stroke at Primasatya Husada Citra Surabaya Hospital. The number of respondents who participated in this study were 17 respondents with a sample of 12 people. Of this number, four (33.3%) were female, and eight (66.7%) were male. This data shows that there are more male respondents than female respondents. All respondents suffered a stroke of an infarction type, and the lesion was located on the right. All respondents aged over 60 years old attended medical rehabilitation, had no mental or communication disorders, and did not use anti-depressants.

From the results of the initial GDS score examination, it was found that three people (25%) got a score of  $> 9$ , three people (25%) got a score of 5-9, and six people (50%) got a score of  $< 5$ . After two weeks of medical rehabilitation, we got a GDS score of nine people (75%) experiencing a steady / decreasing and three people (25%) experiencing an increase. The study also found that 100% of patients had had a stroke for less than one year, and two (16.7%) of the patients had medical rehabilitation for less than 1x / month.

According to Robinson (2003), acute stroke sufferers have not shown signs of depression. A total of 30% of stroke sufferers will show signs of depression after a repeat examination in the sixth month. If symptoms of depression are found in patients who suffer a stroke in the initial 2-3 months, then 50% of patients will still show these symptoms for about one year.<sup>6</sup>

Depression can occur as a direct result of the process of brain infarction or can occur as a reaction due to disability or helplessness caused by a stroke. Emotional behavior and catastrophic reactions are more common in patients who have lesions in the left hemisphere, whereas in patients with right hemisphere damage, there is an indifference reaction pattern. Chemerinski and Robinson (2003)

reported patients with left hemisphere lesions, 64% showing mild to severe depressive disorders, while this disorder was only found in 14% of patients with right hemisphere lesions. They also found that subcortical atrophy was associated with post-stroke depression.<sup>6</sup>

According to Glamcevski et al. (2005), in a state of stroke, elderly patients will feel useless because there is a decrease in body function as a result of a stroke.

Various studies describe the effects of post-stroke depression related to daily activities and quality of life of patients. Depression is difficult for stroke patients to overcome their physical powerlessness and has a negative impact on the recovery of daily activities. Therefore, effective treatments and treatments are given to improve life activities as well as depression symptoms. According to Lincoln and Flannaghan (2003)<sup>7</sup>, medical rehabilitation and psychotherapy can reduce depression in stroke patients. Theoretically, the provision of antidepressants and basic therapy for people with depression in general also help improve patients suffering from depression after stroke.

The results of the analysis of the effect of medical rehabilitation with GDS scores of elderly patients after stroke showed a value of  $p = 1$ , so it can be

concluded that there was no significant effect of medical rehabilitation on GDS scores in elderly patients after stroke after the initial two weeks. The odds ratio is 2.333.

There are limitations to this study due to the lack of time for existing research, so there is still a lack of patients who can be studied. Follow-up in related patients is needed after the following year to get even more accurate research results. Research is needed with patients undergoing specific medical rehabilitation.

## CONCLUSION

Based on the results of research conducted on the effect of medical rehabilitation on GDS scores in elderly patients after a stroke at the Primasatya Husada Citra Surabaya Hospital on 12 respondents, it was concluded that there was no significant effect of medical rehabilitation on GDS scores in elderly patients after stroke.

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