



EFFECT OF MOTOR RELEARNING PROGRAMME ON ACTIVITY OF DAILY LIVING ABILITY AMONG POST STROKE PATIENTS IN MAKASSAR

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Abstract : Portraits of current health problems are very diverse, one that continues to experience an increase in stroke. Stroke is the leading cause of death for preventable nakedness. Post-stroke patients who survive have limitations in performing of activity daily living independently . The MRP method is one of the most effective training methods in improving ADL in post stroke. This research aims to understand the influence of MRP to ADL ability among post stroke patients. This research uses pre experimental with one group pretest-posttest research design . This is an experimental research with one group pretest-posttest design. The sampling technique is purposive sampling with 20 samples who appropriate with the inclusion criteria, then ADL capability is measured using Modified Barthel Index (MBI). The result indicated that 12 times application of MRP method significantly The results showed 6 respondents are dependent medium, 10 respondents dependen minimum and 4 respondents are independent. Based onpaired t test it can be conclude that there is an effect of MRP to ADL ability among post stroke patients ($p = 0.001$, $p < 0.05$).

Keywords: Activity of Daily Living, Motor Relearning Program, Post Stroke

I. INTRODUCTION

According to the World Health Organization (WHO), stroke is a clinical manifestation that arises due to disorders of local or global (overall) functions that occur around 24 hours or more that cause permanent disability or even death.¹ Based on 2013 RISKESDAS data, the highest prevalence of stroke based on the diagnosis of health and symptom personnel was found in South Sulawesi (17.9%), DI Yogyakarta (16.9%), Central Sulawesi (16.6%), followed by East Java at 16 per miles.² Based on data in Department of Health Sector Development P2PL Makassar in 2015 about 10 leading causes of death in stroke Makassar City ranked fifth with 151 deaths tine soul.³ Post-stroke patients who survive have limitations in doing daily work independently. About 20% of survivors of stroke still need care in health agencies due to a disorder of the Activity of Daily Living (ADL) which is a major cause of functional disorders.⁴ Physiotherapy views this stroke as unique with a variety of complaints related to functional motion, to deal with functional problems related to post stroke, various approaches to exercise therapy are applied, one of them is MRP. In addition to being effective and relatively inexpensive, this MRP involves active participation from patients because MRP involves re-learning of functional activities that are very beneficial for patients. Several studies on MRP have provided the fact that patients with stroke have the opportunity to return to activity, as research conducted by Kannabiran et al. (2016) reported that the problem of ADL in post-stroke patients after being given MRP for 4 weeks had a significant

effect overcome ADL problems.⁵ The purpose of this study was to determine the effect of Motor Relearning Program (MRP) on the ability of Activity of Daily Living (ADL) in post-stroke patients in Makassar.

II. METHODS

2.1 Location and Types of Research Method

This research was conducted at the Department of Physiotherapy in dr. Tadjuddin Chalid Hospital in Makassar and the Asy-Syifa Clinic Makassar. This study used the pre-experimental method with the type of one group pretest - posttest design.

2.2 Population and Sample

The population in this study the post-stroke patients who came for treatment at the Physiotherapy Department of dr. Tadjuddin Chalid Hospital in Makassar and the Asy-Syifa Clinic in Makassar. The sample of this study amounted to 20 respondents. Samples were obtained using purposive sampling method that met the inclusion and exclusion criteria set by the researcher. Inclusion patients included patients willing to be respondents during the study and sign consent forms, patients willing to cooperate, able to communicate well and follow instructions, ages 35–65 years, muscle strength ≥ 3 for superior extremities and inferior extremities.

2.3 Method of Collecting Data

The collection of data obtained through primary data. Information about the characteristics and general conditions of respondents included the name, gender, age and consumption of drugs obtained from the respondent's medical record. The ability of ADL in respondents was measured using a modification of the Barthel index which was done twice, before and after being given the MRP. The level of ability of the ADL respondents was then categorized into 3 categories namely moderate dependent, mild dependent and independent.

2.4 Data Analysis

Data analysis using SPSS (Statistical Product for Service Solution) Version 22:00. The collected data were tested for normality using the Shapiro-Wilk test. Because the distribution of pretest-posttest data is normally distributed then Paired Sample T Test is then conducted to see the effect of MRP on ADL in post-stroke patients. After that the results of the data analysis are presented in the form of tables, graphs and narratives.

III. RESULT

Characteristics of respondents based on age distribution, gender and type of stroke are shown in the table below

Table 1. Distribution Based on Age Characteristics, Gender and Stroke Type in Post-Stroke Respondents with Giving Motor Learning Program (MRP) at the Physiotherapy Department of Tadjuddin Chalid Hospital and Asy-Syifa Clinic Makassar

Place of Research	Characteristics		Number of Respondents (N)	Percentage (%)
	Age	Categori		
dr. Tadjuddin Chalid Hospital	35 – 45	Adult	2	10
	46 – 55	Old Adult	3	15
	56 – 65	The Elderly	9	45

	Sub Total	14	70
Asy –Syifa Clinic	35 – 45 Adult	0	0
	46 – 55 Old Adult	0	0
	56 – 65 The Elderly	6	30
	Sub Total	6	30
	In TOTAL	20	100
dr. Tadjuddin Chalid Hospital	Gender	N	%
	Male	6	30
	Female	8	40
	Sub Total	14	70
Asy-Syifa Clinic	Male	4	20
	Female	2	10
	Sub Total	6	30
	In TOTAL	20	100
dr. Tadjuddin Chalid Hospital	Type of Stroke	N	%
	Hemoragik Stroke	4	20
	Non Hemoragik Stroke	10	50
	Sub Total	14	70
Asy-Syifa Clinic	Hemoragik Stroke	3	15
	Non Hemoragik Stroke	3	15
	Sub Total	6	30
	In TOTAL	20	100

Source: Primary Data, 2018

The results showed sample characteristics based on age group, gender, and type of stroke in post-stroke patients given MRP. Based on the age distribution, the respondents were divided into several age groups the age of 35-45 years, 46-55 years, and the age of 56-65 years. In the age group 35 - 45 there were two people (10%). The number of respondents in this age range is the least number of a total of 20 samples, then the age group 46-55 years is three people (15%), and the number of respondents most of all in the age range of 56-65 years as many as 15 people (75%). Based on gender distribution, it was shown that respondents who were male were as many as female respondents. Respondents male sex numbered 10 people (50%) out of a total sample of 20 people and female respondents also amounted to 10 people (50%). Furthermore distribution was based on stroke type, 7 people (35%) with Hemorrhagic Stroke (HS) and 13 people (65%) with non hemorrhagic stroke (NHS).

Data on the results of the pretest and posttest ADL abilities using the Barthel index modification conducted at the Physiotherapy Department of dr. Tadjuddin Chalid Hospital Makassar and Asy-Syifa Clinic Makassar towards post-stroke respondents. Based on the table it is shown that before being given the MRP, there were 16 (80%) respondents who were moderately dependent, 4 (20%) respondents were minimally dependent and there were no independent respondents. After being given 12 times the MRP treatment, there were 6 (30%) respondents who were moderately dependent, 10 (50%) respondents with minimal dependence and 4 (20%) respondents who were independent.

Table 2. Distribution of the Ability of Activity of Daily Living (ADL) Before and After Given MRP at the Physiotherapy Department of Tadjuddin Chalid Hospital Makassar and Ash-Syifa Clinic Makassar.

ADL ability level	<i>Pretest</i>		<i>Posttest</i>	
	N	%	N	%
Moderate Dependent	16	80	6	30
Minimal Dependent	4	20	10	50
Independent	0	0	4	20
Total	20	100	20	100

Source: Primary Data, 2018

The effect of the test results using a paired T test which obtained a P value = 0.001 (P <0.05). This means that there is an effect of MRP on ADL ability in post-stroke patients.

Table 3 Effect of MRP on ADL Capability

Modified Barthel Index	N	Mean	SD	Sig. (P)*
Pretest	20	85,10	5,748	0,001
Posttest	20	94,15	4,404	

Source: Primary Data, 2018

IV. DISCUSSION

Based on age characteristics, the highest incidence of stroke was found in the age range of 56-65 years. This is in accordance with the results of a study conducted by Sofyan, et al., 2015 which said that distribution of stroke patients according to age was found to be the most respondents aged > 55 years with a percentage of 67.5%.⁶ Stroke not only attacks the age group above 50 years, but also occurs in the productive age group under 45 years. This is due to changes in blood vessel structure and it can be seen when a person enters the age of 40

years.⁷ This is evidenced by the existence of respondents in this study who experienced a stroke at that age due to excessive lifestyle, presence of comorbidities, and poor stress control. Basically strokes can occur at any age, this is related to risk factors for stroke that cannot be modified, namely age factors and modifiable risk factors such as hypertension, diabetes mellitus and so on.⁸

According to the sex characteristics, there are 10 men and 10 women. The results of this study are different from some previous studies, in some of the most sexually tested studies that were stricken with stroke were men, there were also those who said that women were slightly more than men, but there were some previous studies that supported this study which states that there is no relationship between sex and the incidence of stroke, this can occur due to multifactorial causes. This research is in line with the results of a study conducted by Teguh in 2011 which found a comparison of stroke incidence between men and women was 50:50.⁹

Based on the type of stroke, 13 respondents experienced non-hemorrhagic stroke and 7 respondents with hemorrhagic stroke, the incidence of non-hemorrhagic stroke (ischemic) was more dominant than hemorrhagic stroke, this is in line with research conducted by Gazbare, et al., (2017) which says the prevalence of non-hemorrhagic stroke (ischemic) incidence is 87% while hemorrhagic stroke is 13%.¹⁰ The increase in the incidence of non-hemorrhagic stroke compared to hemorrhagic stroke is caused by several factors. But in the older adult age group, atherosclerosis is the main cause of non-hemorrhagic stroke.¹¹

In addition, based on the results of the researcher and respondent's history before being given the MRP the respondent was in the moderate and mild category, but after being given the MRP it was divided into three categories namely moderate dependent, minimal dependent and independent. Giving MRP from 20 respondents obtained a significant effect of MRP on ADL can increase functional activity. The results obtained are supported by previous studies such as those conducted by Bhalerao, et al., (2013) on the effectiveness of MRP application in the initial phase of recovery to improve ADL and ambulation functional abilities.¹² Then further research conducted by Kannabiran, et al. (2016) on the MRP group and the combination group MRP and Bobath to increase ADL in stroke patients. After 4 weeks of being given MRP, the results showed a significant increase in functional ability.⁵

There is an increase in ADL capabilities from each respondent because the MRP emphasizes task-oriented training and provides appropriate feedback to patients to improve motor control in performing daily functional activities.¹³ MRP also involves active participation directly from patients so that it can improve ADL ability, this certainly does not happen instantly, but requires regular and repetitive training and other trigger factors. As long as the MRP is given, the enthusiasm of the respondents is very good, this is evident when the training takes place most of the respondents understand the exercises given and are always carried out repeatedly on a regular basis. All organized human activities or movements will be better and more effective because of training.¹⁴ Because strokes involve neurological and motor deficits that have a major impact on nerve tissue damage, especially in the brain, where the damaged brain will respond spontaneously to adaptation, if given a repeated and continuous exercise the adaptability and reorganization will increasingly lead to improvement interconnection between neurons with one another known as neuroplasticity.

One of the advantages of MRP is that it can provide a functional learning process and applies that brain capacity is able to reorganize and adapt (brain plasticity).¹⁵ Improvement of neural post stroke arises immediately spontaneously and continues for weeks, and years, especially in language and cognitive abilities.¹⁶ The increase in neural plasticity mechanism is characterized and can be seen through serum testing of the hormone BDNF (Brain Derivet Neurotrophic Factor) and NGF (Nerve Growth Factor). The mechanism of synaptogenesis and neurogenesis will increase the production of both BDNF and NGF. This is evidenced by the study of Zulkarnain (2014) saying that regular or aerobic physical exercise can improve BDNF which can help maintain verbal memory and increase capacity to learn new things.¹⁷ Other factors that influence the increase in ADL values are the age of stroke patients. Respondents under the age of 60 years showed a significant increase. This is related to the mental state and adaptation of the patient itself. This is in line with the research of Marlina and Nurachmah (2013) that there is a relationship between age and increased independence in post-stroke patients, the older the age of someone who has a stroke, the more difficult it is to adapt to exercise.¹⁸

V. CONCLUSION AND RECOMMENDATION

The researchers concluded that there was a significant effect of MRP on ADL ability in post-stroke patients. With this study, it is expected that the physiotherapist at the hospital / clinic to choose the MRP training therapy modality as one of the chosen modalities to improve ADL ability in post-stroke patients. And the results of this study are also expected to be used by future researchers and who want to examine the same thing should add variables and control groups as well as research the effectiveness of comparison with other methods related to it.

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