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Implementation of Intervention Through Range of Motion (ROM) Exercises to Overcome Physical Activity Mobility Impairment in Mrs. R in the Stroke Unit of RSD Gunung Jati, Cirebon City

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ABSTRACT

Background & Objective: Non-hemorrhagic stroke is a stroke that occurs due to a blockage in the blood vessels caused by a disruption in the blood supply to the brain, resulting in the cessation of blood flow to the brain. Stroke can cause disability in one of the limbs and weakness in one of the limbs. This results in the loss of coordination and the loss of balance. Therefore, therapy is needed to improve muscle strength in stroke patients through Range of Motion interventions. This final scientific work aims to analyze nursing care for patients with physical mobility disorders. **Method:** The research method used is a case study. The subject in this case involves one respondent with a non-hemorrhagic stroke and physical mobility disorders who is undergoing treatment in the stroke unit at RSD Gunung Jati. Data collection was conducted using interview, observation, and documentation techniques. **Result:** The nursing diagnoses identified for Mrs. R included physical mobility impairment, anxiety, and acute pain. The interventions provided were based on the Indonesian Nursing Diagnosis and Intervention Standards (SDKI and SIKI) and the principles of Evidence-Based Nursing (EBN). The implementation of interventions such as mobility support, although not yet fully optimal within 3 days. Range of Motion (ROM) exercises were found to have a positive impact on improving muscle strength and joint flexibility in patients, as well as reducing stiffness and pain symptoms. **Conclusion:** It is recommended to implement nursing care for stroke patients by applying

Evidence-Based Nursing (EBN), specifically: Range of Motion.

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Introduction

Stroke is one of the diseases that poses a serious health problem worldwide. It is a leading cause of death and disability, ranking after cancer and heart disease. This condition occurs due to blockage or obstruction in the blood vessels, disrupting blood flow to the brain and causing hypoxia, or due to the rupture of a blood vessel (Nofrel et al., 2020). Some also define stroke as a condition in which brain cells are damaged due to oxygen deprivation caused by impaired blood flow to the brain. Oxygen deprivation in certain parts of the brain can lead to dysfunction in those specific areas (Pratiwi et al., 2019).

According to Siregar et al. (2019), stroke is a brain disease characterized by a sudden onset of local or global neurological dysfunction that progresses rapidly. Neurological impairment in stroke is caused by non-traumatic cerebral circulation disorders. Furthermore, Azizah & Wahyuningsih (2020) explain that non-hemorrhagic stroke occurs due to a blood clot obstructing an artery or arteries leading to the brain, or an embolus originating from the heart or extracranial arteries (arteries outside the skull) that blocks one or more intracranial arteries.

Data from the World Stroke Organization (WSO) in 2019 recorded approximately 13.7 million people experiencing stroke, with 52% of cases occurring in men and 60% in individuals under the age of 70 (Hidayah et al., 2022). In the same year, the World Health Organization (WHO) reported 13.7 million new stroke cases annually, with around 5.5 million deaths caused by this disease. Approximately 70% of stroke cases and 87% of stroke-related deaths and disabilities occur in low- and middle-income countries. Based on the 2018 Basic Health Research (Riskesdas) data, there was an increase in hypertension and stroke cases compared to 2013. The prevalence of hypertension rose from 25.8% in 2013 to 34.1% in 2018, while the prevalence of stroke increased from 7% to 10.9% over the same period. Nationally, in 2018, the prevalence of stroke in Indonesia based on a doctor's diagnosis among people aged ≥15 years was recorded at 10.9%, equivalent to 2,120,362 individuals. West Java Province reported a stroke prevalence of 11.4%, equivalent to approximately 131,846 patients. In 2018, the highest prevalence was found among individuals aged 75 years and above (50.2%), while the lowest was among those aged 15–24 years (0.6%). Based on gender, stroke occurred slightly more often in men (11%) than in women (10.9%) (Siti Julaeha, 2023).

According to data from the Cirebon City Health Office in 2016, particularly in the field of Disease Prevention and Control (P2P), stroke was among the top ten most common non-communicable diseases in the region. The report noted that the number of existing stroke cases under monitoring reached 189 male patients and 89 female

patients. In addition, there were 137 newly diagnosed cases in men and 95 in women. These figures indicate that stroke is a serious and growing health issue in Cirebon City, both in terms of existing and newly detected cases during that period (Cirebon City Health Office, 2016). Preliminary studies showed that from January to December 2022, there were 288 stroke cases at RSD Gunung Jati, and in February 2023 alone, 36 cases were recorded in the hospital's stroke unit (Siti Julaeha, 2023).

Changes in lifestyle such as irregular eating habits, lack of exercise, excessive working hours, and frequent consumption of fast food have become common practices that increase the risk of stroke. Stroke is a critical health problem that requires special attention. Based on field observations, early mobilization in stroke patients has not yet received sufficient focus. Lack of physical activity after stroke can restrict joint range of motion, which, if persistent, can lead to total dependency, disability, or even death (Sholihany, 2021).

Stroke can cause disabilities such as hemiplegia and hemiparesis. Hemiplegia refers to paralysis of one side of the body, while hemiparesis is weakness of one side of the body. These conditions result in loss of coordination and balance. Therefore, therapy is needed to improve muscle strength in stroke patients, particularly in weakened extremities that hinder daily activities (Fitrian, 2022). Non-hemorrhagic (ischemic) stroke patients often experience impaired physical mobility due to hemiparesis or hemiplegia. Inability to move independently can cause complications such as muscle atrophy, contractures, and deep vein thrombosis (DVT). ROM interventions play an important role in preventing these complications and supporting the rehabilitation process.

Physical mobility or mobilization is the individual's ability to move freely, easily, and regularly to meet activity needs for maintaining health. One of the exercises that can be performed is the Range of Motion (ROM), commonly known as flexibility or joint movement exercises. One type of ROM exercise is functional hand training (Power Grip), which includes the Cylindrical Grip—a functional hand exercise where the patient grips a cylindrical object. In this grip, the fingers are flexed with the thumb bent over the index and middle fingers. This movement mainly involves the flexor digitorum profundus, with the flexor digitorum sublimis and interosseous muscles assisting when greater strength is required (Resmi Pangaribuan, 2021).

For stroke patients, the most common nursing problem is impaired physical mobility, often resulting from blood circulation blockage. Therefore, once neurological and hemodynamic conditions stabilize, stroke patients should be mobilized as early as possible. Routine mobilization can prevent post-stroke consequences, particularly contractures. These exercises aim to reduce dependency on others, enhance self-esteem, and improve coping mechanisms after hospitalization (Kune, 2022).

Several studies have shown that physical therapy can improve muscle strength, including through ROM exercises. ROM is part of physical rehabilitation; stroke patients with hemiparesis perform ROM therapy to improve muscle strength and coordination. If performed early, correctly, and consistently, ROM exercises can

significantly increase muscle strength. On average, ROM exercises improve both muscle power and function. The active ROM method aims to train muscle and joint flexibility and strength by using the patient's own muscles actively, making it more effective in improving muscle power. By performing ROM therapy twice a day for five consecutive days, joint movement improved from 64% to 91% (Purba et al., 2022).

Objective

Based on the background description above, the author is interested in implementing Nursing Intervention with ROM to overcome Physical Activity Mobilization Disorders in Mrs. R with Non-Hemorrhagic Stroke in the Stroke Unit of Gunung Jati Hospital, Cirebon City.

Method

The type of research used in this study is qualitative research with a case study design. A case study is a type of research in which the researcher explores a specific phenomenon (case) at a particular time and activity, and collects detailed and in-depth information using various data collection procedures over a specific period (Nasarudin, 2024). The research subject consists of one person with the initials (Mrs. R). Data collection was conducted using direct interviews, observations, and documentation. Data validity was maintained through the application of the principles of credibility, dependability, confirmability, and transferability. The data obtained were then analyzed descriptively using a nursing care approach, which includes the stages of assessment, diagnosis, planning, implementation, and evaluation of nursing actions, with the aim of improving the patient's health status. This study was conducted from January 20, 2025, to January 22, 2025, in the Stroke Unit of Gunung Jati Regional Hospital in Cirebon City, thereby providing a comprehensive overview of nursing issues in non-hemorrhagic stroke patients within the context of a case study.

Results

TABLE 1. Laboratory test results

Type of Test	Results	Reference Value	Unit
Glucose	282	74-200	Mg/dL
Urea	270	15-45	Mg/dL
Creatinine	0.50	0.60-0.90	Mg/dL

TABLE 2. Radiology Examination Results

Radiology Examination	Reference value
Head CT Scan	Infarction in the left parietal area
Chest X-ray	No pulmonary abnormalities

Discussion

Based on Table 1, assessment is the initial stage in the nursing process that is very important for comprehensively identifying patients' health problems. In the case of Mrs. R, a 57-year-old woman, laboratory test results showed hyperglycemia with a random glucose level of 282 mg/dL and very high urea of 270 mg/dL. Both of these values can worsen the patient's neurological condition. Uncontrolled hyperglycemia is one of the main risk factors for stroke and can slow down the recovery process (Permatasari et al., 2024). This data confirms that the non-hemorrhagic stroke experienced by the patient has a significant impact on the neuromuscular system and mobility.

Based on Table 2, the results of radiological examinations in Mrs. R's case provide important insights for establishing a diagnosis and determining the direction of nursing interventions. The CT scan of the head showed an infarction in the left parietal area, which is evidence of a non-hemorrhagic stroke and explains the motor weakness in the patient's right extremities. This finding aligns with Mrs. R's clinical symptoms, namely weakness in the right hand and foot, and supports neurological data indicating reduced muscle strength on that side of the body. Additionally, the chest X-ray results showed no abnormalities in the lungs, allowing the focus of treatment to be entirely directed toward restoring the patient's neurological function and mobility. This radiological examination was very helpful in confirming the location and type of brain lesion, as well as ruling out other possible causes such as bleeding or lung abnormalities that could worsen the patient's condition. Thus, the radiological results serve as an important foundation for planning and implementing targeted and effective nursing care for patients with non-hemorrhagic stroke.

An evaluation after three days of intervention showed no significant improvement in the strength of the patient's right hand and leg muscles, but no further decline in muscle strength was observed. This indicates that the passive ROM intervention provided was effective in preventing immobilization complications such as contractures and muscle atrophy, though it was not yet able to optimally improve muscle strength in the short term. These findings are consistent with the literature, which states that ROM exercises are important for maintaining joint and muscle function in stroke patients, as well as promoting improved blood circulation and body metabolism. In addition, family involvement in the rehabilitation process has been shown to increase patient motivation and activity, thereby supporting the gradual recovery of mobility function.

Conclusion

The systematic application of nursing care with passive ROM exercises for three days in non-hemorrhagic stroke patients was effective in preventing muscle strength decline and immobilization complications, although no significant improvement in limb strength was observed. Family involvement played a vital role in rehabilitation. Nurses are advised to conduct regular ROM exercises with family support and provide education to accelerate recovery and enhance patient independence.

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