

**RANGE OF MOTION (ROM) EXERCISES USING HANDBALL GRASP
THERAPY ON PHYSICAL MOBILITY DISORDERS IN POST-OPERATIVE
PATIENTS UPPER EXTREMITY FRACTURES**

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ABSTRACT

This study aims to assist nurses in providing better nursing care to patients by explaining the effect of handball therapy on physical immobility in patients with post-operative upper extremity fractures. The results of the study showed that the nursing assessments carried out on patients 1, 2 and 3 were in accordance with existing theories, the data obtained were in accordance with existing theoretical studies so that the data could be used as material to determine actions at the next stage. Conclusion, From the assessment of the three patients who had been given exercises (ROM) using handball therapy S: The patient said he was able to perform simple mobilization movements (ROM) on his right hand after surgery, the patient said when moving his right hand it was no longer so painful O: K.U is good, the patient appears to be able to perform ROM movements on the fingers of his right hand and is able to lift both hands A: Physical Mobility Disorders Resolved P: Maintain intervention.

Keywords: ROM Exercise, Handball Grasp, Fracture

INTRODUCTION

Fractures are also called broken bones, which are partial or complete damage to the continuity of the bone that occurs due to direct impact when the pressure given exceeds the bone's capacity to absorb it; if the bone cracks, the surrounding tissue is also disrupted. The aspect of the fracture is determined not only by the density of bone mass, but also by other aspects such as physical weakness (frailty) and increased aspects of falling the incidence of fractures is on the rise, with a total of 13 million individuals suffering from fractures in 2020, with a frequency of 2.7% (Qasanah et al., 2023).

Fractures occurred in around 15 million people in 2019, with a prevalence rate of 3.2%, while fracture cases jumped to 21 million individuals in 2018, with a frequency rate of 3.8% due to vehicle accidents (Hafifah & Oktariani, 2021). Data in Indonesia on fracture incidents from (Kemenkes RI, 2020) A total of 1,775 individuals (3.8%) of 14,127 blunt or sharp instrument traumas suffered fractures, a total of 236 individuals (1.7%). Trauma is the most common cause of death in people aged 1-44 years worldwide. The largest death ratio (1.2 million per year) results from road accidents.

Upper extremity fractures are common injuries and often require surgical intervention for optimal recovery. However, after the surgical procedure, patients often experience significant impairment of physical mobility due to immobilization and activity restrictions. Mobility refers to an individual's capacity to move freely, easily, and consistently to meet the demands of a healthy behavioral style. Every individual needs to move, low capacity to move leads to assistance and detrimental behaviors.

One of the rehabilitation approaches that can be tested to overcome this disorder is ROM exercises. ROM exercises aim to increase joint flexibility, strengthen muscles, and reduce post-operative pain (Latifah, 2020). Once the bone heals after surgery, range of motion (ROM) can be restored as quickly as possible to overcome the limitations of physical mobility in the fracture. Range of motion (ROM) exercises involve the greatest possible range of motion of the joint. ROM is often understood as activity or mobilization exercises, and supports clients with mobility limitations to rebuild muscle mass and move. Therefore, a healing process is needed, which includes mobilization (Fitamania et al., 2022; Indrawan & Hikmawati, 2021).

Practicing gripping a ball with a flexible and smooth texture stimulates muscle fibers to contract even if it is only a small contraction every day (Appulembang & Sudarta, 2022; Azizah & Wahyuningsih, 2020). Several studies have shown that ROM exercises using handball therapy can provide significant benefits in accelerating recovery and improving the quality of life of patients after upper extremity fracture surgery.

According to the study results Sharma et al., (2022) This reported case demonstrates successful management of a 44-year-old woman after a displaced fracture of the proximal third of the radius. After elbow trauma, not only the elbow joint but also the wrist joint also shows limitations due to immobility. Joint stiffness is also accompanied by weakness of the muscles of the hand, arm, and forearm. A proper and appropriate postoperative protocol is important for patient rehabilitation so that ADL and Instrument-assisted Activities of Daily Living (IADL) can be successfully performed. A multi-treatment approach is an effective way to enhance rehabilitation and facilitate early recovery in patients with postoperative elbow stiffness.

Research result Abd et al., (2023) this illustrates that there is a statistically significant difference between the study group and the control group regarding the mean score of the total shoulder function index during the follow-up period after the implementation of postoperative exercises for proximal humerus fractures. This indicates that exercise intervention has a positive effect on shoulder function in patients undergoing proximal humerus fracture surgery.

Muscle weakness can be overcome by doing ball grip therapy exercises to stimulate the hand or upper extremity while holding a ball in the palm. This therapy is very successful because it helps optimize muscle strength by squeezing the ball, which stimulates the movement of the fingers to clench tightly with the hand. Ball grip treatment is very important to stimulate muscle contractions, especially in the fingers, and train movements relevant to daily tasks such as adduction, abduction, flexion, and extension (Khaliri & Waliyanti, 2023).

RESEARCH METHOD

The research design used in this research was case study. Case study research is a study that explores a nursing problem with detailed limitations, has in-depth data collection and includes various sources of information. Case study research is limited by time and place, and the cases studied are events, activities or individuals. This case study research is a study to explore the problem of nursing intervention at RSUD Wangaya, the time of this research was 21-25 September 2024.

FINDINGS

Nursing diagnosis is based on clinical judgment of the patient's reaction to real or imagined health problems or life events. The purpose of nursing diagnosis is to decide how the patient is reacting to the health problem.

In conducting an assessment on September 21, 2024 on Mr. Y with complaints of pain in the left hand, the patient's family said that the patient fell from a chair placed on the table while cleaning the AC at home BP: 137/97 mmHg, N: 110 x / minute, RR: 22 x / minute, S: 36.6 ° C. With nursing problems of impaired physical mobility related to damage to the integrity of the bone structure as evidenced by the patient's complaints of having difficulty moving, feeling afraid and anxious when moving, the patient's movement is limited, muscle strength is reduced.

In the assessment on September 22, 2024, Mr. T Pain in the right hand and waist, the patient came with complaints of pain in the right hand and waist after falling while repairing the roof of the house. With BP examination: 130/80 mmHg, N: 82 x / minute, RR: 20 x / minute, S: 36.1 ° C. With the nursing problem of Impaired Physical Mobility related to damage to the integrity of the bone structure, as evidenced by the patient complaining of not being able to do activities due to pain that makes the patient limited in moving, the patient looks grimacing, the patient looks only lying in bed looks limited, the patient's physique looks weak, activity and movement are reduced, muscle strength is reduced.

In the assessment on September 22, 2024, Mrs. S Pain in the right hand The patient came with complaints of pain in the right hand due to falling, difficulty using the right hand due to pain. With BP examination: 110/70 mmHg, N: 80 x / minute, RR: 20 x / minute, S: 36.2 ° C. The patient's complaints in the form of pain and other symptoms indicate a problem of impaired physical mobility that must be treated by a nurse. This disorder is related to damage to the bone structure, feeling afraid, anxious when moving, the patient appears to be grimacing, the patient appears to be only lying in bed, looks limited, the patient's physique appears weak, activity and movement are reduced, muscle strength is reduced.

DISCUSSIONS

Traumatic fractures occur suddenly due to strong direct or indirect force, while repetitive stress fractures are common in athletes, dancers, and soldiers. In contrast, pathological fractures can occur due to abnormal weakening of the bone (Kemenkes RI, 2020).

Regarding the third nursing problem, the problem of physical mobility (lower muscle strength in the upper extremities). According to Arifianto & Koeswanti (2022) immobility, also known as impaired physical mobility, is characterized by a person's inability to move all or part of their lower extremities, as well as limitations in their ability to move independently and in a purposeful manner. Immobility, in

the form of bed rest, limited mobility with the use of external assistive devices, limitations in voluntary movement, or even complete paralysis, may occur as a result of altered physical mobility. This results in a person's inability to move freely due to obstacles in their path.

Based on the three cases of the study by the researcher Nursing problems related to physical immobility, especially decreased upper extremity muscle strength, have piqued the author's interest in developing a method of postoperative grip muscle strength training, especially rubber ball grip range of motion therapy. This intervention, which involves teaching patients to do range of motion (ROM) exercises performed with a rubber ball is excellent for strengthening muscles that are important for daily tasks, especially those involving the fingers.

Based on the analysis of the nursing problems obtained from the three patients, the interventions provided were, for example, monitoring the patient's vital signs when they moved, teaching them how to hold a rubber ball, involving the people they cared about so they could help the people they cared about to move better, and explaining what mobilization is and how it works. By holding a ball, this innovative exercise ball grip therapy can help improve hand motor skills. According to Tanjung (2023) that tightening the grip on the hand will cause one's muscles to contract, allowing one's brain to regain control of the muscles.

This intervention was performed once a day for three days. Sensorimotor receptors can be trained using this method. In addition to strengthening the muscles in the hand, the authors claim that patients can easily practice rubber ball therapy at home with the available equipment. For patients suffering from muscle weakness, especially in the hands and arms, rubber balls are a practical and easy-to-carry solution.

Next, after being given nursing intervention for 3x24 hours, then conduct a nursing evaluation. Nursing evaluation on patient 1 (Mr. Y) found that the patient said he was able to do simple mobilization movements (ROM) on his left hand after surgery, the patient said when moving his right hand it was no longer so painful, the patient seemed to be able to do ROM movements on his right fingers and was able to lift both hands.

Meanwhile, the nursing evaluation of patient 2 (Mr. T) found that the patient said that he was able to perform simple mobilization movements (ROM) on his right hand after surgery, the patient said that when moving his right hand it was no longer so painful, the patient appeared to be able to perform ROM movements on his right fingers and was able to lift both hands.

In the nursing evaluation of patient 3 (Mrs. S), it was found that she was able to perform simple mobilization movements (ROM) on her right hand after surgery. The patient said that when she moved her right hand, it was no longer so painful. The patient appeared to be able to perform ROM movements on her right fingers and was able to lift both hands.

Handball therapy is one of the effective methods in implementing ROM exercises. Handball can be used to train joint movements regularly and in a controlled manner, thus helping the recovery process of the patient's physical mobility. Several studies have shown that ROM exercises using handball therapy can provide significant benefits in accelerating recovery and improving the quality of life of post-operative patients with upper extremity fractures (Judha et al., 2024).

Ball grip therapy involves strengthening weak muscles by stimulating the hands and upper limbs with a ball held in the palm of the hand. Squeezing the ball in a certain way trains the fingers to grip tightly, which in turn optimizes muscle strength, making this therapy a powerful tool. To develop movements such as adduction, abduction, flexion, and extension movements that are relevant to everyday life, ball grip therapy is essential (Khaliri & Waliyanti, 2023).

Research result Abd et al., (2023) this illustrates that statistical analysis revealed a significant difference between the experimental group and the control group regarding the mean score of the total shoulder function index during the follow-up period after the implementation of postoperative exercises for proximal humerus fracture. This indicates that the exercise intervention has a positive effect on shoulder function in patients undergoing proximal humerus fracture surgery.

Swelling weakens the muscles, which in turn causes pain, limited movement, and impaired activity. When a patient has a right leg fracture and cannot move freely, it is often because he does not know how to do range of motion exercises and thinks that moving will slow down the healing process (Bachtar, 2021).

CONCLUSION

The nursing assessment carried out on patient 1, 2 and patient 3 was in accordance with existing theory, the data obtained was in accordance with the existing theoretical review so that the data could be used as material to determine action at the next stage.

The nursing diagnosis that emerged in both patients was in accordance with the theory taken between patients 1, 2 and patient 3, namely based on this case study the diagnosis used was Physical Mobility Disorder related to damage to bone structure.

Nursing interventions and innovation interventions provided to patients 1, 2, and 3 involved monitoring the patient's vital signs as they moved, helping them move with a rubber ball, involving family members to help with better movement, and explaining the process and purpose of mobilization. The nurse will monitor the patient's vital signs as they move the rubber ball, explain the process and purpose of mobilization, and involve the patient's loved ones to help with patient mobility.

From the study of the three patients who had been given exercises (ROM) using handball therapy S: The patient said he was able to perform simple mobilization movements (ROM) on his right hand after surgery, the patient said when moving his right hand it was no longer so painful O: K.U is good, the patient appears to be able to perform ROM movements on the fingers of his right hand and is able to lift both hands A: Physical Mobility Disorders Resolved P: Maintain intervention.

SUGGESTION

It is expected for further researchers to develop the results of this study by using more detailed methods such as conducting detailed and clear interviews with clients, and developing the title of this study more interestingly by using the latest sources. As a study material that can be used to improve understanding and knowledge about the effectiveness of Range Of Motion (ROM) exercises using handball therapy on physical immobility in post-operative patients with upper limb

fractures. Educational institutions can use the results of this study as a reference in developing education.

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