

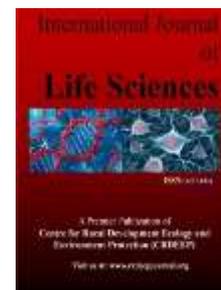
Vol. 12 . No.1. 2023.

©Copyright by CRDEEP Journals. All Rights Reserved.

Contents available at:

<http://www.crdeepjournal.org>

International Journal of Life Sciences (ISSN: 2277-193x) CIF: 5.411; SJIF: 6.431
A Peer Reviewed Journal

Full Length Research Paper

Hand and Foot Massage on Reducing Postoperative Pain Among Abdominal Surgery Patient: Quasi Experimental Study

Divya Kumari and Mrs. Rosaline Lilly Mary A.

¹Masters in Nursing, Shri Guru Ram Rai College of Nursing, Dehradun Uttarakhand. 116, Sarwati Kunj, Golf Course Road, Sector 53, Gurugram, Haryana.

²Shri Guru Ram Rai Institute of Medical and Health Sciences, Dehradun, Uttarakhand 248001, India

ARTICLE INFORMATION**Corresponding Author:**

Rosaline Lilly Mary A

Article history:

Received: 28-02-2023

Revised: 01-03-2023

Accepted: 15-03-2023

Published: 24-03-2023

Key words:

Abdominal surgery,
 Complementary therapy,
 Hand and Foot Massage,
 Numerical Pain Rating
 Scale, Post Operative Pain

ABSTRACT

Patients who are suffering from diseases that affect the various organs in the abdominal cavity are the ones who are usually prescribed abdominal surgery. Post-operative pain can have a profound effect on patient recovery. In this study, we implement and evaluate the effectiveness of hand and foot massage on pain among patients after abdominal surgery. The massage was given to the patients admitted to the Shri Mahant Indresh Hospital in surgical ward. The age group of patients ranged from 25 – 65 years. After 12hrs of surgery the pre - test was done by using numerical pain rating scale, for experimental and control group both. Hand and Foot massage were given to the Experimental group with the help of coconut oil for 5 minutes in each extremity, total duration of 20 minutes, twice a day for first 3 days (after 2 hours of administration of pain medication). Post-test was done after 3 days by using the same scale for experimental group and control group. The obtained 't' values for level of post operative pain between the control and experimental group is 8.098 which were highly significant at $p < 0.001$, table value of $t=2.00$ at 0.05 , so calculated value of 't' is greater than the expected table value. Therefore, it is concluded that hand and foot massage was found to be effective in reducing the post operative pain of abdominal surgery patients.

Introduction

Pain is an unpleasant feeling that is conveyed to the brain by sensory neurons.[1] The discomfort signals actual or potential injury to the body.[3] However, pain is more than a sensation, or the physical awareness of pain; it also includes perception, the subjective interpretation of the discomfort. Perception gives information on the pain's location, intensity, and something about its nature.[2] The various conscious and unconscious responses to both sensation and perception, including the emotional response. [1] Abdominal surgery refers to the operation of abdominal organs to repair accidental abscess and digestive tract diseases. The incidence of complications after abdominal surgery is high, including pulmonary infection, abdominal distension, intestinal adhesion, venous thrombosis and so on.[4]. Varieties of pharmacological and non-pharmacological interventions to enhance optimal pain relief are available; however, patients' responses are individualized.[6] Pain medication is still the current gold standard treatment for acute postoperative pain relief. However, there is an increasing global interest in applying alternative modalities and non-pharmacological approaches for pain and anxiety relief to overcome the adverse effects of medication, such as massage [7]. The hand and foot massage stimulate nerve fibres (A-beta fibres) which contain tactile and pressure receptors.[5] The receptors transmit the nerve impulse to the central nervous system. The gate control system in the dorsal horn at the spinal cord will be activated through the inhibitory interneuron whereas the excitatory interneurons are inhibited, resulting in the inhibition of T-cell functioning thus closing the gate. The pain signal, therefore, is not transmitted along the ascending system of the neuropathy and the brain does not receive the pain message

The hand and foot massage are an appropriate non pharmacological intervention in relieving acute postoperative pain in patient after abdominal surgery. The hand and feet are easily accessible and can be massaged without disturbing the patient's privacy [5]. The researcher has come across patients who had inadequate pain relief during postoperative period with pharmacological measures alone.[7] The difficulty with introducing complementary therapies such as hand and foot massage into nursing practice has little empirical evidence to support the use. It is also observed that published research studies and trials on hand and foot massage in the Indian setting are very much limited. Hence this study may be considered important in providing empirical evidence and its efficiency in reducing postoperative pain in patients with abdominal surgery.[6].

The objective was to evaluate the effectiveness of hand and foot massage on pain among patients with abdominal surgery.

Material and Methods

Study area

The study was conducted in Shri Indresh Hospital, Dehradun. The Hospital is a multi-speciality hospital and research centre with bed strength of 1500 which caters multi-lingual patients from various parts of the Uttarakhand. The study is conducted in surgical ward. Ward is divided into 4 parts. Surgery I, II (male and female surgical ward) Surgery III, and IV. Bed strength of the female surgical ward was 20 and male surgical ward bed strength was 20 and the other Surgery III and IV bed strength was 40. Total bed strength of surgery ward is 80. The selection of area was done based on geographical proximity, feasibility of conducting study and availability of sample.

Sample design: In this study non-randomized control group design was adopted. In this design experimental and control group are selected without randomization and dependent variables are observed in experiment as well as control group before the intervention. Later experimental group receives treatment and after post – test observation both groups assess for the effect of treatment on experiment.

Sample population: The study population consisted of 30 control group and 30 experimental group patients who were undergone abdominal surgery in Shri Mahant Indresh Hospital, Dehradun, Uttarakhand

Study population: Abdominal surgery patients

Data collection methods:

Demographic data and medical history collected through interview method and retrieved from medical records. Postoperative pain among abdominal surgery patients were assessed using numerical pain rating scale through interview method.

Description of tools

Section A: Socio-Demographic and clinical data

Section B: Numerical Pain Assessment scale

SECTION A: Demographic data Baseline profile such as patient's, Age, Sex, Socioeconomic status, Personal habits, Diet, Body weight, Skin allergy, Previous surgery. Clinical history Consist of patient's present surgical details such as: Preoperative diagnosis, Name of the surgery, post-operative day, type of anaesthesia used, type of incision, analgesics prescribed.

SECTION B: Pain is a subjective data which means only you know how you really feel it Numerical pain rating scale measures the subjective intensity of pain of an individual. Numerical scale is a standardised tool to measure pain intensity.

The NPRS is an 11-point scale from 0-10

“0” - No pain

“10”- The most intense pain

Individual verbally select a value that is most in line with the intensity of pain that they have experienced in the last 24 hours. The NPRS has good sensitivity while producing data that can be statistically analysed.

Techniques of hand and foot massage:

Step: 1 Stroking: Use light pressure strokes from the wrist to the finger tips in both back and palm of the hand. Begin a long, slow, and firm, stroking motion from the bottom to the tip of the toes.

Step: 2 Effleurage: Effleurage is the gliding manipulation of the superficial tissues. Make large half- circles stretching strokes from centre to the side using moderate pressure. Make small circles strokes (like an 'o') over the entire back and palm of the hand and in the foot.

Step: 3 Pull and squeeze: Gently squeeze and roll each finger and toe between the investigator’s thumb and index finger from the base to the tip.

Step: 4 Arch presses: Releases tension in the inner and outer longitudinal arches. Using the thumb of hand, push hard and slide along the arch.

Step: 5 Completions: Place the client’s hand and cover it with investigators hand. Gently draw the top hand towards the investigator several times. And repeat the same in feet of the patient.

Preparation of the patients and unit: Develop a good rapport with the patients and the relatives. Explain the procedure to the patients and purpose of massage. Instruct the patients to wash hands and foot before the procedure. Arrange the articles near to the patient’s side. Provide privacy. Place the patient in a comfortable position (supine). Ask patient to keep her arms by side. Cover the patient with the covering sheet.

Steps of procedure: Wash hands. Apply coconut oil and starts massage the upper extremities and then the lower extremities by both palms for 5 minutes in each extremity. Stroke the palm and back of the hand and foot. Give effleurage with moderate pressure. Pull and squeeze the fingers and toes of the hand and foot. Give an arch press with gentle pressure. Complete the massage by interlock the patient’s finger and toes and draw towards several times.

After care: Wash hands. Evaluate the patient’s tolerance and response. Record the intensity of pain.

Data analysis

Data was analyzed based on objectives stated in the study by using descriptive & inferential statistics. A master data sheet was prepared with the responses given by the samples and the data was analysed. Following statistical tests were applied for analysing the data for the present study: -Frequency and percentage, Measurement of central tendency & dispersion: mean, standard deviation. Parametric test: paired t- test and independent t- test, Chi square test.

Results

The pre -test level of pain in experimental group 25 subjects (83.3%) had Extreme level of pain, 3 subjects (10%) had moderate level of pain and 2 subjects (6.7%) had worst pain, the post- test level of pain on ,23 subjects (56.6%) had mild level of pain and 7 subjects (23.3%) had No pain in the experimental group. In Control group 25 subjects (83.3%) had Extreme level of pain, 2 subjects (6.7%) had moderate level of pain and 3 subjects (10%) had worst pain, the post -test level of pain on ,20 subjects (68%%) had moderate level of pain and 8 subjects (26%) had mild level of pain and 2 subjects (7%) had moderate level of pain in control group.

Table 1. Frequency and percentage distribution of subjects based on pre and post-test level of pain according to the numerical pain rating scale in the experimental group and control group

Level of pain	Experimental group (30)				Control group (30)			
	Pre test		Post test		Pre test		Post test	
	F	%	F	%	F	%	F	%
No pain	-	-	7	23.3%	-	-	-	-
Mild	-	-	23	76.7	-	-	8	26%
Moderate pain	3	10%	-	-	2	6.7%	20	68%
Extreme pain	25	83.3%	-	--	25	83.3%	2	7%
Worst possible pain	2	6.7%	-	-	3	10%	-	-

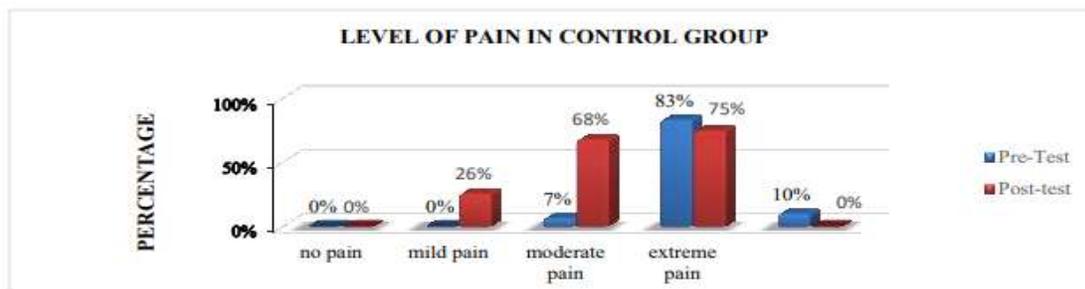


Fig1. Distribution of post operative pain level of abdominal surgery patients in experimental group based on numerical rating scale.

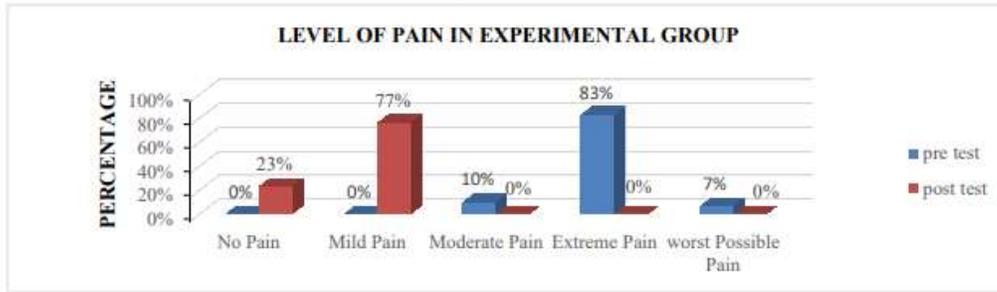


Fig 2 : Distribution of post operative pain level of abdominal surgery patients in control group based on numerical rating scale.

The obtained ‘t’ values for level of post operative pain between the control and experimental group is 8.098 which were highly significant at $p < 0.001$, table value of $t=2.00$, so calculated value of ‘t’ is greater than the expected table value. These findings revealed that the subjects in experimental group had decreased level of post operative pain after giving hand and foot massage compared to control group.

Table 2: Independent ‘t’ test for compare the post-test level of pain among patients with abdominal surgery between the control and experimental group.

S.No.	Group	Mean	SD	df	‘t’ value	Table value	P value
1	Control group	2.80	0.551				
2	Experimental group	1.77	0.430	58	8.098	2.00	< 0.001

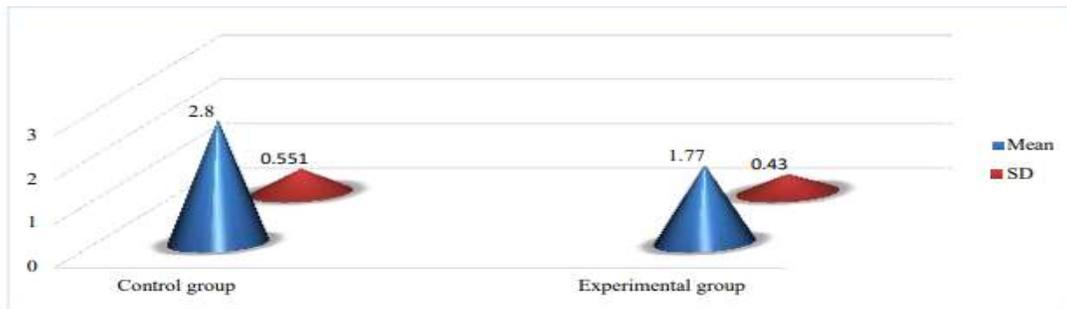


Fig 3. Comparison of mean post- test level of pain in the control and experimental group

Discussion

The primary purpose of the discussion is to assess the effectiveness of hand and foot massage to reduce the post operative pain among abdominal surgery patients and to interpret and describe the significance of finding in light of what was already known about the research problem being investigated, and to explain any new finding about the problem after the problem have taken into consideration. In this study with regard to age, 9 (30%) in experimental group and 10 (33.3%) in control group belonged to the age group of 46 to 55 years and 36 to 45 years, 8 (26.6%) in experimental group and control group belonged to 56 to 65 years respectively, 7 (23.3%) in experimental group belonged to 36 to 45 years and 7 (23.3%) in control group belonged to 46 to 55 years and least number of patients are 6 (20 %) in experimental group and 5 (16.75%) in control group belonged to 25 to 35 years of age. Considering the gender, 17 (56.7%) subjects in the experimental group and 19(63.3%) in the control group were females and the remaining were males. 7(23.3%) in experimental group and 5(16.7%) in control group were smoke cigarette, 6 (20.0%) in experimental group and 4 (13.3%) in control group were drink alcohol, 2 (6.7 %) in experimental and control group were eat Tobacco and chewing betel. according to their diet 22 (73.3%) in experimental group and 17 (56.7%) in control group were non vegetarian and remaining were vegetarian. According to the weight 19 (63.3%) in experimental group and 15 (50%) in control group were 50-70 Kg , 7(23.3 %) in experimental group and 11 (36.7%) in control group were Above 70 kg, remaining4(13.3 %) in experimental group and control group were below 50 kg. Regarding the history of previous surgery, 18 (60%) in experimental group and 25 (83.3%) in control group had no history of previous surgery. A researcher Soniya.T, conducted a time series study A total of fifty abdominal surgery patients who met inclusion criteria were selected by using purposive sampling technique. Numerical pain rating scale was used to assess the level of post operative pain among abdominal surgery patients. Foot and Hand massage was administered 3 times a day for consecutive 3 days. The overall post-test means and standard deviation of the intervention group is 3.2 ± 0.066 . The calculated t value is 39.04 which is greater than the table value (3.53) at the level of $p < 0.001$ The foot and hand massage is effective in reducing postoperative pain along with the pain medication among abdominal surgery patients. In this study pre -test level of pain in experimental group 25 subjects (83.3%) had Extreme level of pain, 3 subjects (10%) had moderate level of pain and 2 subjects (6.7%) had worst pain, the post- test level of pain on ,23 subjects (56.6%) had mild

level of pain and 7 subjects (23.3%) had No pain in the experimental group. The pre- test level of pain in Control group 25 subjects (83.3%) had Extreme level of pain, 2 subjects (6.7%) had moderate level of pain and 3 subjects (10%) had worst pain, the post -test level of pain on ,20 subjects (68%%) had moderate level of pain and 8 subjects (26%) had mild level of pain and 2 subjects (7%) had moderate level of pain in control group. Calculated 't' values in the control group were 8.729 which was not significant. It is concluded that there were no significant differences between the pre- and post- test level of pain among patients with abdominal surgery. And it shows that the calculated 't' value in the experimental group were 24.884 was statistically highly significant at $p < 0.001$ level which clearly shows that there was a significant decrease in the level of pain among patients with abdominal surgery after giving hand and foot massage The result of this study reveals that there is significant reduction in the level of pain after the hand and foot massage. 't' values for level of post operative pain between the control and experimental group is 8.098 which were highly significant at $p < 0.001$, table value of $t=2.00$ at 0.05, so calculated value of 't' is greater than the expected table value. These findings revealed that the subjects in experimental group had decreased level of post operative pain after giving hand and foot massage compared to control group. Jayanthi Babu1, Annie Annal M, Renuka k, (2019) conducted a study with population of post-cesarean mothers during first postoperative day. The study concludes that foot massage is effective in reducing pain in the incision site among post-cesarean mothers. Therefore, the health professionals must explore alternative approaches to provide better care. The results showed that there were statistically significant decreased of subjective pain score among study group rather than control group after foot massage. There was no significant relation between pain score and Age, gender, weight, previous history of surgery So, hand and foot massage has a positive effect on reducing pain after abdominal surgery.

Conclusion

This study attempted to find out the impact of hand and foot massage on the level pain of postoperative patients with abdominal surgery.

- The pre-hand and foot massage pain level was significantly higher than the post- hand and foot massage pain level.
- The highest significance of difference in pain level was found between pre-hand and foot massage and 20 minutes after hand and foot massage.
- There was not significant association between the demographic variable, and pre-hand and foot massage pain score. It is concluded that hand and foot massage was found to be effective in reducing the post operative pain of abdominal surgery patients.

References

- 1) Pain. (n.d.) *Gale encyclopedia of medicine*. (2008). Retrieved from <https://medical-dictionary.thefreedictionary.com/pain>
- 2) Institute of medicine (us) committee on pain, disability, and chronic illness behavior; osterweis m, kleinman a, mechanic d, editors. Pain and disability: clinical, behavioral, and public policy perspectives. Washington (dc): national academies press (us); 1987. 7, the anatomy and physiology of pain. Available from: <https://www.ncbi.nlm.nih.gov/books/nbk219252/>
- 3) Raja SN, Carr DB, Cohen M, Finnerup NB, Flor H, Gibson S, et al. (September 2020). "The revised International Association for the Study of Pain definition of pain: concepts, challenges, and compromises". *Pain*. **161** (9): 1976-1982. doi:10.1097/j.pain.0000000000001939. PMC 7680716, PMID 32694387
- 4) Rao, lu mb; liu, xinjian mm; yu, li mb; xiao, hui mb. Effect of nursing intervention to guide early postoperative activities on rapid rehabilitation of patients undergoing abdominal surgery: a protocol for systematic review and meta-analysis. *Medicine* 100(12):p e24776, march 26, 2021. | doi: 10.1097/md.00000000000024776
- 5) Yunitasari E, Nursanti E & Giri W. The Effectiveness Of Hand Massage, Foot Massage And Combination On Pain Intensity Of Post Sectio Caesarea. *International Journal of Research in Applied Natural and Social Sciences*, 2018; 2347-4580,2321-8851 (6), 39-50
- 6) Effectiveness of complementary and alternative medicine interventions for sleep quality in adult intensive care patients: A systematic review, *International Journal of Nursing Studies*.2020;107: 103582,ISSN 0020-7489
- 7) Hu, Q. L., Dworsky, J. Q., Beck, A. C., Gilbert, E. W., Pockaj, B. A., Varghese, T. K., Jr, Maggard-Gibbons, M., Ko, C. Y., Weigel, R. J., & Laronga, C. (2020). Perioperative Pain Management after Ambulatory Abdominal Surgery: An American College of Surgeons Systematic Review. *Journal of the American College of Surgeons*.2020 231(5), 572–601.
- 8) Jayanthi Babu, Annie Annal M, Renuka K "Effectiveness of Hand Massage vs Foot Massage for Pain in Incision Site among Post-cesarean Mothers Admitted in Obstetrical Care Units at Mahatma Gandhi Medical College and Research Institute, Puducherry" *Pondicherry Journal of Nursing*.2019: 3(12)
- 9) Massage Can Aid in Pain Relief [Massage Therapy Can Aid in Pain Relief | AMTA \(amtamassage.org\)](https://www.amtamassage.org/)
- 10) Tiffany Field, Massage therapy research review *International Journal of Psychological Research and Reviews* 2021; 2639-6041
- 11) B.T. Basavanthappa, "Nursing Research" 1st edition, New Delhi: Jaypee brother's publications 2007, Pp: -223-239
- 12) B.T. Basavanthappa, "Essential of Medical Surgical Nursing" 1st edition, New Delhi; Jaypee brother's publications 2011
- 13) Fritz S. Chaitow, L. And Synder, R. "Fundamentals of Therapeutic Massage", 4th edition: Elsevier publication (p) Ltd; 2009.
- 14) Gautam Das. "Basics of pain management" 2nd edition; BS Publishers and Distributors 2019 ISBN 9789388725712.
- 15) Talbot Laura A. "Principles and Practice of Nursing Research", 1st edition; Mosby's Year Book Publication Pvt Ltd, 1995, Pp:- 317-408