



**THE EFFECTIVENESS OF PROGRESSIVE MUSCLE RELAXATION THERAPY
ON PREOPERATIVE ANXIETY : A SYSTEMATIC REVIEW**

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ABSTRACT

Preoperative anxiety is a common condition experienced by patients awaiting surgery. One non-pharmacological method to reduce this anxiety is Progressive Muscle Relaxation (PMR) therapy, which helps lower anxiety by systematically tensing and relaxing muscle groups. Objective: To evaluate the effectiveness of PMR therapy in reducing anxiety levels in preoperative patients. Method: This study used a systematic literature review with the PRISMA approach. Data were collected from Google Scholar, EBSCO, and Semantic Scholar using the keywords "Effect," "Progressive Muscle Relaxation," and "Preoperative Anxiety." A total of 1,342 articles were initially identified. Inclusion criteria included journals published between 2020 and 2024 that focused on the effects of PMR therapy on preoperative anxiety. After screening and reviewing the literature, seven relevant articles were selected and analyzed based on the inclusion criteria. Results: The reviewed studies showed that PMR therapy significantly reduced anxiety levels in preoperative patients. Patients with moderate to severe anxiety showed improvement to mild or moderate levels after the intervention. PMR also had positive effects on physiological parameters, such as reduced blood pressure and heart rate. 137 participants, pre-intervention anxiety levels were mild (8.75%), moderate (73%), and severe (18.25%). Post-intervention, 64.24% had mild anxiety and 35.76% had moderate anxiety. Conclusion: PMR therapy is effective in managing preoperative anxiety and improving physiological responses. It is recommended as a routine non-pharmacological intervention in clinical settings to support anxiety management without relying on sedatives.

Keywords: anxiety; pre-operative patients; progressive muscle relaxation

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INTRODUCTION

Pre-operative anxiety is a common psychological issue experienced by patients who are about to undergo surgical procedures. This anxiety may be triggered by a variety of factors, such as fear of pain, concerns about the surgical outcome, or uncertainty regarding the anaesthesia process due to the patient's lack of understanding or inadequate education. Pre-operative anxiety affects not only the psychological condition of patients but also has physiological consequences, including elevated blood pressure, heart rate, and stress hormone levels. Anxiety in pre-operative patients can interfere with medical procedures, increase the risk of complications during surgery, and potentially delay post-operative recovery, leading to prolonged hospital stays (Uysal et al., 2023). Various approaches have been employed to manage pre-operative anxiety, including pharmacological methods using sedatives and non-pharmacological therapies (Alvionita et al., 2022). In recent years, non-pharmacological interventions have gained increasing attention due to their minimal side effects and the possibility of being performed independently by patients or with support from family members. These approaches aim to reduce dependence on sedatives and anaesthetic drugs while minimising potential side effects associated with medication use. One of the most popular and evidence-based non-pharmacological techniques for reducing pre-operative anxiety is Progressive Muscle Relaxation (PMR) therapy (Susanti et al., 2023).

Progressive Muscle Relaxation is a technique developed by Edmund Jacobson in the 1920s. It aims to relieve physical and mental tension through the systematic tensing and releasing of muscle groups. The technique involves sequentially tightening and relaxing muscles from the upper body down to the lower body. PMR is believed to suppress sympathetic nervous system activity, which in turn reduces anxiety and helps individuals feel calmer and more in control of their emotions (Diani et al., 2024). PMR therapy is considered effective in reducing anxiety levels in patients prior to surgery. Its importance lies in its potential to support the management of pre-operative anxiety, which, if left unaddressed, may negatively impact surgical outcomes and prolong the recovery period. Although several studies have shown that PMR significantly reduces anxiety, further research is needed to reinforce these findings, particularly in populations undergoing surgical procedures. Therefore, this study aims to evaluate the effectiveness of Progressive Muscle Relaxation therapy in reducing anxiety among pre-operative patients and to determine whether this intervention could serve as an effective approach in future pre-operative anxiety management.

METHOD

This systematic review was conducted using the PRISMA methodology, which is a comprehensive and structured approach for determining search strategies, sourcing information, setting criteria, and assessing the quality of studies. Journals that met the inclusion and exclusion criteria were selected and reviewed for this study. The stages and strategies carried out by the researchers included information searching and document analysis from various databases using keywords related to the research title and independent variables, namely “Effect AND Progressive Muscle Relaxation AND Pre-operative Anxiety.” The journals or academic articles selected were published within the last five years, from 2020 to 2024, and were written in either English or Indonesian. The databases used in this study included Google Scholar, EBSCO, and Semantic Scholar. A total of 1,342 journals were retrieved and entered into the Zotero application for metadata processing. These journals were then filtered based on the established inclusion and exclusion criteria to identify studies suitable for this review. The articles retrieved from the databases were assessed using the PICO framework in accordance with the predetermined criteria. As a result, 7 eligible research articles were selected for further analysis.

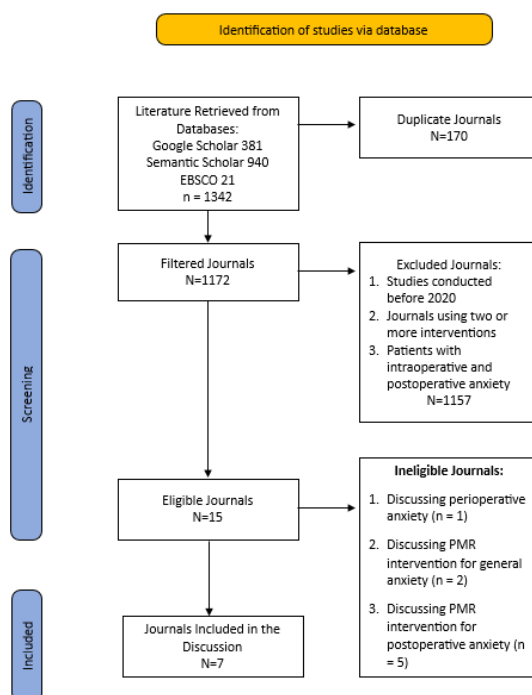


Figure 1. PRISMA Diagram

RESULT

Table 1.
Characteristics of Eligible Literature

Author	Journal Title	Study Design	Population	Results
Indri Dwi Aristiani, Indri Heri Susanti, 2022	<i>Management of Preoperative Anxiety Patients with Progressive Muscle Relaxation Therapy Interventions.</i> Genius Journal, Vol.3 No. 1. DOI 10.56359/gj.v3i1.68, ISSN 2723-7729	Descriptive with a Case Study Approach	Pre-operative patients with kidney stones	There was a reduction in anxiety from a score of 18 (moderate category) to 11 (mild category) after receiving therapy for 25–30 minutes, three times daily during the pre-operative phase.
Sukron, 2023	<i>Pengaruh Progresive Muscle Relaxation Technique Terhadap Kecemasan Pasien Pre Operasi Bedah Mayor di Rumah Sakit Muhammadiyah Palembang,</i> Masker Medika, Vol. 11 No. 1 Juni 2023, DOI 10.52523/maskermedika.v11i1.521, ISSN2654-8658, 2301-8631	Pre-experimental with a Pre-test–Post-test One-Group Design	Pre-operative patients undergoing major surgery	There was a significant difference in anxiety levels before and after receiving Progressive Muscle Relaxation therapy, with a p-value of 0.015.
Lizawati, et.al,2022	<i>Pengaruh Terapi Progressive Muscle Relaxation Terhadap Rasa Cemas Pre Operasi Sectio Caesarea,</i> Jurnal Keperawatan Vol 12, DOI10.59870/jurkep.v12i1.136, ISSN 2621-7694, 2086-9703	Pre-experimental with a Pre-test–Post-test One-Group Design	Pre-operative patients scheduled for caesarean section	There was a significant effect of administering PMR therapy in reducing anxiety among mothers scheduled for a caesarean section, with a p-value of 0.000 (<0.05).
Siti Nurjana h, et.al, 2022	<i>The Effect of Progressive Muscle Relaxation (PMR) on The Mother's Anxiety Level Before Sectio Caesarea at Dinda Hospital at Tangerang City</i> Indonesian Nursing Journal Of Education and Clinic (INJEC) Vol.7 Issue 1 Juni 2022, DOI 10.24990/injec.v7i1.506. ISSN 2527-8819, 2527-8800	Quasi-experimental	Pre-operative patients scheduled for a caesarean section	There was a significant effect observed in the mothers' anxiety levels before the caesarean section. The anxiety score decreased from 58.3 before the intervention to 50.1 after the intervention, with a difference of 8.2. The study findings demonstrated that the paired-samples t-test yielded a p-value of 0.001.
Erna Masdiana, Liza Phonna, 2023	<i>The Effect Of Progressive Muscle Relaxation On Reducing Anxiety in Preoperative Patients in Lhokseumawe Hospital</i> Jurnal Kesehatan Akimal, Vol.2 No.01Edisi Juli,Tahun 2023,ISSN: 2615-0573	Descriptive	Pre-operative patients	There was a reduction in anxiety from severe to moderate following PMR.
Dilek Uysal, et.al 2023	<i>The Effects of Progressive Muscle Relaxation on Preoperative Anxiety and Blood Pressure in Patient with Aneurysm</i> Nursing and Health Sciences Journal (NHSJ) Volume 3, Number 4 (December 2023) e-ISSN: 2798-5067 DOI https://doi.org/10.53713/nhsj.v3i4.274	Quasi-experimental	Pre-operative patients with aneurysm	Progressive muscle relaxation exercises during the pre-operative period for neurosurgical patients diagnosed with aneurysm had a statistically significant effect in reducing both anxiety and blood pressure (p < 0.001).
Cita Lolandia Septin, et.al 2023	<i>The Impact of Progressive Muscle Therapy on Anxiety Levels Among Pre-Anaesthesia Patients at RSI Banjarnegara</i> Java Nursing Journal Vol. 1 Issue 2 Oktober 2023. ISSN 2988-4152 DOI 10.61716/jnj.v1i2.9	Pre-experimental with a Pre-test–Post-test One-Group Design	Pre-operative patients	There was a significant reduction in patient anxiety from moderate to mild.

DISCUSSION

In the study conducted by Masdiana et al. (2023), it was demonstrated that Progressive Muscle Relaxation (PMR) therapy produced effective results in reducing anxiety levels in pre-operative patients. This change in anxiety is considered significant, as pre-operative anxiety may adversely affect the physical condition of patients who are about to undergo surgery. Progressive muscle exercises help patients to recognise, reduce, and control the muscle tension associated with anxiety. This was evidenced in a study involving three respondents scheduled for surgery: prior to the PMR intervention, two respondents exhibited moderate anxiety while one exhibited severe anxiety. Following the intervention, the two respondents' anxiety levels decreased from moderate to mild, and the respondent with severe anxiety showed a reduction to moderate.

Similarly, Lolandia Septin et al. (2023) demonstrated that PMR therapy significantly reduced anxiety in pre-anaesthetic patients at RSI Banjarnegara. In this study, involving 37 respondents, 70.3% (26 patients) exhibited moderate anxiety and 29.7% (11 patients) experienced mild anxiety, as measured by the Hamilton Anxiety Rating Scale (HARS) before the intervention. After a 10-minute PMR session, there was a significant reduction in anxiety: 54.1% (20 patients) showed mild anxiety and 45.9% (17 patients) no longer experienced anxiety. The paired t-test yielded a p-value of 0.000, indicating that the PMR intervention resulted in a statistically significant reduction in pre-operative anxiety.

PMR is an efficient non-pharmacological intervention that can be routinely applied to pre-operative patients, effectively reducing physiological anxiety as evidenced by a decrease in muscle tension. Winarni et al. (2022) found that PMR techniques effectively reduced anxiety in mothers scheduled for a caesarean section. Prior to the intervention, anxiety levels measured using the Zung Self-Report Anxiety Scale (ZSAS) in 36 respondents indicated moderate to high anxiety, largely due to fears regarding the surgical procedure, the baby's health, and the risks of complications associated with both the surgery and anaesthesia. The PMR intervention was provided to a group of 18 respondents one day prior to surgery for 20 minutes, resulting in a significant reduction in anxiety. Moreover, this study demonstrated that PMR was more effective than a breathing relaxation technique administered to a control group, highlighting the importance of both physical and mental therapeutic interventions in reducing pre-operative stress. Consequently, PMR therapy significantly reduced pre-operative anxiety in mothers at RS Dinda Tangerang, and it is recommended that nurses educate patients on and implement this therapy as an effective non-pharmacological approach to reduce stress before surgery.

Additionally, Lizawati et al. (2022) examined pre-operative mothers scheduled for caesarean section using a pre-test and post-test design. In this study, conducted on 21 respondents at RSUD Hj Daud Tanjung Uban and using the Hamilton Anxiety Rating Scale (HARS), the average anxiety level before intervention was 24.667 (with most respondents experiencing moderate anxiety). After a 20-minute PMR session, the average anxiety level decreased to 20.476, with the majority of respondents transitioning to mild anxiety. PMR achieves these results by suppressing the sympathetic nervous system and reducing muscle tension, which in turn lowers stress and anxiety.

PMR is further recommended as an efficient non-pharmacological approach for managing anxiety and blood pressure in pre-operative patients, particularly those at risk of aneurysm and those undergoing major surgery. Sukron (2023) found that PMR significantly reduced anxiety levels in pre-operative patients undergoing major surgery at RS Muhammadiyah Palembang. Before the intervention, the average anxiety level was 21.95, with most patients suffering from moderate to severe anxiety. Post-intervention, the average anxiety level decreased to 20.53, reflecting a mean difference of 1.42. The statistical analysis indicated a p-

value of 0.015, suggesting a significant difference between pre- and post-intervention anxiety levels, thereby confirming the effectiveness of PMR in reducing patient anxiety.

In another study by Uysal et al. (2023), a 20-minute PMR session conducted before surgery was found to significantly reduce both anxiety levels and blood pressure in patients with aneurysm. Following the intervention, the average anxiety score fell dramatically from 11.21 to 3.76, and discomfort—as measured by the Visual Analogue Scale (VAS)—decreased from 5.26 to 2.97. Additionally, systolic blood pressure reduced from 136.05 mmHg to 123 mmHg, diastolic blood pressure from 81.15 mmHg to 72.68 mmHg, heart rate from 93.55 beats per minute to 84.36 beats per minute, and respiratory rate from 13.44 to 12.34 breaths per minute. Similarly, Aristiani et al. (2022) studied pre-operative patients with kidney stones, with anxiety measured using the Depression Anxiety Stress Scales (DASS 42) at RS Kardinah Tegal. Their findings showed a reduction in anxiety scores from 18 before the intervention to 11 after three days of PMR intervention (20–30 minutes per session), with patient vital signs stabilising at 120/70 mmHg and a heart rate of 97 beats per minute. The PMR technique works by directing patients to focus on a series of muscle contractions and relaxations performed sequentially, which helps to reduce sympathetic nervous system activity and produce a calming effect. This reduction in anxiety is crucial for preventing complications associated with high pre-operative anxiety—such as elevated blood pressure—that can complicate surgical procedures, increase the risk of intra-operative complications, and delay post-operative recovery.

CONCLUSION

Progressive Muscle Relaxation (PMR) therapy has proven to be effective in reducing pre-operative patient anxiety. Several studies have demonstrated significant reductions in anxiety following the PMR intervention, whether in patients undergoing major surgery, pregnant women scheduled for caesarean section, or patients with specific medical conditions such as kidney stones and aneurysms. This therapy functions by reducing muscle tension associated with anxiety through sequential muscle contraction and relaxation. Moreover, PMR helps suppress sympathetic nervous system activity that can trigger physiological anxiety, thereby producing a calming effect. Several studies have confirmed that this therapy not only reduces anxiety but also improves vital signs, such as blood pressure and heart rate, ultimately enhancing the stability of patients' vital conditions during and after surgery. This research underscores that Progressive Muscle Relaxation is an efficient and safe non-pharmacological intervention that can be routinely applied to manage pre-operative anxiety, with consistent results across a range of medical contexts. The reduction of anxiety is crucial in preventing surgical complications that may arise from high blood pressure or excessive physiological responses.

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