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THE EFFECT OF RANGE OF MOTION (ROM) NURSING ACTION ON NON-HEMORAGIC STROKE PATIENTS WITH PHYSICAL MOBILITY DISORDERS

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Movement disorders can occur due to muscle weakness and inability to move due to damage to the nervous system in the brain and stiffness in the muscles and joints which can cause problems with the independence of post-stroke patients. As many as 80% of stroke patients experience weakness on one side of the body/hemiparesis (Gorman, 2014). This has an impact on Activity Daily Living (ADL) where a person will depend on others, either partially assisted or totally dependent. The purpose of this study was to describe the effect of ROM nursing on non-hemorrhagic stroke patients with impaired physical mobility. The research method used was a pre-experiment with One Group pre-test-post-test design, a sample of 78 respondents with consecutive sampling techniques who were given ROM exercises with 12 days of exercise with 2 times a day. The results showed that after being given ROM therapy for 2 weeks with two applications in the morning and evening within 10-15 minutes, data collection was obtained using an observation sheet. The statistical test used was the Wilcoxon test and a ρ value of 0.001 was obtained. The conclusion from the discussion of ROM exercises can stimulate increased neuromuscular activity, stimulate nerve fibers in the extremities, especially the parasympathetic nerves that create acetylcholine, thereby triggering contractions.

Keywords: application of ROM actions; impaired physical mobility; non-hemorrhagic stroke

INTRODUCTION

Stroke or also called CVA (Cerebro-Vascular Accident) is a disease/disorder of nerve function that occurs suddenly caused by disruption of blood flow in the brain (Hariyanti, et al., 2020). This condition does not only occur in middle age and old age, but almost 10% of strokes occur at a relatively young age or less than 45 years. It is estimated that the incidence of stroke in people under 45 years of age is between 7-15 cases/100,000 population/year. The incidence increases with age. At the age of less than 35 years, the incidence of stroke is less than 10/100,000 population/year, aged 35-44 the incidence is around 22-45/100,000 population/year.

The World Stroke Organization in 2022 reported that the prevalence of stroke sufferers experienced an increase in stroke incidence of 70%, mortality rates of 43%, and morbidity rates of 143% in low and lower-middle income countries (Feigin et al. 2022). The number of stroke sufferers with an average age of 60 years and over is the second largest in Asia, while those aged 15-19 years are the fifth largest in Asia. This is in line with the Ministry of Health of the Republic of Indonesia 2018, the prevalence of stroke (permil) based on the diagnosis of medical personnel (Nakes) in Indonesia experienced an increase in the incidence of stroke from 2013 to 2018, namely 2013 by 7%, while in 2018 it increased to 10.9%. Specification of men 11.0%, women 10.9%. 5. The results of the Riskesdas show that the prevalence of stroke in Indonesia has increased. In 2018, there were 8.3% of stroke cases based on their signs and symptoms. Data from the DKI Jakarta Health Service in 2023 estimated that 8.7% of stroke patients in South Jakarta experienced weakness on one side

of the body/hemiparesis (Gorman, 2024). While the prevalence of stroke sufferers in the South Tangerang area was 6.38%. Based on these data, the South Jakarta area is the area that occupies the second lowest position after South Tangerang for stroke sufferers (Nuranti et al., 2020).

This has an impact on Activity Daily Living (ADL) where a person will depend on others, either partially assisted or totally dependent. The risk factors that cause people to suffer from stroke are disorders of the nervous system that occur in stroke sufferers so that they can cause nursing problems, namely: impaired physical mobility, speech disorders, memory thinking processes and risk of falling. Impaired physical mobility is the inability or limitations in physical movement of one or more extremities independently. Interventions that can be carried out on stroke sufferers with impaired physical mobility are mobilization support. Mobilization support is facilitating stroke sufferers to be able to increase physical movement activities. (Jamaluddin M, Widiyaningsih, Nadhifah Z.2020).

One form of rehabilitation exercise that is quite effective in increasing movement activity and preventing disability in stroke patients is the assessment of Activity Daily Living (ADLs), and providing left and right tilt exercises and providing Range of Motion (ROM) exercises. This ROM exercise can prevent decreased joint flexibility and joint stiffness. This physical exercise is very important for patients with non-hemorrhagic stroke with the aim of determining the value of the ability of bone and muscle joints to move, improve muscle tone, improve muscles for exercise, prevent joint stiffness and improve blood circulation and prevent deformities. (Rahayu KI.2014).

METHOD

This research activity was carried out for 1 week starting from Monday, March 20-25, 2023. The method of implementing this research uses a descriptive case study approach, namely the analysis of the application of ROM exercises in non-hemorrhagic stroke patients who experience limb weakness. Researchers conducted a case study on the application of ROM (Range Of Motion) in non-hemorrhagic stroke patients with impaired physical mobility.The subjects in this case study were 78 patients who were selected randomly and non-hemorrhagic stroke cases, with the criteria of good patient condition, consciousness of both patients composmetis with female or male stroke patients, Patients who have been diagnosed with Non-Hemorrhagic Stroke, Patients who are willing to be respondents, Aged 50 to 70 years, and Experiencing limited range of motion / impaired physical mobility.

The application of active and passive Range Of Motion exercises is carried out 2x a day, namely morning and evening with a time of 10-15 minutes to increase muscle strength. The first step taken by the researcher was to collect complete information with the next data collection procedure in the analysis. In this result, the researcher involved the role of the family in providing ROM in the afternoon. The researcher will observe the provision of Range Of Motion and the response of the patient after the action. The instruments used by the researcher in this case study are interview sheets, observation sheets and physical examination sheets.

The researcher implemented this research using the Pre-Experimental Design research type using a one group pre-test-post-test design design. All samples that became respondents, were assessed for muscle strength before Range Of Motion training and after Range Of Motion was carried out, muscle strength was assessed again, to see changes in muscle strength. The research instrument

used to collect data was through an observation sheet. Where the researcher recorded the results of the assessment of the degree of muscle strength before and after being given ROM (Range Of Motion) using the muscle strength scale assessment (MMT). In this study, the process of collecting and collecting data was processed after previously obtaining permission from Pasar Rebo Hospital, to carry out the research. As an initial step, the researcher will select respondents based on the predetermined inclusion criteria. Then before being given Range Of Motion training, an assessment of the strength of 44 muscles was carried out first, after being given Range Of Motion training for 12 days (2 weeks) with training 2 times a day for 10 minutes and 8 counts for each movement, then the muscle strength assessment was carried out again. After that the data results were analyzed and conclusions were made

RESULT AND DISCUSSION

Respondent Characteristics

Table 1.
Distribution of respondent frequencies by gender

Gender	f	%
Male	48	57.1
Female	30	42.9

Frequency Distribution of Respondents Based on Patient Gender at Pasar Rebo Regional General Hospital 2023 Based on gender characteristics, it shows that there are 48 male respondents (57.1%), and 30 female respondents (42.9%).

Table 2.
Frequency distribution of respondents by age group

Age Group	f	%
50-55	10	14.3
56 – 60	15	21.4
61 – 65	35	35.7
66- 70	18	28.6

Based on the table above, it shows that the age of the most respondents is in the age group of 61-65 years, namely 35 people (35.7%), while the smallest age of respondents is in the age group of 50-55 years (14.3%).

Table 3.
Distribution of muscle strength before ROM is performed in the Flamboyan internist treatment room of Pasar Rebo Hospital

Muscle strength before ROM	f	%
1,00	19	7.1
2,00	21	35.7
3,00	38	57.1

Based on the muscle strength table before ROM was performed, there were 19 people with poor muscle strength (7.1%), 21 people with insufficient muscle strength (35.7%), and 38 people with sufficient muscle strength (57.1%).

Table 4.

Distribution of muscle strength after ROM was performed in the Flamboyan Internist Care Room of Pasar Rebo Hospital

Muscle strength after ROM	f	%
2,00	10	12.82
3,00	19	24.35
4,00	49	62.82

Based on the muscle strength table after Range Of Moiton was carried out, namely muscle strength was lacking in 10 people (12.82%), sufficient in 19 people (24.35%), and good muscle strength in 49 people (62.82%)

Table 5
Distribution of muscle strength before and after intervention in stroke patients at the Hospital

Muscle strength	f	%	P-value	Z-score
Post Int.< Pre Int	0	0	0,001	3,448
Post Int.< Pre Int	78	100		
Post Int.< Pre Int	0	0		

According to the table above, it shows that there is an effect of Range Of Motion training on muscle strength in stroke patients in the Flamboyan Internist Care Room of Pasar Rebo Hospital. Based on the results of observations made by researchers, respondents who have less muscle strength are 10 people (12.82%) this is due to several factors including age, gender, general condition, and psychological condition of the patient. There are also patients who do not experience an increase in muscle strength, including those in the elderly age group. Where in old age, the musculoskeletal system decreases. This decrease causes the tensile strength of collagen to begin to decrease, changes in this collagen can cause a decrease in muscle strength. Muscle composition changes over time when myofbrin is replaced by fat, collagen and scar tissue.

Blood flow to the muscles decreases as a person ages, with a decrease in the amount of nutrients and energy available to the muscles so that muscle strength decreases. At the age of 60, the total loss of collagen is 10-20% and will continue to decrease with age. So researchers assume that the older a person is, the more their muscle strength will decrease. In addition, any intervention given to the patient if the patient himself has no motivation and intention to recover and an unstable body condition, then a healthy state will be difficult to achieve. Most respondents have good muscle strength as many as 49 respondents (62.82%) this can be seen by optimizing the mobilization movement. ROM exercises are given with a frequency of exercise 6 times a day with a duration of 10 minutes. Done regularly, on time, continuously and also programmed according to the Standard Operating Procedure for range of motion exercises

CONCLUSION

Most of the respondents were male aged 61-65 years with the highest degree of muscle strength before Range Of Motion was performed at degree 2, namely the patient's ability to move but could not fight gravity. The degree of muscle strength after Range Of Motion was performed, the highest at degree 4, namely the patient's ability to fight light resistance. The results of the analysis test obtained a value of $p = 0.001$ with an accuracy of $\alpha = 0.05$ or $p < 0.05$, this certainly shows that there is an effect of Range Of Motion training on muscle strength in stroke patients in the Flamboyan Internist Care Room, Pasar Rebo Hospital.

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