A Journal Kiara Nursing and Midwifery (JKNM)
ISSN (Online) 3063-7600 Volume 2, Issue 02 , March 2026

The Effect of the Finger-Holding Relaxation Technique on Pain Reduction in a Post-Appendectomy Patient at BLUD RSUD Kabupaten Buton: A Case Study

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ARTICLE INFO

Article history :
Received 2025-November-30
Received in revised form 2025-December-15
Accepted 2025-December-26

Keywords :
Finger-holding relaxation technique
Post-appendectomy
Pain Level
Case study

Kata Kunci :
Relaksasi Genggam Jari
Post Apendiktomi
Nyeri Level
Studi Kasus

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ABSTRACT

Background: Postoperative pain remains a frequent clinical problem following appendectomy and may interfere with recovery. Complementary non-pharmacological interventions are increasingly used to support pain management. The finger-holding relaxation technique is a simple relaxation method that may reduce pain perception.
Objective: To describe the effect of the finger-holding relaxation technique on pain intensity in a post-appendectomy patient.
Methods: This case study involved a 21-year-old patient experiencing acute pain after appendectomy. The finger-holding relaxation technique was administered once daily for three consecutive days. Pain intensity was assessed before and after the intervention using the Numeric Rating Scale (NRS).
Results: A gradual decrease in pain intensity was observed following the implementation of the finger-holding relaxation technique over the three-day intervention period.
Conclusion: The finger-holding relaxation technique may be considered an effective complementary nursing intervention for reducing postoperative pain in post-appendectomy patients.

ABSTRAK

Latar Belakang: Nyeri pascaoperasi masih menjadi masalah klinis yang sering terjadi setelah apendiktomi dan dapat mengganggu proses pemulihan. Intervensi non-farmakologis komplementer semakin banyak digunakan untuk mendukung manajemen nyeri. Teknik relaksasi genggam jari merupakan metode relaksasi sederhana yang dapat menurunkan persepsi nyeri.
Tujuan: Untuk menggambarkan efek penerapan teknik relaksasi genggam jari terhadap intensitas nyeri pada pasien post apendiktomi.
Metode: Studi kasus ini melibatkan seorang pasien usia 21 tahun yang mengalami nyeri akut setelah apendiktomi. Teknik relaksasi genggam jari diberikan satu kali sehari selama tiga hari berturut-turut. Intensitas nyeri diukur sebelum dan sesudah intervensi menggunakan Numeric Rating Scale (NRS).
Hasil: Terjadi penurunan intensitas nyeri secara bertahap setelah penerapan teknik relaksasi genggam jari selama periode intervensi tiga hari.
Kesimpulan: Teknik relaksasi genggam jari dapat dipertimbangkan sebagai intervensi keperawatan komplementer yang efektif dalam menurunkan nyeri pascaoperasi pada pasien post apendiktomi.

INTRODUCTION

Appendicitis is an acute inflammatory condition of the vermiform appendix caused by obstruction of the appendiceal lumen and remains one of the most common causes of acute abdominal pain worldwide. Globally, approximately 7% of individuals in developed countries experience appendicitis, with more than 200,000 appendectomy procedures performed annually in the United States. In 2022, the prevalence of appendicitis was reported at 4.8% in Asia and 2.6% in Africa, highlighting its substantial global burden (Hendrawati & Amalia, 2022).

In Indonesia, appendicitis represents a major non-communicable disease, with reported cases increasing from 596,132 in 2019 to 621,435 in 2020, ranking it as the second most prevalent non-communicable condition nationally (Ronika et al., 2024). Regional data from Southeast Sulawesi further emphasize this burden, with 5,980 cases and 177 deaths reported in 2017 (Ahmad & Kardi, 2022). Institutional data from BLUD RSUD Kabupaten Buton demonstrate a consistently high number of post-appendectomy patients between 2023 and early 2025, underscoring the ongoing clinical relevance of appendicitis in this setting.

Obstruction of the appendiceal lumen, commonly due to fecalith formation associated with low dietary fiber intake, initiates an inflammatory cascade that may extend from the mucosa to the serosal layer. Delayed or inadequate treatment

increases the risk of severe complications, reinforcing the importance of timely and effective management (Bessoff & Forrester, 2020).

Appendectomy remains the definitive treatment for appendicitis; however, postoperative pain is an expected consequence of surgical tissue trauma. When inadequately managed, acute postoperative pain may adversely affect physiological stability, delay wound healing, prolong hospitalization, and contribute to psychological distress, including anxiety and sleep disturbances (Potter et al., 2021).

Effective pain management requires an integrated approach combining pharmacological and non-pharmacological strategies. The finger-holding relaxation technique is a simple, low-cost complementary intervention that promotes relaxation through non-nociceptive sensory stimulation, facilitating endorphin release and inhibiting pain transmission via the gate control mechanism at both spinal and supraspinal levels (Wati & Ernawati, 2020; Sugiyanto, 2020).

Accumulating evidence supports the effectiveness of the finger-holding relaxation technique in reducing postoperative pain among appendectomy patients. Previous studies have consistently reported significant reductions in pain intensity following its implementation (Sulung & Rani, 2017; Hasaini, 2019; Rosiska, 2021; Ismiatul Faizah, 2024). Despite these findings, evidence from regional hospital settings remains limited. Therefore, this study aims to examine the application of the finger-holding relaxation technique in reducing pain levels among post-appendectomy patients at BLUD RSUD Kabupaten Buton.

METHODS

This study employed a descriptive case study design to describe the application of finger-hold relaxation technique in reducing postoperative pain among patients with appendicitis. The subject of this case study was a post-appendectomy patient aged 15–50 years who experienced postoperative pain during hospitalization.

The intervention consisted of the finger-hold relaxation technique, administered from day one to day three postoperatively. The technique was performed in a sitting or lying position by gently holding each finger for approximately three minutes, starting from the thumb to the little finger, accompanied by deep breathing. The intervention was conducted at least twice daily, approximately 7–8 hours after surgery or two hours after analgesic administration, and whenever pain occurred, following the established standard operating procedure (SOP).

Data collection was conducted through interviews, direct observation, and pain assessment. Pain intensity was measured before and after each intervention using the Numeric Rating Scale (NRS), ranging from 0 (no pain) to 10 (uncontrolled severe pain). Subjective pain responses and non-verbal behaviors, including facial grimacing, protective posture, and restlessness, were also recorded using an observation sheet.

The study was conducted at BLUD RSUD Kabupaten Buton from June 21 to June 23, 2025. Ethical considerations were addressed by providing clear information regarding the study objectives and procedures, and by obtaining written informed consent from the participant prior to the intervention.

RESULTS

A. Assessment

1. Patient Assessment

A nursing assessment was conducted on June 21, 2025, using a medical–surgical nursing framework. The subject was Mrs. N, a 21-year-old female post-appendectomy patient admitted to BLUD RSUD Kabupaten Buton on June 19, 2025. She had no prior history of appendicitis, surgical procedures, or known allergies. The patient was a university student, unemployed, and lived with extended family members. No family history of appendicitis or communicable diseases was reported.

The primary nursing problem identified was acute postoperative pain, consistent with SDKI: Nyeri Akut, related to tissue trauma secondary to appendectomy. The patient reported pain localized to the right lower abdominal incision site, described as stabbing and intermittent, with a pain intensity score of 7/10 on the Numeric Rating Scale (NRS), indicating severe but controlled pain. Pain episodes lasted approximately 5–10 minutes and were exacerbated by movement.

Clinically, the patient appeared restless, grimaced frequently, and demonstrated protective behaviors toward the surgical site, consistent with subjective and objective indicators of acute pain (SLKI: Tingkat Nyeri meningkat). The patient also reported sleep disturbances and limited mobility due to pain. Vital signs were within normal

postoperative ranges: blood pressure 110/75 mmHg, heart rate 95 beats/minute, respiratory rate 20 breaths/minute, and body temperature 36.5°C.

2. **Basic Needs and Fungtional**

Before illness, the patient maintained adequate nutritional intake, although dietary fiber consumption was low due to infrequent intake of fruits and vegetables. Her diet predominantly consisted of processed and high-fat foods. Fluid intake averaged 1.5–2 liters per day. Postoperatively, the patient was placed on nil per os (NPO) status according to medical orders.

The patient reported a previously normal sleep pattern (7–8 hours per night). Following surgery, she experienced fragmented sleep, sleeping only for brief intervals due to pain. Functional assessment revealed significant limitations in mobility; the patient remained mostly bedridden and had difficulty changing positions due to pain, aligning with SLKI indicators of decreased comfort and activity tolerance.

3. **Medical and Nursing Management**

Pharmacological management included Ketorolac (IV), Ceftriaxone (IV), Ranitidine (IV), and Metronidazole (IV). In accordance with SIKI: Pain Management, non-pharmacological pain management through the finger-holding relaxation technique was implemented as a complementary nursing intervention to enhance pain control and promote relaxation.

B. Diagnosis and Interventions

Table 1. Diagnosis and Interventions Nursing

Component	Description
Nursing Diagnosis (SDKI)	**Acute Pain**
Related Factors (Etiology)	Physical injury agent related to surgical procedure (post-appendectomy)
Defining Characteristics	- Verbal report of right lower abdominal pain - Pain described as intermittent and stabbing - Pain intensity score: 7/10 (severe, controlled) - Facial grimacing - Restlessness and protective behavior - Difficulty sleeping - Pulse rate: 95 beats/minute
Nursing Outcome (SLKI)	**Pain Level**
Outcome Indicators	- Decreased pain intensity score - Reduced facial grimacing and restlessness - Improved comfort and ability to rest - Stabilization of vital signs
Target Outcome	Pain intensity decreases from severe to moderate or mild after nursing intervention
Nursing Intervention (SIKI)	**Pain Management – Non-Pharmacological Intervention**
Specific Intervention	**Finger-Holding Relaxation Technique**
Intervention Activities	- Assess pain location, intensity, quality, and duration - Create a calm and comfortable environment - Position the patient comfortably (supine or semi-Fowler's position) - Instruct the patient to perform deep, slow breathing - Guide the patient to gently hold each finger sequentially, from thumb to little finger - Maintain finger holding for approximately 3 minutes per finger - Continue the session for about 15 minutes per intervention
Frequency and Duration	- Performed twice daily or when pain occurs - Implemented consistently for a minimum of three days
Rationale	Finger-holding relaxation promotes parasympathetic activation, reduces muscle tension, enhances circulation, and decreases pain perception through distraction and relaxation mechanisms
Evaluation (SLKI-based)	After three days of intervention, pain intensity decreased, behavioral signs of pain were reduced, and the patient reported improved comfort and rest

The patient experienced acute pain related to physical injury secondary to appendectomy, indicated by a pain intensity score of 7/10, intermittent stabbing abdominal pain, restlessness, facial grimacing, protective behavior, sleep disturbance, and a pulse rate of 95 bpm. Nursing management focused on non-pharmacological pain reduction using the finger-holding relaxation technique, delivered in a comfortable position with guided deep breathing for 15 minutes per

session, twice daily for three days. Evaluation based on SLKI outcome indicators showed a reduction in pain intensity and pain-related behaviors, with improved comfort and ability to rest, indicating that the pain reduction outcome was achieved.

C. Implementation and Evaluation

The nursing intervention was implemented over three consecutive days with a frequency of twice daily (morning and afternoon).

Table 2. Daily Nursing Implementation and Evaluation of Finger-Holding Relaxation Technique

Day/Date	Time	Nursing Intervention (SIKI)	Pain Intensity Before (NRS)	Pain Intensity After (NRS)	SLKI Evaluation
Day 1 21 June 2025	08:00	Finger-holding relaxation technique (20 minutes)	7 (Severe, controlled)	7 (Severe, controlled)	Target not achieved
	16:00	Finger-holding relaxation technique (20 minutes)	7 (Severe, controlled)	6 (Moderate)	Partial achievement
Day 2 22 June 2025	08:00	Finger-holding relaxation technique (20 minutes)	6 (Moderate)	5 (Moderate)	Target achieved
	16:00	Finger-holding relaxation technique (20 minutes)	5 (Moderate)	4 (Moderate)	Target achieved
Day 3 23 June 2025	08:00	Finger-holding relaxation technique (20 minutes)	4 (Moderate)	3 (Mild)	Target achieved
	16:00	Finger-holding relaxation technique (20 minutes)	3 (Mild)	2 (Mild)	Target achieved

Source: Primary data, 2025

The results demonstrate a progressive and consistent reduction in postoperative pain intensity following the implementation of the finger-holding relaxation technique over three consecutive days. On Day 1, pain intensity remained unchanged after the initial morning session (NRS 7), indicating an early adaptation phase; however, a reduction from severe to moderate pain was observed after the afternoon session (NRS 6), suggesting the onset of a therapeutic response. From Day 2 onward, pain scores decreased consistently after each intervention session, declining from NRS 6 to NRS 4, and further to mild pain levels on Day 3, reaching NRS 2 by the final session. This cumulative reduction from severe to mild pain was accompanied by observable decreases in restlessness and protective behaviors, as well as improved comfort and ability to rest. According to SLKI outcome indicators, the nursing outcome *Pain Level* was achieved, confirming that the finger-holding relaxation technique is an effective complementary non-pharmacological nursing intervention for acute postoperative pain management following appendectomy.

DISCUSSION

The findings of this case study indicate that Mrs. N, a post-appendectomy patient treated at BLUD RSUD Kabupaten Buton, presented with the nursing diagnosis of Acute Pain related to physical injury agents (surgical procedure). Appendicitis is an inflammatory condition of the appendix, most commonly resulting from bacterial infection secondary to luminal obstruction by fecaliths, foreign bodies, or tumors. This obstruction increases intraluminal pressure, impairs blood flow, and leads to ischemia and inflammation. Clinically, appendiceal pain typically begins as diffuse periumbilical discomfort and later localizes to the right lower quadrant of the abdomen (Appulembang et al., 2024; Sambe et al., 2021). Dietary factors such as low fiber intake, excessive carbohydrate consumption, and irregular eating patterns further contribute to fecal stasis and fecalith formation, thereby increasing the risk of appendiceal inflammation (Sani et al., 2020).

Appendectomy remains the definitive treatment for appendicitis to prevent serious complications, including perforation, peritonitis, and intra-abdominal abscess formation. However, postoperative pain is a common consequence of tissue trauma and surgical incision (Alza et al., 2023). Uncontrolled postoperative pain may significantly interfere with daily functioning, including sleep, mobility, and social interaction, and may contribute to adverse physiological and psychological outcomes if inadequately managed (Heriyanda et al., 2023). Pain itself is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, underscoring the need for comprehensive and multimodal pain management strategies in nursing care (Hardianto et al., 2021).

Pain management in nursing practice incorporates both pharmacological and non-pharmacological interventions. While analgesic therapy is effective in alleviating severe postoperative pain, its effects are time-limited, and pain often recurs as drug concentrations decline. Consequently, non-pharmacological approaches are recommended as complementary strategies to enhance pain control and reduce the duration and intensity of pain episodes (Heriyanda et al., 2023). In this case, the finger-holding relaxation technique was applied as a complementary nursing intervention. This technique is simple, self-administered, and aims to promote relaxation, reduce anxiety, improve emotional regulation, and enhance patient comfort (Rosiska, 2021).

The results demonstrate a progressive and cumulative reduction in postoperative pain intensity following the implementation of the finger-holding relaxation technique over three consecutive days. On the first day, pain intensity remained unchanged after the initial session, indicating an early adaptation phase to the intervention; however, a reduction from severe to moderate pain was observed after the second session, suggesting the onset of a therapeutic response. From the second day onward, pain reduction occurred consistently after each intervention session, reflecting improved coping ability and physiological adaptation. By the third day, pain intensity decreased to a mild level (NRS = 2), accompanied by the absence of grimacing, reduced protective behaviors, improved sleep quality, and stabilization of pulse rate within normal limits. Based on SLKI outcome indicators, the nursing outcome Pain Level was considered achieved, as the targeted reduction from severe to mild pain was met through the implementation of SIKI-based interventions, including pain management and relaxation techniques.

From a physiological perspective, the finger-holding relaxation technique is believed to activate the parasympathetic nervous system, suppress sympathetic arousal, and reduce stress hormone secretion such as adrenaline. These responses help regulate breathing patterns, enhance tissue oxygenation, reduce muscle tension, and induce a calming effect that contributes to pain modulation (Rosiska, 2021). Additionally, tactile stimulation combined with controlled breathing may activate large-diameter afferent fibers that inhibit nociceptive transmission at the spinal level, consistent with the gate control theory of pain (Melzack & Wall, 1965).

The findings of this case study are consistent with previous research demonstrating the effectiveness of finger-holding relaxation in reducing postoperative pain among appendectomy patients. Studies by Kusrini and Rahayu (2024) reported significant pain reduction when the technique was administered in a calm environment and in accordance with standard operating procedures, supporting its use as an independent nursing intervention. Similar outcomes were reported by Larasati and Hidayati (2022), who found greater pain reduction in patients receiving finger-holding relaxation compared to those receiving analgesic therapy alone. Furthermore, Suharjiman et al. (2024) documented a marked decrease in pain intensity from NRS 7 to NRS 1 following three consecutive days of finger-holding relaxation therapy.

Despite these positive findings, the finger-holding relaxation technique should be regarded as a complementary intervention rather than a substitute for medical and pharmacological treatment. Overall, this case study provides preliminary evidence supporting the effectiveness of finger-holding relaxation as an adjunctive nursing intervention for reducing postoperative pain following appendectomy. Nevertheless, further research using experimental designs and larger sample sizes is required to strengthen the evidence base and enhance the generalizability of these findings within clinical nursing practice.

CONCLUSION

This case study concludes that the finger-holding relaxation technique is an effective complementary nursing intervention for reducing acute postoperative pain in patients following appendectomy. The implementation of this non-pharmacological technique over three consecutive days resulted in a progressive reduction in pain intensity from severe to mild, accompanied by observable improvements in comfort, relaxation, sleep quality, and behavioral responses. The achievement of the SLKI nursing outcome *Pain Level* indicates that structured relaxation interventions, when integrated with standard pharmacological therapy,

can enhance pain management outcomes in postoperative nursing care. Although the findings are limited to a single case, this study provides clinically relevant evidence supporting the incorporation of finger-holding relaxation as part of holistic and patient-centered pain management strategies in surgical nursing practice.

LIMITATIONS AND RECOMMENDATION

This case study has several limitations that should be considered when interpreting the findings. First, the study involved a single participant, which limits the generalizability of the results to broader postoperative appendectomy populations. Second, the absence of a control or comparison intervention makes it difficult to attribute pain reduction exclusively to the finger-holding relaxation technique, as the patient also received standard pharmacological analgesic therapy. Third, pain assessment relied on self-reported numeric rating scale (NRS) scores, which are subjective and may be influenced by individual pain tolerance, psychological state, and environmental factors. Additionally, the short intervention period and lack of long-term follow-up preclude evaluation of sustained pain control outcomes.

Based on these limitations, future research is recommended to employ experimental or quasi-experimental designs with larger sample sizes and control groups to strengthen causal inference. Comparative studies examining the effectiveness of finger-holding relaxation alone versus in combination with pharmacological interventions are also warranted. Furthermore, incorporating objective physiological indicators (e.g., heart rate variability or cortisol levels) alongside self-reported pain measures may provide a more comprehensive evaluation of intervention effectiveness. In clinical practice, nurses are encouraged to integrate finger-holding relaxation as a complementary intervention within standardized postoperative pain management protocols, supported by clear guidelines and staff training to ensure consistent and effective implementation.

REFERENCES

Ahmad, A., & Kardi, I. S. (2022). Epidemiology of appendicitis in Southeast Sulawesi Province. *Jurnal Kesehatan Masyarakat*, 18(2), 145–152.

Alza, S. H., Inayati, A., & Hasanah, U. (2023). Application of Benson relaxation technique on pain scale in post-appendectomy patients. *Jurnal Cendikia Muda*, 3(4), 561–567.

Appulembang, I., Nurnaeni, N., Sampe, S. A., Jefriyani, J., & Bahrum, S. W. (2024). Risk factor analysis associated with acute appendicitis incidence. *Jurnal Keperawatan Profesional (KEPO)*, 5(1), 34–40.

Bessoff, K. E., & Forrester, J. D. (2020). Appendicitis: Pathophysiology, diagnosis, and management. *Surgical Clinics of North America*, 100(4), 609–624. https://doi.org/10.1016/j.suc.2020.05.002

Hardianto, T., Ayubbana, S., & Inayati, A. (2021). Pain as a sensory and emotional experience and its nursing implications. *Jurnal Cendikia Muda*, 2(4), 590–594.

Hasaini, M. (2019). Effectiveness of finger-holding relaxation technique on postoperative pain intensity. *Jurnal Keperawatan Klinis*, 6(1), 45–51.

Hendrawati, R., & Amalia, R. (2022). Global prevalence and risk factors of acute appendicitis. *International Journal of Nursing and Health Sciences*, 9(3), 215–221.

Heriyanda, H., Mardhatillah, M., & Saputra, M. (2023). Comparison of finger-holding relaxation and Benson relaxation techniques on pain reduction in post-appendectomy patients. *Getsempena Health Science Journal*, 2(2), 83–92.

Ismiatul Faizah, N. (2024). Application of finger-holding relaxation in reducing post-appendectomy pain. *Ners Muda*, 5(2), 134–140.

Kusrini, E. S., & Rahayu, D. A. (2024). Reduction of pain scale in post-appendectomy patients using finger-holding relaxation technique. *Ners Muda*, 5(3), 289–296.

Larasati, I., & Hidayati, E. (2022). Finger-holding relaxation as a nursing intervention in postoperative patients. *Ners Muda*, 3(1), 60–65.

Melzack, R., & Wall, P. D. (1965). Pain mechanisms: A new theory. *Science*, 150(3699), 971–979.

Potter, P. A., Perry, A. G., Stockert, P. A., & Hall, A. (2021). *Fundamentals of nursing* (10th ed.). Elsevier.

Putra, E., Utami, S., & Utami, G. T. (2022). The effect of progressive muscle relaxation on pain and anxiety in postoperative patients. *Jurnal Ners Indonesia*, 13(1), 42–50.

Ronika, R., Putri, D. A., & Wahyuni, S. (2024). Trends of non-communicable diseases in Indonesia: A national report analysis. *Indonesian Journal of Public Health*, 19(1), 33–41.

Rosiska, M. (2021). Effect of finger-holding relaxation technique on pain reduction in postoperative patients. *Jurnal Ilmu Kesehatan Dharmas Indonesia*, 1(2), 51–56.

Sambe, G. F., Battung, S. M., Dachlan, D. M., Jafar, N., & Mansur, M. A. (2021). Dietary habits, fiber intake, and constipation risk. *Journal of Indonesian Community Nutrition*, 10(1), 12–24.

Sani, N., Febriyani, A., & Hermina, Y. F. (2020). Characteristics of acute appendicitis patients in a regional hospital. *Malahayati Nursing Journal*, 2(3), 577–586.

Shafira, A., Novita, M., & Fitriani. (2024). The effect of relaxation techniques on pain intensity in postoperative patients. *Jurnal Keperawatan*, 16(4), 383–396.

Sugiyanto, S. (2020). Non-pharmacological pain management through relaxation techniques. *Jurnal Keperawatan Indonesia*, 23(1), 12–19. https://doi.org/10.7454/jki.v23i1.1021

Suharjiman, S., Fariha, R., Santoso, M. B., Komara, E., Kumala, T. F., & Badrujamaludin, A. (2024). Application of finger-holding relaxation in reducing post-appendectomy pain. *Holistik Jurnal Kesehatan*, 18(10), 1302–1310.

Sulung, N., & Rani, S. D. (2017). The influence of finger-holding relaxation on postoperative pain. *Jurnal Kesehatan Andalas*, 6(2), 412–418.

Toussaint, L., Nguyen, Q. A., Roettger, C., Dixon, K., Offenbächer, M., Kohls, N., & Hirsch, J. K. (2021). Effectiveness of relaxation techniques in reducing pain and anxiety: A meta-analysis. *PLoS ONE*, 16(8), e0256330.

Varvogli, L., & Darviri, C. (2019). Stress management techniques and physiological relaxation mechanisms. *Health Science Journal*, 13(2), 1–7.

Wati, D. N., & Ernawati, E. (2020). Finger-holding relaxation technique and its effect on pain perception. *Jurnal Keperawatan Soedirman*, 15(3), 170–176.