

Effectiveness of Back Massage in Reducing Post Operative Pain and Improving Quality of Recovery among Patients Undergone Orthopedic Surgery

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Abstract—Background: Musculoskeletal disorders are degenerative diseases and inflammatory conditions that cause pain and impair normal activities. They can affect many different parts of the body including upper and lower back, neck, shoulders and extremities. Orthopedic surgery addresses and attempts to correct problems that arise in the skeleton and its attachments, the ligaments and tendons. Pain following orthopedic surgery affects the functional ability and outcomes. Inadequate postoperative pain management decreases participation in rehabilitation and activities of daily living and increased potential for chronic pain. Pain management is essential optimal for patient outcome. **Objectives:** To assess the pre and posttest level of pain and quality of recovery among patients undergone orthopedic surgery in the control and experimental group, to evaluate the effectiveness of back massage on the level of pain and quality of recovery among patients undergone orthopedic surgery in experimental group, to correlate the level of pain with quality of recovery among patients undergone orthopedic surgery in the control and experimental group, to find out the association between level of pain & level of quality of recovery among patients undergone orthopedic surgery and their selected demographic variables in control and experimental group and to find out the association between among patients. **Methodology:** Quasi experimental non randomized control group pretest posttest design was undertaken to assess post operative pain and quality of recovery among 30 patients in control group and 30 patients in experimental group who undergone orthopedic surgery at selected Hospital in Lucknow. **Results:** The study result showed that the pretest level of pain in control group on day I and Day-II, all 30 subjects (100%) had severe level of pain and there was no change in the posttest level of pain. The pretest level of pain on Day-III, 27(90%) subjects had severe level of pain and there was no change in the posttest level of pain. the pretest level of pain on first post operative day 22 subjects (73.3%) had severe level

of pain and on third post operative day, 23 subjects (76.6%) had moderate level of pain and the posttest level of pain on first post operative day 17 subjects (56.6%) had moderate level of pain, on third post operative day 19(63.3%) had mild level of pain in the experimental group. The pretest level of quality of recovery in control group, 28 of them (93.3%) had average level of quality of recovery and 2(6.6%) had poor level of quality of recovery. Whereas in the post test, 29(96.6%) had average level of quality of recovery and 1(3.33%) had poor level of quality of recovery. the pretest level of quality of recovery in the experimental group, 30 subjects (100%) had average level of quality of recovery and in the post test, 29(96.6%) of them had good level of quality of recovery. The obtained 't' values on day-I, day-II, day-III for level of pain between the control and experimental group is 7.35, 14.64, 23.41 which were highly significant at $p < 0.001$ level. the obtained over all 't' value for level of quality of recovery between the experimental and control group was 19.66 which was highly significant at $p < 0.001$ level. The posttest mean of experimental group in case of physical independence was 20.46 whereas in control group was 7.13 and their mean difference was 13.33 which had greater improvement than other parameters. there was a negative correlation ($r = -0.420$) between posttest level of pain and quality of recovery in experimental group at $P < 0.01$ level. **Conclusion:** It was concluded that back massage was effective on post operative pain and quality of recovery among patients undergone orthopedic surgery.

Index Terms—Back massage, Post operative pain, Quality of recovery, Orthopedic surgery

I. INTRODUCTION

Musculoskeletal disorders (MSDs) are injuries or pain in the body's joints, ligaments, muscles, nerves, tendons, and structures that support limbs, neck and

back. MSDs are degenerative diseases and inflammatory conditions that cause pain and impair normal activities¹.

In general population, musculoskeletal disorders are an increasing health care issue globally, being the second leading cause of disability. Orthopedic surgery addresses and attempts to correct problems that arise in the skeleton and its attachments, the ligaments and tendons².

Postoperative pain is a longstanding issue during post-surgery recovery and has become the main healthcare goal in many medical disciplines¹. With aging and a growing population, more than 280 million procedures including joint replacement, cardiovascular and cerebrovascular surgeries, and cancer surgeries are performed globally every year³. Orthopedic procedures have been reported to have the highest incidence of pain compared to other types of operations. Orthopedic surgical Pain is defined by the World Health Organization as “an unpleasant sensory or emotional experience associated with actual or potential tissue damage, or described in terms of such damage.” After orthopedic surgeries such as knee replacements, hip replacements, and repair of hip fractures, pain management is essential during rehabilitation to maximize recovery and ensure the best possible outcomes.

Lewis.SL (2007) Postoperative pain is caused by the interaction of number of physiologic and psychologic factors. The skin and underlying tissues have been traumatized by the incision and retraction during the surgery. Postoperative orthopedic pain can complicate and delay patient's recovery, lengthen hospital stays and costs, and interfere with a patient's return to activities of daily living. In many people, pain medications can have unpleasant side effects⁴.

Alternative therapies are commonly used treatment modalities in present days as it does not have side effects and also it is effective. These therapies are used together with conventional medicines, for the purpose of increasing comfort or relaxation, improving or restoring health and harmony of the body, mind and spirit, improving coping mechanism, reducing stress, relieving pain and increasing the patient's sense of wellbeing⁵.

Massage therapy is the scientific manipulation of the skin and soft tissues of the body. Massage therapy has cellular effects by Mechan transduction, biomechanical effects on tissues, physiological

changes in tissues or organ, neurological effects by reflex stimulation, psychological effects by increasing relationship between body and mind⁶.

Investigator found that patients who have undergone orthopedic surgery suffered from pain and discomfort during their recovery period due to adverse effects of analgesics. The depth of literature and the information available about the new advancing alternative therapies to manage pain made the investigator to double her interest towards the use of back massage to reduce pain among patients undergone orthopedic surgeries.

II. REVIEW OF LITERATURE

Xue, Liqing MM, Yan, Yichen MM, Chen, Zhangmei MM, Hong, Yu MM. (2025) conducted a study on Acupuncture and massage therapy enhance postoperative recovery and quality of life in orthopedic patients. A retrospective cohort analysis was conducted involving 110 patients who underwent orthopedic surgery. Based on differences in their rehabilitation methods, participants were grouped into 2 categories: one receiving standard rehabilitation care ($n = 54$) and the other receiving a combination of acupuncture and massage therapy alongside routine rehabilitation ($n = 56$). The group treated with acupuncture and massage demonstrated significantly enhanced postoperative recovery. Their average hospital stay was shorter (6.18 ± 2.11 days) compared to the conventional group (7.23 ± 2.31 days, $P = .015$). Furthermore, the incidence of joint stiffness (3.6% vs 16.7%, $P = .035$) and chronic pain (7.1% vs 22.2%, $P = .045$) was notably reduced. Assessments using the SF-36 and BI showed greater improvements in quality of life and daily functioning at both evaluation points ($P < .05$). Additionally, the acupuncture and massage group exhibited significantly lower levels of anxiety and depression 1-month post-surgery ($P < .05$)⁷.

Ajila N. (2025) conducted a study on Effectiveness of Effleurage Back Massage in Reducing Back Pain among Orthopedic Patients: A Quasi-Experimental Study. 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. 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 occupation⁸.

III. OBJECTIVES

1. To assess the pre and posttest level of pain and quality of recovery among patients undergone orthopedic surgery in the control and experimental group.
2. To evaluate the effectiveness of back massage on the level of pain and quality of recovery among patients undergone orthopedic surgery in experimental group.
3. To correlate the level of pain with quality of recovery among patients undergone orthopedic surgery in the control and experimental group.
4. To find out the association between level of pain among patients undergone orthopedic surgery and their selected demographic variables in control and experimental group.
5. To find out the association between level of quality of recovery among patients undergone orthopedic surgery and their selected demographic variables in control and experimental group.

IV. METHODOLOGY

A quantitative evaluative research approach was used to determine the effectiveness of back massage in reducing post operative pain and improving quality of recovery among patients undergone orthopedic surgery. The research design selected was quasi experimental non randomized control group pretest posttest design, non- probability convenient sampling technique was used to select 60 samples (30 in experimental group and 30 in control group). The study was conducted in selected hospitals of Lucknow. The visual analog scale was used to assess the level of pain in experimental group before each back massage. The back massage was given to the

experimental group twice daily for 15-20 minutes on 1-3 post operative days before giving analgesics. The post test was conducted in experimental group 1 hour after each back massage. For control group, the visual analog scale was used to assess the pretest level of pain twice daily for 1-3 post operative days before giving analgesics and posttest level of pain was assessed 1 hour of each pretest assessment. The post operative quality of recovery-20 scale was used to assess the pretest level of quality of recovery in research group on first post operative day and the posttest level of quality of recovery on third post operative day. The collected data was analyzed and interpreted by using descriptive and inferential statistics by the help of SPSS software.

V. RESULTS

Table -1 Frequency and percentage distribution of demographic variables of patients undergone orthopedic surgery in the experimental and control group.

n=30+30

Variable	Experimental group		Control group	
	f	%	f	%
Age (in years)				
20-40	6	20	4	13.3
40-60	11	36.6	12	40
60-80	11	36.6	11	36.6
Above 80	2	6.6	3	10
Gender				
Male	13	43.4	16	53.4
Female	17	56.6	14	46.6
Educational status				
Illiterate	9	30	5	16.6
Primary school	5	16.6	11	36.6
High school	9	30	9	30
Higher secondary & above	7	23.3	5	16.6
Occupation				
Home maker	7	23.4	5	16.6
Private employee	2	6.6	4	13.4
Government employee	5	16.6	7	23.4

Self employed	6	20	6	20
Agriculture	10	33.4	8	26.6
History of previous orthopedic surgery				
Yes	13	43.4	12	40
No	17	56.6	18	60
Types of analgesics used				
Oral	13	43.4	11	36.6
Parenteral	17	56.6	19	63.4
Frequency of analgesics administration				
Once a day	6	20	9	30
Twice a day	24	80	21	70
Types of orthopedic surgery				
Upper extremity	10	33.4	13	43.4
Lower extremity	20	66.6	14	56.6
Types of anesthesia				
Spinal	24	76.6	25	83.4
General	4	13.4	3	10
Regional	3	10	2	6.6

The table-1 compares socio-demographic variables of the samples. With regard to age, 11 (36.6%) in

experimental group and 12(40%) in control group belonged to the age group of 40 to 60 years. Considering the sex, 17 (56.6%) subjects in the experimental group and 14 (46.6%) in the control group were females. Regarding the history of previous orthopedic surgery, 17(56.6%) in experimental group and 18(60%) in control group had no history of previous orthopedic surgery. Considering the types of analgesics used, 17(56.6%) subjects in experimental group and 19 (63.3%) in control group had parenteral type of analgesics used. In relation to frequency of analgesics administration, 24(80%) of them in the experimental group and 21(70%) of them in the control group got analgesics twice a day. With respect to types of orthopedicsurgery,20(66.6%) subjects in experimental group and 17(56.6%) in the control group had lower extremity orthopedic surgery. With regard to the types of anesthesia, 23(76.6%) subjects in the experimental group and 25(83.3%) of subjects in the control group undergone spinal anesthesia and 3(10%) subjects in the experimental group and 2(6.6%) subjects in the control group undergone regional anesthesia.

Table- 2: Frequency and percentage distribution of subjects based on pre and post-test level of pain in the control group.

Level of Pain	Day 1				Day 2				Day 3			
	Pre test		Post test		Pre test		Post test		Pre test		Post test	
	f	%	f	%	f	%	f	%	f	%	f	%
No pain	-	-	-	-	-	-	-	-	-	-	-	-
Mild pain	-	-	-	-	-	-	-	-	-	-	-	-
Moderate Pain	-	-	-	-	-	-	-	-	3	10	3	10
Severe pain	30	100	30	100	30	100	30	100	27	90	27	90

The table 2 shows that the pretest level of pain in control group on day I and Day-II, all 30 subjects (100%) had severe level of pain and there was no change in the posttest level of pain. The pretest level of pain on Day-III, 27(90%) subjects had severe level of pain and there was no change in the posttest level of pain.

Table- 3: Frequency and percentage distribution of subjects based on pre and post-test level of pain in the experimental group.

Level of Pain	Day 1				Day 2				Day 3			
	Pre test		Post test		Pre test		Post test		Pre test		Post test	
	f	%	f	%	f	%	f	%	f	%	f	%
No pain	-	-	-	-	-	-	-	-	-	-	-	-
Mild pain	-	-	-	-	-	-	-	-	7	23.3	19	63.3
Moderate Pain	8	26.6	15	56.6	27	90	30	100	23	76.6	11	36.6
Severe pain	22	73.3	13	43.3	3	10	-	-	-	-	-	-

The table 2 shows that the pretest level of pain on first post operative day 22 subjects (73.3%) had severe level of pain and on third post operative day, 23 subjects (76.6%) had moderate level of pain and the posttest level of pain on first post operative day 17 subjects (56.6%) had moderate level of pain, on third post operative day 19(63.3%) had mild level of pain in the experimental group.

Table- 4: Frequency and percentage distribution of subjects based on the pre and posttest level of Quality of recovery in the control group.

Level of Quality of recovery	Pre-test		Post-test	
	f	%	f	%
Poor (20-40)	2	6.6	1	3.4
Average (41-60)	28	93.4	29	96.6
Good (61-80)	-	-	-	-
Better (81-100)	-	-	-	-

The table 4 shows that the pretest level of quality of recovery in control group, 28 of them (93.3%) had average level of quality of recovery and 2(6.6%) had poor level of quality of recovery. Whereas in the post test, 29(96.6%) had average level of quality of recovery and 1(3.33%) had poor level of quality of recovery.

Table- 5: Frequency and percentage distribution of subjects based on the pre and posttest level of Quality of recovery in the experimental group.

Level of Quality of recovery	Pre-test		Post-test	
	f	%	f	%
Poor (20-40)	-	-	-	-
Average (41-60)	30	100	1	3.4
Good (61-80)	-	-	29	96.6
Better (81-100)	-	-	-	-

The table 5 shows that the pretest level of quality of recovery in the experimental group, 30 subjects

(100%) had average level of quality of recovery and in the post test,29(96.6%) of them had good level of quality of recovery.

Table- 6: Correlation between level of pain and quality of recovery among patients undergone orthopedic surgery in the control and experimental group.

Group	"r"-value
Control	
Pretest- level of pain and quality of recovery	-0.145
Posttest- level of pain and quality of recovery	-0.199
Experimental	
Pretest- level of pain and quality of recovery	0.168
Posttest- level of pain and quality of recovery	-0.420**

The table 6 shows that, there was a negative correlation ($r = -0.420$) between posttest level of pain and quality of recovery in experimental group at $P < 0.01$ level. It was inferred that there is a significant improvement in quality of recovery as the pain intensity reduced in experimental group.

There was a no significant association between the level of pain and the other demographic variables among patients undergone orthopedic surgery in the control group. There was a significant association between the demographic variables such as age, gender, history of previous surgery, types of analgesics used and types of anesthesia and their level of pain. No other demographic variables were shown any association with their level of pain among patients undergone orthopedic surgery in the experimental group.

There was no association between the level of quality of recovery and demographic variables in control

group. There was an association between all the demographic variables and their level of quality of recovery among patients undergone orthopedic surgery in the experimental group.

VI. DISCUSSION

The findings of the present study show that the pretest level of pain in control group on day I and Day-II, all 30 subjects (100%) had severe level of pain and there was no change in the posttest level of pain. The pretest level of pain on Day-III, 27(90%) subjects had severe level of pain and there was no change in the posttest level of pain. The pretest level of quality of recovery in control group, 28 of them (93.3%) had average level of quality of recovery and 2(6.6%) had poor level of quality of recovery. Whereas in the post test, 29(96.6%) had average level of quality of recovery and 1(3.33%) had poor level of quality of recovery.

These findings were supported by a study conducted by M. Magudeeswaran, Selvi P, Sridhar, Vignesh, Rubyana Dsouza (2025) conducted a study on A Quasi Experimental Study to Assess the Effectiveness of Back Massage in Reducing Post-Operative Pain among Patients Undergone Orthopedic Surgery at Apollo Loga Hospital Karur. In this study a quasi-experimental, non-randomized control group pretest – posttest design was adopted. Convenience sampling technique was used to select each 30 samples in experimental and control group. Structured interview schedule was used to collect the demographic variables. Visual analog scale was used to assess the level of postoperative pain. Experimental group received intervention of Back massage with routine care for 15-20 minutes twice a day for 1-3 postoperative days. Findings of pretest level of pain in control group on day I and Day-II shows that 27 subjects (90%) had severe level of pain and 3 subjects (10%) had moderate level of pain. And the posttest level of pain in control group on day I and day II, 26 subjects (86.6%) had severe level of pain and 4 subjects (13.3%) had moderate level of pain. The pretest level of pain on day III, 1 subject (3.3%) had mild level of pain, and 2 subjects (6.6%) had moderate level of pain and 27 subjects (90%) had severe level of pain. The posttest level of pain on day III, 5 subjects (16.6%) had moderate level of pain, 25 subjects (83.3%) had severe level of pain. Whereas in

experimental group, the pretest level of pain on Day I post operative day 22 subjects (73.3%) had severe level of pain and on Day III post operative day, 23 subjects (76.6%) had moderate level of pain and the posttest level of pain on I post operative day 17 subjects (56.6%) had moderate level of pain, on III post operative day 19(63.3%) had mild level of pain. Findings revealed that in control group, the pretest mean score was 84.7 with SD 8.4 and the posttest mean score 83.7 with SD 9.5 on the day-I and day –II the pretest mean score was 84.7 with SD 8.4 and in the posttest mean score 83.7 with SD 9.5 On day III, the pretest mean score was 83.5 with SD 12.9 and in the posttest mean score 82.8 with SD 10.4. The calculated 't' values on day-I,II,III in the control group were 0.98,0.98,1.82 which are not significant. It is concluded that there were no significant differences between the pre and posttest level of pain among patients undergone Orthopedic surgery. Findings of experimental group shown that the pretest mean score was 80 with SD 12.3 and the posttest mean score 71.6 with SD 13.8 on the day-I. On Day –II the pretest mean score was 62.3 with SD 8.3 and in the posttest mean score 42 with SD 17.4. On Day-III the pretest mean score was 51.3 with SD 14.8 and the posttest mean score 37.3 with SD 14. The calculated 't' value on day-I, II, III in the experimental group were 3.5, 4.4, 4.5 was statistically highly significant at $p < 0.001$ level.

VII. CONCLUSION

The study concluded that the back massage is effectively reducing the post operative pain and improving quality of recovery among patients undergone orthopedic surgery. This study clearly stated that back massage plays a vital role in reducing the level of post operative pain and improving quality of recovery among patients undergone orthopedic surgery.

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