The Effect Of Hand Massage Relaxation Techniques To Reduce Pain Intensity In Post General Anesthesia Patients At PKU Muhammadiyah Gamping Hospital

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Abstract

Purpose: To determine the effect of hand massage relaxation techniques to reduce pain intensity in post general anesthesia patients at PKU Muhammadiyah Gamping Hospital.
Method: his study is a quantitative study with a one group pre-test and post-test design. The population was patients after general anesthesia at PKU Muhammadiyah Gamping Hospital, with a sample of 66 people selected through purposive sampling. The instrument used was the NRS observation sheet, and data analysis was performed with the Wilcoxon test.
Results: Before the hand massage intervention, most patients had a pain scale of 3 and after the intervention, most patients experienced a decrease in pain to a pain scale of 1. The results of the Wilcoxon test obtained a p-value of 0.000 (<0.005).
Keywords: Hand Massage, Pain, General Anesthesia

1. Introduction

Postoperative pain is a common clinical problem experienced by patients after undergoing surgery with general anesthesia. This condition occurs as a result of tissue damage that triggers an inflammatory process and the release of chemical mediators such as prostaglandins, bradykinin, histamine, and pro-inflammatory cytokines. These mediators activate nociceptors and transmit pain impulses to the central nervous system, causing patients to continue experiencing pain even after the effects of anesthesia have worn off (Anderson, 2019; Johnson & Lee, 2023). If not properly managed, postoperative pain may lead to discomfort, delayed healing, increased risk of complications, and even chronic pain (Sutoyo et al., 2016).

The urgency of non-pharmacological pain management has been increasing due to the limitations and side effects associated with analgesic drugs such as opioids and NSAIDs. One safe, simple, and effective alternative intervention is hand massage. This technique is a non-invasive relaxation method that is easy to apply and provides positive effects both physiologically and psychologically. Hand massage works by enhancing endorphin release, stimulating the parasympathetic nervous system, and reducing muscle tension and anxiety, thereby lowering pain intensity (Yanti et al., 2023; Mahalia et al., 2024).

This study aims to determine the effect of hand massage on pain intensity in patients after general anesthesia. The approach includes identifying the characteristics of the respondents, measuring pain scores before and after the

intervention, and conducting statistical analysis to evaluate the effectiveness of hand massage in reducing pain.

The findings of this study are expected to serve as a basis for the clinical application of non-pharmacological interventions in postoperative pain management. Previous studies have shown that hand massage has significant benefits in reducing pain, such as in patients after mastectomy, elderly patients with joint pain, and even in individuals with high anxiety or cognitive impairment (Putri & Rahmawati, 2023; Sari & Rumhaeni, 2020; Pramesti, 2020). However, research specifically examining the effect of hand massage on postoperative pain following general anesthesia remains limited, particularly in Indonesia. Therefore, this study is important to provide additional scientific evidence regarding the effectiveness of hand massage in the postoperative care context.

Based on the above explanation, the hypothesis proposed in this study is: "There is a significant effect of hand massage on reducing pain intensity in patients after general anesthesia."

2. Methods

This study employed a quantitative pre-experimental design with a one-group pretest-posttest approach, in which pain intensity was measured before and after the administration of hand massage in postoperative patients with general anesthesia. The research was conducted in the recovery room of PKU Muhammadiyah Hospital during May.

The study population consisted of all postoperative patients with general anesthesia treated in the recovery room. The sampling technique used was purposive sampling with predetermined inclusion and exclusion criteria. The inclusion criteria included patients who were hemodynamically stable, able to communicate verbally, and not under the influence of deep sedation. The exclusion criteria included patients with skin disorders on the hands, severe neurological disorders, or contraindications to touch.

Data were collected using the Numeric Rating Scale (NRS) with a limited range (scores 1, 2, and 3), as directed by the academic supervisor due to distributional constraints of categorical data. Measurements were taken before and after the intervention. The hand massage intervention was performed for 10–15 minutes using techniques such as effleurage, petrissage, friction, and finger relaxation according to standard procedures. The tools and materials used included baby oil, a stopwatch, an observation sheet, and pain assessment documentation.

The operational definition of the pain variable in this study was the patient's subjective perception of postoperative pain, measured using the NRS with a scale of 1–3. The operational definition of the hand massage intervention was the application of gentle, rhythmic pressure on the patient's hand using standard techniques in a single session.

The collected data were analyzed using the Wilcoxon Signed-Rank Test, as the data were numerical but not normally distributed. The results of the analysis were then interpreted to determine the effectiveness of hand massage in reducing postoperative pain.

3. Results

3.1. Univariate Analysis

According to the findings, the respondents' characteristics are described as follows:

Characteristics	Frequency	Percentage (%)
Age		
20-30	6	9,1
31-40	8	12,1
41-50	20	30,3
51-60	32	48,5
Total	66	100,0
Gender		
Male	26	39,4
Female	40	60,6
Total	66	100,0
Pretest Pain		
Scale 1	0	0
Scale 2	18	27,3
Scale 3	48	72,7
Total	66	100,0
Posttest Pain		
Scale 1	53	80,3
Scale 2	13	19,7
Scale 3	0	0
Total	66	100,0

Based on the table, the respondents' characteristics by age indicated that the majority were within the age range of 51–60 years, comprising 32 respondents (48.5%). In terms of gender distribution, 26 respondents (39.4%) were male, while 40 respondents (60.6%) were female, demonstrating that the majority of respondents in this study were female.

The descriptive statistical analysis of the pretest data revealed that 48 respondents (72.7%) reported a pain intensity of scale 3, 18 respondents (27.3%) reported a pain intensity of scale 2, and none reported a pain intensity of scale 1. In contrast, the posttest data demonstrated a considerable reduction in pain intensity, with 53 respondents (80.3%) reporting a pain intensity of scale 1, 13 respondents (19.7%) reporting a pain intensity of scale 2, and none reporting a pain intensity of scale 3.

3.2. Bivariate Analysis

Bivariate analysis in this study was conducted using the non-parametric Wilcoxon Signed-Rank Test. The results of the analysis are presented in the following table:

	Pain Intensity Scale			*Mean*	*P-value*
	Scale 1	Scale 2	Scale 3		

Pain Intensity	f	%	f	%	f	%		0.000
Pre test	0	0	18	27,3	48	72,7	2.73	
Posttest	53	80,3	13	19,7	0	0	1.20	

The results presented in the table show a negative rank of 66, indicating a reduction in pain levels from the pretest to the posttest among 66 respondents. The mean pain score decreased from 2.73 in the pretest to 1.20 in the posttest. Furthermore, the analysis demonstrated a statistically significant difference between pretest and posttest pain levels, as indicated by a significance value of p = 0.000 (< 0.05). These findings suggest that the hand massage intervention had a significant effect in reducing postoperative pain.

4. Discussion

This study aimed to determine the effect of hand massage relaxation techniques on pain intensity in postoperative patients with general anesthesia at PKU Muhammadiyah Gamping Hospital. Based on the results of descriptive statistical analysis, it was found that prior to the intervention, the majority of patients experienced severe pain (scale 3), with 48 patients (72.7%). After the intervention, a significant reduction in pain intensity was observed, with most patients reporting mild pain (scale 1), totaling 53 patients (80.3%). This decrease was further supported by the results of the Wilcoxon Signed-Rank Test, which yielded a significance value of 0.000 (p < 0.05) and a negative rank value of 66, indicating that all respondents experienced a reduction in pain following the intervention.

The hypothesis proposed in this study “There is a significant effect of hand massage on reducing pain intensity in postoperative patients with general anesthesia” was confirmed. The results showed a reduction in the mean pain score from 2.73 at the pretest to 1.20 at the posttest, with a p-value of 0.000, indicating a statistically significant effect. Thus, hand massage proved to be an effective intervention in reducing pain intensity among patients after general anesthesia.

Theoretically, these findings reinforce the pain control mechanism, particularly the Gate Control Theory proposed by Melzack and Wall (1965). This theory explains that non-nociceptive stimuli such as massage can “close the gate” at the spinal cord, thereby inhibiting the transmission of pain signals to the brain. Hand massage provides stimulation to A-beta nerve fibers, which inhibit impulses from A-delta and C fibers, thereby reducing pain perception. In addition, hand massage has been associated with increased endorphin production and activation of the parasympathetic nervous system, resulting in relaxation, lowered blood pressure, decreased heart rate, and reduced muscle tension. Collectively, these processes contribute to the overall reduction in pain intensity experienced by patients.

The findings of this study provide significant contributions to nursing practice in anesthesiology, particularly in the non-pharmacological management of postoperative pain. Hand massage may be incorporated into standard pain management protocols in recovery rooms, as it is safe, simple, effective, and free of the side effects often associated with pharmacological therapies such as opioids and NSAIDs. The use of this technique can enhance overall patient comfort, accelerate mobilization, and support the healing process. Moreover, it is especially valuable in situations where the use of analgesics is limited due to patient conditions, medication availability, or institutional policies. Therefore, hand massage can serve as an important alternative for improving the overall quality of nursing care.

Nevertheless, this study had several limitations. The main challenge was the difficulty in recruiting respondents who fully met the inclusion criteria, due to the complexity of postoperative conditions and variations in pain responses. Field observations also revealed that the majority of postoperative patients under general anesthesia continued to experience severe pain (scale 7–10) even 24 hours after surgery. This high pain intensity may have influenced the effectiveness of the intervention and may require a more intensive pain management approach, such as analgesic injections, in combination with hand massage. Additionally, methodological limitations arose from patients who had already received analgesic therapy prior to the intervention. This made it difficult to isolate the pure effect of hand massage, as it was unclear whether the observed reduction in pain intensity was solely due to the intervention or partially influenced by previous analgesic use. These circumstances indirectly affected the researcher's ability to meet the targeted sample size within the research timeframe.

5. Conclusion

a. The characteristics of the respondents in this study included age, gender, and pain scale before and after the intervention. The results indicated that the respondents were predominantly within the age range of 51–60 years and the majority were female.
b. The pain intensity of post–general anesthesia patients prior to the relaxation technique of hand massage was mostly at a moderate to severe level, with pain scores of 2 and 3. This condition reflects postoperative pain resulting from tissue damage and the inflammatory process.
c. After the application of the hand massage relaxation technique, patients experienced a significant reduction in pain intensity, with the majority of respondents reporting mild pain (scale 1). This finding demonstrates the effect of the intervention in reducing patients' pain perception.
d. Based on the results of the statistical analysis using the Wilcoxon Signed-Rank Test, it was found that there was a statistically significant difference ($p < 0.05$) in pain intensity before and after the intervention. This confirms that the hand massage relaxation technique is effective as a non-pharmacological method in assisting postoperative pain management..

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7. Author Contributions

The author assumes full responsibility for the entire research process, starting from problem formulation, proposal preparation, data collection and analysis, to the writing of the final thesis manuscript. All stages were carried out independently under the supervision and guidance of the academic advisor to ensure the accuracy and validity of the research findings.

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