RELATIONSHIP OF ACTIVE RANGE OF MOTION (ROM) TERAPY WITH ACTIVITY OF DAILY LIVING (ADL) COMPLIANCE OF PASCA STROKE PATIENTS IN POLI SYARAF RSUD dr. R. SOETRASNO REMBANG

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Abstract. Background: Stroke disease can affect patients, resulting in self-care deficit and need for nursing help sustainably so that gradually patient and his family can gradually do daily activities independently. The purpose of this research is to analyze the relationship between active ROM therapy to activities of daily living (ADL) of post-stroke patients in the nerve polyclinic of RSUD dr. R. Soetrasno Rembang. Methods: This study uses a type of correlation using a cross-sectional approach; the population is stroke patients in the nerve polyclinic of RSUD dr.R. Soetrasno Rembang in June 2021 to July 2021, a total of 117 patients, with a sample of 64 patients. Using the purposive sampling technique. Independent variable: Active ROM Therapy. Dependent variable:Activity of Daily Living (ADL). Measurement tool with SOP and checklist, utilizing editing, coding, scoring, tabulation, and data analysis, employs the Spearman Rank test. Results: Research results showed that active ROM therapy for post-stroke patients, most of whom were (56,3%), 36 patients. Fulfillment of Activity of Daily Living (ADL) to post post-stroke patients is good in 36 patients. Based on Spearman's Rank p < rho α between the variable of effect of nutrition status with the development of soft motoricknown that p value = 0.000< 0.05, so H0 is rejected and H1 is accepted. Conclusion: There is a relationship between active ROM therapy and Activity Of Daily Living (ADL) of Post Stroke Patient (In Nerve Polyclinic Of Rsud dr. R. Soetrasno Rembang. Active ROM Therapy can enhance the ability and independence of ADL fulfillment in accelerating the recovery process.

Key words: [ROM Therapy, ADL, Post Stroke]

INTRODUCTION

Cerebrovascular accident (CVA) or cerebral circulation disorder is a common neurological disease that requires immediate treatment. This neurological disorder can cause several symptoms such as facial and limb paralysis, slurred speech, unclear speech (pelo), changes in consciousness, visual impairment, and others (Riskesdas, 2018). Physical disabilities can reduce productivity, so post-stroke patients require rehabilitation to minimise physical disabilities and enable them to perform certain activities effectively (Irfan, 2010; Santoso & Ali, 2013).

Sensory and motor impairments after a stroke result in balance disorders, including muscle weakness, reduced flexibility of soft tissues, and impaired motor and sensory control. The loss of function due to impaired motor control in stroke patients can lead to loss of coordination, loss of body balance, and postural instability (the ability to maintain a specific position) (Bakura, 2016). The impact of stroke causes patients to experience self-care deficits or dependence on others and require continuous nursing assistance so that patients and their families can gradually perform daily activities independently (Suhardingsih et al., 2017).

According to World Health Organization (WHO) data, stroke is the second leading cause of death and the third leading cause of disability worldwide. Data from the United States indicates that two-thirds of post-stroke patients require rehabilitation to achieve independent living and improve their quality of life. However, in Indonesia, many stroke victims still experience functional impairments in daily activities and daily needs (Taruna and Arini, 2011).

Data from the World Stroke Organisation shows that there are 13.7 million new stroke cases annually, with approximately 5.5 million deaths resulting from stroke (Ministry of Health, 2020). Based on data collected by the Indonesian Stroke Foundation (Yastroki), the issue of stroke is becoming increasingly important and urgent, as Indonesia now has the highest number of stroke patients in Asia. Data from the 2018 Basic Health Research shows that the prevalence of stroke in Indonesia has increased

to 12.1 per 1,000 people. The stroke mortality rate in Indonesia is 21.1% (Riskesdas, 2018). This figure has increased compared to the 2013 Riskesdas, which was 7 per 1,000 people. In Central Java alone, the prevalence of stroke is 11.8 per 1,000 people, higher than the national stroke prevalence rate. A survey conducted at Dr. R. Soetrasno Rembang General Hospital showed that the number of stroke patients admitted in 2020 reached 683 individuals. Of these, 225 were haemorrhagic stroke patients and 458 were ischaemic stroke patients.

Many approaches can be taken, one of which is a rehabilitation programme for stroke patients, such as joint mobilisation through range of motion (ROM) exercises. Range of Motion (ROM) exercises are performed to maintain or improve the normal and complete range of joint movement, thereby enhancing muscle mass and muscle tone. Early implementation of ROM exercises can enhance muscle strength by stimulating motor units; the more motor units involved, the greater the increase in muscle strength. If not promptly addressed, patients with hemiparesis may develop permanent disabilities (Potter and Perry, 2009, as cited in Andrawati, 2016).

Generally, stroke patients become dependent on others for daily activities (activities of daily living/ADL) such as eating, drinking, bathing, dressing, and so on. Independence and mobility in stroke patients decrease or even disappear. The reduction in independence and mobility can affect the quality of life (Hariandja, 2013).

The results of a study conducted by Suzanna (2019) showed that active ROM therapy for post-stroke patients was effective in 56.7% of cases, involving 38 individuals. The fulfilment of Activities of Daily Living (ADL) in post-stroke patients was mostly good (55.2%) for 37 out of 67 participants. The study concluded that there is a relationship between active ROM therapy and the fulfillment of Activities of Daily Living (ADL) in post-stroke patients at the Neurology Clinic of RSU Mayjen H. A Thalib Kerinci. Active ROM therapy can improve the ability and independence in fulfilling Activities of Daily Living (ADL) to accelerate the recovery process.

The study conducted by Serlina and Asrijal (2021) found that stroke is a cause of disability, leading patients to experience limitations in fulfilling Activities of Daily Living (ADL). The aim is to develop a physical exercise model for ROM to enhance independence.

METHODS

A. Types of research

Research design is a systematic plan in a research study that guides researchers in obtaining answers to research questions. In essence, research design is a plan to achieve a research objective and also serves as a guide for researchers throughout the entire research process (Sastroasmoro & Israel, 2011, cited in Feni Yuni Astanti, 2017).

This study employs a correlational research design (relationship/association) aimed at revealing the correlational relationship between variables, examining the relationship between two variables using a cross-sectional approach. A cross-sectional approach is a type of research that emphasises the timing of measurement and observation of independent and dependent variables at a single point in time (Nursalam, 2013). This study was conducted to determine the relationship between active ROM therapy and the fulfillment of Activities of Daily Living (ADL) in post-stroke patients.

B. Population and Sample

The population in this study consisted of stroke patients who underwent routine check-ups and experienced hemiparesis at the neurology clinic of Dr. R. Soetrasno Rembang Regional General Hospital from June to July 2021, totalling 177 patients.

The population size in this study was 177 people, so the margin of error used was 10%. Therefore, to calculate the sample size in this study:

$$n = \frac{N}{1+N(e)^2}$$
$$= \frac{177}{1 + 177(0{,}1)^2}$$
$$= \frac{177}{1 + 177(0{,}01)}$$

$$= \frac{177}{2,77}$$
$$= 63,89$$
$$= 64$$

The sample size was rounded up to 64 people.

The sample in this study consisted of all stroke patients who underwent routine check-ups and experienced hemiparesis at the neurology clinic of Dr. R. Soetrasno Rembang Regional General Hospital who met the inclusion criteria.

C. Data Analysis Techniques

An analysis was conducted on two variables that were suspected to be related or correlated (Notoatmodjo, 2010, cited in Feni Yuni Astanti, 2015). This was done through hypothesis testing and data processing using software. The collected data were then analysed, including the identification of a problem in the study. The statistical test used was the Spearman Rank correlation with the assistance of SPSS version 22 software, with the criterion that if the p-value was < 0.05, there was a significant relationship between active ROM therapy and the fulfillment of Activities of Daily Living (ADL) in post-stroke patients. If the p-value > 0.05, there is no significant relationship between active ROM therapy and the fulfillment of Activities of Daily Living (ADL) in post-stroke patients.

RESULTS AND DISCUSSION

A. RESULTS

1. Characteristics of Respondents
   a. Age of Respondents

Table 1. Frequency Distribution of Respondents Based on Age in Post-Stroke Patients at the Neurology Clinic of dr. R. Soetrasno Rembang Regional General Hospital

No	Age	Frequency	Percentage (%)
1.	40-54 years old	20	31,3
2.	55-65 years old	25	39,1
3.	65 years old and above	19	29,7
	Total	64	100

   b. Gender of Respondents

Table 2. Frequency Distribution of Respondents Based on Gender in Post-Stroke Patients at the Neurology Clinic of dr. R. Soetrasno Rembang Regional General Hospital

No	Gender	Frequency	Percentage (%)
1.	Male	30	46,9
2.	Female	34	53,1
	Total	64	100

   c. Respondent Education

Table 3. Frequency Distribution of Respondents Based on Education in Post-Stroke Patients at the Neurology Clinic of dr. R. Soetrasno Rembang Regional General Hospital

No	Education	Frequency	Percentage (%)
1.	Elementary School	11	17,2
2.	Junior High School	29	45,3
3.	Senior High School	22	34,4
4.	College	2	3,1
	Total	64	100

   d. Respondent's Occupation

Table 4. Frequency Distribution of Respondents Based on Occupation in Post-Stroke Patients at the Neurology Clinic of dr. R. Soetrasno Rembang Regional General Hospital

No	Occupation	Frequency	Percentage (%)
1.	Labor	31	48,4
2.	Take off	33	51,6
	Total	64	100

e. Respondent's Stroke History

Table 5. Frequency Distribution of Respondents Based on Stroke History in Post-Stroke Patients at the Neurology Clinic of dr. R. Soetrasno Rembang Regional General Hospital

No	Stroke History	Frequency	Percentage (%)
1.	Stroke Hemorrhagic	4	6,3
2.	Stroke Non-Hemorrhagic	60	93,8
	Total	64	100

f. Respondent's Stroke Attack

Table 6. Frequency Distribution of Respondents Based on Stroke Attack History in Post-Stroke Patients at the Neurology Clinic of dr. R. Soetrasno Rembang Regional General Hospital

No	Stroke Attack	Frequency	Percentage (%)
1.	First Attack	33	51,6
2.	Repeated Attack	31	48,4
	Total	64	100

g. Respondent's Medical History

Table 7. Frequency Distribution of Respondents Based on Medical History in Post-Stroke Patients at the Neurology Clinic of dr. R. Soetrasno Regional General Hospital, Rembang

No	Comorbid	Frequency	Percentage (%)
1.	Diabetes mellitus	11	17,2
2.	Hipertension	43	67,2
3.	No Comorbid	10	15,6
	Total	64	100

2. Univariate analysis

a. Active ROM Therapy

Table 8. Frequency Distribution of Respondents Based on Active ROM Therapy in Post-Stroke Patients at the Neurology Clinic of dr. R. Soetrasno Rembang Regional General Hospital

No	Active ROM Therapy	Frequency	Percentage (%)
1.	Superfine	6	9,4
2.	Great	36	56,3
3.	Moderate	18	28,1
4.	Deficient	4	6,3
	Total	64	100

b. Activities of Daily Living (ADL)

Table 9. Frequency Distribution of Respondents Based on Activities of Daily Living (ADL) in Post-Stroke Patients at the Neurology Clinic of dr. R. Soetrasno Regional General Hospital, Rembang

No	Medical History	Frequency	Percentage (%)
1.	Great	36	56,3
2.	Moderate	26	39,1
3.	Deficient	3	4,7
	Total	64	100

3. Bivariate Analysis

Table 10. Cross-tabulation of the Relationship between Active ROM Therapy and Activities of Daily Living (ADL) in Post-Stroke Patients at the Neurology Clinic of dr. R. Soetrasno Rembang Regional General Hospital

Active ROM Therapy	Activity of Daily Living (ADL)						Total	
	Great		Moderate		Deficient			
	N	%	N	%	N	%	N	%
Superfine	6	100,0	0	0,0	0	0,0	6	100
Good	30	83,3	6	16,7	0	0,0	36	100
Moderate	0	0,0	18	100,0	0	0,0	18	100
Deficient	0	0,0	1	25,0	3	75,0	4	100
	36	56,3	25	39,1	3	4,7	64	100

p value = 0,000 α = 0,05

B. DISCUSSION

1. Active ROM Therapy for Post-Stroke Patients at the Neurology Clinic of Dr. R. Soetrasno General Hospital, Rembang

Based on Table 8, it shows that out of 64 respondents who underwent active ROM therapy, the majority (56.3%) or 36 people responded positively. This was influenced by several factors, including age and education.

According to the researcher, active ROM therapy was mostly effective. This is because most respondents experienced an increase in muscle strength, meaning they could move weak muscles or body parts according to instructions and also move muscles with minimal resistance, thereby enhancing independence. This aligns with Potter & Perry's (2007) theory that ROM therapy helps maintain or improve the level of normal and complete joint mobility, thereby increasing muscle mass and muscle tone. This theory is supported by Yurida Olivian et al. (2017) in their study titled 'The Effect of Active-Assisted Range of Motion (ROM) Exercise on Muscle Strength Improvement,' which found that stroke patients with muscle stiffness showed changes after undergoing active ROM exercise.

Based on Table 1, most respondents were aged 55–65 years, with 25 individuals (39.1%). According to the researchers, individuals aged 55–65 years are considered middle-aged adults who have good response speed and realistic thinking abilities.

This is supported by the theory according to Sebastian (2012), Nursalam and Parlani (2012), who state that as a person ages, their level of maturity and strength in thinking and receiving information increases. Meanwhile, according to Monk (2011), age is an aspect that plays a role in a person's level of maturity, thereby influencing perception. Additionally, it is also influenced by factors based on education. Based on Table 3, nearly half of the respondents had a junior high school education, with 29 people (45.3%).

According to the researcher, low education levels can affect the ability to absorb or accept incoming information, especially new information that is unfamiliar to the respondents, such as Active ROM Therapy. Individuals with higher education tend to respond more rationally compared to those with lower education levels or no education at all. The education level of the respondents in this study is classified as basic education, so they may face difficulties in understanding the information provided, especially regarding health issues.

This aligns with the opinion of I.B. Manera, as cited by Muhyuliansyah (2013), who states that education can influence an individual, including their behaviour in adopting a healthy lifestyle, motivating themselves, and actively participating in supportive activities. Meanwhile, according to Koentjoroningrat, as cited by Nursalam (20012), the higher a person's level of education, the better their ability to think and receive information, resulting in better knowledge acquisition. A person's level of education influences their responses to external and internal stimuli. People with higher education will respond more rationally than those without education.

2. Fulfillment of Activities of Daily Living (ADL) for Post-Stroke Patients at the Neurology Clinic of Dr. R. Soetrasno Regional General Hospital, Rembang.

Based on Table 9, it shows that out of 64 respondents, the majority (56.3%) had good Activity of Daily Living (ADL) scores, with 36 people. According to the researcher, the majority (56.3%) of respondents had good ADL performance. This is because most patients were enthusiastic about active ROM therapy, which positively impacted their ADL performance. Additionally, patients had the motivation to be independent, thereby reducing their dependence on other family members.

A form of measurement of an individual's ability to perform Activities of Daily Living independently. Determining functional independence can identify a client's abilities and limitations, thereby facilitating the selection of optimal interventions (Maryam, 2008, cited by Silvina Primadayanti, 2011). Independence is defined as the absence of supervision, guidance, or active personal assistance. Independence is an individual's ability to make decisions, act responsibly, and perform tasks in life without depending on others (Intan Fajar N, 2017).

Some exercises that can be performed to improve ability during activities/ADL include the Barthel Index assessment. Based on the Barthell Index assessment results, the lowest-scoring activity was transferring from a chair to a bed or vice versa. Most respondents were unable to transfer and required assistance from others to move the patient, with or without aids.

According to the researchers, the respondents' inability to transfer and their continued reliance on others' assistance were due to limited muscle strength for transferring. Meanwhile, the highest Barthell Index score was for dressing activities, where all patients could put on, take off, tie, or fasten all the specified clothing.

According to the researchers, dressing is a simple activity that does not require assistance from others, and all patients were able to perform it. Based on Table 1, most respondents were aged 55–65 years, with 25 individuals (39.1%). According to the researchers, as individuals enter their 70s (high-risk elderly), they typically experience declines in various areas, including their level of independence in performing daily activities.

This is supported by Maryam's theory (2008), as cited by Intan Fajar N (2017). Age and developmental status influence an individual's willingness and ability, or how they react to difficulties in performing Activities of Daily Living.

According to Table 7, the majority of respondents (43 individuals, 67.2%) had a history of hypertension. According to the researcher, a patient's history of illness can cause trauma related to their health, leading to difficulties in performing Activities of Daily Living.

This is supported by Hardywinoto's theory (2007), as cited by Intan Fajar N (2017), that an individual's physiological health can influence their ability to perform ADLs, such as the musculoskeletal system coordinated by the nervous system, enabling it to respond to sensory input through movement or motor skills. Disorders that arise, for example, due to illness or trauma, can interfere with a person's ability to perform activities of daily living.

3. The Relationship between Active ROM Therapy and the Fulfilment of Activities of Daily Living (ADL)

Based on Table 10, it shows that out of 64 respondents, 30 people (83.3%) had good ADLs after active ROM therapy.

The results of the Spearman's rank correlation test yielded a significant value or probability value (0.000) far below the significance level of 0.05 (ρ value < α), indicating that there is a relationship between active ROM therapy and activities of daily living (ADL) in post-stroke patients at the Neurology Clinic of Dr. R. Soetrasno General Hospital in Rembang.

Based on the results of the Spearman's rank correlation test, a correlation coefficient of 0.815 was obtained, indicating a very strong relationship between the variables.

According to the researcher, active ROM therapy can improve the fulfillment of Activities of Daily Living (ADL). The administration of active ROM therapy enhances patients' independence. The independence that emerges in post-stroke patients is crucial for accelerating the recovery process of the disabilities they experience comprehensively. It not only alleviates the burden on family members or those around them but also fosters motivation among stroke patients.

This is supported by Marlina's theory (2013), as cited by Wahyu Nur Fitriyani (2015), which states that intensive, targeted, and regular ROM exercises for stroke patients can enhance motor skills for daily activities and reduce dependency levels.

Lewis (2007) suggests that exercises for stroke patients should be performed twice daily to prevent complications. Other studies indicate that ROM exercises have a high likelihood of improving flexibility and joint range of motion. ROM exercises can be performed for one or two weeks, twice daily in the morning and evening, for at least 10–15 minutes, to accelerate the recovery process (Murtaqib, 2013, cited in Zainudin Harahap, 2014).

This theory aligns with Cahyo Pramono's research titled ‘The Effectiveness of ROM Exercises on Improving ADL Independence in Stroke Elderly.’ The research results showed that the average improvement in ADL independence among stroke patients increased from 5.89 to 11.67 with a standard deviation of 1.132. The statistical test using a paired t-test yielded a p-value of 0.000 ($p < 0.05$). This study concluded that ROM exercises are effective in improving ADL

independence among stroke patients.

This study is further supported by Nur Aini et al.'s research titled 'Improvement in Muscle Strength in Hemiparetic Stroke Patients at Dr. Moewardi General Hospital, Surakarta.' Based on the results of the Paired Sample T Test analysis, a significance value of 0.005 ($p<0.05$) was obtained, meaning that Ha was accepted, indicating that "there is a difference in muscle strength values between before and after performing ROM exercises for 7 days with a frequency of 1 time per day.

CONCLUSION

There is a relationship between active ROM therapy and the fulfillment of Activities of Daily Living (ADL) in post-stroke patients at the Neurology Clinic of Dr. R. Soetrasno General Hospital in Rembang. The results of the Spearman's rank correlation test yielded a correlation coefficient of 0.815, indicating a very strong relationship between the variables. Meanwhile, the probability value (p) was 0.000, which is significantly lower than the standard significance level of 0.05 (p value < α).

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