

Effect of Hand Massage on alleviating Pain after Abdominal Surgery

Shymaa Helmy Ahmed ¹, Mona Mohammed Abo El-ella ²

^{1,2}Lecturers of Adult Nursing Department (medical-surgical nursing), Faculty of Nursing, South Valley University, Qena, Egypt

Abstract:

Background: Pain considers the fifth vital signs; it is a major postoperative problem. Management of postoperative pain is vital role of nurses. Reflexology is a standalone nursing intervention that can be used to relieve pain. Hand massage, is a method of reflexology. **The aim of** this study was to evaluate the effect of hand massage on reducing pain after abdominal surgery. **Design:** A quasi-experimental, two groups study design was utilized. **Setting:** General Surgery departments at Qena University Hospitals. **Sampling:** Convenience sample of sixty patients according to the inclusion criteria. **Tools:** two tools were used including; Patients' assessment sheet and. Numeric Pain Rating Scale. **Results:** Main results for this study showed that 26.7% of study group and only 6.7% of control group had mild pain. In addition, 50% of study group and 66.7% of control group had moderate pain. Statistically significant differences were found among the two groups in term of level of pain immediately and 60 minutes following intervention P value = 0.001. **Conclusion:** Hand massage along with routine care can decrease pain among patients undergoing abdominal surgery. **Recommendations:** Hand massage should be included in the nursing mangement. Thus, it can be used with pharmacological approaches to manage pain following abdominal surgery.

Key words: Abdominal surgery, Hand massage, Pain, Reflexology, Complementary therapies.

Introduction

Pain is an intolerable sensation and often triggered by harsh or noxious stimuli. It is an unpleasant emotional and sensory experience resembling or associated with potential or actual tissue injury ^(1,2).

Pain, also known as the fifth vital sign, is a major postoperative issue ^(3,4). Post- surgical pain is usually visceral pain caused by peritoneal irritation caused by surgical procedures and the entrapment of dissolved CO₂ within the abdomen ^(5,6). Pain related to surgery that not alleviated is not benign and can affect patient mobility, coughing and respiratory exercises, and predisposing patients to complications for example pneumonia, atelectasis and deep venous thrombosis ⁽⁷⁾.

Abdominal surgery can cause chronic abdominal and pelvic neuralgia. Abdominal and pelvic nerves can cut, damaged, or stretched during gynecologic

surgery, appendectomy, or repair of hernia. This complication, called surgical neuropathic pain, can be debilitating and stressful ^(8,9). After abdominal surgery, release of neuropeptides and ischemia cause pain at the surgical site, and moderate to severe pain is common ⁽¹⁰⁾.

Many efforts are now being made to reduce the severity of postoperative pain and the need for narcotic analgesics in other ways. In the field of treatment, there has been an increase in the use of complementary medical methods, such as massage, which is associated with relaxation, anxiety and pain relief. Until now, there is no scientific consensus on the mechanism of action of these methods ⁽¹¹⁾. Complementary therapies used as adjunctive therapies combined with conventional treatments to improve general health and encourage quicker recovery. Massage therapy is a form of complementary medical care and considered an

essential component of wellbeing and health⁽¹²⁾.

For centuries, massage therapy has used to treat pain. When it combined with drug therapy has found to help manage acute postoperative pain⁽¹³⁾. It involves manipulating soft tissues by hand to have a beneficial effect on how various body systems works. Additionally, a combination of specialized stroking motions, friction, and application of varying intensities of pressure applied to the body's soft tissues to reduce postoperative pain⁽¹⁴⁾.

The purpose of hand massage, a form of reflexology, is to stimulate endings of the nerves that are thought to belong to various organs in the hands by rubbing the hands in certain areas with the knuckles, fingertips, and blunt⁽¹⁵⁾. Because hands contain the majority of pain receptors, stimulating neurons can be an excellent method for reducing pain. It can be performed for a minimum of 10 minutes on each extremity as a single treatment or in combination with other treatments performed exclusively by a health care professional such as a physiotherapist or nurse^(16,17).

Significance of the study:

Postoperative pain is a chief concern for healthcare providers and patients. Therefore, appropriate management is essential. Reflexology is a powerful component of pain management. It considers alternative and complementary medicine used to relieve pain; hand massage is one form of reflexology applied to relief pain after abdominal surgery. As a result, this research was conducted.

Study aim

To evaluate the effect of hand massage on reducing pain after abdominal surgery.

Hypothesis:

Patients who will receive routine care and hand massage will experience significantly less pain than patients who will receive only routine care.

Subject and Methods

I-Technical design

Research design: A quasi-experimental research design used to conduct this research.

Study Setting:

The research carried out in General Surgery departments at Qena University Hospitals.

Sample size: Convenience sample composed of sixty patients (30 control and 30 study) their age 18-60 years of both sexes, capable to communicate clearly and give oral consent who had undergone abdominal surgery.

Exclusion criteria:

- Patients with damaged skin, inflammation , eczema on their hands.
- Obstetrical and orthopedic surgeries.
- Critically ill patient.
- Amputation of the hand.

Tools: data was collected by using two tools:

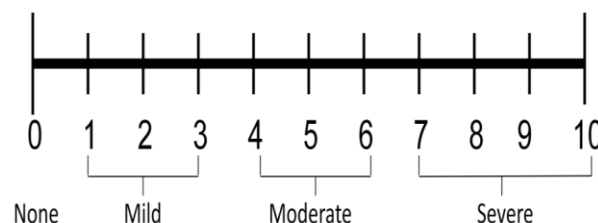
Tool I- Patients' assessment sheet: This tool was developed and utilized by the researchers. It involved two parts as the following:

Part 1: Socio demographic data (name, age, sex, education, marital status and employment).

Part 2: Medical data include (Past medical history, preoperative diagnosis, types of abdominal surgery, previous history of surgery and prescribed analgesics).

Tool II- Numeric Pain Rating Scale (NPRS):

It is adopted by **McCaffery and Beebe (1989)**⁽¹⁸⁾. This is an 11-point evenly divided scale for self-rating pain in adults and children 10 years or older.



Scoring system: The following ratings represented the range of scores, which were between 0 and 10:

0 (no pain), 1–3 (mild pain), 4–6 (moderate pain), and 7–10 (severe pain).

Tools Validity: Three experts in the medical surgical field from the Faculty of Nursing and two experts in the physical therapy and general surgery fields from the Faculty of Medicine evaluated the content validity.

Tools reliability: According to the Cronbach's test reliability of tool, one was 0.81, whereas tool two was 0.84.

Pilot study: was conducted on 10% of the entire sample (6 patients) to determine the applicability of the tools and the time essential to complete it. In addition, to determine any problems or difficulties that may occur during collection of data. The pilot study's data was investigated; no changes were made, so, patients from the pilot study also participated in the main study.

Procedure: The actual fieldwork began from November 2021 until of April 2022. The study conducted through preparatory, implementation, and evaluation phases.

Preparatory phase

It lasted about two months, beginning in November 2021 and ending in December 2021, and included a review of related literature. The researchers translated the tools into Arabic language and retranslated them into English to ensure accuracy.

Implementing Phase

It started from the beginning of January 2022 to end of April 2022. The researcher met with each patient individually, explained the study's aim, and the patients gave their verbal consent to participate in the study.

- For both groups pretest was conducted **Tool I (Patients' assessment sheet)** and **Tool II (Numeric Pain Rating Scale)** were filled by the researcher.

- Hand massage was done for 20 minutes 10 minutes for each hand by the researcher to the study group and the control group was given analgesics only.

Hands massage technique: 1. Place the patient's hand in appropriate position. 2. Stood at the right side to the patient. 3. Applied 5 ml of coconut oil. Massage the left hand gently. 4. Face the palm down. Make little circles around the wrist bone through pressing with the thumbs. 5. Turn the wrist over and stroke the inside of the wrist with the thumbs. 6. Press hard and stroke in the direction of the palms and back to the wrist. 7. The stroke should begin at the knuckles and end at the wrist. 8. Then give each finger a massage. 9. Stroke the palm away from the wrist with firm, even strokes. After that, massage the center of the palm in a circular motion before moving on to the right hand. For the right hand, the steps 1 to 9 were repeated⁽¹⁹⁾.

Evaluation phase

Post-test for pain (Tool II) was evaluated immediately and sixty minutes after hand massage for the study group. For control group patients were under their routine care, and after twenty minutes, posttest level of pain was evaluated. After sixty minutes of interval, posttest of pain level was evaluated again

II. Administrative Design: It attained by the submission of a formal letter from the dean of Faculty of Nursing, South Valley University in Qena to the directors of Qena Hospitals University. An exploratory visit carried out to general surgery departments to assess the appropriate time for data collection and admission rate.

Ethical Consideration

During the research, there was no risk to the subjects. Ethical principles in clinical research were followed. After clarifying the aim and nature of the study oral consent was gained

from patients who were willing to participate in the study, anonymity and confidentiality were assured, patient had the right to leave the study at any time and for no reason, and privacy of patient was considered during data collection.

Statistical Analysis

The Anderson-Darling test was used to test data for normality and for homogeneity variances prior to further statistical analysis. Categorical variables were described by number and percent (N, %), where continuous variables described by mean and standard deviation (Mean, SD). Chi-square test and Fisher exact test used to compare between categorical variables where compare between continuous variables by t-test and A nova Test. We are Used Person Correlation to Appear the Association between Numeric Rating Scale During the study Phases (Pre, Immediately and after 60 minutes) with demographic data for each group. A two-tailed $p < 0.05$ considered statistically significant. The software IBM SPSS 20.0 was used for all analyses.

Results:

Table 1: reveals that, the highest percentage in study and control groups their age was more than 40 years (73.3% and 43.3%) respectively. As regard sex, slightly more than half (53.3%) of both groups were female. Looking at marital status, slightly more than half (56.7%) of the study group and about two fifth (40 %) of the control group were married. In addition, near half (46.7%) of the study group were housewives while more than one fifth (26.7%) of the control group were retired.

Table 2: mentions that, more than one third of the study group and slightly less than three quarters of control group did not have any chronic diseases (40% and 70%) respectively. Looking at preoperative diagnosis, more than one third (36.7%) of the study group had cholecystitis while one-third (33.3%) of control group had appendicitis. Concerning types of abdominal surgery, slightly less than half (43.3%) of the study group had a cholecystectomy and more than one quarter of the control group (26.7%) had hernioplasty. In addition, Ketofen was the analgesic that used by majority of the study and control groups (83.3% and 90%) respectively.

Table 3: illustrates that, there was statistically significant differences between the control and study groups regarding level of pain immediately and 60 minutes following intervention P value = 0.001**.

Table 4: reveals that, there was statistically significant correlation between the control and study groups as regard level of pain immediately and 60 minutes following intervention.

Fig (1): shows that, slightly more than one quarter (26.7%) of study group and only (6.7%) of control group had mild pain. In addition, about half of study group and two thirds of control group had moderate pain (50% and 66.7%) respectively. Also, there was no statistically significant difference between the study and control groups regarding level of pain at baseline.

Table (1): Distribution of Socio demographic data for patients in the study and control group (n= 60).

Items	Study (n=30)		Control (n=30)		X ²
	No	%	No	%	
1-Age groups					
Less than 20 year	2	6.7	6	20.0	10.26
From 20-30 year	1	3.3	8	26.7	
from 30-40 year	5	16.7	3	10.0	
More than 40 year	22	73.3	13	43.3	
Mean ±SD(range)	49.40±13.02(19-60)		37.47±16.80(8-60)		
2-Sex					
Male	14	46.7	14	46.7	0.00
Female	16	53.3	16	53.3	
3-Level of Education					
Illiterate	10	33.3	10	33.3	0.59
Read and write	6	20.0	4	13.3	
Primary	6	20.0	7	23.3	
Secondary	4	13.3	4	13.3	
University	4	13.3	5	16.7	
4-Marital status					
Single	4	13.3	10	33.3	3.77
Married	17	56.7	12	40.0	
Divorced	2	6.7	1	3.3	
Widowed	7	23.3	7	23.3	
5-Employment					
Employee	2	6.7	6	20.0	6.80
Unemployed	3	10.0	3	10.0	
Retired	8	26.7	8	26.7	
House wife	14	46.7	6	20.0	
Student	3	10.0	7	23.3	

Table (2): Distribution of Medical data for patients in each group (n= 60).

Items	Study (n=30)		Control (n=30)		X ²
	No	%	No	%	
1-Past medical history:					
- No	12	40.0	21	70.0	7.43
- Diabetes mellitus (DM)	7	23.3	5	16.7	
- Hypertension (HTN)	7	23.3	1	3.3	
- DM and HTN	4	13.3	3	10.0	
2-Preoperative Diagnosis:					
- Appendicitis	2	6.7	10	33.3	12.29
- Cholecystitis	11	36.7	3	10.0	
- Hernia	5	16.7	8	26.7	
- Severe abdominal Pain	7	23.3	3	10.0	
- Abdominal hemorrhage	1	3.3	1	3.3	
- Penetrating abdominal stab	1	3.3	1	3.3	
- Gall stone	2	6.7	2	6.7	
- Peptic ulcer	1	3.3	2	6.7	
3-Types of abdominal surgery:					
- Hernioplasty	5	16.7	8	26.7	14.51
- Cholecystectomy	13	43.3	4	13.3	
- Appendectomy	2	6.7	10	33.3	
- Abdominal exploration surgery	9	30.0	4	13.3	
- Splenectomy	1	3.3	2	6.7	
- Subtotal gastrectomy	0	0.0	2	6.7	
4- Previous history of surgery:					
- Yes	15	50.0	13	43.3	0.27
- No	15	50.0	17	56.7	
5-Analgesics:					
- Ketofen	25	83.3	27	90.0	11.47
- Nalfin A	5	16.7	3	10.0	

Table (3): Comparison between Study and Control group related to Numeric Rating Scale Immediately and After 60 minutes. (n=60)

Items	Immediately				P. value	After 60 minutes				P. value
	Study (n=30)		Control (n=30)			Study (n=30)		Control (n=30)		
	No	%	No	%		No	%	No	%	
Numeric Rating Scale (NRS)										
- No pain	0	0.0	0	0.0	<0.001**	7	23.3	0	0.0	<0.001**
- Mild	16	53.3	3	10.0		17	56.7	6	20.0	
- Moderate	11	36.7	14	46.7		5	16.7	13	43.3	
- Severe	3	10.0	13	43.3		1	3.3	11	36.7	
Mean ±SD(range)	3.9±2.02 (1-8)		6.1±2.58 (1-10)		0.001**	1.77±1.92 (0-7)		5.8±2.3 (2-10)		<0.001**

**Significant at P value < 0.01

Table (4): Correlations between Numeric Pain Rating scale and selected demographic data for each group (n=60).

Items	Group	Numeric Rating Scale					
		Pre		Immediately		After 60 minutes	
		r	P	R	P	r	P
-Age	Study	-.369*	0.045	-0.162	0.393	0.088	0.645
	Control	-0.109	0.567	-0.230	0.222	-0.158	0.403
-Sex	Study	0.019	0.920	0.087	0.646	-0.009	0.961
	Control	-0.190	0.314	-0.253	0.177	-0.261	0.164
-Past medical history	Study	-0.245	0.192	-0.093	0.626	0.093	0.623
	Control	-0.161	0.397	-0.182	0.337	-0.055	0.772
-Preoperative Diagnosis	Study	-0.124	0.515	-0.065	0.733	-0.065	0.734
	Control	-0.097	0.612	-0.107	0.575	-0.065	0.734
-Types of abdominal surgery	Study	0.330	0.075	.383*	0.037	0.244	0.195
	Control	-0.033	0.861	-0.051	0.789	-0.172	0.364
- Previous history of surgery	Study	0.264	0.158	.385*	0.035	.559**	0.001
	Control	0.340	0.066	.592**	0.001	.496**	0.005

*Statistically Significant at P. value <0.05

**Statistically Significant at P. value <0.01

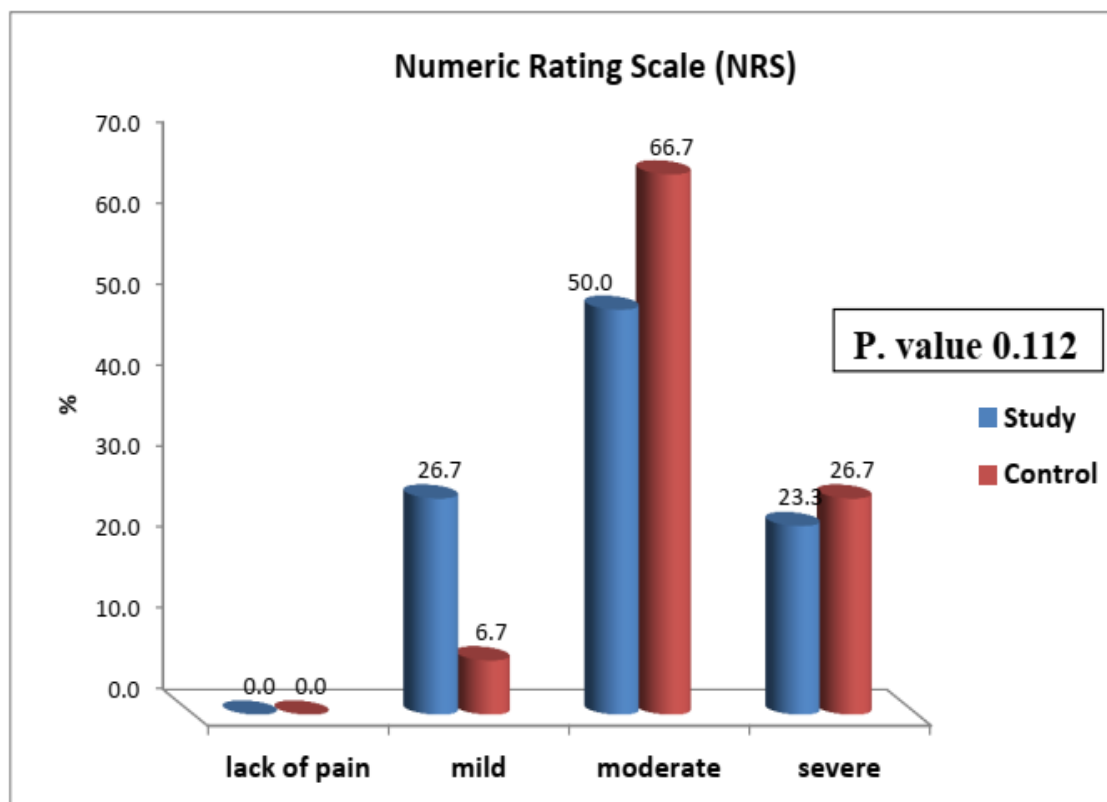


Figure (1): Comparison of baseline pain scores in study and control groups. (n=60)

Discussion:

Pain is one of the most common post-operative complaints among patients worldwide. Despite the availability of medications and anesthetics, post-operative pain is still common⁽²⁰⁾. Reflexology has been shown to be a safe and non-invasive nursing intervention in recent studies. Hand reflexology can be used to improve psychological and actual protests in patients with different kinds of medical issues⁽²¹⁾. Therefore, this study was carried out to evaluate the effect of hand massage on reducing pain after abdominal surgery.

This study revealed that, the highest percentage in study and control groups were over 40 years old. This result was in line with the study of **El Shehata et al**⁽²²⁾ who found that slightly more than half were in the age group of 30 - 40 years and inconsistent with **Rejeh et al**⁽²¹⁾ who stated that the average age of the participants in study and control groups was 60.

Regarding gender, the current study illustrated that slightly more than two quarters of both groups were female. This result was in agreement with the study by **Soniya**⁽¹⁹⁾ who reported that the patients' sex was equal for males and females. Looking at marital status, slightly more than half of the study group and about two-fifths of the control group were married. This result is consistent with **Koras and Karabulut**⁽⁶⁾ who found that the majority of the experimental and control groups were married.

This study showed that, the highest percentage of both groups was housewife and slightly more than one-quarter in the two groups were retired. This finding was consistent with **Koras and Karabulut**⁽⁶⁾ who found that slightly more than half of both groups were housewife and less than one-quarter of the experimental group and a minority of the control group were retired. He

findings of this study mentioned that, highest percentage in study and control groups did not have any chronic diseases. This result is contradicting with **Taman et al** ⁽²³⁾ who reported that majority of both groups had other comorbidity.

Looking at preoperative diagnosis, this study showed that more than a third of study group had Cholecystitis while one-third of control group had appendicitis. Concerning types of abdominal surgery, slightly less than half of the study group had a cholecystectomy and more than quarter of control group had hernioplasty. This disagreed with study of **Soniya** ⁽¹⁹⁾ who reported that more than one third in intervention group diagnosed as inguinal hernia and in study group slightly less than half of patients diagnosed as cholecystitis. In addition, this finding supported by **El Shehata et al** ⁽²²⁾ who found that slightly over two third of study group had cholecystectomy and less than half of control group had appendectomy.

Our study mentioned that, Ketofen was the analgesic that used by the majority of the two groups. This finding confirmed with **Youssef and Hassan** ⁽²⁴⁾ who reported that all patients took non-steroidal anti-inflammatory pain drugs.

This study showed that, slightly more than quarter of study group and the minority of control group had mild pain and, about half of study group and two thirds of control group had moderate pain at baseline. In addition, there was no statistically significant difference between the two groups regarding level of pain at baseline. Our findings concur with **Youssef and Hassan** ⁽²⁴⁾ who mentioned that there was no significant difference between the intervention and control groups' pain severity at baseline.

The current study illustrated that, there was statistically significant differences between the

two groups concerning level of pain immediately and 60 minutes following intervention. This agrees with **Demira and Saritasb** ⁽²⁵⁾ who found that the mean scores of pain intensity level decreased with a statistical significance in study group comparison with control group pre and post intervention.

The current study revealed that, a statistically significant correlation was found between study and control groups as regard level of pain immediately and 60 minutes following intervention for whom had history of previous surgery. This explained by the fact that subjects who had previously undergone surgeries had a better response to hand massage than other.

Conclusion

The findings of this study concluded that use of hand massage along with routine care could decrease pain among patients undergoing abdominal surgery.

Recommendations

The study suggested the following recommendations:

- Application of the study on various operations and a larger sample to broaden the scope of the findings.
- Hand massage should be involved in the nursing management. Thus, it can be used with pharmacological approaches to manage post-operative pain following abdominal surgery.
- Nurses should be educated and trained on reflexology to be able to use it to manage post abdominal surgery pain.

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