

Impact of the Finger Handheld Relaxation Technique on Pain Intensity and Stress among Post Appendectomy Patients

Shaimaa Mohamed Elghareeb Allam⁽¹⁾, Aml Ahmed Mohammed Elmetwaly⁽²⁾,
Islam mokhtar mokhtar⁽³⁾

(1) Lecturer at Medical-Surgical Nursing, Faculty of Nursing, Mansoura University, Egypt.

(2) Medical-Surgical Nursing, Medical Surgical Nursing Department, Faculty of Nursing, Mansoura, Egypt.

(3) Assistant Professor at Medical-Surgical Nursing, Faculty of Nursing, Beni Suf University, Egypt.

Abstract

Background: Pain and emotional stress are an unpleasant experience for patients post-appendectomy because of their tissue trauma surgical incision. Handheld finger relaxation is a therapy that can be applied to reduce pain and stress in patients. **This study** aimed to evaluate the impact of the finger handheld relaxation technique on pain intensity and stress among post-appendectomy patients. **Design:** Quasi-experimental design study & control group was used in the present study. **Setting:** The research was carried out at inpatient surgical departments at Mansoura University Hospital, Egypt. **Subjects:** The study subjects included a purposive sampling technique enrolled to select a sample of 150 post-appendectomy patients in the previously selected departments and randomly assigned into two equal groups. **Tools of data collection:** Three tools were used for data collection; Tool I: Health assessment sheet to identify data related to patients post appendectomy's personal and medical history, Tool II: Numeric Pain Rating Scale (NPRS), and Tool III: Cohen's Perceived Stress Scale Short Version (PSS-10). **Results:** The current study revealed that post the implementation of the finger handheld relaxation technique, pain intensity reduced that ranged from no (0) unbearable pain in study compared to (15%) in the control group and (25%) had severe pain in the study group compared to (75%) in the control group. Also, the study group had less stress levels compared to the control group post-appendectomy patients with a highly statistically significant difference between the two groups ($P < 0.000^*$). **Conclusion:** The study concluded that; the finger handheld relaxation technique has a positive effect on reducing pain intensity and stress among post-appendectomy patients. **Recommendations:** The finger handheld relaxation technique should be integrated into the care of post-appendectomy patients to help reduce pain intensity and stress levels.

Keywords: Finger handheld relaxation, Pain intensity, Posts appendectomy patients, Stress

Introduction

Appendicitis is inflammation brought on by appendix infection. These infections have the potential to induce acute inflammation that needs to be surgically treated right once to avert potentially fatal consequences. Patients with appendicitis have appendectomy as treatment. Discomfort is a side effect of postoperative issues. Both pharmaceutical and non-pharmacological pain management is required to alleviate the suffering (Georgakopoulou, et al., 2022).

Patients who have had an appendectomy endure pain because of the surgical incision's tissue stress. A technique called portable finger relaxation can be used to lessen a patient's pain. Inadequate pain treatment causes post-appendectomy patients to have a less pleasant

experience, which is a nursing concern. Patients may experience weariness as a result of their pain, which may impair their ability and willingness to recover as well as their ability to continue self-care (Hasaini, 2019).

The finger relaxation technique involves releasing mental and physical tension and stress to raise pain tolerance. The three types of relaxation include deep breathing, muscle relaxation, and finger grasping. The finger relaxation technique can be applied as an intervention to postoperative patients' pain levels both in the hospital and at home (Calisanie & Ratnasari, 2021).

A portable relaxation technique is one of the many non-pharmacological treatments. Because it has the power to alter how patients perceive their cognitive and affective

motivation, relaxation is a mental and physical liberation from tension and stress. Relaxation techniques help patients manage their pain, discomfort, and other physical and psychological stresses (Rucka & Talarowska, 2022).

One strategy for reducing stress is relaxation. With the help of this technique, patients can be intentionally overpowered and treated to strengthen their physical muscles. Two methods of relaxation can be utilized to reduce stress (Ma'rifah, Handayani, & Dewi, 2018). Acupressure that is very straight forward and easy to practice for anyone who has issues with their fingers and the passage of energy through their bodies. To relax our emotions and regulate our body's energy, this technique employs gentle hand movements (Suaib & Kurniawan, 2022).

The relaxed condition helps reduce stress and solve issues. Reflex sites on the hands will produce reflex stimulation (spontaneous), which will travel to the brain in the form of electric or shock waves. The waves are promptly processed by the brain and then sent on to the compromised nerves in the body organs, preventing blockages in the energy channels. As a result of the dominant input from the A-beta fibers that secrete the neurotransmitter inhibitor that inhibits and reduces pain sensation, the flow of this energy will produce impulses that are conveyed through the afferent nerve fibers, closing the "gate" of the non-nociceptors (Ma'rifah, Handayani, & Dewi, 2018).

The finger-hand relaxation technique is an easy method for controlling emotions and boosting emotional intelligence. Our fingers' length is made up of energy meridians or channels, which are linked to several organs and emotions. The reflection locations on the hand generate an automatic response while gripping. The stimulus will result in a shock wave or a reduction in brain activity. The wave enters the brain and removes the obstruction in the energy flow before processing it right away and sending it to the nerves of the injured body organs. Human bodies can control their body temperature, heart rate, blood pressure, muscular tension, and energy absorption. Since it can help us become calmer and more focused

this finger hand-held method is quite useful in daily life (Ahmed, et al., 2023).

Another function of care in the position of an advocate is to provide various services and information, particularly in approving or taking nurse actions for finger grip relaxation therapy that will be provided to families to utilize to uphold and preserve family rights. By doing finger grasp relaxation therapy on family members, the facilitator's job is to assist families in coming up with solutions to problems (Panggabean, 2022).

Significance of the study:

The finger-held relaxation technique is an easy way to enhance emotional intelligence and mood regulation. Our fingers have meridians, or energy routes, that connect them to various organs and emotions. Holding a finger while inhaling deeply (relaxing) heats the points of entry and entry of energy to the meridians (energy channels) located on our fingers, which helps lessen and heal physical and mental strain. The nurse participates in the medical management of pain and is crucial to the care of the patients; as a result, she must be knowledgeable about both the advantageous and detrimental pharmacological effects of these substances. The finger portable relaxation technique is a rapid, low-cost, and secures non-pharmacological treatment (Fadliyah, Hendarto, Mardhika, & Agustin, 2022). Therefore, the study's objective was to assess how the finger-handling relaxation technique affected the intensity of the discomfort and stress among post-appendectomy patients.

Aim of the study:

The study aimed to evaluate the impact of the finger handheld relaxation technique on pain intensity and stress among post-appendectomy patients through:

- Assessing pain intensity among post appendectomy patients in the study and control group pre and post-finger handheld relaxation technique application.
- Assessing stress level among post appendectomy patients in the study and control group pre and post-finger handheld relaxation technique application.

- Determine the effect of the finger handheld relaxation technique on pain intensity and stress among post-appendectomy patients.

Research hypothesis:

Post-appendectomy patients who will receive the finger handheld relaxation technique will exhibit less pain intensity and stress levels than those who don't receive it.

Subjects and Method:

Research design:

Quasi-experimental design study & control group was used in this study.

Setting:

The research was carried out at inpatient surgical departments at Mansoura University Hospital, Egypt, building with six levels that provides care for all patients in the delta region. There are five wards total in surgical departments: 6, 7, 8, 11, and 12.

Subjects:

The study subjects included a purposive sampling technique enrolled to select a sample of 150 adult patients from both sexes who underwent appendectomy in the previously selected departments and randomly assigned into two equal groups, with 75 patients post-appendectomy in each group (75 in the study and 75 in the control groups). Study subjects included patients who agreed to participate in the study and they had no hand injuries.

Sample randomization:

It was done by asking each patient to choose a piece of paper. The patient who chooses option number one on the paper is a member of the study group, while patient option number two is a member of the control group. While the study group receives finger-handling relaxation techniques and standard medical treatment, the control group only receives standard medical treatment.

Sample size calculation:

The following formula was used to calculate sample size: $n = Z^2 * p / d^2$, where n is sample size, Z is the type I error probability value for the sided test and equals 1.96, p is the prevalence of appendectomy, q is equal to $1 - p$,

and d^2 is the accuracy of estimate equal to 0.01. Consequently, 135 patients were needed after adding a 20% dropout and using the sample calculation. An additional 15 patients were included in the sample to broaden the effect size. Each group's ultimate sample size was 75 patients.

Data collection tools:

Three tools were used for data collection;

Tool I: Health assessment sheet to identify data related to patients post appendectomy's personal and medical history that includes two parts:

Part 1: Post appendectomy patients' personal data: It included age, sex, educational level, occupation, and residence.

Part 1: Post appendectomy Patients' medical history: It included previous hospitalization, other surgery, and the presence of chronic conditions.

Tool (II): Numerical Pain Rating Scales (NPRS) by Potter & Perry (2005):

Scale for numerically rating pain (NPRS). This was created to document the test group's discomfort in several postures (supine, afflicted side, non-affected side, and semi-fowler) as well as its location and intensity. It takes the form of a straight line with ends that signify extremes like "no pain at all" and "pain as bad as it can be." On a line connecting the two endpoints, the patient is instructed to indicate their current level of discomfort. To quantify the level of pain, a numerical pain rating scale will be employed. The NPRS has a range of 0 = no pain, 1-3 = mild pain, 4-6 = moderate pain, 7-9 = severe pain, and 10 = terrible agony.

Tool III: Cohen's Perceived Stress Scale Short Version (PSS-10): Cohen, Kamarck, & Mermelstein, (1983), produced it in its upgraded form. It was altered to determine the subjects' level of stress. It contained ten questions that inquired about emotions and ideas from the preceding month. Each response was coded as regularly (3 points), occasionally (2 points), or never (1 point) on a three-point

Likert scale. Total scores for each subject ranged from 10 to 30. Low stress (17), average stress (17–24), and high stress (24) were the three groups into which the individuals' perceived levels of stress were split.

Validity of the tools:

To determine the study instruments' content validity, a team of three medical-surgical nursing professors and two surgical medicine experts affiliated to Mansoura University examined the tools for clarity, relevance, comprehensiveness, understanding, and applicability.

Reliability of the tools:

The reliability of the tools was investigated to establish how closely the components are connected. Numerically rating pain (NPRS) reliability was conducted by **Ferraz et al., (1990)** with high test-retest reliability ($r = 0.96$ and 0.95 , respectively). For Cohen's Perceived Stress Measure Short Version dependability, it was found that Cronbach's Alpha was (0.894) (**Lee, 2012**).

A pilot study:

A pilot study was done on 10% of the sample (15) patients who had undergone appendectomy was used in a pilot study to assess the viability and clarity of the research technique. To create the final tool, the tools changed. Patients who underwent appendectomy as part of the pilot trial were excluded in this study.

Ethical considerations:

Approval (no.P.0481) was obtained from the Institutional Review Board of the Faculty of Nursing, Mansoura University. Before starting the study, the researchers met with head of surgical departments of the chosen setting to confirm their participation and lay out the study's objectives. Following an appendectomy, patients voluntarily agreed to participate. Patients were informed of the study's objectives following an appendectomy. Following appendectomy, patients were informed that they were free to leave at any time, without explanation, and without doing so affect the treatment given. Patients were also told that their data was kept confidential and

used only for research and that the information acquired was used for that purpose.

The procedure of data collection:

The researchers visited the settings they had previously selected twice a week, from 8 am to 2 pm from the beginning of March till August 2023. It takes between 40 and 50 minutes to finish each interview tool. The researchers interacted with patients one-on-one in the previously selected setting, introducing themselves and outlining the study's objectives before doing the study.

The study's implementation process has three phases (assessment phase, implementation phase, and evaluation phase).

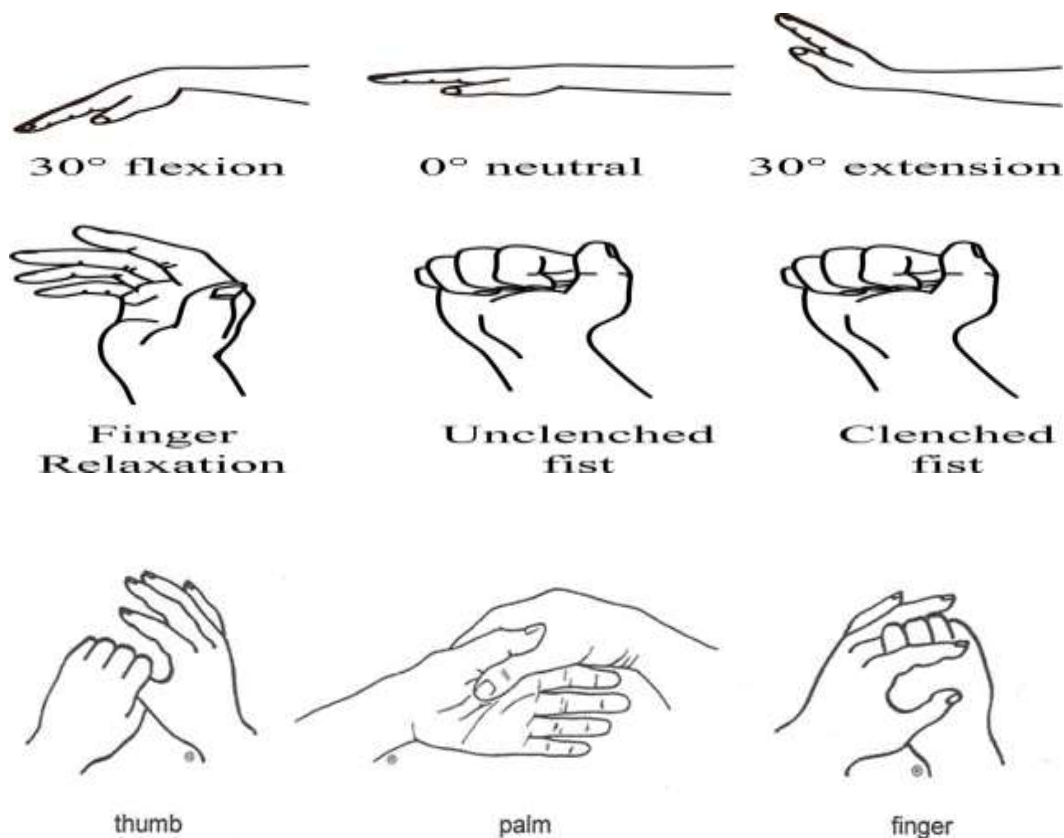
Assessment phase:

The researchers also analyzed previous and more recent literature that was available in addition to books, journals, magazines, and internet searches. The first information the researchers gathered when gathering their data was demographics, medical history, discomfort, and stress level. After that, each post-appendectomy patient in each group underwent an individual interview to collect fundamental information.

Implementation Phase:

The finger handheld relaxation technique was implemented through the following steps:

The definition, goal, types, and application of relaxation treatment were all covered in the presentation (demonstration) of the finger-held relaxation technique. To set the scene, the post-appendectomy patients found a serene, quiet area and settled into a cozy position. The long meridians, or energy channels, that run the length of our fingers are linked to several bodily functions and feelings. When the patient felt discomfort, the main way of specific intervention comprised gripping each of the five fingers, from the thumb to the little/pinky finger, for three to five minutes. By warming the energy entry points to the meridians (energy channels) on our fingertips, holding a finger while taking a deep breath (relaxing) can help to lessen and heal pain and tension (**Handoyo, 2021**).



(Fig 1) Bakker, R., Kalra, M., Tomescu, S. S., Bahensky, R., & Chandrashekar, N. (2022). The effects of pistol grip power tools on median nerve pressure and tendon strains. *International Journal of Occupational Safety and Ergonomics*, 28(3), 1904-1910.

Following an appendectomy, the patient was informed of what would occur. Each of the three post-appendectomy patients that the researchers recruited each day received one-on-one care from the researchers. The patient was lying on the bed with her eyes closed and her breathing labored when the researchers performed the finger-handed intervention after washing their hands and cleaning the patients' hands after appendectomy with a damp towel.

Holding each finger in is a relaxation method called finger relaxation that is used to ease or lessen pain. The Jin Shin Jyutsu is the source of this method. Jin Shin Jyutsu is a form of Japanese acupressure. Energy can be balanced and harmonized throughout the body by grasping fingers. It's said that touching your thumb might help with headaches and anxiety. With the index finger in direct contact with the

kidneys, the hold is used to reduce feelings of anger, fear, and muscle pain. A touch of the middle finger has a calming impact that can help you overcome anger and lower blood pressure and exhaustion in your body since it is strongly tied to blood circulation and fatigue. A simple touch with the ring finger can dispel bad energy and depressing emotions while also easing digestive and respiratory issues. The small intestine and heart are in immediate touch with the little finger. The little finger is thought to be a natural way to calm anxiety and stress. There are multiple steps in the finger grip technique used here: 1) Set up a peaceful setting, 2) Put the client in a relaxed position, such as sitting or lying down, and advise him to take a deep breath and unwind. Close the client's eyes and instruct them to take calm, deep breaths to relax all of their muscles. The

process of relaxation starts with the client applying light pressure to the thumb and holding it there until the pulse is sensed. 5) The client is asked to maintain a steady breath count. 6) While taking regular breaths, hold the thumb for two to three minutes before switching to the index, middle, ring, and little fingers one at a time for the same amount of time. 7) Let go of patient finger grasp and make an effort to relax more (Sulung & Rani, 2017). Both groups were assessed after three hours. The intervention was offered to the research group. To examine the sensitivity ratio between the pre-and post-treatment periods, pain and stress levels were once more assessed (posttest) for both groups.

For the control group:

For almost 30 minutes, the researchers spoke face-to-face with each patient post appendectomy in the control group to identify themselves, outline the study's objectives, and obtain their verbal agreement. Without employing the finger handheld relaxation technique after that, the researchers gathered data on the patients' post-appendectomy demographics, pain, and stress evaluation scores. The control group received routine hospital care.

Evaluation phase:

Using the same instruments as the pretest, the researchers reevaluated the pain and Stress levels for all patients post appendectomy in the study and control groups (tools II and III as post-test) to assess their progress and the results of the finger handheld relaxation technique.

Statistical analysis

Using software from IBM Corporation, all data were gathered, collated, and statistically examined IBM Corp, 2015. Windows version 23.0 of IBM SPSS Statistics IBM Corp. Armonk, NY The mean SD, (range), and number & were used to express quantitative data and respectively qualitative data (percentage). Two groups of normally distributed variables were compared using the t-test. All tests were two-sided and used the Chi-square test to compare the percentage of categorical variables. P-values of 0.05 or higher were regarded as statistically significant, 0.001 or higher as very significant, and 0.05 or below as inconsequential.

Results:

According to **Table 1**, 60% and 46.6% of post-appendectomy patients in the study and control group were in the 40 to 60 age range, respectively. Regarding education, 53.4% in the study group compared to 33.4% in the control group had secondary education. Also, (33.4%, and 40%, respectively) of the study group and the control group not working. Rural residents, 53.4% and 68% of the study and control groups were rural, respectively. Regarding their demographic traits, there was no statistically significant difference between the two groups.

Figure 2: Portrayed that 55% of the study group and 60% of the control group of the studied post-appendectomy patients were males.

According to **Table 2**, the study and control groups, respectively, 86.6% and 80% didn't have any other surgery. In the study group and control group, respectively, 93.4% & 86.6% hadn't previously been hospitalized. Concerning the presence of chronic conditions, it was observed that 73.4% of the study group compared to 80% in the control group had no chronic conditions. There was no statistically significant difference between the two groups in terms of their medical history.

Table (3): Demonstrates the pain mean scores in the studied post-appendectomy patients' pre and post-finger handheld relaxation application in the two groups. As shown post- finger handheld relaxation application in the study group, indicated highly statistically significant differences in the pain scores among the studied two groups ($P < 0.001$).

Figure 3: Highlights that, no (0) of post appendectomy patients in the study group had pain unbearable compared to (15%) in the control group. Also, only (25 %) had severe pain in the study group compared to 75% of post-appendectomy patients in the control group post-finger handheld relaxation application.

Figure (4) shows that post finger handheld relaxation application, the study group stress level was low among 55% of the studied post-appendectomy patients compared to no one in the control group, with a highly statistically significant difference between the two groups ($P < 0.000^*$).

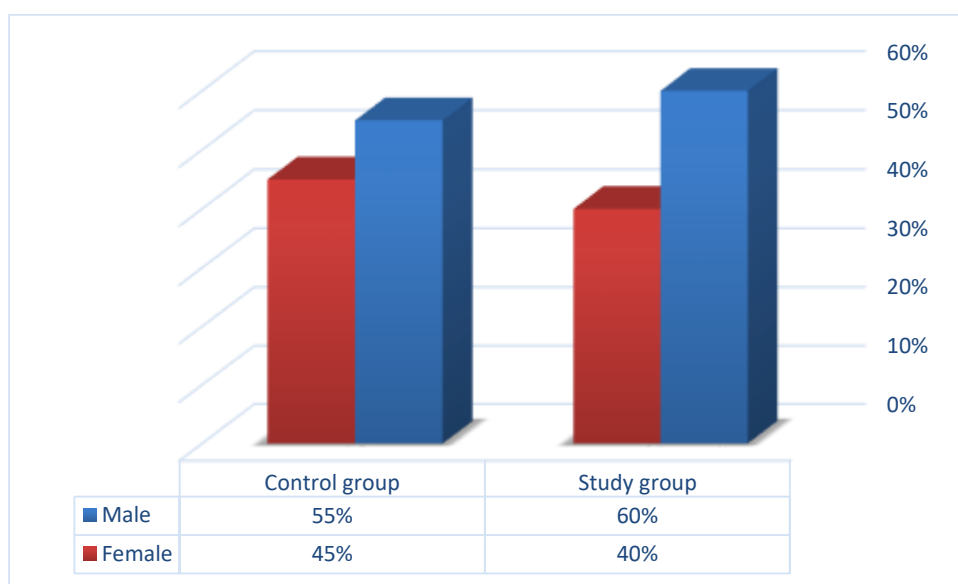
Table 1: Distribution of the studied post-appendectomy patients regarding their personal data

Post-appendectomy patients' personal data	Study Group		Control Group		Test of significance	
	n=75	%	n=75	%		
Age	- 21 < 30	10	13.4	15	20.0	X ² = 0.178
	- 30 < 40	20	26.6	25	33.4	P= 0.978
	- 40 ≥ 60	45	60.0	35	46.6	
Mean+SD	36.44±19.78		37.65±15.78			t= 0.025 P= 0.889
Educational Level	- Illiterate	5	6.6	10	13.4	X ² =0.5.834 P=0.136
	- Read & Write	15	20.0	20	26.6	
	- Secondary	40	53.4	25	33.4	
	- University	15	20.0	20	26.6	
Occupation	- Not working	25	33.4	30	40.0	X ² = 2.823
	- Working	50	66.6	45	60.0	P= 0.0978
Place of Residence	- Urban	35	46.6	30	32.0	X ² = 0.856
	- Rural	40	53.4	45	68.0	P= 0.364

X²= Chi-Square test

t= Student T test

* Significant p at ≤0.05

**Figure 2:** Distribution of the studied post-appendectomy patients regarding their Sex**Table 2:** Distribution of the studied post-appendectomy patients regarding their medical history

Medical history	Groups				Test of Significance
	Study Group (n=75)		Control group (n=75)		
	No.	%	No.	%	
Do other surgery					
- Yes	10	13.4	15	20.0	X ² = 3.456
- No	65	86.6	60	80.0	P= 0.389
Previous hospitalization					
- Yes	5	6.6	10	13.4	X ² = 0.576
- No	70	93.4	65	86.6	P= 0.475
Presence of chronic conditions					
- Yes	20	26.6	15	20.0	X ² = 1.563
- No	55	73.4	60	80.0	P= 0.243

X²= Chi-Square test

* Significant p at ≤0.05

Table (3): Comparison between pain mean scores pre and post-finger handheld relaxation application among studied post-appendectomy patients in the study and control groups

Pain mean scores	Study group (n=75) Mean ±SD	Control group (n=75) Mean ±SD	t-test	P-value
Pre-finger handheld relaxation application	8.2 ±0.3	8.0 ±0.5	0.456	0.674
Post-finger handheld relaxation application	5.6 ±2.3	8.3 ±0.2	6.342	<0.001*

*Statistically significant level at P < .0001

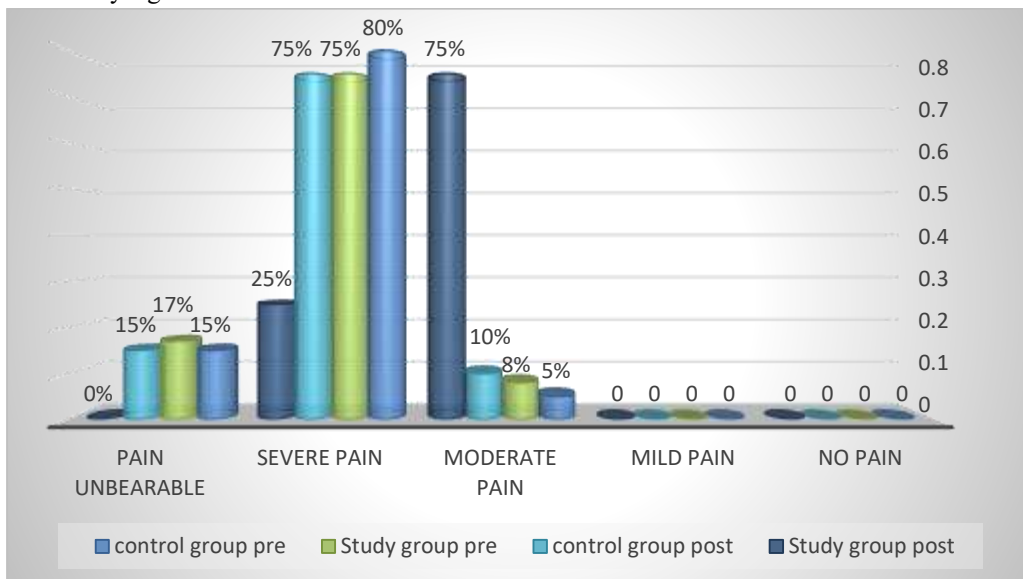


Figure (3): Percentage distribution of post appendectomy patients regarding their pain levels post finger handheld relaxation application in the study and control groups

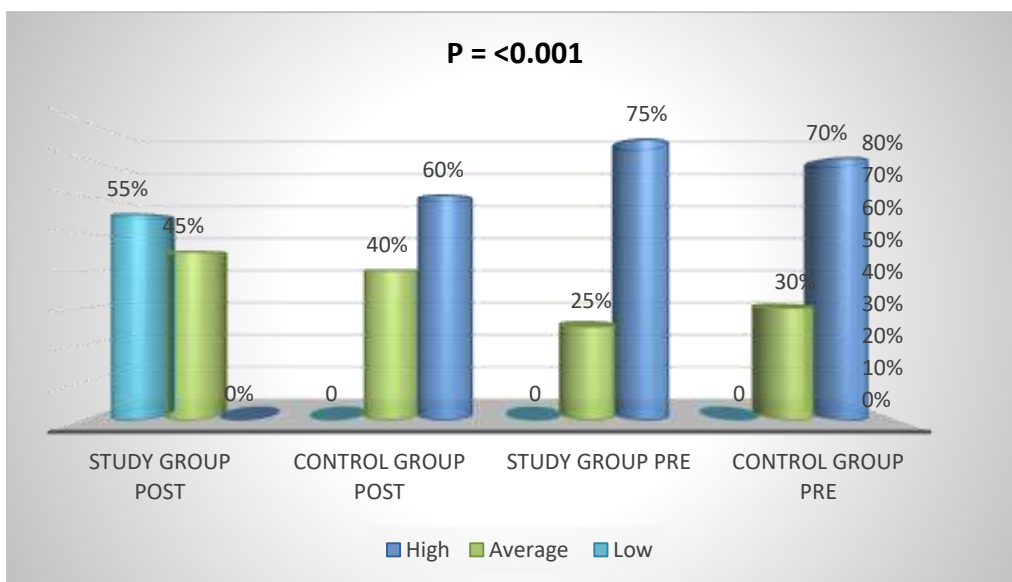


Figure (4): Distribution of the studied post-appendectomy patients according to their stress level pre and post-finger handheld relaxation application (n=150)

Discussion:

Following surgery patients will typically experience severe pain in the first two hours as the anesthetic effects wear off because postoperative recovery takes an average of three days. The main capital convenience is the use of non-pharmacological methods to control pain. When compared to the usage of pharmaceutical management, nonpharmacological management is more cost-effective and has no negative side effects. Non-pharmacological pain management with relaxation techniques, which is an external activity that influences a person's internal response to pain, is an alternative to pharmacological treatment (Lee, Woo, Chae, Kim, & Shin, 2023).

Pain management helps to lessen pain perception. Treatment options include both pharmaceutical and nonpharmacological methods. It's simple to control emotions and increase emotional intelligence by using finger relaxation techniques. Our fingers are connected to various organs and emotions by energy meridians and channels. When you grasp something, the reflection points on your hand stimulate an automatic reflex. The stimulus will empty the brain of a shock or electrical charge. The wave is quickly processed by the brain and sent to the nerves in the damaged body organs, obstructing the energy flow to disappear (Nave, Deane, Miller, & Clark, 2022)& (Mohammed Elsayed ,& Mohamed , 2021).

The results of this study showed that there were no significant differences between the two groups for personal data such as age, education level, employment status, and residence. The researchers interpret this as evidence that the baseline of pain and stress levels were comparable between the two groups.

The results of this study demonstrated that post-finger handheld relaxation application in the study group indicated highly statistically significant differences in the pain scores among the studied two groups. According to the researchers' points of view, it reflected the positive effects of the finger handheld relaxation application in reducing pain scores among those patients.

The results of this study highlighted that one-quarter of post-appendectomy patients had severe pain in the study group compared to three-quarters of post-appendectomy patients in the control group post-finger handheld relaxation application. From the researchers' points of view, it indicated the effectiveness of the finger handheld relaxation application in reducing pain levels among those patients.

The results of the current study are similar to the study results conducted by Pongoh, Egam, Kamalah, and Mallongi, (2020) who found that using a very hefty scale; a postoperative pain scale was completed before relaxing the finger grasp. The use of the finger-gripping technique in postoperative patients resulted in a reduction in pain scores. Similarly, Tyas (2020) and Rasyidah, Tarwiyah, & Maulani, (2022) stated that there is an effect of finger grip relaxation techniques on reducing pain levels. Also, Nurses mostly use distraction and relaxation to manage pain (Ibitoye, Oyewale, Olubiyi, & Onasoga, 2019).

Between the two groups, there was a significant difference in the post-phase. This was in line with the findings of Ma'rifah, Handayani, & Dewi, (2018), there was a substantial difference in the pain scale between the experimental group and the control group when the finger grip relaxation was performed. Moreover, Pongoh, Egam, Kamalah, & Mallongi, (2020) indicated that statistical test results revealed the efficiency of finger relaxation on changes in the severity of pain and pain among patients. This guaranteed the intervention's effectiveness.

In the same line with Nyayu, & Anisa, (2021) it was shown that using finger relaxation techniques helped post-appendicitis surgery patients experience less discomfort. The finger-grasping relaxation technique helps ease mental and emotional stress, and the body will relax as a result of the hand's reflecting spots.

Techniques for relaxing the fingers while holding them can lessen pain physiologically. Delta-fibers A and C, which carry impulses along nerve fibers into the substantia gelatinosa afferent nociceptors (gate) in the spinal cord for the next pass through the thalamus, then deliver impulses to the cerebral cortex and interpret as

pain, transmit signals in response to pain stimulation. The overwhelming input from A-beta fibers, which secrete the neurotransmitter inhibitor that suppressed and diminished pain stimulus, will cause impulses to be sent through the afferent nerve fibers of non-nociceptors and cause a "gate" to close (Nyayu & Anisa, 2021).

Similarly to this, research by Prayogi, Andriyani, Olfah, & Harmilah, (2021) found that after receiving treatment with finger-hold/handheld relaxation techniques, respondents' pain levels changed or were modulated as a result of the stimulation. Handheld finger relaxation is the method that stimulates the brain the first and most, which inhibits pain stimulation. Patients who are experiencing pain on the first day after an appendectomy can observe a reduction in pain intensity when using handheld finger relaxation techniques.

Following treatment, there was a significant decrease in pain intensity as shown by a decline in scores in individuals who had undergone post-appendectomy. Reduction in pain severity in post-appendectomy patients is attributed to portable finger relaxation therapy, which encourages respondents to unwind by holding each of the five fingers individually for three to five minutes, which is one of the simplest and quickest ways to let go of pent-up emotions and promotes relaxation. This method allows for easy hand contact and breathing to balance the body's energy ((Yuliastuti, 2015).

The respondents were given a handheld finger for relaxation techniques, which means that the respondents can feel the excitement when they touch it, based on the findings of research in general about the effect of this relaxation technique in Post-appendectomy patients found that respondents experienced pain intensity differences. These triggers increase comfort and lessen depressive and anxious symptoms in the respondent, allowing for better pain management and bodily function. Following the application of relaxation techniques, the respondent's pain intensity decreases, which is a result of the elements' positive and appropriate responses (Nyayu & Anisa, 2021).

The findings support Yuliastuti, (2015) assertion that holding the finger can be employed as an alternative to non-pharmacologic pain management in patients who have pain complaints and can stop pain neurotransmitters from transmitting pain impulses brought on by invasive procedures. Because holding a finger warms the finger dots on the exit and entry of meridian energy (energy channels), which are placed on our fingers, it can ease the physical and mental strain.

The current study's findings showed that post finger handheld relaxation application, the study group stress level was low among more than half of the studied post-appendectomy patients compared to no one in the control group, with a highly statistically significant difference between the two groups. From the researchers' point of view, it reflected the success of the current study aim that finger handheld relaxation application reduced the stress level in the study group.

The finger relaxation technique offers a way to relieve mental and physical stress and tension while also increasing pain tolerance. Additionally, relaxation can lower depression-causing factors such as cortisol levels, allowing for better regulation of pain and improved bodily functions. According to studies on pain intensity, people recovering from cesarean sections who relax their finger grasp report less discomfort (Astutik & Kurlinawati, 2017).

When you grab anything, the reflex spots on your hand will cause a spontaneous reflex to happen. Electrical waves will be sent during the stimulation, immediately processed by the brain, and then forwarded to the nerves in the impacted organs. An obstruction in the energy's smooth path is the outcome of this procedure. The result of this muscular relaxation is a drop in blood norepinephrine levels. Endorphins, the body's natural analgesic hormone, will be released as a result of relaxation, which will naturally cause the pain to lessen. The hypothalamus will get input from relaxed muscles, calming the soul and the body's internal organs (Handoyo, 2021).

The current study's findings on the average score of stress level pre and post-intervention showed that, before the finger relaxation

application, the majority of the study group had an average stress level. With a highly statistically significant difference between the two groups, the study group's average stress level decreased after a finger-held relaxation technique application. From the researchers' point of view, Research confirmed that finger handheld relaxation was beneficial in lowering stress levels.

According to the average stress level before and post-intervention score, the current study's findings showed that following finger handheld relaxation application, the study group's stress level dramatically decreased. This may be interpreted by a finger-held relaxation technique that would enhance the response of the relaxation, a person's capacity to cause the body to produce chemicals and brain messages that would cause the muscles and organs to slow down and would boost blood flow to the brain. **The 2019 edition of Information Resources Management Reduced levels** of stress hormones and lower CNS activity, as seen in measurable changes in brain waves, are further characteristics of all relaxation response approaches.

Limitation:

The sample size for this study was somewhat limited, and only one public hospital was included, another weak point is the ability to communicate one's pain experience to researchers after fully describing their pain experience was necessary for effective pain evaluation. Each individual's interpretation will be unique.

Conclusion:

Depending on the result of the present study, the study concluded that; the finger handheld relaxation technique has a positive effect on reducing pain intensity and stress among patients post appendectomy.

Recommendations:

The following suggestions are recommended based on the present study's findings:

- The finger handheld relaxation technique should be integrated into the care of patients post appendectomy to help reduce pain intensity and stress level

- Replication of the current study in more settings with a large sample size.
- Improving awareness among patients about the benefits of finger handheld relaxation techniques in reducing pain and stress.

Future researchers:

- Comparative study about the effect of finger handheld relaxation technique application versus guided imagination techniques to reduce the perception of pain and stress among patients.

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