Universe International Journal of Interdisciplinary Research
(International Peer Reviewed Refereed Journal)
DOI No. – 08.2020-25662434

© UIJIR | ISSN (O) – 2582-6417
OCT 2023 | Vol. 4 Issue 5
www.uijir.com

EFFECTIVENESS OF HAND AND FOOT MASSAGE ON QUALITY OF RECOVERY AMONG POSTOPERATIVE ABDOMINAL SURGERY PATIENTS

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ABSTRACT

Alternative medicine therapies have many non-invasive techniques that are cost-effective and simple with fewer side effects when compared to drugs; among those, hand and foot massage therapy is still a novel intervention to manage various postoperative complications. **Purpose:** To evaluate the effectiveness of hand and foot massage on the quality of recovery among postoperative abdominal surgery patients. **Design:** Quasi-experimental study. **Methods*:*** This single-centre, quasi-experimental study conveniently recruited 80 postoperative abdominal surgery patients. Hand and Foot massage was administered for 20 minutes twice a day for 3 consecutive postoperative days, i.e., 5 minutes for each extremity in the experimental group & the control group received routine treatment without hand and foot massage. **Findings:** The intervention showed a significant improvement in the quality of recovery in the experimental group (172.90± 8.96) as compared to the control group (155.80±14.04) at (P <0.001). **Conclusion:** Hand and foot massages significantly improved the quality of recovery among postoperative abdominal surgery patients.

Keywords: Quality of recovery, hand massage, foot massage, abdominal surgery, pain

DOI Link :: https://doi-ds.org/doilink/10.2023-54239556/UIJIR

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BACKGROUND

Abdominal surgery is a major surgery in which a person's abdominal region is surgically manipulated to diagnose or treat a medical condition. Therefore, major surgery requires hospitalization, specialized care, and more postoperative complications, leading to delayed recovery among patients1. Early intervention stimulates the quality of recovery is a new concept 2. Literature suggests that alternative medicine improves recovery and reduces postoperative complications among cardiovascular, Neurosurgery & and other primary surgery patients. In recent years, complementary therapies have been tremendously focused on managing postoperative recovery. 3 These therapies have many non-invasive, cost-effective, and simple techniques with fewer side effects when compared to drugs. Complimentary therapies are often used as an adjuvant to surgery alongside conventional medical treatments to enhance overall health and promote faster recovery.4

Furthermore, analgesic drugs are not devoid of adverse effects, leading to many complications and discomfort. Therefore, there is a need to have a scientifically tested, simple, and effective intervention to manage and reduce various postoperative complications, which bears on the patient's recovery post-surgery.5

The researcher also explored the clinical area, where many patients undergoing abdominal surgery suffered from agonizing pain and discomfort. During their postoperative recovery period due to adverse effects of analgesics & and anesthesia.6 The depth of literature and the information available about the new advancing alternative therapies to improve the quality of recovery this experience made the researcher double her interest towards the use of massage therapy.

Also, it instill novel intervention to manage various post-operative complications. Therefore, this study evaluated the effectiveness of massage therapy in promoting the quality of recovery among postoperative patients who underwent major abdominal surgery.

METHODS

Study design and setting

A quasi-experimental, single tertiary care center study was conducted at the surgery department of Lokbandhu Rajnarayan Combined Hospital, Lucknow, from October 2021 to August 2022.

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Study inclusion and exclusion criteria and sample size.

We conveniently recruited patients on the 1st - 3rd day of the postoperative period and underwent open abdominal surgery. They have sufficient cognitive ability to understand written and verbal instructions and can verbally or nonverbally report their pain intensity and quality of recovery scores. We excluded patients who were critically ill and unconscious, had a primary diagnosis of peripheral vascular disease, and had undergone epidural analgesics. The sample size was computed by taking a 68% proportion of good recovery after the treatment from Oreskov et al.7

by using the following statistical formula, sample size was calculated.

$$n = \frac{z_{\alpha}^{2} pq}{L^{2}}$$

Where P=68%, q =100 – p, significancelevel95%. Allowable error L=15%ofp for detecting the results with 90%power of the study,

The minimum sample size required comes out to ben = 80.

The samples were 80 (40ineachgroup,i.e., experimental and control group).

Intervention

The investigator underwent the one-week training afterwards same certified investigator provided foot and hand massages to all the patients. Before beginning the massage therapy, healthcare personnel and families were informed to ensure that no obstacles would arise throughout the session. Before the massage, the feet and hands were given a general visual inspection for local examination. Patients sat at the edge of the bed, on a chair, or reclined supine or on one side of the bed. Positioning was determined by the patient's desire, mobility, and tube and catheter placement. Patients were dressed in hospital gowns, and non-massaged portions were covered with a sheet and blankets. Afterward, 5 ml of coconut oil was applied to the hands, followed by the feet of the patients. During the stroke massage, the hands were placed entirely on the limb and moved from the end to the beginning slowly and rhythmically without applying pressure on the patient body. Hand and Foot massage was administered for 20 min twice a day for 3 consecutive postoperative days, i.e., 5 minutes for each extremity in the experimental group & the control group received routine treatment without hand and foot massage.

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The steps in the massage procedure are described in Table 1.

DATA COLLECTION TOOLS:

The data were collected in three parts. The first part involved the patient's socio-demographic and clinical variables, including age, gender, education, occupation, diet, monthly income, BMI, anesthesia, incision, type of analgesic, and frequency. The second part involved assessing the pain by using a numeric pain rating scale. The most commonly used scores are 0 to 10, where 0 indicates no pain, 1-3 indicates mild pain, 4-7 indicates moderate pain, and 8-10 indicates severe pain. The third step was assessing the quality of recovery using the quality of recovery -40 scale, a 5-point Likert-type scale (positive items, 1= none of the time to 5 = all of the time, for negative items, the scoring was reversed), and individual scores are then added together, with the minimum score being 40 points and the maximum score being 200 points. QoR-40 scale includes five clinically relevant dimensions; comfort (12 items), emotions (9 items), physical independence (5 items), patient support (7 items), and pain (7 items). Permission to use the tool was obtained from the developer by the investigator.

Piloting and reliability of data collection tools

The pilot study took 10 % of the total sample size of 08 patients, and the tool's reliability came 0.9. Hence the study was found to be feasible to conduct.

Recruitment and data collection

Screening of the patients who underwent major abdominal surgery was done according to the inclusion & and exclusion criteria; patients who fulfilled the inclusion criteria were enrolled. A brief interactive session was conducted, explaining the nature and purpose of the study.

Written consent was taken from participants & and eligible samples were assigned to the experimental and control group using a convenient sampling technique. Pretest was taken for the experimental and control groups on the 1st postoperative day.

Hand and Foot massage was administered daily on the same time for 20 min twice a day for 3 consecutive postoperative days, i.e., 5 minutes for each extremity in the experimental group. The control group received routine treatment without hand and foot massages. Post-test was done for the experimental and control groups on the 3rd postoperative day after one hour of the intervention.

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Ethical consideration

This study was approved by the Institutional Ethical Committee (IEC/VPIMS/001/21.) of Vivekananda Polyclinic & Institute of Medical Sciences. Formal written permission was obtained from authorities of Lokbandhu Rajnarayan Combined Hospital, Lucknow, where the study was conducted. All the patients participated voluntarily and were informed about the study aims and procedures and their right to participate and withdraw from the study at any time.

Data analysis

Data were presented as mean (SD) and frequency (%). The chi-square test was used to assess the normal distribution of both groups regarding sociodemographic and clinical variables Table 2. The Mann-Whitney test (following non-distribution) was used to compare the groups before intervention regarding the quality of recovery. The changes in the patients' quality of recovery in the experimental and control groups after the intervention were compared using the Mann-Whitney test and are presented in a table. A p-value <0.05 was considered statistically significant. All statistical analysis was performed using SPSS 23.0 software.

RESULT

Characteristics of study participants

The patient's mean age in the control group was 45.98±13.82, and in the experimental group was 40.90±13.89. Majorities(60%) of the patients in control group were male, and in the experimental group, a majority (55%) were female. Most patients had normal BMI in both the experimental and control groups. All the patients in both groups received spinal anesthesia before the surgery. Most (62.5%) of the patients were operated through Kocher's incision in a control group, similar to that of the experimental group (35%) of patients operated through Kocher's incision.

The majority (60%) in the control group received NSAIDs (Inj diclofenac sodium) for pain management. In the experimental group, a maximum (60%) of the patients received opioids (Inj. tramadol) for pain management. All patients in both groups received analgesics twice a day. Furthermore, the experimental and control groups were comparable (P>0.05) for all the sociodemographic and clinical variables except the type of incision, which did not show any comparability.

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Table 2 shows demographic and clinical variables of patients in the experimental and control group n=80

Variables		**Control**		**Experimental**		**Chi square**	**P value**
Age*		45.98±13.82		40.90±13.89		-	-
		n	**%**	**n**	**%**		
Gender	Male	24	60.0%	18	45.0%	1.805	0.179
	Female	16	40.0%	22	55.0%		
Education	Illiterate	14	35.0%	12	30.0%	4.491	0.344
	High school	5	12.5%	11	27.5%		
	Intermediate	14	35.0%	9	22.5%		
	Bachelor level	7	17.5%	7	17.5%		
	Masters and above	0	0.0%	1	2.5%		
Occupation	Health care professional	5	12.5%	4	10.0%	9.019	0.061
	Employee (Private /government sector)	18	45.0%	7	17.5%		
	Business	8	20.0%	10	25.0%		
	Student	1	2.5%	1	2.5%		
	Homemaker	8	20.0%	18	45.0%		
Diet	Vegetarian	22	55.0%	21	52.5%	0.050	0.823
	Non vegetarian	18	45.0%	19	47.5%		
Monthly income	Rs. <10,000	18	45.0%	24	60.0%	4.739	0.192
	Rs.10,000-40,000	12	30.0%	5	12.5%		
	Rs 40,000-1,20,000	10	25.0%	10	25.0%		

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	Above 1,20,000	0	0.0%	1	2.5%		
BMI	< 18.5 (underweight)	2	5.0%	0	0.0%	2.745	0.433
	18.5 - 24.9 (Normal)	19	47.5%	23	57.5%		
	>25 (overweight)	17	42.5%	16	40.0%		
	≥30 (obese)	2	5.0%	1	2.5%		
Anesthesia	Spinal anaesthesia	40	100.0%	40	100.0%	-	-
Incision	Midline incision	14	35.0%	8	20.0%	20.239	**<0.001**
	Para median incision	0	0.0%	4	10.0%		
	Kocher's incision	25	62.5%	14	35.0%		
	Mc Burney's incision	0	0.0%	7	17.5%		
	Other	1	2.5%	7	17.5%		
Type of analgesic	NSAIDs	24	60.0%	16	40.0%	3.200	0.074
	Opioids	16	40.0%	24	60.0%		
Frequency of Analgesic	Twice a day	40	100.0%	40	100.0%	-	-

*=Mean ±SD, n=frequency

Table 2.Comparison of groups before intervention in terms of quality of recovery

It was noted that a statistically significant (P<0.05) difference was obtained for domain-2 (emotions)and domain-3(Physical Independence). The mean score of domain-2 in the control group was (6.38 ± 1.48) which was higher than that of the experimental group (5.63±1.71). Therefore, patients in the control group were likely to be more emotionally stable than the experimental group. Also, the mean score of domain-3 in the control group was (7.93 ± 2.59) which was higher than that of the experimental group (6.65±1.12), which suggests that patients

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in the control group were more physically independent (in terms of self-grooming, carrying out usual home and work activities, writing legibly) as compared to the patients in the experimental group. This significant difference could be due to the study's design, as no randomization was done.

Pretest intergroup comparison with reaming domains (domains 1, 4, 5, 6, 7, 8) was insignificant.

Table 3:Domain wise intergroup comparison of the QoR-40 scores before intervention

n=80

Domains	Experimental	Control	MannWhitney Test	
	Mean±SD	Mean±SD	U-value	P-value
Domain-1Comfort	8.70 ±2.20	7.68 ±2.15	1.84	0.066
Domain-2Emotions	5.63±1.71	6.38 ±1.48	2.32	**0.021**
Domain-3 Physical Independence	6.65±1.12	7.93 ±2.59	2.28	**0.023**
Domain-4PatientSupport	13.13±3.35	12.18±3.55	1.72	0.085
Domain-5Comfort(Part-B)	28.78±3.26	29.78±5.05	1.79	0.073
Domain-6Emotions(Part-B)	25.68±2.52	25.58±3.74	1.04	0.299
Domain-7Patientsupport	3.85±1.00	4.13±0.56	1.01	0.314
Domain-8Pain	25.25±2.75	26.40±3.32	1.69	0.090
QoR -40Totalscore	**117.65±9.46**	**120.03±12.04**	**0.81**	**0.416**

Comparison of groups after intervention in terms of quality of recovery

The experimental group has significantly (P<0.05) higher comfort core than the control group. Also, there was a significant improvement in emotion stability as suggested by a significant (P<0.05) increase in the mean score of domains-2 (emotion).

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Table 4

Table 4: Domain wise intergroup comparison of the QoR-40 scores after intervention

n=80

Domains	Experimental	Control	MannWhitney Test	
	Mean±SD	Mean±SD	U-value	p-value
Domain-1Comfort	14.08±1.14	12.85±1.93	3.66	**<0.001**
Domain-2Emotions	12.65±1.53	10.25±2.16	5.21	**<0.001**
Domain-3Physical Independence	19.30±3.42	15.98±4.09	3.68	**<0.001**
Domain-4PatientSupport	27.93±2.36	21.68±4.26	6.51	**<0.001**
Domain-5Comfort	36.28±1.63	34.50±3.23	2.33	**0.020**
Domain-6Emotions	27.43±1.57	26.38±2.47	1.68	0.094
Domain-7Physical Independence	4.63±0.63	4.33±0.57	2.55	**0.011**
Domain-8Pain	30.63±1.90	29.85±3.17	0.59	0.553
QoR-40Totalscore	**172.90±8.96**	**155.80±14.04**	**5.61**	**<0.001**

Furthermore, the mean score(19.30±3.42) of physical independence in the experimental group was higher than that of the control group (15.98±4.09) at P<0.05, which suggests that patients in the experimental group felt more physically independent in comparison to the patients in the control group. Posttestcomparisonscoresalsorevealedthatpatientsintheexperimentalgroup felt more supported by family, friends and healthcare team members than the control group. Further line graph (Figure 1) shows the significant items of various domains.

Table 5 After an intervention, scores showed significant improvement in QoR-40 scores as the mean scores of the experimental group (172.90±8.96) were more than that of the control group (155.80±14.04) at(P<0.001).

DISCUSSION

Post-operative recovery is a complex process that needs to be addressed. There are several post-operative factors that hinder it.8 We tried massage therapy to see whether it affects the quality of recovery, so this study holistically evaluated the effectiveness of massage therapy on the quality of recovery among post-operative abdominal surgery patients.

The findings showed that patients derived statistically significant benefits from massage therapy

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in various domains of the QoR-40 tool. Improvements in the post test scores were observed in domains including comfort, emotions, physical independence, and patient support, and these findings were similar to those of other studies of surgical patients 9,10,11,12,13. Pain is a common sequela of surgery, with harmful effects that prolong the post operative recovery. Pharmacological and non-pharmacological approaches are used to treat mild to severe pain. However, these treatments have still not provided sufficient patient satisfaction14. In meta-analysis, Moyer et al. reported that massage therapy has significantly decreased the pain level in patients postoperatively15 but in our study massage therapy did not show significant ($p=0.553$) improvements in the pain. This may be explained by the fact that the therapy was provided only for the 3 days.

Although this study demonstrated that foot and hand massage was significantly associated with improving patients' quality of recovery, but it cannot claim the cause and effect relationship between improved quality of recovery and effectiveness of hand and foot massage therapy as the patients were not randomly selected, the small sample size and some confounding variables like patients were on NSAIDs, Opioids with frequency twice a day may have masked the effectiveness of massage therapy are some of the limitations of this quasi-experimental study.

Study Strengths

A comprehensive multidimensional tool (physical, emotional, psychological and social) was used to evaluate the quality of recovery in postoperative patients. The researcher used a validated technique of massage.

Recommendations

The present study was conducted on a small sample size; a more extensive study on a large sample and multiple settings is recommended to generalize hand and foot stroke massage. A randomized clinical trial with a control group that receives attention for the same length of time as the experimental group is suggested. Complementary and alternative therapies should be incorporated into routine practice as they are inexpensive and effective. The findings of this study can be utilized to educate family members and non-nursing personnel.

Conclusion

Findings from this study are encouraging because foot and hand stroke massage appears to be effective in improving the quality of recovery of postoperative abdominal surgery patients. Because this intervention is easy and inexpensive, it can be included as a complementary therapy to improve the quality of recovery of postoperative patients. Furthermore, they are simple to

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teach to family members or untrained personnel.

DISCLOSURES AND ACKNOWLEDGMENT

We express gratitude to all the study participants for their co-operation and devotion of time during data collection period, without which it might not have been possible to complete this project. The authors confirm that they do not have any conflicts of interest to disclose.

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