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## Effect of handheld finger-grip relaxation technique and guided imagery for managing postoperative pain

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### Abstract

**Background:** Finger-grip relaxation is a non-pharmacological technique that can help reduce pain. This method is very simple and can be performed by anyone. Guided imagery is another technique that induces a relaxation effect on the body and can also alleviate pain. Guided imagery is performed by using an individual's imagination in a guided way.

**Purpose:** To understand the nursing care involving finger-grip relaxation combined with guided imagery in reducing the intensity of post-laparotomy pain.

**Method:** A case study with a descriptive design and a nursing care process approach was applied involving a sample of five individuals. Non-pharmacological pain reduction techniques were carried out by applying finger-grip relaxation and guided imagery interventions for three consecutive days, with each session lasting approximately 15 minutes per day. Pain levels were measured before and after the therapy using the numeric rating scale.

**Results:** Participant characteristics data showed an average age with a standard deviation of  $(29.4 \pm 8.173)$ , with ages ranging from 18 to 41 years. The majority of participants were female (60.0%). After non-pharmacological finger-grip relaxation and guided imagery interventions were conducted on five patients with post-laparotomy pain, results indicated a shift in pain levels from moderate to mild pain. On the first day, the first participant showed a pain scale reduction from 6 pre-intervention to 2 after three days of consecutive finger-grip relaxation. Similarly, participants 2, 3, 4, and 5 showed reductions in pain intensity, with the lowest pain scale observed being 1 on the third day.

**Conclusion:** The application of finger-grip relaxation and guided imagery techniques is effective in reducing pain levels.

**Recommendations:** This study is expected to provide a reference for the necessity of complementary therapy interventions to optimize post-operative patient care in hospitals. Additionally, the results of finger-grip relaxation combined with guided imagery interventions may be applied in clinical nursing practice within educational institutions.

**Keywords:** Guided Imagery; Handheld Finger-grip Relaxation; Postoperative Pain.

### INTRODUCTION

Pain is an uncomfortable, highly subjective experience. The sensation of pain varies from person to person, and only the individual feeling it can describe or assess their pain (Utami & Khoiriyah,

2020). Postoperative pain arises due to mechanical stimuli from the wound, which causes the body to send signals, leading the patient to feel pain (Astuti & Aini, 2020). Although postoperative pain is a

physiological response, one of the most dreaded complaints by patients after surgery is that pain begins before full consciousness is regained and intensifies as the effects of anesthesia wear off. This type of pain is acute, resulting from surgical effects (Potter & Perry, 2010).

For over a century, surgical care has been a crucial component of healthcare worldwide. It's estimated that 230 million surgical procedures are performed globally each year (World Health Organization, 2018). Surgery ranks 11th out of 50 health conditions in Indonesia, with a prevalence of 12.8%, where 32% of these are major surgeries, 25.1% are associated with mental health issues, and 7% involve anxiety (Ministry of Health of the Republic of Indonesia, 2016).

Pain management is a protocol for addressing pain and includes two approaches: pharmacological and non-pharmacological. Pharmacological actions usually involve administering analgesic medications to reduce severe pain, which may last for hours or even days (Wati & Ernawati, 2020). Analgesics are divided into three categories: non-opioid (such as acetaminophen and NSAIDs), opioid (narcotic types), and co-analgesics or adjuvants (Novita, 2019). Non-pharmacological therapies, used as a complement to medications to shorten relatively brief episodes of pain, include relaxation, deep breathing techniques, distraction, hypnotherapy, hypnobirthing, music therapy, massage, acupuncture, hot or cold compress therapy, transcutaneous electrical nerve stimulation, and various other relaxation methods such as muscle relaxation, meditation, yoga, or hypnotherapy. Among these relaxation methods, the combination of finger-grip relaxation and guided imagery has not yet been explored.

Finger-grip relaxation is a non-pharmacological method for managing pain that can be done independently and easily by anyone. This technique combines deep breathing and holding the fingers for a relatively short duration. The sensation felt when performing this technique includes comfort and relaxation, which helps relieve mental and physical tension from stress, increasing pain tolerance (Hasaini, 2019). The general relaxation response is part of the decline in cognitive, physiological, and behavioral stimulation. The relaxation process also

involves reducing pain stimulation (Haniyah, Setyawati, & Sholikah, 2016).

Guided imagery is a technique that provides a relaxation effect. It involves using an individual's imagination in a guided way, aiming to promote relaxation and enhance quality of life by visualizing a pleasant place or situation. Individuals can reach a state of relaxation, especially if their imagination involves senses like sight, hearing, smell, touch, and taste (Udkhiyah & Jamaludin, 2020).

An initial survey conducted in the Sakura Ward 15 on five postoperative laparotomy patients experiencing moderate pain revealed clinical signs such as grimacing, restlessness, and sleeping difficulty. Nurses on duty reported that they had never used the finger-grip relaxation technique combined with guided imagery; patients were only given pharmacological therapy in the form of a 2 mg injection of Santagesic.

## RESEARCH METHOD

A descriptive design with a nursing care process approach in the form of pre-test and post-test was applied. The study was conducted in October 2023 at the Sakura Ward 15 of Indriati Hospital, Solo Baru, involving five participants as a sample. The inclusion criteria were: patients who had undergone surgery, adult patients, those with a pain scale ranging from 3 to 6, and patients who received general anesthesia.

Changes in pain perception were measured using the numeric rating scale (NRS). Pain levels were categorized into three types: mild pain (scale 1-2), moderate pain (scale 3-4), and severe pain (scale 5-6). The research procedure began with the five participants being asked to fill out a consent form (informed consent), followed by a pain assessment. Next, the patient was positioned comfortably for vital sign measurements. Then, the intervention in the form of finger-grip relaxation therapy for approximately 15 minutes, combined with guided imagery, was administered. After the intervention, evaluation and documentation were carried out. Finger-grip relaxation therapy was provided 1 hour before the administration of the 2 mg Santagesic injection and was performed for 3 consecutive days with a therapy frequency of once per day.

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**RESEARCH RESULTS**

**Table 1. Characteristics of the Participants (N=5)**

Variables	Results
Age (Mean±SD)(Range)(Year)	(29.4 ± 8.173)(18-41)
Age (n/%)	
18-25	1/20.0
26-33	3/60.0
34-41	1/20.0
Gender (n/%)	
Male	2/40.0
Female	3/60.0
Pain Scales - Pre-test (n%)	
Severe	5/100.0

Table 1 shows the characteristics of the participants, with an average age and standard deviation of (29.4 ± 8.173), within an age range of 18-41 years, and the majority of participants were female, totaling 3 participants (60.0%). The majority of participants had a pain level categorized as severe before the implementation of the finger-grip relaxation intervention.

**Table 2. Comparative Pain Scales after the Intervention**

Participant	Day-1		Day-2		Day-3	
	Pre Test	Post Test	Pre Test	Post Test	Pre Test	Post Test
1	6	5	5	4	4	2
2	5	4	4	3	3	1
3	6	5	5	4	3	2
4	6	5	5	3	3	1
5	5	4	4	3	2	1

Table 2 shows the pain scale results for all five participants. It is observed that the average pain intensity decreased after the finger-grip relaxation technique combined with guided imagery was administered from day one to day three. On the first day, the first participant showed a decrease in pain intensity, with a pre-test pain scale of 6. However, after three consecutive days of finger-grip relaxation intervention, the pain intensity reduced to scale 2 on day three. Similarly, participants 2, 3, 4, and 5 showed a decrease in pain intensity, with the lowest pain intensity recorded as scale 1 on day three.

**DISCUSSION**

The initial assessment results showed that participants appeared to grimace in pain and were

restless. Participants one, three, and four reported that pain was felt when moving, describing the pain as sharp and stabbing, with a pain scale of 6, and sometimes the pain would come and go. Meanwhile, participants two and five mentioned pain during movement, a stabbing sensation, pain at the surgical site, with a pain scale of 5, and intermittent pain. Vital signs were elevated due to anxiety about the pain sensation.

The intervention using finger-grip relaxation combined with guided imagery, applied to five participants over three days, was effective in reducing post-laparotomy pain. This was consistent with the results where all five participants showed a decrease in pain from moderate to mild pain on the pain scale. Based on the characteristics of the

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participants, with an average age and standard deviation of (29.4 ± 8.173) and an age range of 18-41 years, the majority of participants were female (60.0%).

Factors influencing pain include age, gender, culture, pain perception, attention, anxiety, fatigue, previous experiences, and coping styles (Astutik & Kurlinawati, 2017). One of the factors affecting postoperative pain is age. Age is an important variable that can influence responses to pain. Differences found among age groups may affect how respondents react to and express pain. There is a positive correlation between age and postoperative pain intensity, meaning that older individuals tend to report higher pain levels (Purnamasari, Nasrullah, Mundakir, Hasanah, & Choliq, 2023).

Patients who independently use finger-grip relaxation, from the thumb to the pinky, then switch hands, experience a reduction in pain intensity after gripping their fingers for 3 to 5 minutes (Wati & Ernawati, 2020). This occurs because the touch of the hand helps the patient relax, and stable breathing helps balance energy in the body. The finger-grip technique can warm the energy points on the hand's meridian, reducing pain intensity due to the relaxation stimulation reaching the brain. Finger-grip relaxation affected pain intensity reduction in postoperative patients (Sugiyanto, 2020). Finger-grip relaxation also reduced pain in postoperative appendicitis patients (Norma, Rasyid, & Samaran, 2020). Finger-grip therapy can reduce pain in postoperative appendectomy patients (Wati, Widyastuti, & Istiqomah, 2020; Aswad, 2020; Hasaini, 2019). Finger-grip relaxation affected pain perception in postoperative fracture patients at the Jombang Regional Hospital (Indrawati & Arham, 2020). Guided imagery is a technique that requires individuals to form mental images of pleasant things. These images are received as stimuli by various senses, then processed through the brainstem to the thalamus, with some stimuli transmitted to the amygdala and hippocampus, and most sent to the cerebral cortex. In the cerebral cortex, sensory association processes occur, where the stimuli are analyzed, understood, and organized into something tangible, allowing the brain to recognize the object and its significance (Felix, Ferreira, Oliveira, Barichello, Pires, & Barbosa, 2018). A reduction in pain levels at three measured intervals, indicating

that guided imagery interventions influenced pain levels in postoperative patients (Acar & Aygin, 2019).

The study results indicate that five respondents, after receiving the guided imagery technique, experienced a reduction from moderate to mild pain. A reduction in pain levels: before guided imagery, participants had a 100% pain intensity, and after the intervention, pain decreased by 90% (Darmadi, Hafid, Patima, & Risnah, 2020).

Pain responses vary among participants. Guided imagery is a technique that creates impressions in the participant's mind, focusing on those impressions, gradually reducing their pain perception. When patients focus on pleasant imaginations, their pain intensity decreases as their attention is diverted from the pain. Therefore, it was found that guided imagery can reduce pain intensity.

Based on the nursing care analysis for clients with the nursing diagnosis of acute pain related to physical injury (surgical procedure), after applying the finger-grip relaxation technique combined with guided imagery for approximately 15 minutes once per day, conducted over three consecutive days, postoperative pain was reduced from severe to mild, as shown in the pre-test and post-test results.

## CONCLUSION

The finger-grip relaxation practice, when used together with guided imagery, has been shown to effectively lower pain levels in patients after surgery. Incorporating this combined therapy as a complementary approach in pain management could be beneficial. This technique offers an independent nursing intervention option for managing post-operative pain.

## SUGGESTIONS

The outcomes of combining finger-grip relaxation with guided imagery are anticipated to highlight the importance of complementary therapy to enhance hospital care. Moreover, this intervention's results can be implemented in clinical nursing practices within educational institutions.

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