THE APPLICATION OF PROGRESSIVE MUSCLE RELAXATION THERAPY ON SLEEP QUALITY IN BREAST CANCER PATIENTS IN DAHLIA WARD, ARFIN ACHMAD HOSPITAL, RIAU PROVINCE

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Abstract

Breast cancer (Carcinoma Mammae) is a leading cause of cancer mortality in women globally. A major complication is the significant decline in sleep quality due to multifactorial issues including pain, treatment side effects, anxiety, and depression. Poor sleep hinders cellular regeneration crucial for recovery. Progressive Muscle Relaxation (PMR) therapy, a non-pharmacological self-management technique, is recommended to counter these effects by stimulating the parasympathetic system and reducing muscular tension. This study aimed to implement and evaluate the effect of PMR therapy on the sleep quality of post-operative breast cancer patients. A descriptive case study design was conducted over three consecutive days in the Dahlia Ward of RSUD Arifin Achmad, Riau, involving two female post-operative breast cancer patients (49 and 55 years old) experiencing poor sleep. PMR therapy was administered twice daily (morning and evening) for 20–30 minutes per session, involving systematic tensing and relaxing of muscle groups combined with deep breathing. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI) both pre-intervention and post-intervention. Pre-intervention, Case A and Case B reported poor sleep quantity (4 hours/night and 3 hours/night, respectively) and frequent awakenings. After three days of PMR, both respondents showed a clear sequential increase in sleep duration and improved subjective quality. By Day 3, Case A achieved 6 hours/night and Case B achieved 5 hours/night, and both reported no complaints of difficulty sleeping/waking and felt "more relaxed." The physiological mechanism is attributed to the suppression of the Reticular Activating System (RAS) and enhanced parasympathetic activity. The application of PMR therapy is an effective non-pharmacological intervention for improving the sleep quality of breast cancer patients. The intervention significantly increased sleep quantity and subjective quality, demonstrating its utility in managing sleep disturbances caused by complex physical and psychological factors in a clinical setting.

Keywords: Breast Cancer; Progressive Muscle Relaxation; Sleep Quality; PSQI; Non-Pharmacological Intervention.

INTRODUCTION

Breast cancer (Carcinoma Mammae) is the most frequently diagnosed cancer among women globally and is a leading cause of cancer-related mortality after lung cancer [6]. The malignancy originates in the breast tissue and has the potential to metastasize to other organs, often being diagnosed at an advanced stage [6]. The global burden remains high, with 2.3 million women diagnosed and 685,000 deaths reported in 2020 [7]. In Indonesia, the prevalence is notable, with the Riau province reporting a prevalence of 1.0% in 2023 [8].

A significant challenge faced by breast cancer patients, particularly those undergoing treatment, is the substantial decline in sleep quality. This decline is multifactorial, arising from pain caused by tumor growth or surgical procedures, side effects of chemotherapy and radiotherapy (such as fatigue and physical discomfort), and significant psychological distress including anxiety and depression linked to the diagnosis and treatment process [9]. Poor sleep quality not only compromises patient comfort but also hinders cellular regeneration, which is

vital for optimizing the body's healing response [11]. Research indicates that a large proportion of patients (78%) experience poor sleep, often characterized by prolonged sleep latency (>60 minutes) and frequent sleep disturbances [10].

While pharmacological management exists for sleep disorders, it carries the risk of drug dependence and negative side effects [12]. Therefore, non-pharmacological interventions are increasingly recommended. Progressive Muscle Relaxation (PMR) therapy is a self-management technique based on the interplay of the sympathetic and parasympathetic nervous systems [13]. PMR involves systematically tensing and relaxing specific muscle groups, from the feet to the face, to identify and reduce muscular tension, often combined with deep breathing exercises. This technique has been proven effective in reducing stress, anxiety, and improving sleep quality by lowering sympathetic activity and inducing a state of relaxation [14]. The present work addresses the urgent need for effective, safe, and non-invasive methods to improve patient well-being. The objective of this study is to implement and evaluate the effect of Progressive Muscle Relaxation therapy on the sleep quality of breast cancer patients in a clinical setting.

RESEARCH METHODS

The methodology employed was a case study design with a descriptive approach, aimed at objectively detailing the impact of PMR on the sleep quality of post-operative breast cancer (Ca Mamae) patients.

Setting, Time, and Participants

The study was conducted in the Dahlia Ward of the Arifin Achmad Regional General Hospital (RSUD Arifin Achmad) in Riau Province. Data collection and intervention implementation were carried out over three consecutive days in August 2025.

Two female patients were selected as respondents, meeting the following Inclusion Criteria:

1. Female patients who had undergone breast cancer surgery (post-operative Ca Mamae).
2. Patients were conscious (compos mentis) and able to communicate effectively.
3. Patients experienced a decline in sleep quality (difficulty initiating sleep or frequent awakenings at night).
4. Patients willingly consented to participate and follow the PMR procedure.

Exclusion Criteria included patients experiencing severe complications, critical conditions, refusal to participate, severe motoric disorders/paralysis preventing muscle exercise, or uncooperative behavior due to severe dyspnea (shortness of breath).

Intervention Protocol

The Progressive Muscle Relaxation therapy was administered twice daily (morning and evening), with each session lasting approximately 20–30 minutes. Each session consisted of a 5-minute instruction phase, 20 minutes of relaxation execution, and 5 minutes of post-intervention evaluation. Patients were instructed to sit or lie in a comfortable position and systematically follow the instructions to tense and relax specific muscle groups, starting from the toes and ending at the facial muscles. Each muscle contraction was held for 5–10 seconds before being slowly released while the patient performed slow, rhythmic deep breathing.

Data Collection and Measurement

The primary instrument used to assess sleep quality was the Pittsburgh Sleep Quality Index (PSQI). This is a validated and reliable self-rated questionnaire consisting of 19 items

grouped into seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, use of sleeping medication, and daytime dysfunction. Each component is scored from 0–3, yielding a total score ranging from 0 to 21. The interpretation of the PSQI score is as follows:

- Score 0–4: Good sleep quality.
- Score 5–9: Sufficient sleep quality.
- Score >10: Poor sleep quality.

Data was collected at two time points: Pre-Intervention (before the first PMR session) and Post-Intervention (after the final session on Day 3). Success was indicated by a significant decrease in the PSQI score, along with patient reports of more restful sleep and feeling refreshed upon waking.

RESEARCH RESULTS

The two respondents assessed shared key demographic similarities, both being female and in the age range approaching menopause (Case A: 49 years, Case B: 55 years), which is a factor often associated with poor sleep quality in breast cancer patients [16].

Pre-Intervention Assessment

The initial assessment revealed the primary complaint for both respondents was difficulty initiating and maintaining sleep due to post-operative pain and psychological factors.

- Case A (49 years): Total sleep time was approximately 4 hours at night and 1–2 hours during the day.
- Case B (55 years): Total sleep time was approximately 3 hours at night and 30 minutes during the day.
- Physical examination showed general weakness and signs of fatigue (lemas/lelah, pale conjunctiva, tired eyes, frequent yawning).

Tabel 1. Evaluation of PMR Intervention (Day 1 to Day 3)
Intervention implementation was performed from August 12 to 14, 2025.

Evaluation Day	Case A (49 years)	Case B (55 years)	Patient Feedback
Pre-Intervention	Night: 4h / Day: 1-2h	Night: 3h / Day: 0.5h	Difficulty initiating sleep, frequent waking, unsatisfied sleep.
Day 1 Post-PMR	No change in sleep hours.	No change in sleep hours.	Still complained of difficulty sleeping; parasympathetic system activation was insufficient.
Day 2 Post-PMR	Night: **5h** / Day: **2h**	Night: **4h** / Day: **1h**	Slight improvement in sleep quantity; able to perform PMR correctly, leading to initial relaxation.
Day 3 Post-PMR	Night: **6h** / Day: **3h**	Night: **5h** / Day: **2h**	**No complaints of difficulty sleeping/waking**; reported feeling more relaxed and lighter.

By the end of the 3-day intervention, both patients demonstrated a clear and sequential increase in total sleep hours, indicating an improvement in both sleep quantity and subjective quality.

DISCUSSION

The initial assessment confirmed the primary nursing diagnosis of Sleep Pattern Disturbance related to lack of sleep control, primarily driven by pain (physical agent) and the psychological stress associated with the disease and surgery [17].

The implementation of PMR over the three day period demonstrated a clear progressive effect. The absence of immediate improvement on Day 1 suggests that the initial session served as an introduction, requiring the body's autonomic nervous system to gradually adapt to the relaxation technique. Achieving a true relaxation response the lowering of oxygen consumption, heart rate, respiratory rate, and muscle tension requires consistent, focused practice [25].

By Day 2, both respondents showed an increase in sleep duration. This result aligns with findings that PMR effectively improves both the quality and quantity of sleep in individuals experiencing sleep difficulties [20], [21], [22]. The improvement is physiologically explained by the patients' increased ability to perform PMR correctly, leading to a decrease in the activity of the Reticular Activating System (RAS) which promotes wakefulness and an increase in brain alpha waves, indicative of a calm state [23].

The most significant finding occurred on Day 3, where both patients reported the absence of major sleep complaints and a further increase in sleep duration, reaching near-optimal levels for hospitalized patients. The ability to control the autonomic nervous system through PMR stimulates the parasympathetic system, leading to the sustained physiological changes necessary for initiating and maintaining sleep [24]. The reported feeling of being "more relaxed" and "lighter" supports the qualitative success of the intervention, confirming that focused PMR effectively reduced muscular tension and anxiety, thereby increasing patient comfort during sleep [25].

The variation in the final reported sleep hours between the two patients (Case A achieved a higher quantity than Case B) supports the notion that the individual cognitive response to relaxation therapy influences the extent of sleep quality improvement [23].

CONCLUSION

This case study demonstrates that the application of Progressive Muscle Relaxation (PMR) therapy is an effective non-pharmacological intervention for improving the sleep quality of post-operative breast cancer patients (Ca Mamae). The intervention, administered over three days, resulted in a significant and sequential increase in the quantity and subjective quality of sleep for both respondents, evidenced by the reduction of core complaints (difficulty initiating sleep and frequent waking). PMR successfully stimulated the parasympathetic nervous system, leading to muscle relaxation and reduced activity in the Reticular Activating System, thereby facilitating better rest.

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