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Original Article

Effect of finger-holding technique on pain and anxiety in patients after Transurethral Resection of the Prostate (TURP): A quasi-experimental study

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Abstract

Background: Patients undergoing Transurethral Resection of the Prostate frequently experience postoperative pain and anxiety during the early recovery phase. Non-pharmacological nursing interventions may help improve patient comfort and psychological stability during this period.
Objective: This study aimed to examine the effect of the finger-holding technique on pain and anxiety among patients after Transurethral Resection of the Prostate.
Methods: A quantitative quasi-experimental study with a nonequivalent control group design was conducted at Siti Fatimah Hospital Palembang from July to September 2025. Thirty-four postoperative patients were recruited using purposive sampling and divided into an intervention group (n=17) and a control group (n=17). The intervention group received the finger-holding relaxation technique twice daily for three days in addition to standard postoperative care, while the control group received standard care only. Pain intensity was measured using the Numeric Rating Scale, and anxiety levels were assessed using the Generalized Anxiety Disorder-7 scale. Data were analyzed using descriptive statistics and comparative tests with a significance level of $p<0.05$.
Results: Both groups experienced reductions in pain and anxiety after the treatment period. The intervention group demonstrated a greater reduction in mean pain score from 6.47 to 2.06 compared with the control group, which decreased from 7.00 to 4.76. Anxiety scores in the intervention group decreased from 11.88 to 4.24, whereas the control group decreased from 11.53 to 7.18. Statistical analysis showed significant improvements in both groups, with a stronger effect observed in the intervention group.
Conclusion: The finger-holding technique effectively reduces pain and anxiety in patients after Transurethral Resection of the Prostate and may serve as a simple complementary nursing intervention to improve postoperative comfort.

Background

Benign prostatic hyperplasia (BPH) often occurs in older men because the prostate gland undergoes progressive enlargement with increasing age. Epidemiological studies show that the global burden of benign prostatic hyperplasia continues to increase among men aged 60–90 years in many countries. Patients frequently experience urinary obstruction symptoms that interfere with daily activities and quality of life. Health professionals commonly perform surgical management when pharmacological therapy fails to control the symptoms. Transurethral resection of the prostate represents one of the most common surgical procedures used to treat benign prostatic hyperplasia. This procedure removes prostate tissue through the urethra to restore urinary flow and reduce obstruction (Ye et al., 2024; Siloam Hospitals, 2025).

Patients who undergo transurethral resection of the prostate frequently experience postoperative discomfort because tissue trauma occurs during surgical intervention. Postoperative patients often report moderate to severe pain that emerges during the early recovery period. Clinical evidence shows that postoperative pain commonly appears due to bladder spasms, catheter irritation, and surgical tissue injury. Patients who experience uncontrolled pain often develop psychological responses such as fear and emotional distress. The coexistence of pain and psychological distress frequently complicates postoperative recovery in patients after transurethral resection of the prostate. Previous clinical observations report that postoperative pain frequently correlates with increased anxiety among patients undergoing transurethral resection of the prostate (Ismail et al., 2013; Daulay & Siburian, 2021).

Pain represents a complex physiological and psychological response that involves sensory, emotional, and cognitive components. The gate control theory explains that pain perception

occurs through neural pathways that transmit nociceptive stimuli to the central nervous system. Patients who experience persistent postoperative pain may develop increased sympathetic responses that intensify anxiety symptoms. Anxiety in surgical patients often manifests through restlessness, worry, and emotional tension during the recovery phase. Measurement tools such as the numerical rating scale or visual analog scale provide reliable methods for evaluating pain intensity in clinical practice. Health professionals frequently assess psychological responses using standardized instruments to identify anxiety levels in patients undergoing medical treatment (Melzack & Wall, 1965; Alghadir et al., 2018; Rutter & Brown, 2017).

Nurses play an essential role in managing postoperative pain and anxiety through pharmacological and nonpharmacological interventions. Holistic nursing approaches emphasize patient comfort by integrating physical, psychological, and emotional care. Kolcaba's comfort theory explains that nursing interventions should focus on promoting relief, ease, and transcendence in patients experiencing discomfort. Nonpharmacological interventions represent an important strategy because these approaches minimize medication dependence and enhance patient coping mechanisms. Several complementary techniques such as breathing exercises, relaxation therapy, and therapeutic touch demonstrate beneficial effects in reducing pain perception. Nursing care interventions that improve patient comfort may contribute to better recovery outcomes in postoperative settings (Kolcaba, 1994; Lin et al., 2024; Safitri et al., 2023).

Finger-holding relaxation technique represents one complementary nursing intervention that aims to stimulate energy pathways and reduce tension in the body. This technique involves gentle pressure and controlled breathing while patients hold each finger sequentially to promote relaxation. Clinical studies report that finger-holding relaxation technique significantly reduces pain levels in postoperative patients undergoing appendectomy and other surgical procedures. Similar findings indicate that finger-grip relaxation techniques effectively decrease anxiety and pain in patients undergoing surgical recovery. Previous studies also demonstrate that combining relaxation techniques with finger-holding therapy enhances patient comfort and reduces physiological stress responses. These findings suggest that finger-holding relaxation technique offers a simple and practical intervention that nurses can apply in clinical settings (Ahmad & Kardi, 2022; Wati & Ernawati, 2020; Elnosary et al., 2024).

Although several studies have examined the benefits of finger-holding relaxation techniques in various surgical populations, evidence regarding its effectiveness among patients after transurethral resection of the prostate remains limited. Patients undergoing this procedure often experience significant postoperative discomfort that requires effective nursing interventions. Nurses need evidence-based nonpharmacological strategies that can reduce both pain and anxiety simultaneously during postoperative recovery. Research that evaluates the effectiveness of finger-holding technique in this specific patient population remains scarce in current literature. Therefore, scientific investigation is necessary to determine whether this intervention can improve postoperative comfort outcomes in patients after transurethral resection of the prostate. The purpose of this study is to analyze the effect of finger-holding technique on pain and anxiety in patients after Transurethral Resection of the Prostate (TURP).

Methods

Study Design

This study employed a quantitative approach with a quasi-experimental design using a nonequivalent control group design. The study followed the reporting recommendations outlined in the Transparent Reporting of Evaluations with Nonrandomized Designs (TREND) Statement from the EQUATOR Network to ensure transparency and methodological rigor in reporting nonrandomized intervention studies. The design involved two groups consisting of an intervention group and a control group without random allocation. Both groups underwent baseline measurement (pre-test) of pain and anxiety levels on the first day after Transurethral Resection of the Prostate (TURP). The intervention group received finger-holding technique therapy as an additional nursing

intervention alongside standard postoperative care, while the control group received only routine postoperative care provided by the hospital. Post-intervention assessment (post-test) was conducted on the third postoperative day to evaluate changes in pain and anxiety following the intervention period. This design was selected because clinical and ethical considerations limited the feasibility of randomization in the hospital setting, while the design still allowed comparison between groups and measurement of intervention effects over time.

Sampling

The study population consisted of all patients who underwent Transurethral Resection of the Prostate and were hospitalized at Siti Fatimah Hospital Palembang between July and September 2025. Patient recruitment was conducted consecutively as eligible patients were admitted to the postoperative ward. The researcher collaborated with ward nurses to identify patients on the first postoperative day who met the study criteria. Patients who fulfilled the eligibility criteria received a comprehensive explanation regarding the objectives, procedures, benefits, and potential risks of the study. After patients voluntarily agreed to participate and signed the informed consent form, they were included as research respondents. The sampling technique applied was purposive sampling based on predetermined inclusion and exclusion criteria. Inclusion criteria included patients on the first postoperative day after TURP, age ≥45 years, ability to read and communicate effectively, absence of hearing or speech impairment, and willingness to participate in the study. Exclusion criteria included patients with severe systemic complications such as severe anemia, neurological disorders, uncontrolled diabetes mellitus, cancer, severe arthritis, cardiovascular disease, severe psychological disorders, and patients with a previous history of TURP surgery. The sample size was determined using the Federer formula for experimental studies, with an additional 5% adjustment to anticipate potential dropouts. Based on this calculation, the total sample size was 34 respondents consisting of 17 participants in the intervention group and 17 participants in the control group. Group allocation was determined based on the chronological order of patient admission and treatment time in order to minimize contamination of the intervention and reduce potential bias.

Instruments

Three instruments were utilized in this study to collect research data. The first instrument consisted of a structured questionnaire designed to collect demographic and clinical characteristics of the respondents, including age, education level, medical history, and postoperative condition. The second instrument was the Numeric Rating Scale (NRS) used to measure pain intensity. The NRS is a widely used pain assessment tool that employs an 11-point scale ranging from 0 to 10, where a score of 0 represents no pain and a score of 10 represents the worst possible pain. The NRS was selected due to its simplicity, sensitivity, and strong psychometric properties for measuring acute postoperative pain. The third instrument was the Generalized Anxiety Disorder-7 (GAD-7) scale, which consists of seven items assessing anxiety symptoms experienced during the past two weeks. Each item is scored on a scale from 0 to 3, producing a total score ranging from 0 to 21 that categorizes anxiety levels into minimal, mild, moderate, or severe. Prior to data collection, the researcher ensured that respondents clearly understood the items in each instrument to minimize measurement error.

Intervention

The intervention applied in this study was the finger-holding technique as a complementary relaxation therapy delivered alongside routine postoperative nursing care. The intervention was administered directly by the researcher who had previously undergone internal training to ensure procedural consistency and intervention fidelity. The training included theoretical explanations regarding the physiological basis of the technique, demonstration of procedural steps, and practical simulations until the researcher demonstrated competence in performing the intervention. The intervention was conducted

from the first postoperative day until the third postoperative day. During the intervention session, patients were positioned comfortably in a semi-Fowler position to promote relaxation and physiological stability. Patients were instructed to hold each finger of one hand with the opposite hand sequentially. Each finger was held gently for approximately two to three minutes while patients were guided to perform slow and controlled breathing techniques. The breathing pattern involved inhalation for four seconds, holding the breath for two seconds, and exhalation for six seconds to enhance relaxation and reduce sympathetic nervous system activity. The entire procedure lasted approximately 10–15 minutes per session and was conducted twice daily, once in the morning and once in the afternoon. This standardized intervention protocol aimed to stimulate relaxation responses, reduce muscular tension, and promote psychological calmness in postoperative patients.

Data Collection

Data collection was conducted at two time points to capture changes in outcome variables before and after the intervention. The first measurement (pre-test) was performed on the first postoperative day before the intervention was initiated. At this stage, respondents completed the pain assessment using the Numeric Rating Scale and the anxiety assessment using the GAD-7 questionnaire under the guidance of the researcher. The second measurement (post-test) was conducted on the third postoperative day after the completion of the intervention period. The third postoperative day was selected as the evaluation point because it represents the early recovery phase when clinical improvements in pain and psychological responses are expected following repeated interventions. All questionnaires were completed with direct supervision from the researcher to ensure accurate understanding and completion of the instruments. The collected data then underwent a series of data management processes including editing, coding, processing, and data cleaning before statistical analysis was performed.

Data Analysis

Data analysis was conducted using Statistical Package for the Social Sciences (SPSS) version 25. Descriptive analysis (univariate analysis) was first performed to describe respondent characteristics and baseline variables using frequency distributions, means, medians, and standard deviations. In this study, pain measured by the Numeric Rating Scale was defined as the primary outcome, while anxiety measured by the GAD-7 scale was defined as the secondary outcome. Normality of data distribution was assessed using the Shapiro–Wilk test because the sample size was relatively small. Data with normal distribution were presented as mean ± standard deviation and analyzed using the paired sample t-test to compare pretest and posttest values within the same group. Data that were not normally distributed were presented as median and range values and analyzed using the Wilcoxon signed-rank test for within-group comparisons. For comparisons between the intervention and control groups, independent sample t-tests were applied for normally distributed data, while the Mann–Whitney U test was used for non-normally distributed data. Statistical significance was determined using a p-value threshold of less than 0.05.

Ethical Consideration

This study adhered to ethical principles governing research involving human participants. Ethical approval was obtained from the Health Research Ethics Committee prior to the initiation of the study. All participants received clear and comprehensive information regarding the purpose, procedures, benefits, and potential risks of the research before participation. Participants who agreed to participate voluntarily signed an informed consent form as documentation of their consent. Confidentiality of respondent data was maintained through the use of coded identification numbers rather than personal identifiers in the data collection forms and analysis process. Participants were also informed that they had the right to withdraw from the study at any time without any negative consequences or impact on the medical care

they received. The study ensured that all procedures respected participant autonomy, privacy, and well-being throughout the research process.

Results

Respondent Characteristics

This section presents the distribution of respondents' demographic and clinical characteristics to describe the baseline profile of participants in both the intervention and control groups. The analysis of respondent characteristics aims to determine the comparability between groups before the intervention was administered. Descriptive statistics are presented using frequency and percentage distributions to provide a clear overview of participant profiles.

Table 1. Distribution of Respondent Characteristics by Study Group

Variable	Intervention (n,%)	Control (n,%)
Age		
41-50 years	2 (5.9)	0 (0)
51-60 years	7 (20.6)	12 (35.3)
>60 years	8 (23.5)	5 (14.7)
Education		
Elementary school	5 (14.7)	3 (8.8)
Junior high school	6 (17.6)	6 (17.6)
Senior high school	5 (14.7)	5 (14.7)
Higher education	1 (2.9)	3 (8.8)
Marital Status		
Married	13 (38.2)	12 (35.3)
Widower	4 (11.8)	5 (14.7)
Occupation		
Private employee	1 (2.9)	1 (2.9)
Trader	3 (8.8)	4 (11.8)
Civil servant	1 (2.9)	1 (2.9)
Retired	2 (5.9)	6 (17.6)
Entrepreneur	10 (29.4)	5 (14.7)
History of disease		
Yes	5 (14.7)	4 (11.8)
No	12 (35.3)	13 (38.2)

The distribution of respondent characteristics shows that most participants in both groups were aged above 50 years, which reflects the typical age distribution of patients undergoing Transurethral Resection of the Prostate as presented in Table 1. Educational attainment in both groups was predominantly at the elementary and junior high school levels, suggesting that respondents had relatively comparable educational backgrounds as shown in Table 1. Most respondents in both groups were married, indicating a relatively similar level of social support among participants as described in Table 1. Occupational distribution indicates that the majority of participants in the intervention group were entrepreneurs, while the control group included a larger proportion of retired individuals as presented in Table 1. The majority of respondents in both groups reported no significant medical history, which suggests that the observed outcomes were less likely to be influenced by comorbid conditions as shown in Table 1. Overall, the distribution of demographic and clinical characteristics indicates comparable baseline profiles between the intervention and control groups as presented in Table 1.

The following analysis describes the distribution of pain and anxiety scores measured before and after the intervention in both study groups. Descriptive statistics are presented to illustrate the central tendency and variability of outcome variables.

Table 2. Distribution of Pain and Anxiety Scores Before and After Intervention

Group	Mean	Median	SD	Min	Max	p-value
Pain Score						
Intervention						
Pretest	6.47	7.00	1.12	4	8	0.001
Posttest	2.06	2.00	10.88	1	5	
Control						
Pretest	7.00	7.00	1.32	5	9	0.001
Posttest	4.76	5.00	1.09	2	6	
Anxiety Score						
Intervention						
Pretest	11.88	11.00	1.96	10	16	0.001
Posttest	4.24	4.00	1.25	3	7	
Control						
Pretest	11.53	11.0	2.00	9	16	0.001
Posttest	7.18	7.00	1.33	5	10	

Table 2 presents descriptive and within-group analyses indicate that both the control and intervention groups experienced reductions in pain and anxiety during the postoperative care period. The control group showed a decrease in mean pain score from 7.00 to 4.76 and a reduction in mean anxiety score from 11.53 to 7.18, reflecting clinical improvement associated with standard postoperative care. The intervention group demonstrated a greater decline in pain and anxiety levels, with mean pain scores decreasing from 6.47 to 2.06 and mean anxiety scores decreasing from 11.88 to 4.24. Statistical testing within groups also showed significant reductions in both outcomes, with $p < 0.05$ in the control group and $p < 0.001$ in the intervention group, indicating stronger effects of the intervention. Overall, the magnitude of change suggests that the finger-holding technique provided additional benefits in reducing postoperative pain and anxiety beyond routine care.

Discussion

This study demonstrates that postoperative patients who received the finger-holding technique experienced a greater reduction in pain and anxiety compared with patients who received standard postoperative care alone. The intervention group showed a substantial decline in pain scores after the three-day intervention period. The anxiety level in the intervention group also decreased more markedly than in the control group. Both groups experienced improvement during recovery; however, the magnitude of change was considerably larger in the intervention group. These findings indicate that the finger-holding technique may provide additional benefits as a complementary nursing intervention. The results suggest that integrating simple relaxation techniques into postoperative nursing care may improve patient comfort and psychological stability during early recovery.

Pain in postoperative patients frequently occurs because surgical procedures cause tissue trauma and physiological stress responses. Clinical conditions after prostate surgery often produce bladder spasms, catheter discomfort, and inflammatory responses that stimulate nociceptors in the surgical area. These physiological mechanisms can activate neural pathways that transmit pain signals to the central nervous system. Melzack and Wall explain that nociceptive stimuli pass through spinal gating mechanisms that influence the perception of pain intensity in patients (Melzack & Wall, 1965). Health professionals therefore must manage postoperative pain using both pharmacological and non-pharmacological approaches to optimize patient recovery (Safitri et al., 2023). Effective nursing interventions that reduce nociceptive stimulation can help patients achieve greater physiological comfort during the postoperative phase (Mediarti et al., 2025).

Anxiety also frequently accompanies postoperative pain because patients experience uncertainty regarding recovery outcomes and

physical discomfort. Patients undergoing surgical procedures often report psychological responses such as worry, tension, and fear during the early recovery period. Psychological distress can increase sympathetic nervous system activity and amplify the perception of pain. Rutter and Brown explain that anxiety symptoms may manifest through cognitive and emotional responses that influence patient well-being during medical treatment (Rutter & Brown, 2017). Nursing care that addresses both physiological and psychological responses therefore becomes essential in postoperative management (Daryaswanti et al., 2023). Holistic care approaches that target emotional responses can improve the overall quality of patient recovery (Wahyuni et al., 2023).

The finger-holding technique functions as a relaxation intervention that stimulates sensory pathways and promotes parasympathetic responses in the body. Gentle pressure on the fingers combined with controlled breathing helps patients regulate emotional tension and muscular relaxation. This process may modulate pain perception through sensory stimulation and distraction mechanisms. Ahmad and Kardi reported that finger-holding relaxation significantly reduced postoperative pain levels among surgical patients (Ahmad & Kardi, 2022). Similar studies also demonstrate that relaxation techniques involving finger-grip stimulation effectively reduce pain intensity in postoperative appendectomy patients (Wati & Ernawati, 2020). These findings indicate that sensory-based relaxation techniques can support physiological comfort during postoperative recovery.

The reduction of anxiety observed in this study may be explained by the calming effect produced through rhythmic breathing and tactile stimulation during the intervention. The finger-holding technique encourages patients to focus attention on breathing patterns and bodily sensations. This mechanism may reduce cognitive rumination and emotional tension during the recovery process. Research conducted by Rizqy Iftitah Alam and colleagues found that finger-grip relaxation therapy significantly decreased anxiety among surgical patients before operative procedures (Rizqy Iftitah Alam et al., 2022). Another clinical study also demonstrated that handheld finger-grip relaxation reduced both pain and anxiety in neurosurgical patients (Elnosary et al., 2024). These results reinforce the potential role of simple relaxation therapies in promoting psychological stability in clinical settings.

Holistic nursing frameworks further support the use of complementary relaxation techniques to improve patient comfort. Kolcaba explains that nursing interventions should address physical, psychospiritual, and environmental dimensions of comfort in patients (Kolcaba, 1994). Comfort-oriented interventions can enhance patient coping capacity and improve adaptation during illness. Lin and colleagues report that interventions based on comfort theory can significantly improve patient well-being and emotional stability in healthcare environments (Lin et al., 2024). Nursing practice therefore benefits from incorporating complementary therapies that strengthen both physical and psychological recovery processes (Lilis Maghfuroh et al., 2023). Integrating simple relaxation interventions into routine care may support a more patient-centered approach to postoperative nursing.

Previous studies have also demonstrated the effectiveness of various non-pharmacological interventions for reducing pain in clinical populations. Complementary approaches such as breathing relaxation, music therapy, and acupressure have shown beneficial effects in reducing pain perception. Amroni reported that breathing relaxation combined with murottal therapy significantly reduced pain intensity in postoperative patients (Amroni, 2025). Other studies also demonstrate that complementary interventions such as music therapy and acupressure contribute to improved comfort among patients experiencing pain (I Gusti Ayu Putu Desy et al., 2025; Soleha et al., 2025). These findings highlight the importance of integrating evidence-based complementary therapies into nursing practice to enhance patient outcomes (Ramadhani, 2024). Therefore, the finger-holding technique may represent a practical, low-cost, and accessible strategy for improving postoperative comfort in clinical care settings.

Conclusion and Recommendation

This study concludes that the finger-holding technique effectively reduces postoperative pain and anxiety among patients after Transurethral Resection of the Prostate. Patients who received the intervention experienced greater improvements in both physical and psychological outcomes compared with those who received routine postoperative care alone. The findings indicate that the finger-holding technique can serve as a simple, safe, and cost-effective complementary nursing intervention to enhance patient comfort during early postoperative recovery. Nurses are therefore encouraged to incorporate this technique into routine postoperative care as part of holistic patient management. Future research should involve larger sample sizes, randomized controlled designs, and longer observation periods to further evaluate the effectiveness and generalizability of this intervention in diverse clinical settings.

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Declaration on the Use of AI
No AI tools were used in the preparation of this manuscript.

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