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Implementation of Range of Motion Exercises for Non-Hemorrhagic Stroke Patients (Mrs. Z) at Dr. H. Koesnadi General Hospital, Bondowoso

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ABSTRACT
Introduction: Non-hemorrhagic stroke is a type of stroke that occurs due to the obstruction of blood flow to the brain. This condition can cause damage to brain cells and disrupt various bodily functions, particularly physical functions. One of the main problems commonly experienced by patients with non hemorrhagic stroke is impaired physical mobility. This impairment is generally caused by the loss of motor control and decreased muscle strength. One non-pharmacological therapy that can be applied to improve flexibility and muscle strength is range of motion (ROM) exercises, both passive and active. This study aims to identify the implementation of range of motion exercises in non-hemorrhagic stroke patients with the nursing diagnosis of Impaired Physical Mobility in the Teratai Pavilion at dr. H. Koesnadi General Hospital, Bondowoso.
Methods : Data collection techniques included interviews, observations, physical examinations, and documentation. Nursing intervention in the form of range of motion exercises was administered to patients for 15–30 minutes in the morning and evening over three consecutive days, with the aim of increasing muscle strength in weakened extremities.
Results : The data analysis revealed that the primary nursing problem experienced by the patient was Impaired Physical Mobility. The implementation of range of motion exercises proved to be an effective intervention in improving joint flexibility and muscle strength in non-hemorrhagic stroke patients.
Discussion: Based on the evaluation of the nursing care provided, it can be concluded that range of motion exercises can improve muscle strength and joint flexibility in non hemorrhagic stroke patients experiencing impaired physical mobility. This intervention can be considered a beneficial non-pharmacological approach in the recovery of motor function.

***Keywords**: Non-Hemorrhagic Stroke; Impaired Physical Mobility; Range of Motion Exercises*

Introduction

Stroke is one of the leading causes of death and disability worldwide, with incidents continuing to increase every year (WHO, 2022; Kharisma, 2020). In Indonesia, stroke is the leading cause of death among non-communicable diseases, with a prevalence of 10.9 per 1,000 people (Indonesian Ministry of Health, 2023; Masithoh, 2024). There are two main types of stroke, namely hemorrhagic and non-hemorrhagic, with non-hemorrhagic stroke accounting for about 85% of all reported stroke cases (Abdillah, Istiqomah, & Kurnianto, 2022; WHO, 2022). Non-hemorrhagic stroke is caused by a blockage in blood flow to the brain, resulting in brain tissue damage and motor function impairment (Setyowati, Elma, & Mashfufa, 2023).

Non-hemorrhagic stroke is a type of stroke caused by a blockage of blood flow to the brain, resulting in brain cell damage and physical dysfunction (Abdillah, Istiqomah, & Kurnianto, 2022; Iswatun, Wijayanti, & Silvia, 2022). Physical mobility impairment is a major problem often found in non-hemorrhagic stroke patients due to loss of motor control and decreased muscle strength (Masithoh, 2024; Kharisma, 2020). Prolonged immobility can worsen the client's condition through secondary complications such as muscle atrophy and joint contractures (Santjaka, Lestari, & Pujiastuti, 2019; Sajidin, Indrawati, & Sudiana, 2018).

Patients with non-hemorrhagic stroke often experience physical mobility impairments caused by damage to the motor and sensory systems (Harahap, 2021; Masithoh, 2024). These impairments result in the client's inability to perform physical activities independently, including moving, transferring, and maintaining body balance (Wahyuni, Pristianto, & Efendi, 2023; Sajidin, Indrawati, & Sudiana, 2018). Sustained physical mobility limitations can cause secondary complications such as muscle atrophy, joint contractures, and pressure ulcers (Putri, Jawiah, & Azzahra, 2023; Sentiani, Gustina, & Erda, 2025). Therefore, appropriate rehabilitation interventions are needed to minimize the negative impact of physical mobility impairment in non-hemorrhagic stroke clients (Setyowati et al., 2023; Siwi & Setiawan, 2022).

Passive Range of Motion (PROM) exercises are one effective nursing intervention in addressing physical mobility impairments in non-hemorrhagic stroke patients (Abdillah et al., 2022; Masithoh, 2024). This exercise is performed by passively moving

the client's joints by medical personnel or nurses, without involving the client's muscle contractions (Harahap, 2021; Wahyuni et al., 2023). Research shows that passive ROM can help prevent joint contractures, improve blood circulation, and maintain muscle elasticity in stroke patients (Santjaka, Lestari, & Pujiastuti, 2019; Pristianto et al., 2023). In addition, this exercise has also been shown to improve joint flexibility and prevent motor function decline in clients who are unable to move actively (Setyowati et al., 2023; Iswatun et al., 2022).

A study by Setyowati et al. (2023) shows that regular passive ROM exercises can improve the motor function of non-hemorrhagic stroke patients. This is reinforced by research conducted by Siwi and Setiawan (2022), which found that the application of passive ROM in intensive care units can improve muscle strength and increase patients' mobility. This intervention is also effective in preventing joint contractures and reducing the risk of complications due to long-term immobility (Pristianto et al., 2023; Putri et al., 2023).

Not only at the physical level, passive ROM exercises also have a positive impact on the psychological condition of clients (Novitarum, Sigalingging, & Barus, 2025; Khusnul, 2023). With regular movement, clients experience an improvement in physical ability, which impacts their self-confidence and motivation for recovery (Rohmah, 2021; Musthofa, 2024). This is important in post-stroke rehabilitation efforts, considering that psychological support is one of the main supporting factors in the healing process (Sentiani et al., 2025; Wahyuni et al., 2023).

In the nursing context, the role of nurses in teaching and assisting clients in performing passive ROM is crucial (Masithoh, 2024; Harahap, 2021). Educating the client's family about the correct ROM techniques can accelerate the recovery process and reduce the risk of complications (Pristianto et al., 2023; Siwi & Setiawan, 2022). A holistic approach involving healthcare professionals and the client's family has been shown to improve the effectiveness of therapy (Setyowati et al., 2023; Putri et al., 2023).

The effectiveness of passive ROM is inseparable from the optimal intensity and duration of exercise (Harahap, 2021; Pristianto et al., 2023). Exercises performed consistently during the rehabilitation period can prevent muscle atrophy and maintain

joint elasticity (Masithoh, 2024; Khusnul, 2023). This indicates that passive ROM is an effective non-pharmacological intervention in addressing physical mobility disorders in non-hemorrhagic stroke clients (Siwi & Setiawan, 2022; Wahyuni et al., 2023).

Based on various studies, passive ROM has been proven to improve motor function and prevent complications of immobility in non-hemorrhagic stroke patients (Masithoh, 2024; Harahap, 2021). Consistent and continuous exercise is necessary to maintain joint elasticity and prevent muscle stiffness (Pristianto et al., 2023; Siwi & Setiawan, 2022). Support from medical personnel, nurses, and the client's family is crucial to the successful implementation of passive ROM (Harahap, 2021; Masithoh, 2024).

Based on the description of the data and issues, the researcher is interested in further discussing the Implementation of Range of Motion Exercises for Non-Hemorrhagic Stroke Clients, Mrs. Z, with Physical Mobility Impairment Nursing Problems at the Teratai Pavilion of Dr. H. Koesnadi Bondowoso Regional General Hospital in 2025.

Method

Data collection techniques included interviews, observations, physical examinations, and documentation. Nursing interventions in the form of range of motion exercises were given to patients for 15-30 minutes in the morning and afternoon for three consecutive days, from Wednesday, January 15, 2025 to Friday, January 17, 2025, which included assessment, nursing diagnosis formulation, nursing intervention development, nursing implementation, and nursing evaluation. This aims to increase muscle strength in the weakened extremities of the patient, namely the muscle strength of the left upper and lower extremities.

Results

In the assessment conducted by the researcher, data obtained during the interview revealed that the client, Mrs. Z, is 41 years old and female. She is married with two children and currently lives with her husband and two children. The data obtained from

Mrs. Z during the assessment revealed that she complained of sudden weakness and difficulty moving her left hand and foot.

Nursing Diagnosis

Based on the above data, the client's main diagnosis was Physical Mobility Disorder (D.0054) in accordance with the theory according to (SDKI, 2017) that the characteristic limitation of clients with Physical Mobility Disorder is limitation in physical movement of one or more extremities independently.

Nursing intervention

A researcher provided the intervention of Mobilization Support (I.05173), which consisted of: Observation: Identification of pain or other physical complaints; Identification of physical tolerance for movement; Monitoring of heart rate and blood pressure before starting mobilization; Monitoring of signs of physical mobility impairment; Monitoring of general condition during mobilization. Therapeutic: Facilitate mobilization activities with assistive devices (e.g., bed rails); Facilitate range of motion exercises; Involve family members to help clients improve movement. Education: Explain the purpose and procedure of mobilization; Teach simple mobilization that must be done (e.g., sitting on the bed, sitting on the side of the bed, moving from the bed to a chair).

It is expected that after nursing interventions are performed for 3 x 24 hours, physical mobility will improve (I.05042) with the following outcome criteria: 1. Increased limb movement (5); 2. Increased muscle strength (5); 3. Increased range of motion (ROM) (5); 4. Decreased limited movement (5); 5. Decreased physical weakness (5).

Nursing Implementation

The implementation was carried out for three days. On the first day, January 15, 2025, from 8:00 a.m. to 5:00 p.m. Western Indonesian Time, the researcher identified physical tolerance for movement; monitored vital signs; monitored signs of physical mobility impairment; monitored general condition during mobilization; performed

active and passive range of motion (ROM) exercises for 15–30 minutes in the morning and afternoon, involving family members to assist with the ROM exercises.

On January 16, 2025, from 8:00 a.m. to 5:00 p.m. WIB, the second day of implementation was carried out. The researchers identified physical tolerance for movement; monitored vital signs; monitored signs of physical mobility impairment; monitored general condition during mobilization; performed active and passive range of motion (ROM) exercises for 15–30 minutes in the morning and afternoon; and involved family members to assist with the range of motion (ROM) exercise procedures.

On the last day of implementation, which was carried out on January 17, 2025, from 8:00 a.m. to 10:00 a.m. WIB. The researchers identified physical tolerance for movement; monitored vital signs; monitored signs of physical mobility impairment; monitored general condition during mobilization; performed active and passive range of motion (ROM) exercises for 15–30 minutes; and involved family members to assist with the ROM exercises.

Nursing Evaluation

Nursing evaluations were conducted daily for three days after nursing interventions to assess the client's response to the mobility support interventions that had been implemented. These evaluations used the SOAP format to monitor the client's response to the nursing interventions that had been implemented.

During the evaluation on the first day, January 15, 2025, the following data was obtained Subjective: the client said that his left leg and arm could not be moved and he could not walk properly. Objective: the client's general condition was weak, GCS 445, left upper extremity muscle strength with a score of 1 and left lower extremity muscle strength with a score of 2, the client's vital signs were BP; 150/96 mmHg, N: 80 x/min, RR: 20 x/min, S: 36.6 ˚C, SpO2: 95%. Assessment: Decreased limb movement (1), decreased muscle strength (1), decreased range of motion (ROM) (1), increased limited movement (1), increased physical weakness (1). Plan: Continue interventions 1-7.

On the second day of evaluation, January 16, 2025, the following data was obtained: Subjective: the client reported that his left leg and arm were still heavy to move and he was unable to walk properly. Objective: the client's general condition was

fair, GCS 445, left upper extremity muscle strength rated at 2 and left lower extremity muscle strength rated at 3, vital signs BP; 130/80 mmHg, N: 77 x/min, RR: 20 x/min, S: 36.7 ˚C, SpO2: 98%. Assessment: Movement of the extremities is moderately decreased (2), muscle strength is moderately decreased (2), range of motion (ROM) is moderately decreased (2), limited movement is moderately increased (2), physical weakness is moderately increased (2). Plan: Continue interventions 1-6.

During the evaluation on the third day, January 17, 2025, the following data was obtained Subjective: The client stated that the left leg and arm could be moved, although still weak. Objective: The client's general condition was fairly good, GCS 445, muscle strength of the left upper extremity with a score of 3 and muscle strength of the left lower extremity with a score of 3, the client's vital signs BP; 130/70 mmHg, N: 92 x/min, RR: 20 x/min, S: 36.4 ˚C, SpO2: 98%. Assessment: Moderate limb movement (3), moderate muscle strength (3), moderate range of motion (ROM) (3), moderate limited movement (3), moderate physical weakness (3). Plan: Discontinue client intervention upon discharge from the hospital.

Discussion

Based on the data from the assessment above, it shows that the researcher conducted an assessment on Mrs. Z on January 17, 2025. During the assessment, the client said that her left hand and foot suddenly became weak and difficult to move. This is a sign that Mrs. Z is experiencing physical mobility impairment, so the author made this diagnosis.

Non-hemorrhagic stroke is a type of stroke caused by a blockage of blood flow to the brain, resulting in brain cell damage and physical dysfunction (Abdillah, Istiqomah, & Kurnianto, 2022; Iswatun, Wijayanti, & Silvia, 2022). Physical mobility impairment is a major problem often found in non-hemorrhagic stroke clients due to loss of motor control and decreased muscle strength (Masithoh, 2024; Kharisma, 2020). Prolonged immobility can worsen the client's condition through secondary complications such as muscle atrophy and joint contractures (Santjaka, Lestari, & Pujiastuti, 2019; Sajidin, Indrawati, & Sudiana, 2018). This is in line with Indah Permatasari, Indhit Tri Utami, and Ludiana in a journal entitled Application of Range of Motion (ROM) Therapy To

Increasing Muscle Strength in Patients with Stroke (2024), which explains that stroke is a neurological change caused by a disruption in the blood supply to part of the brain, and a common problem in stroke patients is movement disorders. Muscle weakness in stroke patients affects muscle contraction. The impact of muscle weakness associated with a lack of physical activity is usually evident in several ways.

The researchers concluded that Mrs. Z's physical mobility impairment was caused by a non-hemorrhagic stroke, with several supporting data obtained by the researchers in the form of both subjective and objective data.

Devi Mediarti et al. (2024) concluded that providing ROM exercises for clients with non-hemorrhagic stroke who have physical mobility issues in the morning and evening for approximately 30 minutes, with 4-8 repetitions of each movement, showed effectiveness in increasing muscle strength. A study by Triyana A, et al. (2023) reported that Range of Motion (ROM) exercises, administered actively or passively to clients with non-hemorrhagic stroke, were able to overcome physical mobility disorders. Although the data from this case study is preliminary and descriptive, the findings provide preliminary evidence that range of motion exercises are effective in reducing physical mobility disorders.

Passive Range of Motion (PROM) exercises are one of the effective nursing interventions in addressing physical mobility impairments in non-hemorrhagic stroke clients (Abdillah et al., 2022; Masithoh, 2024). This exercise is performed by passively moving the client's joints by medical personnel or nurses, without involving the client's muscle contractions (Harahap, 2021; Wahyuni et al., 2023). Research shows that passive ROM can help prevent joint contractures, improve blood circulation, and maintain muscle elasticity in stroke patients (Santjaka, Lestari, & Pujiastuti, 2019; Pristianto et al., 2023). In addition, this exercise has also been proven to improve joint flexibility and prevent motor function decline in clients who are unable to move actively (Setyowati et al., 2023; Iswatun et al., 2022).

The researchers assumed that providing range-of-motion exercises is an effective form of non-pharmacological therapy to increase the strength of the client's limb muscles. Therefore, the researchers formulated a nursing plan for Mrs. Z, which included range-of-motion exercises to increase the strength of the client's limb muscles.

Based on the data obtained, the intervention to be given to Mrs. Z with Non-Hemorrhagic Stroke is to provide range of motion exercises.

Range of Motion Exercises involve active and passive movements of the joints to maintain and restore joint flexibility and improve circulation (PPNI, 2021). A study by Setyowati et al. (2023) shows that regular passive ROM exercises can improve the motor function of non-hemorrhagic stroke patients. This is reinforced by research conducted by Siwi and Setiawan (2022), which found that the application of passive ROM in intensive care units can improve muscle strength and enhance the mobility of patients. This intervention is also effective in preventing joint contractures and reducing the risk of complications due to long-term immobility (Pristianto et al., 2023; Putri et al., 2023).

The effectiveness of passive ROM is inseparable from the optimal intensity and duration of exercise (Harahap, 2021; Pristianto et al., 2023). Exercises performed consistently during the rehabilitation period can prevent muscle atrophy and maintain joint elasticity (Masithoh, 2024; Khusnul, 2023). This indicates that passive ROM is an effective non-pharmacological intervention in addressing physical mobility disorders in non-hemorrhagic stroke clients (Siwi & Setiawan, 2022; Wahyuni et al., 2023).

Based on various studies, passive ROM has been proven to improve motor function and prevent complications of immobility in non-hemorrhagic stroke patients (Masithoh, 2024; Harahap, 2021). Consistent and continuous exercise is necessary to maintain joint elasticity and prevent muscle stiffness (Pristianto et al., 2023; Siwi & Setiawan, 2022). Support from medical personnel, nurses, and the client's family is crucial to the successful implementation of passive ROM (Harahap, 2021; Masithoh, 2024).

According to the researcher's opinion, the implementation of Range of Motion exercises can address physical mobility impairments. The implementation provided to the client, Mrs. Z, with a nursing diagnosis of Physical Mobility Impairment, was in accordance with the Indonesian Nurses Association's Standard Operating Procedures.

Evaluation of the implementation of Range of Motion Exercises on client Mrs. Z with a nursing diagnosis of Physical Mobility Impairment, has been given for 3 days by the researcher with a duration of 15-30 minutes each time.

On the first day, Wednesday, January 15, 2025, it was found that the client's left leg and arm could not be moved, but the client was able to listen quite well to the researcher's explanation when giving instructions on how to perform the range of motion exercise steps. The client was able to follow each step in performing the range of motion exercise but with the help of nurses and family because the client's general condition was still weak. The client was also able to repeat the range of motion exercises twice per session, although still with the assistance of a nurse, with each session lasting 15–30 minutes.

On the second day, Thursday, January 16, 2025, the client said that his left leg and arm were still heavy to move and he was still unable to walk properly after the range of motion exercises on Wednesday, January 15, 2025. During the second session, the client was able to follow each step in performing the range-of-motion exercises but still required assistance from the nurse and family, although the overall condition had improved. The client was very enthusiastic when asked by the researcher how they felt during the range-of-motion exercises that had been taught.

The range of motion exercises we have implemented are in accordance with Cahyati's (2021) opinion that joint movement exercises or Range Of Motion (ROM) are one form of implementation that nurses can do to improve the quality of life of clients affected by stroke. Both passive and active range of motion exercises are carried out as an effort to prevent contractures. Contractures can occur daily if immobilization lasts for 8 hours. Therefore, movement training is performed on the fingers and toes, wrists and ankles, elbows, arms, knees, and legs, in collaboration with a physiotherapist, to improve active movement ability, restore joint flexibility, and prevent deformities.

Passive ROM exercises in stroke patients can be an alternative to influence and improve joint range in the upper and lower extremities. The analysis results show that passive ROM can increase joint range, where the contraction and relaxation reactions during passive ROM movements performed on stroke patients increase blood flow and stretch muscle fibers in the paralyzed joint area. Performing passive ROM can be an alternative option in increasing joint range in stroke patients with paralysis.

The results of research conducted by Rahayu (2024) state that ROM exercises can increase flexibility and range of motion in stroke patients, prevent joint stiffness and

flexibility decline, and stimulate increased chemical, neuromuscular, and muscular activity.

Range of motion exercises for stroke patients can be an alternative to influence and improve joint range of motion in the upper and lower extremities. The results of the analysis show that passive range of motion exercises can increase joint range, where the contraction and relaxation reactions during passive ROM movements performed on stroke patients increase blood flow and stretch muscle fibers in the paralyzed joint area, thereby increasing the abduction-adduction range of motion in the upper and lower extremities only in the large joints. Performing passive ROM can be an alternative option in increasing joint range in stroke patients who experience paralysis.

The researchers' opinion after implementation was that there were changes before and after the range of motion exercises were performed on the clients. These range of motion exercises can be incorporated into the clients' daily routine by scheduling them twice a day, in the morning and afternoon, for six days, with a duration of 15-30 minutes, which can increase muscle strength in the weakened extremities. Therefore, range of motion exercises can be used as a non-pharmacological therapy for non-hemorrhagic stroke patients, especially those with physical mobility disorders.

Conclusion

Range of motion (ROM) exercises are one of the most effective nursing interventions for treating physical mobility disorders in clients with non-hemorrhagic strokes. These exercises are performed by passively moving the client's joints by medical personnel or nurses, without involving muscle contraction from the client. Passive ROM plays an important role in preventing joint contractures, improving blood circulation, and maintaining muscle elasticity in stroke clients. In addition, this exercise has also been proven to improve joint flexibility and prevent motor function decline, especially in clients who are unable to move actively.

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