THE INCREASING OF MUSCLE STRENGTH AMONG ELDERLY PATIENT POST STROKE NON-HEMORRHAGIC IN SASANA TRESNA WERDHA CIRACAS.

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Abstract

Stroke Non-Hemorrhagic is a problem of neuromuscular system which caused by thrombus, embolus and ischemia, thus resulting in the condition of cerebral infarct. This condition may lead to the increasing of disability and mortality incidence. Passive range of motion (ROM) exercise is energy which issued by nurses or mechanical tools for helping patients make a movement in accordance with the patient's ability and muscle strength in use by patients is just 50%. In addition, passive ROM is aimed to enhance blood flow to the brain, minimize the disability as a resultant of blood flow insufficiency to the brain, so that it can improve the function of nitric sensor. The purpose of this study is to identify the effect before and after of passive ROM exercise towards muscle strength among Non-Hemorrhagic Stroke patients in SasanaTresnaWherdaCiracas. The method of this study is a Quasi Experiment with purposive sampling. This research included 13 respondents in the study time period from February to March, 2016. The analysis of this study was used Paired Sample T-Test, with p value 0.05. The result has been shown that the increasing of the muscle strength score after passive ROM exercise as much as 1.08 (p = 0.000), with value before and after were 1. 38 and 2.46, respectively. The value discrepancy before and after passive ROM exercise was expected to be applied to the recovery process of Non-Hemorrhagic Stroke patients

Keyword: ROM; muscle strength; Non-Hemorrhagic Stroke

INTRODUCTION

Stroke is a loss of brain function caused by the cessation of blood supply gets brain (Smeltzerdan Bare, 2002). Stroke is a clinical syndrome with symptoms such as focal brain dysfunction and globally, which can cause death or permanent disability of more than 24 hours, without any other cause except vascular disorders (Ginsberg, 2007). Stroke is a disease or functional disorders of the brain acute focal or global hamper blood circulation to the brain. Due to blockage of the blood vessels of the brain or the rupture of blood vessels in the brain (Junaidi, 2011). Stroke ranks as the third leading cause of death after coronary heart disease and cancer in developing countries.

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Stroke is a disease that most often lead to defects in the form of paralysis of limbs, speech disorder, thought processes, memory, and other forms of disability other as a result of brain dysfunction. Briefing is a complex process that requires coordination between the musculoskeletal system and the nervous system. Motor dysfunction is the most common hemiplagia (paralysis on one side) due to lesions on one side of the brain opposite. Hemiparise (weakness of one side of the body) due to loss of control volunteer to motor movements. Sensory loss due to stroke can be either a light touch or damage may be more severe, with loss of proprioception (the ability to sense the dangerak position parts of the body) and the difficulty in interpreting visual stimuli, traktil, and auditorium.(Smeltzerdan Bare, 2002; Irdawati 2008; Kozier et al, 2010;

Muttaqin,2011;PotterandPerry,2010).

Exercise ROM (range of motion) is one form of exercise in the rehabilitation process that is still considered effective enough to prevent disability in patients with stroke.

Exercise ROM (range of motion) is a set of movements performed on the joints which aims to increase flexibility and muscle strength. (Potter & Perry, 2006). Muscle strength that contract pleasant produced by muscle, it is an ability to generate a voltage to a prisoner. Muscle strength is important to improve the physical overall condition. ROM (range of motion) is a passive energy expended by the (nurse) or mechanical means to assist the patient to perform the movement in accordance with the patient's ability and muscle strength in use by patients by 50%. (MOH, 2002; Potter and Perry, 2005; Barbara Kozier., Et al, 2010).

Murtaqib (2013) in his study of differences in practice ROM (range of motion) passive and active for 1-2 weeks to increase range of motion in patients with stroke result is that there are differences in range of motion in flexion and extension ROM (range of motion) passive and ROM (range of motion) is active, with p value (0.001), ROM (range of motion) passive more influence than the ROM (range of motion) aktif. Subianto (2012) on the effect of exercise ROM (range of motion) to mobilization changes in stroke patients get the result that there is influence between workouts ROM (range of motion) to changes in the patient's mobilization stroke. Agustina, Mulyadi and Palandeng (2013) in his research on the effect of exercise ROM (range of motion) the muscle strength in patients with stroke showed that the influence of exercise ROM (range of motion) the muscle strength in patients with stroke with a value of P = 0.003 and showed muscle strength scores before and after exercise ROM (range of motion) increased an average score of 3.87.

From the observation and interview researchers with Responsible nurse in the Elderly homes, the amount of elderly in nursing Werdha as 165 people, there are the men 74 and the women 91 people, 53 people have hypertension, stroke with 15 men is male 9 people and woman 6 people, 13 people suffered paralysis is stroke Non haemoragik. The patient's condition stroke of weakness in the limbs, speech disorders, to overcome the weakness in the limbs in stroke patients, the intervention ROM (range of motion) is active or passive. Handling rehabilitation in stroke patients with impaired mobilization and limitation of motion in dipanti ROM exercises done by the students Nursing practice, but the practice is not continuously. Students do exercises ROM (range of motion) in less than 15 minutes in 24 hours, for student practice, then carried out by a physiotherapy that time is not fixed.The nurses who take care in institutions have not given special attention and only occasionally done some exercises ROM(rangeofmotion).

Based on existing research and the phenomenon the researchers interested in conducting research on the effect before and after exercise ROM (range of motion) of the passive muscle strength in patients with non-hemorrhagic stroke.

METHODS

This research with quantitative research, with the design of this quasi-experimental study using pre-test and post-testdesain, without using control groups. The purpose of this study was to determine the

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effect of independent variables (ROM (range of motion passive) on the dependent variable (muscle strength).Formsof this study design is used asfollows:

.Scheme.1 : Research design

$$R1 \longrightarrow 01 \longrightarrow x1 \longrightarrow 02$$
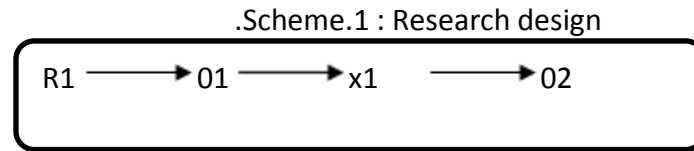
Source: Notoatmodjo, 2012

Information :
R1: Respondents who received treatment / intervention.
01: Pre-test prior to treatment.
02: Post test after treatment.
X1: Intervention in the treatment group.

The population in this study are all non-hemorrhagic stroke patients who stayed in the gym PantiTresnaWerdhaCiracas with a population of 165 in 2015.sampelnya entire non-hemorrhagic stroke patients who stayed dipantiSasanaTresnaWerdhaCiracas when research Using a purposive sampling. Sampling by selecting sempel among the population according to the desired researchers, so that they can represent the characteristics of the sample of the population that has been known previously (Nursalam, 2008).Sempel great formula using numerical analysis are as follows:

$$n = \frac{\sigma 2 \ (Z\ 1\text{-}\alpha\ /\ 2 + Z\ 1\text{-}\beta\ /\ 2)\ 2}{(\mu\ 1 - \mu2)\ 2}$$

n = Approximate number sempel

$\sigma2$ = standard deviation of the average two different pairs (4,224 (Claudia at.all))

Z1-α / 2 = Degrees of significance

Z1-β / 2 = Strength Test

$\mu1$ = average strength of the group (125.40 (Mutaqib)

$\mu2$ = average strength of the group (130.93 (Mutaqib)

$$n = \frac{4{,}224\ (0.05 + 0.84)\ 2}{(125.40 \text{ to } 130.93)\ 2}$$

$$\frac{3.34}{25}$$

$$= 13$$

Criteria for inclusion in this study are: a). to be the respondent. b).diagnosed with non-hemorrhagic stroke. c).weakness in the limbs (hemiparise). d). Informed Consent

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RESULTS / DISCUSSION AND IMPACT

This research plan would be carried out in RS Islam Jakarta, the data gathering process turns patients few and difficult to capture the data, after investigators asked for input and policy of LPPM the implementation is done in Sasana Tresna Werdha Ciracas, data was collected from February 1, 2016 to March 31 2016. Research by the quasi-experimental design using pre-test and post-test, without using control groups. The purpose of this study was to determine the effect of independent variables (ROM (range of motion passive) on the dependent variable (muscle strength), of the 15 elderly people who suffered stoke and paralysis only 13 people who do data retrieval, because two others are being treated.

The results of the univariate analysis in this study was to determine the frequency distribution of an individual respondent characteristics analysis of the results of research in the show as follows:

Table 1

Against Frequency Distribution of Respondents by Age In Non Haemorrhagic Stroke Patients In Sasana Tresna Werdha Ciracas 2016

Variables	Category	Frequency	Percentage
Age	(>50 years)	1	7,7
	(51-60 years)	1	7,7
	(61-70 years)	9	69,2
	(>70 years)	2	15,4
	Total	13	100.0

Table 1 Shows a majority of respondents aged 61-70tahun numbering (61.2%). The youngest age is 47 years old while the oldest 78 years of age.

Increasing age is a high risk of stroke, stroke is therefore classified as a degenerative disease. In concept, described the risk of stroke increased since the age of 45 years. Upon reaching the age of 50 years the risk of stroke increased by double risk with age (National Stroke Association, 2011) . Ones, Yalcinkaya, Toklu & Caglar (2009) who found that age contributes to the motor skills of stroke patients. In his research explained that age has a significant effect on the motor skills of stroke patients. There are similarities in the research conducted and previous research that the influence of age with the process of post-stroke patients recovery non hemorrhagic. At the time of the study, patients who are elderly do exercises ROM (range of motion) passive, patients tend to quickly feel the fatigue and lack of relaxation during training, because the age is a risk factor for stroke, it shows that the older the age, the ability of the brain to reorganize his motor skills less and less. Because when the patient had a stroke by a blockage in one part of the brain that causes hemiparese or limb weakness, resulting in motor disorders, while at the time of exercise ROM (range of motion) passive stroke patients have intolerance to exercise ROM (range of motion) and can not do the exercises intensively, other than that it is caused also by the slow process of recovery of brain tissue in people with advanced age, it is because the ability of older patients in the exercise is not so good, the patient's age-old need for expanded practice in recovery of motor skills due to degenerative factors in the elderly.

Table 2
Against Frequency Distribution of Respondents by Gender In Non Haemorrhagic Stroke Patients In Sasana Tresna Werdha Ciracas 2016.

Variables	Category	Frequency	Percentage
Gander	Male	10	76.9
	Female	3	23.1
	Total	13	100.0

Table 2: Shows the majority of the respondents male of 10 people (76.9%).

In theory stroke is more common in men than women (Lewis, 2007). According Petrina (2007) the incidence of stroke 19% higher in men than women in all races.Similarly, according to the American Heart Association (2010), the incidence of stroke in men more than women at a young age but not in older age. There are similarities in the study conducted by researchers and from previous research that men are more affected by stroke compared with women in the elderly, evidenced by ischemic stroke epidemiology theory common in men than in women regardless of ethnicity, and national origin (Sudlow and Warlow, 2000) . This may be linked men tend to smoke and drink alcohol so in middle age to old age may occur thrombus or embolism which causes blockage of blood flow to the brain and this can lead to ischemic areas of the vast ultimately can aggravate the condition of stroke. Because cigarettes contain nicotine which is an addictive substance that can raise cholesterol levels in the body, causing cerebral thrombosis, as well as alcohol can damage organs in the body.

In this study the bivariate analysis done to see the effect before and after exercise ROM (range of motion) of the passive muscle strength in patients with non-hemorrhagic stroke, the following are the results of the bivariate analysis using statistical test t dependent, can be seen in the following table:

Table 3
The frequency distribution of the average muscle strength Before and after the ROM (range of motion) in patients with non-hemorrhagic stroke in SasanaTresnaWerdhaCiracas 2016

Muscle Strength	Mean	SD	SE	P value
Before the ROM (range Of Passive Motion)	1,38	0,870	0,241	
				0,000
After the ROM (range of motion)	2,46	0,967	0,268	

Statistical test using the t test or a dependent (paired samples test) in the above table shows the average number of muscle strength in patients prior to the ROM (range of motion) is 1,38 people and the mean muscle strength after the ROM (range of motion) is 2,46 people. Statistical test results obtained p-value = 0.000, meaning at α 5% seen no significant differences in muscle strength average non-hemorrhagic stroke patients before and after the ROM (range of motion) passive.1,08 means an increase in muscle strength non-hemorrhagic strokepatients.

In a study conducted by researchers shows that there is a significant effect on non-hemorrhagic stroke patients with muscle strength after exercise ROM (range of motion) passive. The mean average

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muscle strength respondents before the exercise ROM (range of motion) is 1.38, which means passive contraction of the muscles. Meanwhile, after the workout ROM (range of motion) passive is 2.46 change in muscle strength after exercise ROM (range of motion) passive, an increase in muscle strength after the ROM (range of motion) passively by a margin of 1,08.

The concept of a stroke on motor neurone disease which can lead to loss of voluntary control of the motor movement. One of the problems often faced by stroke patients is associated with motor movementshemiparese. Hemiparese or weakness of one side of the body is another sign often found in stroke patients besides hemiplegi (Smletzer& Bare, 2008). Manifestase of hemiparese most common is the decrease in muscle strength.

Muscle strength is associated with neuromuscular system that is how big the ability of the nervous system activates muscles to perform contractions. Thus, the more muscle fibers are activated, the greater the force produced by the muscle.

According Agustina et al (2013) in his research showed muscle strength scores before and after exercise ROM (range of motion) has significant increased and muscle strength scores in stroke patients with P = 0.003. Another study conducted by Murtaqib (2013) in his study of differences in practice ROM (range of motion) passive and active for 1-2 weeks to increase range of motion in patients with stroke result is that there are differences in range of motion in flexion and extension ROM (range of motion) and passive ROM (range of motion) active with p= value 0.001. Similarly Cahyati (2011) concerning ROM Exercise Comparison Exercise Unilateral and Bilateral ROM on Muscle Strength Due to Ischemic Stroke Patients Hemiparese Results showed increased muscle strength in both the intervention group and there are significant differences between the intervention groups with p= 0.018. ROM exercises can significantly improve muscle strength of the patient during done with proper technique. Exercises done programmatically at least 2-3 times/day (Kozier, et al., 2008).

There are similarities in the research obtained by previous studies that their differences before the exercise ROM (range of motion) and after exercise ROM (range of motion) passive in stroke patients non hemorrhagic evidenced by the researchers that the more often patients do exercises ROM (range of motion) passive, it can improve motor movement and muscle strength in patients with non-hemorrhagic stroke. The results are consistent with several studies of ROM (range of motion) and muscle strength that has made stating that the exercise ROM (range of motion) on the limb is considered as a management strategy hemiparese, and can be included in the act of stroke rehabilitation that impact greater in facilitating the active movement of limbs and improve the performance of the motor control of the arms and legs are experiencing parese.

According to Guyton (2007), the mechanism may increase smooth muscle contraction in the extremities. Passive ROM exercises can lead to stimulation thus increasing the activation of chemical neuromuscular and muscular. Through neuromuscular stimulation will increase the stimulation to the muscles of the extremities, especially the nerve fibers that stimulate the parasympathetic nerve to asetilcholin production, resulting in a contraction. The mechanism through the muscular smooth muscle, especially the extremities will increase metabolism in metakonderia to produce ATP utilized by the smooth muscle of the limbs as energy for contraction and increase smooth muscle tone extremities. There will be an increase in muscle strength due to the energy produced by the ATP.

By doing the exercises ROM (range of motion) passive, which is one of rehabilitation therapy for stroke patients very has an effect on the recovery process caused by hemipareses, the muscle strength in patients prior to exercise ROM (range of motion) passive are 1.38 their contraction muscles during palpation, more frequent exercise ROM (range of motion) passive in patients Stroke then an increase in muscle strength will be more effective and significant, after the workout ROM (range of motion) passive there is an increase in muscle strength 2:46 able to move wide joints filled without against resistance. Backed by the research of others who have increased Scor 3.87 on muscle strength. While in this study there was an increase in muscle strength with 1:08 scor difference.

CONCLUSION

The results of this research shows the average number of muscle strength in patients prior to the ROM (range of motion) is 1.38 namely contraction palpation and mean muscle strength after the ROM (range of motion) is 2.46 namely their extensive range of motion without his back against resistance. Statistical test results obtained p-value = 0.000, meaning at α 5% seen no significant difference on average muscle power stroke patients non hemorrhagic before and after the ROM (range of motion) passive, and their influence before and after practice ROM (range of motion) of the passive muscle strength in stroke patients with non hemoragik.

Exercise the ROM (range of motion) passive needs to be done programmatically at the Children's either done by a nurse or in cooperation with the duty officer in each of the room, after the first officer taught about exercise ROM (range of motion). In addition it should be made permanent procedure and schedule clearly passive ROM exercises for example with a frequency of 2 times/day every morning and evening.

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