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Deep Breathing Relaxation Therapy for the Implementation of Acute-Pain in Post-ORIF of Patella Sinistra Fractures Patients

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ABSTRACT

Objective: The study aims to find out whether the intensity of pain decreases after the application of non-pharmacological techniques of deep breathing relaxation.
Method: Method used in descriptive case study with approach to nursing process. Population in this study of post-ORIF of fractures patella sinistra patients in Wijayakusuma ward Kardinah Hospital, Tegal City, who have experienced acute pain nursing problems. Data collection in this study was carried out through interviews, observations, and physical examinations. The analysis of data in this study is performed in a descriptive narrative manner using PDCA for patient development, the presentation of data is described descriptively to know the results obtained during conducting a case study.
Result: The results of the study showed that the respondent's pain intensity decreased from a 5 pain score to a 3 pain score after non-pharmacological respiratory relaxation therapy was administered.
Conclusion: Deep breathing relaxation therapy can be used to reduce the intensity of pain in post-orif fractural respondents. It is hoped that this non-pharmacological breathing relaxation technique can be used by health care professionals, especially nurses, as a way to reduce the scale of respondent pain.

Keywords: acute pain, deep breathing, fractures, non-pharmacological techniques

Introduction

A fracture is a damage or crack of the bone caused by injury, physical stress, stiffness, angle, condition of the soft tissue that surrounds the bone, which determines whether the bone is broken completely or not. One of the health problems that is frequently faced and

becoming concern throughout the world's health centers is fractures (Reskita, 2018). According to the World Health Organization (WHO), every year at least 5 million people die from fractures, and fracturing accounts for 9% of deaths worldwide and poses health threats worldwide. Traffic accidents cause at least 1.35 million deaths each year. About 20 to 50 million people suffer non-fatal injuries, and many suffer fractures. In developing countries, the number of deaths per 100,000 population continues to rise (24.1% and 18.4% respectively).The incidence of fractures in Indonesia was recorded at 5.5%. Injury to a part of the body is the most common, with the most occurring in the lower limbs of 67.9%. Motorcycle accidents (40.6%) and falls (40.9%) are one of the leading causes of bone fractures, followed by bulky injuries or stabbing (7.3%), other land transport accidents (7.1%) and falling (2,5%). According to a study in Indonesia, fractures are the third cause of death after tuberculosis and coronary heart disease. Indonesia is one of the countries in Southeast Asia with the highest rate of fracture, with about 1.3 million fractures per year and a population of about 238 million people (Sandra et al., 2020).

The number of work-related accidents in Indonesia increased by 1% each year from 2013 to 2018. The most affected body parts were the lower limbs 67.9% and the upper limbs 32.7%. The number of injuries in West Java is mainly due to traffic accidents. The province of North Sulawesi has the highest number of injuries, which is 3.5%, West Java occupies the 19th place after DKI Jakarta about 2.2% of cases per year (Utari et al., 2019). The prevalence of fractures in Central Java reached 64,5% in 2018. According to data from RSUD Kardinah Kota Tegal in Lavender Lower Room, as many as 51 patients had fractures in the last month. The phenomena in the hospital indicate that patients experience various barriers in care such as pain, self-care such as bathing, difficulty in moving, potential exposure to infections, changes in tissue circulation, risk of skin damage, anxiety, lack of knowledge, and constipation (Yusuf, 2018).

Pain is the most common problem with fractures. Pain is the body's defense mechanism and control against danger. Pain in fractures is usually acute, this pain can cause frustration and anxiety, which can then lead to psychological depression. Blood pressure rises and heart rate increases, which can weaken the immune system. That's the impact of fracture pain on stress and anxiety on the client. As a result of these fractures, respondents encountered various obstacles to meeting their basic needs. Such as disturbances of sense of comfort, pain, limitation of physical function and anxiety (Yulafni, 2021).

An attempt or way to relieve pain is pain management that includes pharmacological and non-pharmacological interventions. Pharmacological therapy is a collaboration between nurses and doctors where pain relievers are given to reduce the patient's pain. Non-pharmacological treatment therapy is a procedure that reduces pain reactions without pharmacological agents (Hermanto et al., 2020). Based on the above phenomenon, then the researchers will perform nursing care with non-pharmacological techniques of deep breath relaxation in patients post ORIF fractures of patella sinistra. The aim of this study is to know the effectiveness of non-pharmacological techniques of deep breathing relaxation in reducing the intensity of pain in respondents post-orif patella sinistra fractures in the Wijayakusuma ward Kardinah Hospital, Tegal City.

Objective

The aim of this study was to find out if there was a decrease in the intensity of pain after the administration of non-pharmacological techniques of deep breathing relaxation.

Method

This type of scientific writing work is written with the design of case study descriptive case study on respondents post orif fractur patella sinistra. The focus on this case study was the post-ORIF respondent of patella sinistra fractures in the Wijayakusuma ward Kardinah Hospital, Tegal City who experienced acute pain nursing problems. The sample-taking technique used in this case study is purposive sampling, where the sample is targeted in the process of nursing as many as 1 people with post- ORIF diagnosis of patella sinistra fracture. Interviewing, observation and physical examination are the data collection methods used in this study. This method of interviewing is carried out by asking questions to the respondents and their families who are responsible for respondents. The observation method was performed on respondents that were performed over 3 days to see the general condition of respondents and respondents' response to the nursing care provided. Other complaints experienced by respondents are determined through physical examination to determine nursing measures. Physical examination is done by Inspection, Palpation, Percussion, Auscultation. This case study uses data analysis in a descriptive way using plan do check action / PDCA to record respondents on the progress that has been made.

The effectiveness of non-pharmacological therapy of respiratory relaxation is assessed on the basis of the scale of pain after the administration of depth breathing relaxation therapy, the expected criteria are a decrease in pain complaints, a decreased anxiety and recurrent pain, reduced fear of serious injury.

Results

In this section is described the picture and discussion of the implementation of respondents with acute pain due to post-ORIF fractur patella sinistra in Wijayakusuma ward Kardinah Hospital, Tegal City. Conceptually and theoretically, the discussion focuses on aspects of nursing examination, nursing diagnosis, nursing plan, implementation, and evaluation.

Assessment

The examination was carried out on respondents with post-orif diagnosis of patella sinistra fractures obtained the results of the general composmental condition, examination of vital signs TD: 131/67 mmHg, temperature 36.4 °C, pulse 88x / minute, breathing 20x / min. The results of the review of the main complaints of respondents said that after the operation respondents complained of pain in the left knee, pain such as scratching, pain scale 6, pain disappeared. Respondents complained that they could only lie in bed, eat and drink and urinate with the help of family members. Respondents also complained that they were unable to perform activities such as sitting or bending to the left or right and that the client did not understand about wound care and wound condition because of the first surgery. Respondents seemed to grieve pain, respondent movements were limited and respondents were just lying in bed.

Physical examination results obtained composmental general condition, normal skin and nails examination, normal head, normal eyes, normal ears, normal nose and sinuses, normal mouth and throat, normal neck, normal chest and spine, normal breathing, normal cardiovascular, normal gastrointestinal, normal muscle, musculoskeletal system: The muscle tone of the extremity is not disturbed, the muscle tonus is limited, the upper extremity strength is normal, the strength of the lower extremity of the patella sinistra is not strong, the

range of motion is restricted, the edema of the leg is not present, the right bisp reflex is normal left normal, normal right trisp reflex left normal normal, left normal right patella reflex is limited, normal left right achilles reflex is not normal, no deformation of the joint extremity pain Yes P : Mobilization Q : Like iris terrier R : left patella S : 5 T : Loss arises, normal endocrine system, genitalia and anal normal.

The radiological examination of Genu AP/Lat photo obtained the result of patella sinistra fracture, in nail and wire fixation, aposition and alignmnt good, articulatio genu intak, joint gap not narrowing, shift of the joint (-), effect : genu does not appear disorder. Respondents received pharmacological therapy in the form of ketorolac 30 mg 2x1 injections to deal with pain, ranitidine 50 mg 2 x 1 injection to treat stomach acid, amlodipine 1x10 mg to lower blood pressure, cefazolin 1gr/12 hours as an antibiotic, vicilin 4x1,5 gr as antibiotic.

Table of 1. Results of Laboratory Testing

No	Inspecting	Results	Unity	The Normal Value	Increased / Decreased
1	Hemoglobin	12.1	g/dL	11.0-15.0	Normally
2	Leukosit	**11.72**	/mm^3	4.0-10.0	Increased
3	Trombosit	**432**	/mm^3	150-300	Increased
4	Hematokrit	36.1	%	37.0-47.0	Decreased
5	Kadar gula	92.55	mg/dL	<140	Normally
6	Ureum	**57.9**	mg/dL	15.0-40.0	Increased
7	Creatinin	0.59	mg/dL	0.60-1.10	Normally
8	SGOT	18	U/L	< 40	Decreased
9	SGPT	34	U/L	<41	Normally
10	Eritrosit	3.91	10^6/µL	3.50-5.00	Normally
11	RDW	12.6	%	11.0-16.0	Normally
12	MCV	92.3	fL	80.0-100.0	Normally
13	MCH	30.8	pg	27.0-34.0	Normally
14	MCHC	33.4	g/dL	32.0-36.0	Normally

Nursing Diagnose

The primary diagnosis or priority of respondents is acute pain that is a physical injury agent. The researchers found two additional diagnoses, namely disorder of physical mobility b/d disruption of the integrity of bone structures and risk of infection related with invasive aspect of the procedure. The diagnosis given to respondents according to the theory that the diagnosis of acute pain is related to the physical injury agent, supported by subjective data respondents experienced pain in the left knee, experienced pain disorder. P = pain when moving, Q = feeling scratched, R = left knee, S = scale Pain 6, T = constant and pain does not spread. Objective data respondents seemed to withstand pain, postoperative pain on the first day, post-operative wounds still closed bandages, blood pressure 131/67 mmHg, pulse 88x/minute, temperature = 36,4°C, breathing = 20x / min.

The actual data obtained in the case has been verified Indonesian Nursing Diagnostic Standards. That is, pain on a scale ranges from acute to mild and short-lasting (less than 3 months) that occurs after an acute injury, illness, or surgery and recovers with or without treatment. Another diagnosis according to the Indonesian Nursing Diagnostic Standards is a disorder of physical mobility associated with a disruption of bone integrity. The loss of the respondent's ability to move is caused by a left patella fracture as a result of a fall, and the left knee is bent to focus when it falls. Disorder of physical mobility is the limitation of the independent physical movement of one or more members of the body. The third diagnosis of infection risk in respondents was demonstrated by risk factors for the effects of invasive procedures. Risk of infection is an increased risk of attack of pathogenic organisms (Tim Pokja SDKI DPP PPPNI, 2017).

Nursing Interventions

The nursing intervention or action plan in this study focused on the problem of acute pain. The goal of this 3x24 hour nursing intervention is to expect the pain to decrease with the following criteria: pain decreases, grimaced decrescent, anxiety decreased, fear of reinjury reduced. The main intervention is pain management by determining location, duration, characteristics, frequency, intensity and quality of pain, determining the scale of pain and identifying factors that increase and decrease pain. Therapeutic intervention provides non-pharmacological pain relief methods. Educational interventions explain pain management strategies, recommend pain monitoring independently, and teach non-pharmacological pain management methods. Collaborative interventions work together to provide pain medication.

Non-pharmacological techniques using deep breathing relaxation techniques begin with breathing through the nose until the pulmonary cavity is filled with air by counting slowly. Next, breathe out the air gradually through the mouth while swallowing the upper and lower extremities relaxing pushing the breath rhythmically up to 3 times. The next step is to breathe again through the nose and exhale slowly through the mouth. Feel your palms and legs relaxed. Maintain concentration by closing the eyes and focusing on the sick area. recommends repeating the procedure up to 15 times until the pain decreases, alternating with short breaks every 5 times with an estimated time of 30-35 each session (Novitasari & Yuliana, 2022).

Evaluation of the scale of pain using the numeric pain scale which means the number 0 means no pain, the number 1 to 3 means the light pain marked with the respondent can still withstand the swelling, the number 4 to 6 means the pain is marked with respondents appear meringis but still can withstand its swelling, the figure 7 to 10 means the severed pain marked by respondent appears grimaced.

Nursing Impelementation

The implementation of nursing in this study applied to the focus of one of the problems of acute pain nurse. The implementation of the first day is to identify the location, duration, characteristics, quality and frequency of pain, determine the scale of pain and provide non-pharmacological pain relief methods. The second day is the determination of the scale of pain and the application of pain relief techniques in the form of non-pharmacological techniques of deep breath relaxation, in collaboration with the administration of analgesic is ketorolac 30mg 2x1. The implementation of the third day is to identify the scale of pain, collaborating with the administration of the analgesic ketorolac 30mg 2x1. The therapeutic effect of the administration of ketorolac is that after the respondents were given the injection of Ketorolac,

the respondent said the swelling was slightly reduced and it was not as painful as before the injections.

Treatment of pain involves pharmacological and non-pharmacological action. Typically, the use of opioid analgesics is used to relieve severe pain, while non-steroidal drugs are used to alleviate mild or moderate pain. Currently, non-pharmacological therapy is widely used by nurses to reduce the intensity of pain, which is complementary therapy. Based on the results of the study, 23 respondents (61%) reduced pain. Prior to the autogenic relaxation technique, the average pain value was 5.24, while after the autogenous relaxation method, the mean pain value is 3.47 which is included in the moderate pain. There were statistically significant differences in pain scores between after and before non-pharmacological techniques of deep breathing relaxation with a p-value of 0,000 (Novitasari et al., 2018). The implementation of non-pharmacological pain that nurses typically perform at the hospital in Tegal includes massage therapy, deep breathing relaxation, warm compresses, as well as controlling the patient's environmental condition from lighting to spatial arrangement so that the patient can rest. In addition, nurses also need to explain and teach non-pharmacological techniques to patients to cope with pain, the administration of collaborative drugs should also be done (Novitasari & Yuliana, 2022).

The concept of deep breath therapy is one of the non-pharmacological implementation of post-operative pain. This non-pharmacological technique of deep breathing relaxation relieves spasmodic skeletal muscles due to increased levels of prostaglandins, expands blood vessels, and increases blood flow to areas of spazmodic and ischemic activity, thereby reducing the scale of pain in patients. Non-pharmacological breathing relaxation techniques involve muscles and airways, do not require equipment, so it is easy to do when pain occurs (Waang et al., 2022). Non-pharmacological breathing relaxation techniques lower tense muscles by controlling pain. The technique itself consists of slow and rhythmic abdominal breathing. Respondents can close their eyes and breathe calmly, slowly and comfortably (Reskita, 2018).

The nurse teaches patients non-pharmacological techniques of deep breath relaxation starting with deep breathing through the nose until the lungs are filled with air. Then breath slowly through the mouth and feel the body relaxed. Provide information or education related to hypertension about causes, signs, symptoms, prevention and recommended diet (Aprilia et al., 2023). A study in Dr. Soedilan Mangun Sumarso Wonogiri Hospital about effect of deep breathing and listening to gamelan music on the level of pain in post-operative fractures patients found that listening for music gamelan and giving non-pharmacological therapy of breathing relaxation in influence on changes in pain levels meaningfully post-ORIF postoperative patients (Sumardi et al., 2020). A study about use of inner breathing relaxation techniques for pain relief in post-fracture surgery patients found that pain in post-operative patients decreased after given non-pharmacological therapy of deep breathing relaxation. The results of this study showed that a decrease in the scale of pain in patients receiving non-pharmacological therapy of deep breathing relaxation was greater than in patients who did not receive therapy (Wahyuningsih, 2021).

The results of the study inner breath relaxation therapy for acute pain in gastritis patients concluded that non-pharmacological breathing relaxation techniques in this study proved to be effective in reducing the scale of pain. The implementation of nursing care was carried out within 3 days on the respondents by determining the criteria for the result of pain decreased from average on a scale of 6 to mild on the scale 2 (Aprilia et al., 2023). Another

study about deep breathing relaxation techniques in postoperative pacients with broken legs in Haji Center Adam Malik Medan Hospital showed the results that deep breathing relaxation techniques can relieve muscle tension. Therefore, based on the responses and interviews conducted with patients suggest that deep breathing relaxation techniques can reduce the intensity of pain in patients with postoperative fractures. This gives a feeling of relaxation and comfort and ultimately improves the respondent's perception of the pain they experience (Aslidar, 2016).

Evaluated

After the implementation of nursing techniques of deep breathing relaxation for 3x24 hours was obtained a decrease in the intensity of pain from moderate with a scale of 6 to mild with scale 3. Pain in patients is already independently controlled by applying non-pharmacological techniques of deep breathing relaxation. Nursing discussion in this case study is to address the problem of nursing acute pain in respondents post orif patella sinistra fractures using non-pharmacological techniques of deep breath relaxation. This non-pharmacological technique of deep breath relaxation can be used to reduce pain demonstrated by pre-executed non-farmacological techniques of relaxation of breath in respondents complained of moderate pain (scale 6) and after intervention for 3 days the pain complaints became mild. (skala 3). So the researchers concluded that the goal of this study was achieved is to reduce pain with deep breath relaxation therapy. Then the researchers also advised respondents if pain was felt back, respondents could implement deep breathing relaxation therapy independently.

Conclusion

The results of this case study can be concluded that at the time of the pain assessment the respondents felt P = Pain due to post surgery and pain arises when moving, Q = feeling tear-irrited, R = left knee, S = pain scale 6, T = loss arises, in addition to that the respondent also appears to resist the pain so that the nursing problem can be enforced acute pain b / d physical injury agent. Plan of action to deal with acute pain, i.e. Determine the location, duration, characteristics, quality, intensity and frequency of pain, determine the scale of the pain, teach non-pharmacological techniques to reduce pain and analgesic collaboration. Implementation to deal with acute pain is by pharmacological and non-pharmacological means, by farmacological means by administering ketorolac injections 30 mg 2x1 through the intravena while by non-farmacological methods by providing deep breathing relaxation therapy. The result is the implementation of deep breathing relaxation therapy in effective for reducing the intensity of pain.

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