APPLICATION OF PROGRESSIVE MUSCLE RELAXATION IN BREAST CANCER PATIENTS WITH CHRONIC PAIN AT RSUD ARIFIN ACHMAD PROVINCE RIAU

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Abstract

Breast cancer is an abnormal growth of cells in breast tissue and often causes symptoms such as pain, fatigue, and psychological disorders that reduce the patient's quality of life. Cancer-related pain is a major complaint with a high prevalence, especially in metastatic cancer. Pain management generally uses pharmacological therapy, but non-pharmacological therapies such as progressive muscle relaxation are also effective. The purpose of this final nursing thesis is to analyze progressive muscle relaxation intervention in addressing chronic pain nursing problems in breast cancer patients. This intervention was carried out on 2 patients who met the criteria. Progressive muscle relaxation therapy was applied for 3 consecutive days, once a day for 15 minutes. Pain was measured using the Numeric Rating Scale (NRS), and success criteria were based on the Indonesian Nursing Outcome Standards (SLKI). Evaluation of this intervention in patient 1 showed a decrease in pain from a score of 6 to 3, a reduction in complaints of pain, restlessness, protective behavior, and grimacing, as well as improved blood pressure and appetite. Patient 2 showed a decrease in pain scale from 7 to 4, with a reduction in pain complaints, protective behavior, and grimacing, as well as a decrease in restlessness and an improvement in blood pressure and pulse rate. Based on the results of the nursing care provided, it can be concluded that the application of progressive muscle relaxation therapy is effective in reducing pain in cancer patients. Progressive muscle relaxation is recommended as a non-pharmacological therapy to reduce pain experienced by breast cancer patients.

Keyword: Breast Cancer, Pain, Progressive Muscle Relaxation
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INTRODUCTION

Cancer is a non-communicable disease characterized by abnormal and uncontrolled cell growth that can damage surrounding tissue and spread to distant sites, known as metastasis (Ariyanti et al., 2025). Breast cancer is the most common type among women, while lung cancer is the most common among men. Breast cancer is the abnormal growth of malignant cells in breast tissue that can invade surrounding tissue and spread (metastasize) to other organs. Based on data from the Global Cancer Observatory in 2022, there are an estimated 20 million new cases of cancer and 9.7 million people, or 18.7% of all deaths worldwide. Of these figures, the four types of cancer that cause the highest number of deaths are breast, cervical, lung, and colorectal cancer. In Indonesia, cancer ranks third as the leading cause of death, after stroke and heart disease. According to data from the international cancer observatory or Globocan in 2022, there were 408,661 new cases and 242,988 deaths caused by cancer. The highest number of deaths were caused by breast, cervical, and lung (Kemenkes RI, 2024).

Cancer patients often experience symptoms such as pain, fatigue, sleep disturbances, anxiety, and depression. Of the various symptoms experienced by cancer patients, pain is the

most common (Utomo et al., 2021). The stage of cancer also affects the level of pain, where the higher the stage of breast cancer experienced by the patient, the more severe the intensity of pain felt. This condition occurs due to the infiltration or spread of tumor cells to surrounding tissues. In patients with advanced breast cancer, especially those who have metastasized, damage to the visceral organs and skeletal system often occurs, causing chronic visceral/bone cancer pain. In addition, the use of anticancer drugs and chemotherapy can also trigger chronic neuropathic pain, also known as chronic post-cancer medicine (Humairah Nasution & Chalil, 2023).

Chronic pain not only causes physical suffering but also has psychological, social, and clinical impacts. Pain that is not well controlled can result in a decline in the patient's functional ability, hinder daily activities, reduce appetite, disrupt sleep patterns, and weaken the immune system, thereby worsening the clinical condition and accelerating the decline in overall health status. From a psychological perspective, prolonged pain can trigger anxiety, emotional distress, depression, and even despair as patients feel their quality of life has declined and they have lost their independence in carrying out daily activities (Wang et al., 2025).

Pain management in patients is generally carried out with pharmacological therapy such as the administration of analgesics. However, non-pharmacological interventions such as progressive muscle relaxation are also effective in reducing pain, anxiety, and stress. This technique, developed by Edmund Jacobson, is performed by systematically tensing and relaxing the muscles from the face to the feet to achieve physical and mental relaxation (Candrawati et al., 2025). Progressive muscle relaxation stimulates the release of endorphins, enkephalins, and endogenous opioids, which act as the body's natural pain relievers by inhibiting the transmission of pain impulses in the spinal cord and brain. More relaxed muscles also help increase blood flow and oxygen supply to tissues, thereby reducing the accumulation of waste products that trigger pain, such as lactic acid. Psychologically, progressive muscle relaxation contributes to reducing anxiety and mental tension, which in turn suppresses cortical activity in the brain areas involved in pain perception processing (Karina et al., 2025).

In line with research conducted by Mardiana et al., (2020), which showed a decrease in the pain scale experienced by breast cancer patients after being given Progressive Muscle Relaxation (PMR) complementary therapy with an average difference value of 2.00 (95% CI = 1.245 – 2.755). The results of the statistical test using the Paired Sample T-Test yielded a significance value of $p = 0.001 < 0.05$. Progressive Muscle Relaxation (PMR) therapy was administered 3 hours after the administration of analgesic drugs while lying down or sitting in a chair with the head supported as comfortably as possible. The importance of performing PMR therapy lies in its effects, such as reducing pain and promoting relaxation. This relaxation technique can create a balance between the body and mind, facilitating physical and psychological healing (Natosba et al., 2020).

Based on medical records from Arifin Achmad Regional General Hospital in Riau Province, the prevalence of breast cancer in Riau Province ranks first, followed by cervical cancer, nasopharyngeal cancer, lung cancer, and other cancers. There were 1,819 cases of breast cancer in the inpatient ward in 2022, and this number increased in 2023 to a total of 2,133 breast cancer patients, making it the most common type of cancer in the inpatient ward with 314 new cases of breast cancer in 2023 (Rizka & Dilaruri, 2025).

Based on the results of the study, the researchers were interested in conducting an application of "The Application of Progressive Muscle Relaxation in Breast Cancer Patients with Chronic Pain at Arifin Achmad Regional General Hospital, Riau Province."

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RESEARCH METHODS

The application of Evidence-Based Nursing uses quantitative methods with a case study approach to describe the application of progressive muscle relaxation therapy in breast cancer patients with chronic pain. The implementation was carried out through the nursing care process, which includes the stages of assessment, diagnosis, nursing intervention, implementation, and nursing evaluation.

The implementation was carried out over 3 days, from July 31 to August 2, 2025. The intervention was carried out 3 consecutive days, once a day for 15 minutes. The implementation was carried out at Arifin Achmad Regional General Hospital. The subjects of this application were 2 respondents suffering from breast cancer. Progressive muscle relaxation therapy was applied while lying down or sitting on a bed with the head supported as comfortably as possible. Progressive muscle relaxation therapy is a relaxation therapy that involves tensing and relaxing the muscles in one part of the body at a time to provide a physical sensation of relaxation. This therapy consists of 14 movements, starting with training the facial muscles and ending with the leg muscles.

The success of the intervention was measured before and after the application of progressive muscle relaxation therapy on the reduction of pain scale in cancer patients using the Numeric Rating Scale (NRS). Additionally, it refers to the success criteria of the Indonesian Nursing Outcomes Standards (SLKI), which include pain levels with complaints of pain, restlessness, grimacing, difficulty sleeping, sleep patterns, blood pressure, pulse rate, and appetite (PPNI, 2018).

RESEARCH RESULTS

The results of the nursing evaluation of the case after 3 days of progressive muscle relaxation therapy showed a decrease in pain levels. Based on the Numeric Rating Scale (NRS) assessment, patient 1 (Mrs. E) showed a change in pain scale from 6 to 3, and the Indonesian nursing outcome standard (SLKI) results showed a decrease in pain, anxiety, and grimacing, as well as improved blood pressure and appetite. Meanwhile, patient 2 (Mrs. N) showed a decrease in pain scale from 7 to 4, and the Indonesian nursing outcome standard (SLKI) results showed a decrease in complaints of pain, anxiety, and grimacing, improved blood pressure and pulse rate, a decrease in complaints of frequent waking/awakening, a decrease in complaints of dissatisfaction with sleep, and improved sleep patterns.

Table 1. Results Based on Success Indicators for Mrs. E and Mrs. N

Success Indicators	Mrs. E		Mrs.N	
	Pre-test	Post-test	Pre-test	Post-test
Blood Pressure (mmHg)				
Day 1	134/88	126/81	127/83	119/78
Day 2	124/83	116/77	117/78	113/76
Day 3	120/82	113/73	122/80	116/79
Pulse Rate (x/minute)				
Day 1	99	94	105	98
Day 2	98	95	98	96
Day 3	94	96	97	96
Pain Level (Numeric Rating Scale)				

Day 1	6	6	7	6
Day 2	5	4	6	5
Day 3	4	3	5	4

Source: primary data

Table 2. Results Based on Success Indicators for Mrs. E and Mrs. N

No	Success Indicators	Mrs. E		Mrs.N	
		Pre-test	Post-test	Pre-test	Post-test
1.	Pain complaints	2	4	1	3
2.	Grimace	3	4	1	3
3.	Restless	2	4	1	4
4.	Be protective	2	4	1	4

Source: primary data

Description:
1 = Increased
2 = Moderately increased
3 = Moderate
4 = Moderately decreased
5 = Decreased

Overall, the results of Table 1 and Table 2 show that progressive muscle relaxation therapy is effective in reducing pain intensity and improving the physiological and psychological conditions of patients.

DISCUSSION
1. Nursing Assessment
   Based on the results of the assessment of patient 1 (Mrs. E), a 52-year-old female with a medical diagnosis of CA Mammae Dextra, with the main complaint of pain in a lump in the right breast and sometimes radiating to the shoulder and armpit, the pain comes and goes, throbbing pain with a pain scale of 6 out of 10, the pain intensifies when the lump in the breast is touched and when moving, and decreases when resting. In addition, the patient also complained of decreased appetite, occasional nausea, and weight loss from 55 kg to 47 kg. Physical examination results showed dry mucosa, slightly chapped lips, pale appearance, a lump in the right breast, a grimacing facial expression when pain occurred, restlessness, and a protective attitude. Mrs. E's vital signs were blood pressure 134/88 mmHg, pulse rate 99 x/minute, respiratory rate 20 x/minute, and temperature 36.6°C.
   Based on the assessment of patient 2 (Mrs. N), a 48-year-old female with a medical diagnosis of CA Mammae Dextra who had undergone modified radical mastectomy (MRM) on her left breast in 2021. The patient's main complaint is pain in the area of the lump on her right breast, which radiates to her armpit. The pain feels like throbbing, is continuous with a pain scale of 7 out of 10, and increases when the lump on her right breast is touched or when she moves, but decreases when she rests. Additionally, the patient also complains of disturbed sleep because the pain sometimes occurs while sleeping and feels unrefreshed upon waking the next morning due to lack of sleep. Physical examination findings reveal a wound in the right breast area, weakness, a grimacing facial expression

when pain occurs, restlessness, and a protective posture. Mrs. N's vital signs were blood pressure 127/83 mmHg, pulse rate 105 x/minute, respiratory rate 20 x/minute, and temperature 36.8°C.

2. Nursing Diagnosis

The results of data analysis conducted on patient 1 (Mrs. E) confirmed the nursing diagnosis of chronic pain associated with tumor infiltration and nutritional deficiency associated with psychological factors (reluctance to eat). The focus of nursing issues in this application is chronic pain associated with tumor infiltration.

The results of data analysis conducted on patient 2 (Mrs. N) confirmed a nursing diagnosis of chronic pain associated with tumor infiltration and sleep pattern disturbance. The focus of nursing issues in this application is chronic pain associated with tumor infiltration.

According to the International Association for the Study of Pain (IASP), pain is an unpleasant sensation that arises from an area of the body, whether caused by tissue damage or not, and is related to previous experiences. Approximately 50–70% of cancer patients experience pain. Pain in cancer patients is subjective because it is a combination of physical and non-physical aspects (Fajri et al., 2022).

Cancer pain can be caused by tumor growth itself, side effects of treatments such as chemotherapy and radiotherapy, or cancer metastasis to other organs (Aridamayanti et al., 2025). Chronic pain can interfere with daily activities, including difficulty sleeping, decreased appetite, and a lack of understanding from family and friends about the patient's condition (Kurniasari & Wiedyaningsih, 2019).

3. Nursing Intervention

Nursing interventions in this application focus on chronic pain nursing issues in both patient 1 and patient 2, namely pain management (I.08238), which consists of the following actions: identifying the location, characteristics, frequency, and intensity of pain; identifying the pain scale; identifying the factors causing pain; controlling environmental factors that exacerbate pain (temperature, lighting, noise), rest and sleep facilities, teaching non-pharmacological techniques to reduce pain (progressive muscle relaxation), explaining the causes and triggers of pain, explaining pain relief strategies, recommending independent pain monitoring, recommending non-pharmacological techniques to reduce pain, and collaborating on the administration of analgesics (PPNI, 2018).

The focus of nursing intervention is to perform non-pharmacological techniques to reduce pain with progressive muscle relaxation therapy. This is in line with research conducted by Kumari et al. (2023), which showed that before the application of progressive muscle relaxation techniques, the average pain score was around 5 (scale of 0–10), and after the application of progressive muscle relaxation techniques, there was a decrease in pain intensity, with the average pain score decreasing to around 2. This indicates that progressive muscle relaxation is an effective intervention in reducing pain intensity and improving pain-related impairments in daily activities among cancer patients receiving palliative care. This is also in line with research conducted by Kumari et al. (2023), which states that among the relaxation therapies that can be applied to reduce pain frequency is Progressive Muscle Relaxation.

Progressive muscle relaxation is a nursing intervention aimed at helping the body achieve a relaxed state through two stages. The first stage involves tensing specific muscle groups, followed by the second stage where the tension is released while focusing on the emerging sensation of relaxation, allowing muscle tension to gradually dissipate and the body to feel more calm or relaxed (Riwayati et al., 2023).

The progressive muscle relaxation intervention was administered for three consecutive days, once daily for 15 minutes. This intervention is in line with the recommendations in the Indonesian Nursing Intervention Standards (SIKI) regarding the administration of non-pharmacological therapy to reduce pain.

4. Nursing Implementation

The nursing implementation carried out was the application of progressive muscle relaxation therapy on patient 1 and patient 2 who were experiencing pain by explaining and teaching progressive muscle relaxation techniques. Before applying progressive muscle relaxation, pain was measured using the Numeric Rating Scale (NRS). The application began by creating a calm environment, positioning the patient as comfortably as possible, and then performing progressive muscle relaxation with 14 movements in accordance with the predetermined standard operating procedure (SOP).

The results of the implementation on patient 1 (Mrs. E) after progressive muscle relaxation showed a decrease in the intensity of the pain scale from 6 to 3. The results of the implementation on patient 2 (Mrs. N) after progressive muscle relaxation showed a decrease in the intensity of the pain scale from 7 to 4.

5. Nursing Evaluation

The results of the case evaluation conducted 3 days after the application of progressive muscle relaxation on patient 1 (Mrs. E) were observed based on the Indonesian nursing outcome standards (SLKI). Complaints of pain, restlessness, grimacing, and protective behavior decreased significantly, while blood pressure and appetite improved. Based on the assessment of pain intensity using the Numeric Rating Scale (NRS) before progressive muscle relaxation therapy was administered, the patient experienced moderate pain with a score of 6. However, after progressive muscle relaxation therapy was administered, the patient's pain decreased to mild pain with a score of 3.

The results of the case evaluation conducted 3 days after the application of progressive muscle relaxation on patient 2 (Mrs. N) were observed from the Indonesian Nursing Outcomes Standards (SLKI): complaints of pain and grimacing decreased, restlessness and protective behavior decreased significantly, blood pressure and pulse rate improved, complaints of frequent waking/awakening and dissatisfaction with sleep decreased, and sleep patterns improved. Based on the assessment of pain intensity using the Numeric Rating Scale (NRS) before progressive muscle relaxation therapy was administered, the patient experienced severe pain with a score of 7. However, after receiving progressive muscle relaxation therapy, the patient experienced a reduction in pain to moderate pain with a score of 4.

The results of the pain reduction evaluation between patient 1 (Mrs. E) and patient 2 (Mrs. N) were related to the differences in the complaints felt by the patients and the types of analgesics they received. Patient 1 (Mrs. E) complained of pain on a scale of 6 out of 10 and received ketorolac therapy. Ketorolac is a non-opioid NSAID analgesic that works by inhibiting the cyclooxygenase (COX) enzyme, thereby reducing the production of prostaglandins as mediators of pain and inflammation (Ghlichloo & Gerriets, 2023). This drug is effective for mild to moderate pain, especially that associated with inflammatory processes. In patient 1, the pain complaint was categorized as moderate pain because the source of the pain was still at the moderate stage, and the response to pharmacological therapy and progressive muscle relaxation was quite optimal. This condition supports the effectiveness of progressive muscle relaxation in reducing muscle tension and pain perception, so that pain reduction can reach the mild pain category.

Patient 2 (Mrs. N) complained of pain on a scale of 7 out of 10 and received MST (Morphine Sulfate Tablet) therapy. MST (Morphine Sulfate Tablet) is a strong opioid analgesic that acts directly on opioid receptors in the central nervous system to inhibit pain impulse transmission and modulate pain perception (Murphy et al., 2025). MST is generally administered for moderate to severe pain. In patient 2, the pain experienced was in the severe pain category, indicating stronger nociceptive stimulation and possible central sensitization. MST (Morphine Sulfate Tablet) has a stronger analgesic potential than ketorolac, but the high intensity of the initial pain meant that the reduction in pain achieved was still in the moderate pain category after the intervention. In patient 2 (Mrs. N), there were other factors such as sleep disturbances and severe pain that reduced the effectiveness of progressive muscle relaxation in achieving more optimal pain reduction.

The application of progressive muscle relaxation therapy for three days in breast cancer patients showed a decrease in pain intensity and partial improvement in the Indonesian Nursing Outcome Standards (SLKI) indicators in two breast cancer patients. However, the success indicators were not fully achieved. Patient 1 (Mrs. E) experienced a decrease in pain intensity to the mild pain category, and several success indicators, such as grimacing, restlessness, and protective behavior, decreased but not completely. In patient 2 (Mrs. N), the reduction in pain intensity remained in the moderate category, and some success indicators, such as grimacing and protective behavior, only showed partial improvement. The difference in pain reduction results was due to differences in the level of pain experienced by the patients and other complaints that affected the effectiveness of progressive muscle relaxation.

CONCLUSION

The results of the assessment of breast cancer patients regarding the application of progressive muscle relaxation indicate that patient 1 (Mrs.E) experiences chronic pain associated with tumor infiltration, characterized by a lump in the right breast that is painful to the touch. The pain sometimes radiates to the shoulder and armpit, comes and goes, and feels like throbbing, with a pain scale of 6 out of 10. The pain increases when the lump in the breast is touched and when moving, and decreases when resting. The results of the signs are blood pressure 134/88 mmHg, pulse rate 99 x/minute, respiratory rate 20 x/minute, temperature 36.6°C. Patient 2 (Mrs.N) experienced chronic pain associated with tumor infiltration, characterized by a visible lump in the right breast that was painful and radiated to the armpit, throbbing pain, continuous pain with a pain scale of 7 out of 10, increased pain when touching the lump in the right breast and when moving, and decreased pain when resting. Vital signs were blood pressure 127/83 mmHg, pulse 105 x/minute, respiratory rate 20 x/minute, and temperature 36.8°C.

The results of the data analysis confirmed the nursing diagnosis for patient 1 (Mrs. E) as chronic pain related to tumor infiltration and nutritional deficiency related to psychological factors. Meanwhile, the nursing diagnosis for patient 2 (Mrs. N) was chronic pain related to tumor infiltration and sleep pattern disturbance.

The nursing interventions implemented in this application refer to the Indonesian Nursing Intervention Standards (SIKI), namely pain management, nutrition management, and sleep support. In addition, the intervention also focuses on the application of Evidence-Based Nursing (EBN) results, namely the application of progressive muscle relaxation therapy in cancer patients with chronic pain nursing problems.

The nursing implementation provided to both patients in this application includes non-pharmacological therapy, namely the application of Evidence-Based Nursing (EBN) with progressive muscle relaxation aimed at reducing the pain scale. The application was conducted for 3 consecutive days, once a day for 15 minutes.

The results of the nursing evaluation conducted after the implementation of progressive muscle relaxation therapy showed a decrease in pain levels. Based on the Numeric Rating Scale (NRS) assessment, patient 1 (Mrs. E) showed a decrease in pain scale from 6 to 3, and the Indonesian Nursing Outcome Standards (SLKI) results for pain complaints, restlessness, and grimacing showed a decrease, while blood pressure and appetite improved. Meanwhile, patient 2 (Mrs. N) showed a decrease in pain scale from 7 to 4, and the Indonesian Nursing Outcome Standards (SLKI) results showed a decrease in pain complaints and grimacing, a decrease in restlessness and protective behavior, improved blood pressure and pulse rate, and adequate sleep patterns.

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