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Effectiveness of Effleurage Back Massage in Reducing Back Pain among Orthopedic Patients: A Quasi-Experimental Study

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Abstract

Background: Back pain remains a prevalent and significant health issue, adversely impacting quality of life and productivity globally. Effective management, particularly through non-pharmacological interventions, is essential for enhancing patient outcomes and well-being.

Objectives: To evaluate the effectiveness of effleurage back massage in reducing back pain among orthopedic patients and to find out the associations between the level of pain and selected demographic variables.

Methods: A quasi-experimental two-group pre-test–post-test design was adopted. The study included 60 orthopedic patients aged 20–60 years, selected through convenience sampling and equally divided into experimental (n=30) and control (n=30) groups. The experimental group received effleurage back massage sessions lasting 20 minutes daily for five consecutive days, while the control group received no intervention. Pain levels were assessed using a Visual Analogue Scale (VAS) before and after the intervention. Associations between pain levels and demographic variables such as age, sex, education, and occupation were analyzed using chi-square tests.

Results: The mean pain score significantly reduced in the experimental group from 3.40±0.98 to 1.03±0.17 post-intervention ($p<0.05$). In contrast, the control group showed minimal change (3.43±1.31 to 3.36±1.37, $p>0.05$). Chi-square analysis indicated no significant associations between the level of back pain and demographic variables including age, sex, educational status, and occupation.

Conclusion: Effleurage back massage effectively reduces back pain in orthopedic patients, providing significant pain relief as a safe and non-pharmacological intervention. Despite its effectiveness, pain levels showed no significant association with demographic variables, highlighting its universal applicability irrespective of patient characteristics. Effleurage massage thus represents a valuable complementary therapy in clinical practice.

Keywords: Back Pain, Effleurage Massage, Orthopedic Patients, Pain Management

INTRODUCTION

Back pain is one of the most common health complaints, affecting a significant portion of the global population at some point in their lives. It often results from a combination of factors including sedentary lifestyle, occupational stress, aging, and musculoskeletal strain. Chronic back pain significantly impairs quality of life, restricts daily activities, and leads to considerable healthcare costs. Effective pain

management, therefore, remains a priority in clinical practice, with both pharmacological and non-pharmacological interventions continuously explored to enhance patient outcomes and well-being.[1,2,3]
Massage therapy, particularly Effleurage, has gained widespread recognition for its effectiveness in pain management. Effleurage is characterized by rhythmic, gentle strokes aimed at promoting relaxation, enhancing circulation, and relieving muscle tension. This technique, widely utilized in therapeutic and clinical settings, has demonstrated significant benefits in managing various types of musculoskeletal pain, including back pain. Given the rising preference for complementary and alternative therapies, Effleurage massage presents a valuable intervention that can supplement conventional pain management approaches.[4,5,6]

Need and Significance of the Study

Back pain is a prevalent musculoskeletal condition globally, significantly impacting individuals' quality of life and productivity. According to the World Health Organization (WHO), nearly everyone experiences back pain at some point, affecting approximately 4%–33% of the population at any given time[1]. In India alone, the annual prevalence rate of low back pain is approximately 6 million cases, highlighting its significant public health burden[7].
Pain management remains a substantial challenge for healthcare providers and institutions, particularly in acute care settings. Effective pain relief interventions not only alleviate discomfort but also enhance emotional well-being, improve mobility, promote participation in rehabilitation therapies, facilitate relaxation, and contribute to quicker recovery, thus potentially reducing the need for pharmacological interventions[8].
Massage therapy, specifically effleurage back massage, has emerged as a beneficial complementary approach in pain management. Effleurage involves rhythmic, gentle stroking movements over the spine and back, known for promoting muscle relaxation, enhancing circulation, and providing both physiological and psychological comfort[8].
Given the rising preference for conservative and alternative therapies in pain management due to their cost-effectiveness and minimal side effects, this study holds significant implications[5]. It aims to systematically evaluate the effectiveness of effleurage back massage in reducing back pain among orthopedic patients. By assessing its efficacy, this research contributes valuable evidence to the existing body of knowledge, promoting evidence-based nursing practices and potentially influencing healthcare protocols and educational curricula in nursing[9].
This study is significant as it seeks to address a critical gap in pain management strategies within clinical settings, providing healthcare professionals with empirical data to support the integration of non-pharmacological interventions such as effleurage massage into patient care regimens[7]. Ultimately, findings from this study could enhance patient outcomes, improve clinical practices, and foster advancements in nursing education, administration, and research[10]

Materials and Methods

Research Approach A quantitative approach was adopted for this study, aiming to systematically evaluate the effectiveness of effleurage back massage on back pain among orthopedic patients.
Research Design A quasi-experimental, two-group pre-test–post-test design was utilized. This design allowed for comparison between the experimental group receiving the intervention and the control group receiving no intervention.

Setting The study was conducted at the Orthopedic Outpatient Department of Sree Mookambika Medical College Hospital, Kulasekharam, Kanyakumari District. The hospital is a 750-bed multispecialty facility with an average monthly census of 80–100 orthopedic patients experiencing back pain.

Population and Sample The target population comprised orthopedic patients aged between 20 and 60 years experiencing varying levels of back pain. A convenience sampling technique was employed to select 60 participants, divided equally into experimental (n=30) and control groups (n=30).

Inclusion Criteria

- Patients aged 20–60 years.
- Patients willing to participate.
- Conscious and oriented patients.

Exclusion Criteria

- Patients unwilling to participate.
- Patients with psychiatric illnesses.
- Patients with brain or spinal cord injuries.
- Participants previously involved in a pilot study.

Data Collection Instrument The instrument consisted of two sections:

- **Section A:** Demographic variables including age, sex, educational status, and occupation.
- **Section B:** Visual Analogue Scale (VAS) for assessing the level of back pain, with pain levels categorized from "no pain" to "intolerable pain."

Intervention Procedure Participants in the experimental group received effleurage back massage for 20 minutes per session over five consecutive days. The massage included four types of strokes: straight effleurage, bilateral effleurage, deep effleurage, and superficial effleurage. Control group participants received no intervention.

Data Collection Procedure Data collection occurred over a four-week period. After obtaining informed consent, baseline pain levels were assessed using the VAS for both groups. Post-intervention pain levels were reassessed after five days.

Statistical Analysis Data were analyzed using descriptive and inferential statistics. Student's t-test was employed to evaluate the effectiveness of the massage, while chi-square tests assessed associations between demographic variables and back pain levels.

Ethical Considerations Ethical approval was obtained from the institutional review board. Oral informed consent was secured from all participants, ensuring confidentiality and the right to withdraw at any point during the study.

Data Quality Assurance To ensure data quality, the research instrument (VAS) was standardized and previously validated. Data collection was conducted consistently by a single trained investigator to maintain uniformity. Regular cross-checking and verification of data entry were performed to minimize errors and ensure accuracy.

Results

A total of 60 orthopedic patients experiencing varying degrees of back pain participated in this study, equally divided into experimental and control groups. The demographic distribution of the participants is

detailed below.

In terms of gender distribution, the study consisted of an equal proportion of males and females (53.3% males and 46.7% females) in both groups. Regarding age, the majority belonged to the 41–50 years age group (36.6%), followed by 31–40 years (33.3%), 51–60 years (15.0%), and 21–30 years (15.0%), indicating a higher prevalence of back pain in middle-aged adults.

Educationally, 40.0% of participants had secondary education, 31.7% had primary education, 16.7% were college-educated, and 11.6% were illiterate. Occupationally, a substantial proportion were heavy workers (36.7%), followed by moderate workers (30.0%), housewives (26.7%), and sedentary workers (6.6%), reflecting a diverse occupational background among back pain sufferers.

Table 1: Demographic Distribution of Participants (n=60)

Variable	Category	Experimental Group (n=30)	Control Group (n=30)	Total (%)
Gender	Male	16 (53.3%)	16 (53.3%)	53.3%
	Female	14 (46.7%)	14 (46.7%)	46.7%
Age	21–30 years	5 (16.7%)	4 (13.3%)	15.0%
	31–40 years	9 (30.0%)	11 (36.7%)	33.3%
	41–50 years	11 (36.7%)	11 (36.7%)	36.6%
	51–60 years	5 (16.7%)	4 (13.3%)	15.0%
Education	Illiterate	2 (6.7%)	5 (16.7%)	11.6%
	Primary	11 (36.7%)	8 (26.7%)	31.7%
	Secondary	16 (53.3%)	8 (26.7%)	40.0%
	College	1 (3.3%)	9 (30.0%)	16.7%
Occupation	Sedentary Worker	2 (6.7%)	2 (6.7%)	6.6%
	Moderate Worker	10 (33.3%)	8 (26.7%)	30.0%
	Heavy Worker	12 (40.0%)	10 (33.3%)	36.7%
	Housewife	6 (20.0%)	10 (33.3%)	26.7%

Table 2: Effectiveness of Effleurage Back Massage on Pain Levels (n=60)

Group	Pre-test (Mean ± SD)	Post-test (Mean ± SD)	Mean Reduction	t-value	p-value
Experimental Group	3.40 ± 0.98	1.03 ± 0.17	2.37 ± 0.81	13.58	<0.05
Control Group	3.43 ± 1.31	3.36 ± 1.37	0.07 ± 0.06	1.82	>0.05

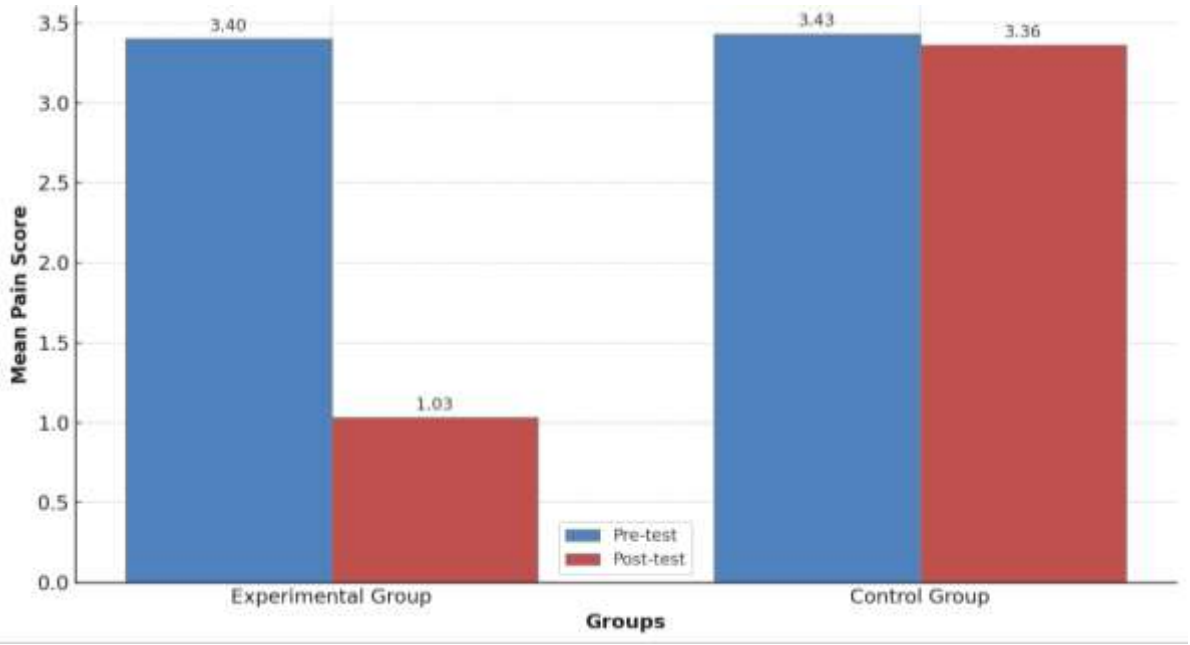

Fig 1: Comparison of Mean back pain scores between Experimental and control groups

Table 3: Comparison of Mean Pain Reduction between Groups (n=60)

Group	Mean Reduction	t-value	df	p-value
Experimental Group	2.37 ± 0.81	9.52	58	<0.05
Control Group	0.07 ± 0.06			

Table 4: Association between Level of Back Pain and Selected Demographic Variables (n=60)

Demographic Variables	χ^2-value	df	Table Value	Significance
Age	23.06	20	31.410	Not significant
Sex	6.17	5	11.07	Not significant
Educational Status	12.17	18	24.996	Not significant
Occupation	13.55	15	24.996	Not significant

Discussion

The present study demonstrates that effleurage back massage significantly reduced mean pain scores from 3.40 ± 0.98 to 1.03 ± 0.17 in the experimental group, a change that aligns with extant literature. Research in post-operative orthopedic and cardiothoracic populations reported similar immediate benefits, observing reduced pain and anxiety following five consecutive days of effleurage massage[11]. Furthermore, randomized trials comparing Swedish or structural massage to usual care in chronic low back pain found massage to be more effective for short-term pain relief, with some benefits lasting up to six months[12]. Mechanistically, pressure at trigger points and gentle stroking maneuvers improve circulation, relax muscle tension, and modulate pain via gate control pathways, supporting the findings[13]. Although methodological variabilities exist in prior studies, collectively they affirm that effleurage and related

massage modalities are viable non-pharmacological treatments for reducing musculoskeletal pain, reinforcing the clinical relevance and applicability of results.

Conclusion

Effleurage back massage significantly reduced mean pain scores from 3.40 ± 0.98 to 1.03 ± 0.17 in the experimental group, demonstrating a substantial therapeutic benefit. This aligns with findings in orthopedic settings where back massage yielded meaningful pain relief (mean decrease from 7.85 to 5.28, $p < 0.001$). Additionally, systematic reviews have established massage as an effective non-pharmacological intervention for acute and chronic low back pain, offering short-term symptom relief and functional improvement compared to usual care or no treatment. As such, effleurage massage constitutes a valuable, low-risk adjunct to standard orthopedic pain management protocols, meriting integration into routine clinical practice for enhanced patient outcomes.

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