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THE EFFECT OF A COMBINATION OF PROGRESSIVE MUSCLE RELAXATION AND MUSIC THERAPY ON PAIN INTENSITY AND ANXIETY LEVELS IN INPATIENT WARD PATIENTS: A CASE STUDY

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ABSTRACT

Background: Pain and anxiety are common problems experienced by patients during hospitalization and can hinder the healing process. The combination of progressive muscle relaxation and music therapy is a nonpharmacological intervention that has the potential to help reduce both of these conditions. Objective: To describe the application of a combination of progressive muscle relaxation and music therapy on pain intensity and anxiety levels in patients in an inpatient ward. Methods: This study used a descriptive design with a case study approach involving two patients selected through purposive sampling. The intervention was administered once daily for three consecutive days, lasting 20–30 minutes each session. Pain intensity was measured using the Numeric Rating Scale (NRS), and anxiety levels were measured using the Hospital Anxiety and Depression Scale (HADS). Results: After the intervention, there was a decrease in pain intensity in both subjects from a score of 6 to 4 and 2, as well as a decrease in anxiety scores from 13 to 4 in Subject I and from 12 to 3 in Subject II. Conclusion: The combination of progressive muscle relaxation and music therapy showed a tendency to be effective in reducing pain intensity and anxiety levels in patients in the ward. Recommendation: This intervention can be considered as an adjunct therapy in nursing practice and requires further evaluation through research with a larger sample size.

Keywords: progressive muscle relaxation; music therapy; pain; anxiety.

INTRODUCTION

Pain is one of the main problems patients often experience during hospitalization. Pain can be caused by the disease process, diagnostic tests, invasive procedures, surgery, or other therapeutic interventions. The experience of pain is multidimensional because it is not only related to tissue damage but is also influenced by psychological factors, previous pain experiences, environmental conditions, social support, and the patient's ability to cope with the illness. Pain that is not adequately managed can hinder mobility, disrupt sleep, reduce appetite, slow the recovery process, and lower the patient's quality of life. Therefore, comprehensive pain assessment and management

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are an essential part of nursing care in the inpatient setting (Lin et al., 2021; Becerra-Bolaños et al., 2023).

The prevalence of pain and anxiety among hospitalized patients remains relatively high. Becerra-Bolaños et al. (2023) found that 52.9% of hospitalized patients experienced pain with an average pain intensity of 5.3 on the Visual Analogue Scale. A study by Lin et al. (2021) also reported that the incidence of pain during hospitalization reached 48.1%, which was higher than at the time of initial hospital admission. In addition to pain, anxiety was also commonly found among hospitalized patients. Among patients receiving hospital care, 65.6% reported experiencing anxiety and 52% reported experiencing pain. These data indicate that pain and anxiety are problems that frequently occur together and require attention in nursing care (Schlegelmilch et al., 2019).

Pain and anxiety are interrelated. Pain can cause fear, worry about the medical condition, a sense of helplessness, and anxiety about upcoming procedures. Conversely, anxiety can increase sympathetic nervous system activity, muscle tension, heart rate, respiratory rate, and the patient's sensitivity to pain stimuli. These conditions make patients more sensitive to pain stimuli, which can further increase the perceived intensity of pain. If left unaddressed, the cycle of pain, muscle tension, and anxiety can interfere with rest, daily activities, adherence to treatment, the rehabilitation process, and the patient's comfort during care (Palmer et al., 2021; Gerges et al., 2023).

Pain and anxiety can be managed through both pharmacological and nonpharmacological approaches. Pharmacological therapies, such as analgesics and anti-anxiety medications, remain necessary depending on the patient's condition and indications. However, medication use can cause side effects and does not always address the psychological aspects associated with pain. Therefore, nonpharmacological therapies can be used as complementary interventions to help improve patients' comfort and ability to control their physiological and psychological responses. Relaxation interventions are relatively safe, noninvasive, easy to teach, low-cost, and can be implemented by nurses as part of comprehensive pain management (Ju et al., 2019; Vambheim et al., 2021).

One nonpharmacological intervention that can be applied is progressive muscle relaxation. Progressive muscle relaxation is performed by systematically and sequentially tensing and relaxing muscle groups in the body. This technique helps patients recognize the difference between tense and relaxed muscle states, reduces physical tension, and induces a relaxation response. A study by Mashhadi-Naser et al. (2024) showed that progressive muscle relaxation can significantly reduce postoperative pain and anxiety and improve sleep quality in patients with hip fractures. Other studies have also shown that progressive muscle relaxation can reduce pain intensity and pain-related activity limitations in cancer patients receiving palliative care (Anshasi et al., 2023).

In addition to progressive muscle relaxation, music therapy is a nonpharmacological intervention that can be used to reduce pain and anxiety. Music can provide a distracting effect by diverting the patient's attention from pain stimuli,



creating a calming atmosphere, stabilizing emotional responses, and reducing stress-induced physiological arousal. The results of systematic reviews and meta-analyses indicate that music therapy is effective in reducing pain intensity and anxiety levels in patients undergoing orthopedic surgery. Music therapy also has the potential to reduce the use of opioid analgesics, making it a viable adjunct therapy in the management of pain for hospitalized patients (Patiyal et al., 2021; Kühlmann et al., 2018).

The combination of progressive muscle relaxation and music therapy is expected to provide greater benefits because the two interventions have complementary mechanisms of action. Progressive muscle relaxation focuses more on reducing muscle tension and physiological responses to stress, while music therapy helps divert attention, improve mood, and create conditions that promote relaxation. A study by Nguyen et al. (2023) indicates that the combination of music therapy and progressive muscle relaxation is worth implementing and shows a tendency to reduce anxiety, depression, and stress. The results of a systematic review also show that progressive muscle relaxation combined with other interventions tends to be more effective than progressive muscle relaxation alone (Khir et al., 2024; Nguyen et al., 2023).

Although various studies have demonstrated the benefits of progressive muscle relaxation and music therapy, most studies still evaluate these two interventions separately or apply them to specific populations. Research on the combined application of both interventions to address both pain intensity and anxiety levels in patients in the ward remains limited, particularly in the form of case studies that provide an in-depth description of individual patient responses. Case studies allow nurses to assess patients' conditions before the intervention, implement a combination of progressive muscle relaxation and music therapy, and evaluate changes in pain intensity and anxiety levels after the intervention. Based on this, this study was conducted to examine the effects of combining progressive muscle relaxation and music therapy on pain intensity and anxiety levels in patients in a hospital ward.

METHODS

This study employed a descriptive design with a case study approach to describe the application of a combination of progressive muscle relaxation and music therapy on pain intensity and anxiety levels in patients in an inpatient ward. The study subjects consisted of two patients selected using purposive sampling. Inclusion criteria included patients who were conscious and cooperative, experiencing mild to moderate pain, experiencing anxiety, able to communicate well, and willing to participate in the study. Patients with hearing impairments, impaired consciousness, unstable clinical conditions, or severe pain requiring immediate intervention were excluded.

The intervention was administered once a day for three consecutive days. Each session began with an assessment of pain intensity and anxiety levels. Patients were then guided through progressive muscle relaxation by gradually tensing and relaxing muscle groups, followed by music therapy using soothing instrumental music. The intervention lasted approximately 20–30 minutes in a comfortable environment with minimal distractions.



Pain intensity was measured using the Numeric Rating Scale (NRS) with a score range of 0–10, while anxiety levels were measured using appropriate anxiety instruments, such as the Hospital Anxiety and Depression Scale (HADS). Measurements were taken before and after the intervention at each session. Data were collected through interviews, observations, direct measurements, and nursing documentation.

The data were analyzed descriptively by comparing pain intensity scores and anxiety levels before and after the three-day intervention for each patient. The results of the analysis are presented in tables and narrative form to illustrate changes in patient responses after receiving a combination of progressive muscle relaxation and music therapy. The study was conducted in accordance with ethical principles, including informed consent, confidentiality, beneficence, and the patients' right to withdraw from the study.

RESULTS

This study began with a preparatory phase that included identifying the problem, determining the intervention objectives, and selecting appropriate methods to help reduce pain intensity and anxiety levels in patients in the ward. Pain and anxiety are common issues experienced by patients during treatment due to medical conditions, medical procedures, or nursing interventions. These two conditions are interrelated; pain can increase anxiety, while anxiety can exacerbate the perception of pain, thereby affecting patients' comfort, quality of rest, and healing process. Therefore, nonpharmacological interventions that are easy to implement, safe, and effective are needed as adjunctive therapies. One such intervention is a combination of progressive muscle relaxation and music therapy. Progressive muscle relaxation helps reduce muscle tension and enhance the relaxation response, while music therapy provides distraction and emotional calm, which is expected to reduce patients' pain intensity and anxiety levels. Based on this, this case study aims to describe the application of a combination of progressive muscle relaxation and music therapy on pain intensity and anxiety levels in patients in a hospital ward.



Table 1. Respondent Characteristics

Characteristics	Subject I	Subject II
Age	36	32
Gender	Female	Female
Education	High School	Elementary
Occupation	Housewife	school Laborer
Marital Status	Married	Married
Medical History	None	Gastritis

According to Table 1, both respondents are female and married. Subject I is 36 years old, has a high school education, works as a homemaker, and has no history of illness. Subject II is 32 years old, has an elementary school education, works as a laborer, and has a history of gastritis. Although there are differences in educational level, occupation, and medical history, both subjects are in the adult age group, making them suitable for illustrating the application of a combination of progressive muscle relaxation and music therapy on pain intensity and anxiety levels in patients in the ward. The results of this case study, which focused on the application of a combination of progressive muscle relaxation and music therapy on pain intensity and anxiety levels in patients, are as follows:

Table 2. Initial Assessment of Both Subjects

Date	Subject	Pain Intensity		Anxiety Level		N	BP	RR	Facial Expression
		Scale	Categor y	Score	Categor y				
19 May 2026	I	6	Moderate	13	Moderate	105	131/90	20	Grimacing and tense
20 May 2026	II	6	Moderate	12	Moderate	110	143/75	20	Grimacing and tense

Table 2 shows that prior to the intervention, both subjects experienced moderate pain with a pain scale score of 6, as well as moderate anxiety, with a score of 13 for Subject I and 12 for Subject II. Both subjects also displayed grimacing and tense facial expressions accompanied by an increased pulse rate, indicating physiological and psychological responses to pain and anxiety before being administered the combination of progressive muscle relaxation and music therapy.



Table 3. Pain and Anxiety Measurements Before and After Progressive Muscle Relaxation and Music Therapy

Subject	Date	Pain		Anxiety	
		Before	After	Before	After
I	20 May 2026	6	5	13	10
	21 May 2026	6	5	7	6
	22 May 2026	5	4	6	4
II	21 May 2026	6	5	12	8
	22 May 2026	4	3	7	6
	23 May 2026	3	2	3	3

Table 3 shows that the three-day combination of progressive muscle relaxation and music therapy resulted in a trend toward a decrease in pain intensity and anxiety levels in both subjects. In Subject I, the pain score decreased from 6 to 4, while the anxiety score decreased from 13 to 4 at the end of the intervention. In Subject II, the pain score decreased from 6 to 2, while the anxiety score decreased from 12 to 3. These results indicate that the combination of these two nonpharmacological interventions can help reduce pain and anxiety in patients undergoing treatment.

Table 4. Vital Sign Measurements for the Two Subjects

Subject	Date	Vital Signs	Before	After	Difference
I	20 May 2026	Pulse	104	92	12
		BP	137/91	121/89	16/2
		RR	20	20	0
		Expression	Grimacing & tense	Relaxed	-
	21 May 2026	Pulse	101	97	4
		BP	129/89	118/86	11/3
		RR	20	20	0
		Expression	Grimacing & tense	Relaxed	-
	22 May 2026	Pulse	102	95	7
		BP	128/91	121/82	7/9
		RR	20	20	0
		Expression	Grimacing	Relaxed	-
II	21 May 2026	Pulse	110	100	10
		BP	137/93	128/87	9/6
		RR	20	20	0
		Expression	Grimacing & tense	Relaxed	-
	22 May 2026	Pulse	104	92	12
		BP	128/85	121/80	7/5
		RR	20	20	0
		Expression	Grimacing	Relaxed	-
	23 May 2026	Pulse	90	74	6
		BP	120/73	112/64	8/9
		RR	20	18	2
		Expression	Calm	Relaxed	-



Based on Table 4, after three days of combined progressive muscle relaxation and music therapy, both subjects showed improvements in their vital signs. In Subject I, the pulse rate decreased from 104 to 92 beats per minute on the first day, from 101 to 97 beats per minute on the second day, and from 102 to 95 beats per minute on the third day. Blood pressure also decreased gradually, while the respiratory rate remained stable at 20 breaths per minute. In addition, facial expressions changed from a grimacing and tense appearance to a relaxed one following the intervention. In Subject II, the pulse rate decreased from 110 to 100 beats per minute on the first day, from 104 to 92 beats per minute on the second day, and from 90 to 74 beats per minute on the third day. Blood pressure showed a gradual decrease; respiratory rate remained stable until the second day and decreased to 18 breaths per minute on the third day. Changes in facial expressions from grimacing or tension to relaxation indicated a relaxation response following the intervention. Overall, these results suggest that the combination of progressive muscle relaxation and music therapy has a positive effect on stabilizing vital signs and improving patient comfort during treatment.

DISCUSSION

The results of the case study showed that the application of a combination of progressive muscle relaxation and music therapy, administered once a day for three consecutive days, was able to reduce pain intensity and anxiety levels in both subjects. In Subject I, the pain score decreased from 6 to 4 and the anxiety score from 13 to 4. Meanwhile, in Subject II, the pain score decreased from 6 to 2 and the anxiety score from 12 to 3 after the entire intervention series was completed. These findings indicate that repeated interventions over three days provide a more consistent therapeutic effect compared to a single session, as the relaxation response can be maintained and reinforced during each session. These results are consistent with a recent meta-analysis stating that music intervention as an adjunct therapy significantly reduces patients' pain and anxiety during medical treatment and procedures (Li et al., 2024).

The reduction in pain observed in both subjects can be explained by the physiological mechanism of progressive muscle relaxation. This technique works by systematically tensing and then relaxing muscle groups, thereby reducing sympathetic nervous system activity, alleviating muscle tension, improving blood circulation, and enhancing the dominance of the parasympathetic nervous system. This state leads to a reduced perception of pain because the body is in a more relaxed state. This effect is further optimized when relaxation is performed repeatedly over three days, leading to improved physiological adaptation to stress. The findings of Mashhadi-Naser et al. (2024) and various recent studies also indicate that PMR is effective in reducing pain in both postoperative patients and those with chronic conditions.

In addition to progressive muscle relaxation, music therapy also contributes to pain reduction through the mechanism of cognitive distraction. Soothing instrumental music can divert patients' attention from painful sensations, increase the release of endorphins, and reduce cerebral cortex activity associated with pain perception. As a



result, patients find it easier to achieve a state of relaxation and report a decrease in pain scores following the intervention. The results of a recent systematic review show that music therapy consistently reduces pain intensity in various patient groups, including perioperative patients, emergency department patients, and patients undergoing invasive procedures (Sharkiya, 2024).

The reduction in anxiety levels found in this study also demonstrates the effectiveness of the combination of the two interventions. Before the intervention, both subjects were in the moderate anxiety category; they then experienced a gradual decrease to the mild category after three days of therapy. This reduction likely occurred because progressive muscle relaxation reduced the activation of the sympathetic nervous system, while music therapy improved emotional regulation through stimulation of the limbic system, causing the patients to feel calmer. Results from a recent randomized controlled trial also reported that therapeutic music significantly reduced patients' anxiety before and after medical procedures compared to the control group (Bürlukkara et al., 2024).

The effectiveness of combining progressive muscle relaxation and music therapy is believed to be greater than when the two interventions are administered separately, as their mechanisms of action complement one another. Progressive muscle relaxation focuses on reducing physical tension, while music therapy primarily influences psychological and emotional aspects. This combination produces a more comprehensive relaxation response, resulting in simultaneous reductions in pain and anxiety. This is consistent with the study by Nguyen et al. (2023), which reported that the combination of music and relaxation tends to result in greater reductions in stress, anxiety, and depression compared to single interventions.

The administration of the intervention once a day for three consecutive days in this study is also supported by several previous studies that used repeated interventions over several days so that the relaxation effect could be sustained. Repeated therapy sessions allow patients to adapt to relaxation techniques, improve their ability to control physiological responses to pain, and reinforce the distracting effects of music. A randomized controlled trial on music therapy for patients with pain showed that repeated music sessions lasting approximately 30 minutes resulted in a more significant reduction in pain and anxiety compared to a single session (Angkoontassaneeyarat et al., 2025). Thus, the frequency of once a day for 3 days used in this study has a scientific basis and is appropriate for implementation as a nonpharmacological nursing intervention.

Although this study involved only two subjects and used a case study design, the results provide clinical evidence that the combination of progressive muscle relaxation and music therapy can be easily implemented in a clinical setting without requiring complex equipment or significant costs. The intervention lasts 20–30 minutes, is safe, easy for nurses to teach, and can be combined with pharmacological therapy already prescribed to patients (Angkoontassaneeyarat et al., 2025). Therefore, this intervention has the potential to become part of evidence-based nursing practice in the management of pain and anxiety in hospitalized patients.



Overall, the results of this study reinforce the evidence that the combination of progressive muscle relaxation and music therapy is an effective nonpharmacological intervention for reducing patients' pain intensity and anxiety levels. The decrease in scores for both subjects indicates consistent clinical benefits following the intervention, which was administered once daily for three consecutive days. These findings are also consistent with various recent systematic reviews and randomized controlled trials that recommend music therapy and relaxation techniques as complementary therapies to improve patient comfort, reduce the need for analgesics, and support the healing process. Further research is recommended using an experimental design with a larger sample size so that the effectiveness of the combined intervention can be more strongly demonstrated.

CONCLUSION

The application of a combination of progressive muscle relaxation and music therapy, administered once daily for three consecutive days, showed a tendency to be effective in reducing pain intensity and anxiety levels in both patients in the ward. After the intervention, both subjects experienced a gradual decrease in pain and anxiety scores until the end of the observation period. The results of this case study indicate that the combination of these two nonpharmacological interventions can be used as a safe, easy-to-implement adjunctive therapy with the potential to improve patient comfort during hospitalization. However, since this study employed a case study design with a limited number of subjects, further research with an experimental design and a larger sample size is needed to confirm the effectiveness of these interventions. Furthermore, this approach may be considered as a complementary nonpharmacological nursing intervention in the management of pain and anxiety in patients undergoing inpatient care.

IMPLICATIONS FOR NURSING PRACTICE

A combination of progressive muscle relaxation and music therapy can be integrated into nursing interventions as a complementary therapy to help reduce patients' pain intensity and anxiety levels in the ward. This intervention is safe, noninvasive, easy to learn, inexpensive, and can be administered by nurses in approximately 20–30 minutes as an adjunct to pharmacological therapy. The implementation of this intervention is expected to improve patient comfort, enhance psychological responses during treatment, increase satisfaction with nursing care, and support a more holistic healing process.

ETHICAL STATEMENT AND CONFLICT OF INTEREST

This study was conducted in accordance with the principles of research ethics, which include respect for persons, beneficence, non-maleficence, justice, and confidentiality of respondents' identities. Prior to the study, all respondents received an explanation of the study's objectives, procedures, benefits, and their rights as research participants. All respondents voluntarily agreed to participate by signing an informed consent form. Respondent identities were kept confidential, and all data



collected were used solely for research purposes. Furthermore, the author declares that there are no conflicts of interest in the conduct or publication of this study.

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