



ORIGINAL ARTICLE

Comparison of activity daily living performance among post-stroke older people with and without rehabilitation program[☆]



Sri Rezki Badruni, Andi Masyitha Irwan*, Silvia Malasari

Faculty of Nursing, Hasanuddin University, Makassar, Indonesia

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KEYWORDS

Activity daily living;
Rehabilitation;
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Abstract

Objective: To compare ADL performance among post-stroke older people with or without a rehabilitation program.

Method: This study used a cross-sectional design. There were 80 participants (30 of them attended rehabilitation, and the rest of them did not attend any rehabilitation program) with purposive sampling involved in this study. We used the Chi-square test to analyze the difference between 2 groups. Barthel Index was utilized to determine ADL levels.

Results: No significant difference of ADL ability independence between post-stroke older people who attend and not attend rehabilitation program based on the last time of stroke attack ≤ 1 year ($p = 0.163 > \alpha 0.05$) and > 1 year ($p = 0.271 > \alpha 0.05$).

Conclusions: Further research is needed to explore ability balance and fall risk, which is strengthened through the rehabilitation program and essential in performing ADL. In addition, assessing the type of stroke, the area affected by stroke, and the severity of stroke is also required.

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Introduction

One of the diseases that are usually found in older people is stroke. Stroke or Cerebro Vascular Accident (CVA) is a condition of loss of brain function caused by the cessation of blood supply to the brain, which can suddenly or quickly cause symptoms that correspond to the affected area, which can cause death or most often can cause disability.¹ Stroke can affect anyone, and there is no standard age when a person is prone to stroke. However, in general, people

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* Corresponding author.

E-mail address: citha_ners@med.unhas.ac.id (A.M. Irwan).

who have a stroke are over the age of 65 years.² In 2015, deaths from stroke accounted for 11.8% of total deaths worldwide and were a major cause of long-term disability in the United States.³ In addition, based on 2013 Indonesian Basic Health Research shows a significant percentage of non-communicable disease prevalence, including cancer, stroke, chronic kidney disease, diabetes mellitus, and hypertension.⁴

The majority of post-stroke patients had an inability to self-care due to weakness in the extremities and decreased mobility function so that it can inhibit the fulfillment of daily life activities. Therefore, intervention rehabilitation programs for post-stroke patients are critical to carry out Activity Daily Living (ADL) and to return or at least close to their ability before illness.⁵ In addition, maximum independence can help post-stroke patients perform self-care or activities undertaken to maintain and improve their health status.^{6,7}

After a stroke occurs, patients who are able to survive past the first weeks will then be transferred to the rehabilitation unit for 3–4 weeks. After six months, stroke patients will be partially or totally independent, to undergo daily activities such as eating, dressing, bathing, and moving.⁸ In general, healing strokes occur in a day, the first week, up to 6 months. If there is still a disability after six months, healing occurs after that will not be striking again, although minor repairs can still occur up to 2 years.⁹

Based on a preliminary study conducted by researchers at a referral hospital in the Eastern part of Indonesia, 79% of older people post-stroke were not attended rehabilitation programs. Previous studies have discussed the impact of rehabilitation programs on the level of independence of post-stroke patients. But not specific to post-stroke older people. Furthermore, in Indonesia, where there are still many post-stroke older people who do not participate in rehabilitation programs, a comparison of the level of independence between those who follow and does not participate in rehabilitation programs can be data to promote rehabilitation programs. Therefore, researchers are interested in researching the comparison of Activity Daily Living (ADL) performance among post-stroke older people with or without rehabilitation programs”.

Method

A cross-sectional design was used in this study. With a purposive sampling method, data collection was carried out throughout January and February 2019. There were 332 post-strokes older people admitted to a referral hospital in Makassar in September 2018. Makassar is a capital city of South Sulawesi Province, A metropolitan city located in the Eastern part of Indonesia. Based on the sample size calculation, we recruited 80 post-stroke older people as participants, 30 of them participated in the rehabilitation program, and the rest did not. The inclusion criteria are: could communicate effectively, not in the acute phase, and have returned to their houses. Measurement of ADL performance is done with the Barthel Index, an instrument that measures toileting, eating, dressing, moving, and the ability to control excitatory urination and excretion of excretion. This level of independence is categorized into 5, namely

independence, mild dependence, moderate dependence, heavy dependence, and total dependence. Chi-Square test was used to compare the independence of the elderly after stroke following rehabilitation and without rehabilitation. A value of $p < 0.05$ indicates a difference between the two groups. This study gets ethical clearance from Hasanuddin University Medical Research Ethics Committee. All participants gave their informed consent before data collection.

Results

Table 1, shows the characteristics of respondents based on the age of the respondent, marital status, frequency of stroke, and duration of stroke.

Comparison ADL performance among post-stroke older people with and without rehabilitation program

Based on Table 2, it can be concluded that there is no significant difference of ADL performance between post-stroke patients who attend and not attend rehabilitation program based on the last time of stroke attack ≤ 1 year ($p = 0.163 > \alpha 0.05$) and > 1 year ($p = 0.271 > \alpha 0.05$).

Discussion

ADL performance among post-stroke older people with a rehabilitation program

The majority of participants had mild ADL ability independence level. They experience limited mobility that affects their daily activities. Therefore, rehabilitation is recommended to post-stroke older people to restore their essential ability in performing ADL activities. Physical exercise given to post-stroke older people in the rehabilitation program could stimulate damaged nerves to recover and then gradually increasing muscle strength.¹⁰ Post-stroke rehabilitation program aimed to maximize the individual ability and improve quality of life. Physiotherapy deals more with gross motor skills, strengthening, and modalities therapy. On the other hand, Occupational therapy deals with impaired coordination and balance or fine motor skills. Prosthetic orthotics include manufacturing aids. Psychologists to deal with psychological aspect.¹¹ While nurses have to maximize and ensure that patients are able to do ADL independently at home.

Successfulness of the rehabilitation program mainly depends on patients' willingness.¹² The intensity of its program will be gradually increased based on the outcome of the post-stroke patients. Therefore, it is crucial to focus the content of rehabilitation on the improvement of ADL ability so the post-stroke patients could feel the benefit of attending rehabilitation programs and, in turn, help them maintain their willingness to follow the program.

Table 1 Characteristics of respondents (N = 80).

Variables	Rehabilitation		Non-rehabilitation		Rehabilitation	Non-rehabilitation
	Average \pm SD	Min–max	Average \pm SD	Min–max	n (%)	n (%)
<i>Age</i>						
60–74 years	65 \pm 4.7	60–74	64.4 \pm 4.1	60–73	25 (83.3%)	41 (82%)
75–90 years	80 \pm 2.4	77–84	79 \pm 2.2	77–82	5 (16.7%)	9 (18%)
<i>Gender</i>						
Female					12 (40%)	28 (56%)
Male					18 (60%)	22 (44%)
<i>Marital status</i>						
Married						
Single					25 (83.3%)	34 (68%)
Widow					0 (0%)	1 (2%)
Widower					5 (16.7%)	15 (30%)
<i>Stroke</i>						
Frequency						
First time					19 (63.3%)	39 (78%)
Recurrent					11 (36.7%)	11 (22%)
<i>Time since the last stroke</i>						
2 weeks–6 months					10 (33.3%)	17 (34%)
>6 months					20 (66.7%)	33 (66%)

Table 2 Independence level among post-stroke older people.

ADL performance	Rehabilitation n (%)	Non-rehabilitation n (%)	p
<i>≤1 year since last stroke (n = 40)</i>			
Independence	6 (33.3%)	11 (50.0%)	0.163
Mild dependence	8 (44.4%)	7 (31.8%)	
Moderate dependence	0 (0.0%)	2 (9.1%)	
Severe dependence	3 (16.7%)	0 (0.0%)	
Total dependence	1 (5.6%)	2 (9.1%)	
<i>>1 year since last stroke (n = 40)</i>			
Independence	1 (8.3%)	12 (42.9%)	0.271
Mild dependence	8 (66.7%)	9 (32.1%)	
Moderate dependence	0 (0.0%)	2 (7.1%)	
Severe dependence	3 (25.0%)	4 (14.3%)	
Total dependence	0 (0.0%)	1 (3.6%)	

ADL performance among post-stroke older people without rehabilitation program

Participants without a rehabilitation program in this study mainly had an independence level in performing ADL. This finding is not in line with previous research, which states that stroke can cause several problems such as physical limitations, disability, and depression in a person, causing dependence on others.¹³ However, in this study, we only measure their ability to performing basic ADL, balance, fall risk, as well as fine motor skills, which also crucial aspects in doing activities were not explored yet. Those aspects are greatly improved when post-stroke patients are attending a rehabilitation program. In addition, stroke recovery depends

on the part of the brain affected by a stroke, which we do not assess in this study.¹⁴

Participants who did not attend rehabilitation was because the family felt able to train them at home, the respondents felt more comfortable if they were cared for by their own families, even the respondents were able to do their daily activities. The family also feels that there is no significant weakness, so there is no need to go to the hospital for rehabilitation. On the other hand, some participants also reported that distance, long queues at the hospital, financial problems, and no significant progress after several rehabilitation sessions were reasons why they decided not to attend rehabilitation programs anymore. Rehabilitation at home (home-based rehabilitation) is only recommended

for patients with minor strokes.¹² Therefore, public health centers play an essential role in providing accessible and affordable rehabilitation program for post-stroke older people to ensure their attendance and improve their ADL ability.

Comparison of ADL performance among post-stroke older people with and without rehabilitation program

No significant difference in ADL performance between post-stroke patients who attend and not attend rehabilitation programs ≤ 1 year and > 1 year. Several factors might affect this finding. The number of participants who did not attend the rehabilitation program is bigger than those who attend a rehabilitation program. In addition, for those who were attending a rehabilitation program, we did not assess how long the respondents had been in rehabilitation, the frequency of their attendance, and whether they attend it regularly or not.

Phase of stroke, acute and chronic phases also might affect the finding of this study. The majority of our participants did not attend the rehabilitation program were those who have a stroke attack > 6 months. The acute phase of stroke in which post-stroke older people are still unable to carry out activities is 2 weeks–6 months after the attack. In this phase, the rehabilitation program should be maximized for functional recovery (golden period). The majority of post-stroke patients (83%) were experiencing disability in performing ADL within 3–6 months after stroke.³ Therefore, attending a rehabilitation program earlier is better because it gave a significant contribution to increasing the ADL functional independence, and increasing self-confidence and cognitive function.¹⁵

This study had some limitations. Small sample size with an uneven number of those with and without a rehabilitation program might affect the findings of this study. In addition, we do not explore further the description of rehabilitation (length of attendance, frequency, regularity).

Conclusion

No significant difference in ADL performance between post-stroke older people who attend and not attend rehabilitation program. Further research is needed to explore balance and fall risk, which is strengthened through a rehabilitation program and essential in performing ADL. In addition, assessing the type of stroke, the area affected by stroke, and the severity of stroke is also required.

Conflict of interest

The authors declare no conflict of interest.

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