



The Effect of Finger-Holding on Anxiety Levels Among Preoperative Patients in The Bougenville Ward on The 2nd Floor of Kendal Regional General Hospital

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Abstract

Background: Preoperative anxiety is a common psychological response that may affect patients' readiness for surgery and perioperative stability. This study aimed to determine the effect of a finger-holding relaxation technique on anxiety levels among preoperative patients in the Bougenville Ward on the 2nd Floor of Kendal Regional General Hospital. Methods: A pre-experimental one-group pretest-posttest design was used with 59 preoperative patients selected through purposive sampling. Anxiety was measured using the Amsterdam Preoperative Anxiety and Information Scale, and the finger-holding intervention was administered for approximately 15 minutes. Data were analyzed using the Shapiro-Wilk test and Wilcoxon Signed-Rank Test. Results: Mean anxiety scores decreased from 14.19 ± 1.55 before intervention to 12.29 ± 1.54 after intervention. Fifty respondents (84.7%) showed decreased anxiety, nine (15.3%) were unchanged, and none showed increased anxiety. The Wilcoxon test showed $Z = -6.439$ and $p < 0.001$. Conclusion: Finger-holding significantly reduced preoperative anxiety and may be used as a simple, low-cost, non-pharmacological nursing intervention to support perioperative care. These findings support its practical integration into routine preoperative nursing to improve patient comfort and psychological preparedness before surgery.

Keywords: finger-holding, preoperative anxiety, relaxation technique, perioperative nursing, non-pharmacological intervention.



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INTRODUCTION

Surgery is a medical procedure that may provoke psychological responses in patients because it involves uncertainty regarding the surgical procedure, anesthesia, potential complications, postoperative pain, and treatment outcomes. One of the most common psychological responses during the preoperative phase is anxiety, an emotional condition characterized by fear, worry, and tension when an individual perceives a situation as threatening. Preoperative anxiety requires serious attention because it not only affects patients' psychological readiness but may also be associated with physiological responses such as increased blood pressure and heart rate before surgery (Salsabilla et al., 2023; Aditama et al., 2025). Therefore, anxiety management constitutes an important component of perioperative nursing care to help patients achieve optimal physical and psychological readiness before undergoing surgery.

Preoperative anxiety is a common clinical problem experienced by various groups of surgical patients at different levels of severity. Musyaffa et al. (2024) reported that preoperative patients may experience anxiety due to concerns about surgical procedures, anesthesia, and postoperative conditions, while Katimenta et al. (2022) emphasized that family support is also associated with patients' anxiety levels before surgery. These findings indicate that preoperative anxiety does not emerge as an isolated response but is influenced by interactions among clinical conditions, individual experiences, available information, and patients' social environments. A systematic review further demonstrated that preoperative anxiety remains a clinically relevant concern, encouraging the development of various non-pharmacological interventions to reduce patients' psychological burden during the perioperative period (Agüero-Millan et al., 2023).

Poorly managed anxiety may interfere with patients' readiness to undergo surgical procedures and increase discomfort during the preoperative period. Patients with higher anxiety levels may have

difficulty concentrating on information provided by healthcare professionals, perceive surgery as more threatening, and exhibit stronger emotional responses as the procedure approaches. Evidence indicates that various psychological and relaxation-based interventions can reduce anxiety before surgery, highlighting the importance of anxiety management as an integral component of perioperative preparation (Verhoeven et al., 2024; Tung et al., 2024). Accordingly, nursing interventions should not focus solely on physical preparation but should also incorporate simple, safe, and practical strategies to help patients control psychological responses before surgery.

Anxiety management can be delivered through pharmacological and non-pharmacological approaches; however, non-pharmacological interventions offer advantages because they can be implemented as complementary measures without increasing patients' medication burden. Agüero-Millan et al. (2023) demonstrated through a systematic review that various non-pharmacological interventions have the potential to reduce preoperative anxiety, while Xie et al. (2023) found that acupuncture-based stimulation can reduce anxiety among adults undergoing elective surgery. Other research has also shown that hand-based touch interventions, such as hand massage, have beneficial effects on preoperative anxiety and several hemodynamic parameters (Aşkan & Bakar, 2023). These findings strengthen the rationale for incorporating simple touch- and relaxation-based interventions into nursing care to alleviate anxiety among preoperative patients.

One non-pharmacological intervention that can be implemented by nurses is the finger-holding relaxation technique, which involves alternately holding each finger while regulating breathing to help patients achieve a more relaxed state. This technique is relatively easy to perform, requires no specialized equipment, can be administered within a short period, and can be taught to patients for independent practice. Maharani and Maliya (2024) reported that finger-holding therapy combined with dhikr helped reduce anxiety among preoperative patients, while Nanda and Rosyid (2025) also demonstrated the effectiveness of finger-holding relaxation in decreasing anxiety before surgery. These characteristics make finger-holding a relevant and practical nursing intervention for supporting patients' psychological readiness before surgical procedures.

Empirical evidence regarding the use of finger-holding techniques among preoperative patients has been demonstrated across several clinical contexts. Hamidah et al. (2023) found reduced anxiety following finger-holding relaxation among preoperative patients with benign prostatic hyperplasia, while Shifa et al. (2022) reported that the same technique reduced anxiety among patients undergoing cesarean section. Salsabilla et al. (2023) also demonstrated that finger-holding relaxation significantly reduced anxiety among cesarean section patients receiving spinal anesthesia, whereas Sari and Norhapifah (2022) reported comparable findings among pregnant women undergoing preoperative cesarean section care. The consistency of these findings indicates the potential of finger-holding as a non-pharmacological intervention; nevertheless, its implementation among patients with different characteristics and within different healthcare settings still requires further contextual empirical examination.

Although research on finger-holding relaxation has continued to develop, many previous studies have focused primarily on patients undergoing specific surgical procedures, particularly cesarean section, thereby limiting the generalizability of their findings to more heterogeneous preoperative populations. In addition, the effectiveness of relaxation interventions may be influenced by patient characteristics, previous surgical experience, clinical condition, care environment, and the healthcare context in which the intervention is implemented (Katimenta et al., 2022; Agüero-Millan et al., 2023). Data from the Bougenville Ward on the 2nd Floor of Kendal Regional General Hospital also indicate that anxiety remains present among patients awaiting surgery, highlighting the need for simple interventions that can be incorporated into routine nursing practice. This condition establishes a research gap concerning the need for empirical evidence on the effect of finger-holding techniques on anxiety levels among preoperative patients within the specific clinical context of Kendal Regional General Hospital, which has not been sufficiently addressed in previous studies.

Based on the preceding discussion, preoperative anxiety is an important nursing problem because it may affect patients' readiness to undergo surgery, while the finger-holding technique offers a simple non-pharmacological approach supported by empirical evidence from previous studies. Evidence from national and international studies on relaxation interventions, hand-based stimulation, and non-pharmacological approaches demonstrates opportunities to integrate easily applicable techniques into perioperative nursing services (Aşkan & Bakar, 2023; Xie et al., 2023; Verhoeven et

al., 2024). However, specific evidence regarding the application of finger-holding techniques among preoperative patients in the Bougenville Ward on the 2nd Floor of Kendal Regional General Hospital is still required to support evidence-based nursing decisions within this healthcare setting. Therefore, this study aims to analyze the effect of the finger-holding technique on anxiety levels among preoperative patients in the Bougenville Ward on the 2nd Floor of Kendal Regional General Hospital.

RESEARCH METHODS

This study employed a pretest-posttest intervention design to examine the effect of the finger-holding technique on anxiety levels among preoperative patients in the Bougenville Ward on the 2nd Floor of Kendal Regional General Hospital. The study involved 59 preoperative patients who were selected using purposive sampling based on the eligibility criteria established by the researchers. Anxiety levels were assessed using the Amsterdam Preoperative Anxiety and Information Scale (APAIS), which was administered before and after the intervention. The finger-holding technique was performed for approximately 15 minutes by alternately holding the fingers while encouraging controlled breathing, after which participants' anxiety levels were reassessed using the same instrument.

The collected data were processed and analyzed using SPSS version 25 through univariate and bivariate analyses. Univariate analysis was used to describe respondents' characteristics and the distribution of anxiety levels before and after the finger-holding intervention, while the normality of pretest and posttest scores was assessed using the Shapiro–Wilk test. Because the anxiety scores were not normally distributed, as indicated by significance values below 0.05, the Wilcoxon Signed-Rank Test was applied to determine differences in anxiety levels before and after the intervention. Statistical significance was established at $p < 0.05$, with a significant result indicating an effect of the finger-holding technique on anxiety levels among preoperative patients.

RESULTS AND DISCUSSION

Respondent Characteristics and Their Relevance to Preoperative Anxiety

The study involved 59 preoperative patients treated in the Bougenville Ward on the 2nd Floor of Kendal Regional General Hospital. The respondents demonstrated heterogeneous demographic and clinical characteristics in terms of age, sex, educational level, previous surgical experience, and type of anesthesia. This heterogeneity is important because preoperative anxiety is not determined solely by the surgical procedure itself but can also be influenced by individual characteristics, previous experiences, access to health information, and social support. Previous studies have similarly emphasized that anxiety among patients awaiting surgery is multifactorial and may vary according to demographic, psychological, and contextual conditions (Katimenta et al., 2022; Kok et al., 2023).

In terms of age, the largest proportion of respondents was older than 35 years, comprising 26 patients (44.1%), followed by those aged 30–35 years with 18 patients (30.5%), while 15 patients (25.4%) were younger than 30 years. The mean categorical age score was 2.19 ± 0.82 , with a median of 2 and an observed category range from 1 (<30 years) to 3 (>35 years). These findings indicate that the study population was predominantly composed of mature adult patients who were required to cope with both the physical demands of illness and psychological preparation for surgery. Differences in age may contribute to variations in coping responses because perceptions of surgical risk, previous exposure to healthcare, and concerns regarding postoperative recovery may differ across stages of adulthood (Agüero-Millan et al., 2023; Verhoeven et al., 2024).

With regard to sex, 31 respondents (52.5%) were female and 28 respondents (47.5%) were male, demonstrating a relatively balanced distribution with a slight predominance of women. This distribution reduces the likelihood that the overall characteristics of the sample were overwhelmingly represented by one sex, although individual anxiety responses may still differ considerably. Preoperative anxiety is influenced by emotional appraisal, perceived threat, coping strategies, and available support rather than by sex alone. The findings of Kok et al. (2023) further highlight the importance of psychosocial support in shaping preoperative anxiety, indicating that demographic characteristics should be interpreted together with interpersonal and contextual factors.

Educational attainment also varied among respondents, with senior high school being the most common level of education, reported by 30 patients (50.8%). Twelve respondents (20.3%) had completed higher education, 10 respondents (16.9%) had junior high school education, and seven

respondents (11.9%) had elementary school education. Educational background may influence how patients receive, understand, and interpret information concerning surgery, anesthesia, possible complications, and postoperative care. Accordingly, perioperative information and anxiety-reduction interventions should be communicated in an understandable manner and adjusted to patients' levels of health literacy, because uncertainty and insufficient understanding may contribute to preoperative psychological distress (Agüero-Millan et al., 2023; Chiu et al., 2023).

Previous surgical experience showed that 34 respondents (57.6%) had never undergone surgery, whereas 25 respondents (42.4%) reported having undergone a previous surgical procedure. The predominance of first-time surgical patients is clinically relevant because unfamiliarity with the operating room environment, anesthesia, surgical procedures, and postoperative sensations may contribute to uncertainty before surgery. Nevertheless, previous surgery does not always guarantee lower anxiety because a negative or traumatic surgical experience may also increase anticipatory fear during subsequent procedures. Musyaffa et al. (2024) identified preoperative anxiety as an important condition among surgical patients, while broader evidence indicates that individualized non-pharmacological preparation may help address anxiety arising from uncertainty and perceived procedural threat (Verhoeven et al., 2024).

Table 1. Characteristics of Preoperative Patients in the Bougenville Ward on the 2nd Floor of Kendal Regional General Hospital (N = 59)

Variable	Category	Frequency (n)	Percentage (%)
Age	<30 years	15	25.4
	30–35 years	18	30.5
	>35 years	26	44.1
Sex	Male	28	47.5
	Female	31	52.5
Education	Elementary school	7	11.9
	Junior high school	10	16.9
	Senior high school	30	50.8
	Higher education	12	20.3
Previous surgery	Yes	25	42.4
	No	34	57.6
Type of anesthesia	Regional	33	55.9
	Spinal	26	44.1

Note. Mean categorical age score = 2.19 ± 0.82 ; median = 2; minimum category = 1 (<30 years); maximum category = 3 (>35 years).

Regarding anesthesia, 33 respondents (55.9%) were recorded in the regional anesthesia category, while 26 respondents (44.1%) were recorded in the spinal anesthesia category. Concerns related to anesthesia constitute an important component of the preoperative experience because patients may worry about pain, consciousness during surgery, complications, or the physiological consequences of anesthetic procedures. Such concerns may interact with anxiety regarding the surgical procedure itself and consequently increase the psychological burden immediately before surgery. The importance of addressing these concerns is supported by research showing that structured non-pharmacological interventions can reduce anxiety and improve psychological readiness among patients awaiting surgical procedures (Tung et al., 2024; Verhoeven et al., 2024).

The overall respondent profile therefore indicates that the sample consisted of patients with diverse backgrounds and varying levels of previous exposure to surgery. More than half had never undergone surgery, half had completed senior high school, the largest age group was older than 35 years, and women constituted a slightly greater proportion of the sample. These characteristics should be considered when interpreting anxiety outcomes because anxiety is shaped by an interaction between personal experience, understanding of medical information, perceived threat, and available coping resources. Katimenta et al. (2022), for example, demonstrated an association between family support and anxiety among preoperative patients, suggesting that demographic findings should not be viewed independently from the social environment surrounding each patient.

The relatively large proportion of patients without previous surgical experience may be particularly relevant to the implementation of a simple relaxation intervention. A technique that does not require complex instructions or specialized equipment may be advantageous for patients who are simultaneously processing unfamiliar information about surgery and managing anticipatory anxiety. Finger-holding relaxation fulfills these practical characteristics because it can be administered directly at the bedside and does not require sophisticated technology or additional invasive procedures. Previous studies have reported beneficial effects of finger-holding relaxation among preoperative populations, including patients undergoing cesarean section and other surgical procedures (Shifa et al., 2022; Salsabilla et al., 2023; Hamidah et al., 2023).

The educational profile of the respondents additionally supports the use of a straightforward intervention that can be demonstrated directly by nurses. Because approximately half of the participants had senior high school education and the remainder represented different educational levels, interventions requiring extensive technical knowledge could potentially create variation in comprehension and adherence. In contrast, a simple behavioral intervention based on guided touch and controlled relaxation can be communicated through demonstration and repeated practice. Evidence from hand-based interventions also indicates that physical-touch approaches such as hand massage may reduce preoperative anxiety and influence physiological parameters, supporting the clinical plausibility of simple hand-focused relaxation strategies (Aşkan & Bakar, 2023).

These demographic and clinical characteristics provide an essential context for interpreting the subsequent changes in anxiety scores following the finger-holding intervention. The sample cannot be understood merely as a homogeneous group of surgical patients because participants differed in age, education, prior surgical exposure, sex, and anesthetic category, all of which may contribute to variations in psychological responses. Nevertheless, the presence of this diversity also demonstrates the practical relevance of evaluating an intervention that is simple, inexpensive, and potentially applicable across different patient profiles. Systematic evidence regarding non-pharmacological management of preoperative anxiety supports the continued evaluation of accessible nursing interventions that can complement routine perioperative preparation (Agüero-Millan et al., 2023; Xie et al., 2023).

From a nursing perspective, the characteristics identified in this study emphasize the importance of individualized preoperative care rather than the uniform management of all surgical patients. Nurses should consider patients' previous surgical experiences, educational backgrounds, perceived concerns, and ability to understand procedural information when providing psychological support and relaxation interventions. The demographic findings also provide the necessary baseline for understanding why individual responses to finger-holding may vary even when the same duration and procedure are applied to all participants.

Preoperative Anxiety Levels Before and After the Finger-Holding Intervention

Before receiving the finger-holding intervention, the majority of participants experienced moderate anxiety. Of the 59 preoperative patients, 49 respondents (83.1%) were classified as having moderate anxiety, whereas only 10 respondents (16.9%) experienced mild anxiety. No participants were categorized as having no anxiety, severe anxiety, or panic, indicating that psychological distress was present among all respondents before the intervention, although its intensity remained within the mild-to-moderate range. This finding is consistent with Musyaffa et al. (2024), who reported that anxiety is frequently experienced by patients awaiting surgery because of concerns regarding surgical procedures, anesthesia, postoperative pain, and uncertainty about treatment outcomes.

The mean anxiety score before the intervention was 14.19 ± 1.55 , with a median of 14, a minimum score of 11, and a maximum score of 17. The relatively narrow distribution around the mean suggests that most participants experienced comparable levels of psychological tension before undergoing surgery. Preoperative anxiety may develop when patients perceive surgery as a potential threat to physical integrity, personal safety, or future functioning, particularly when the procedure represents an unfamiliar experience. Agüero-Millan et al. (2023) emphasized that preoperative anxiety is sufficiently prevalent and clinically important to justify the use of structured non-pharmacological interventions as part of routine perioperative care.

The high proportion of moderate anxiety found in this study may also be associated with the fact that more than half of the respondents had never undergone surgery previously. Patients who lack

previous surgical experience may have limited expectations regarding the operating room environment, anesthesia procedures, postoperative pain, and recovery, thereby increasing uncertainty before surgery. Anxiety may become stronger when patients interpret incomplete or unfamiliar information as threatening or when they anticipate adverse events that have not yet occurred. Katimenta et al. (2022) further demonstrated that psychosocial factors such as family support can influence anxiety among preoperative patients, indicating that anxiety is shaped not only by the medical procedure itself but also by the patient's broader psychosocial environment.

The baseline findings support the need for non-pharmacological interventions that can be implemented shortly before surgery without increasing pharmacological burden. Finger-holding relaxation is particularly relevant because it is simple, non-invasive, requires no special equipment, and can be performed directly at the patient's bedside. Nanda and Rosyid (2025) found that finger-holding relaxation was effective in reducing anxiety among preoperative patients, while Maharani and Maliya (2024) reported a reduction in anxiety through finger-holding combined with dhikr. These findings suggest that interventions involving touch, controlled attention, and relaxation may provide patients with a practical coping mechanism during the psychologically demanding period before surgery.

Following the finger-holding intervention, the distribution of anxiety changed substantially. Thirty-two respondents (54.2%) were classified as having mild anxiety, while 27 respondents (45.8%) remained in the moderate anxiety category, and no participants were categorized as having severe anxiety or panic. The mean post-intervention anxiety score decreased to 12.29 ± 1.54 , with a median of 12, a minimum score of 9, and a maximum score of 16. This descriptive shift demonstrates that the intervention was followed by a movement from predominantly moderate anxiety before intervention toward predominantly mild anxiety after the finger-holding technique was administered.

Table 2. Distribution and Descriptive Statistics of Preoperative Anxiety Before and After the Finger-Holding Intervention (N = 59)

Anxiety Measurement	Category / Statistic	Frequency (n)	Percentage (%) / Value
Before intervention	Mild anxiety	10	16.9
	Moderate anxiety	49	83.1
	No anxiety	0	0.0
	Severe anxiety	0	0.0
	Panic	0	0.0
	Mean $\pm$ SD	—	14.19 ± 1.55
	Median	—	14
	Minimum	—	11
	Maximum	—	17
After intervention	Mild anxiety	32	54.2
	Moderate anxiety	27	45.8
	No anxiety	0	0.0
	Severe anxiety	0	0.0
	Panic	0	0.0
	Mean $\pm$ SD	—	12.29 ± 1.54
	Median	—	12
	Minimum	—	9
	Maximum	—	16

The post-intervention results indicate a clear descriptive reduction in anxiety, with the mean score decreasing by 1.90 points from 14.19 to 12.29. The proportion of respondents experiencing mild anxiety increased from 16.9% before the intervention to 54.2% afterward, whereas the proportion experiencing moderate anxiety decreased from 83.1% to 45.8%. These changes suggest that finger-holding may promote psychological relaxation and facilitate emotional regulation immediately before surgery. Similar findings were reported by Hamidah et al. (2023), who observed reduced anxiety following finger-holding relaxation in preoperative patients with benign prostatic hyperplasia.

The decrease in anxiety after the intervention is also consistent with evidence from studies involving specific surgical populations. Shifa et al. (2022) reported that finger-holding relaxation reduced anxiety among patients before cesarean section, while Salsabilla et al. (2023) demonstrated a decrease in anxiety among cesarean section patients undergoing spinal anesthesia. Sari and Norhapifah (2022) likewise reported beneficial effects of finger-holding therapy among pregnant women in the preoperative phase of cesarean section. The consistency of these findings across different surgical settings supports the potential of finger-holding as a broadly applicable complementary nursing intervention for reducing psychological distress before surgery.

The mechanism underlying these changes can also be interpreted within the broader evidence on touch- and pressure-based interventions. Aşkan and Bakar (2023) demonstrated that hand massage reduced preoperative anxiety and influenced hemodynamic parameters, whereas Xie et al. (2023) concluded through a systematic review and meta-analysis that acupressure significantly reduced anxiety among adults undergoing elective surgery. Although finger-holding differs technically from massage or formal acupressure, these interventions share common elements involving tactile stimulation, focused attention, and relaxation. Such evidence strengthens the clinical plausibility that gentle hand-based stimulation may facilitate a calmer psychological state during the preoperative period.

The present findings are also compatible with evidence from other non-pharmacological approaches used to manage preoperative anxiety. Chiu et al. (2023) found that virtual reality reduced anxiety among adults undergoing elective surgery, while Gao et al. (2023) reported through systematic review and meta-analysis that virtual reality interventions were effective in reducing preoperative anxiety among adults. Rajjoub et al. (2024) similarly demonstrated the potential of meditation for reducing perioperative anxiety, and Tung et al. (2024) found beneficial effects of mindfulness-based preoperative interventions. Collectively, these studies indicate that anxiety before surgery can be modified through interventions that redirect attention, encourage relaxation, and reduce psychological arousal, supporting the conceptual basis of finger-holding as a simple nursing-based strategy.

Nevertheless, the persistence of moderate anxiety among 27 respondents (45.8%) after the intervention indicates that finger-holding did not completely eliminate anxiety in all patients. Preoperative anxiety is multifactorial and may be influenced by illness severity, type of surgery, previous traumatic experiences, expectations regarding postoperative pain, family support, personal coping capacity, and perceived surgical risk. Kok et al. (2023) highlighted the importance of social support in relation to preoperative anxiety, while Verhoeven et al. (2024) emphasized that psychological interventions may produce different effects depending on intervention characteristics and patient-related factors. Therefore, finger-holding should be viewed as a complementary intervention rather than as a universal replacement for comprehensive psychological assessment and individualized perioperative care.

The descriptive findings demonstrate a clinically meaningful shift in the distribution of anxiety after finger-holding relaxation, particularly the increase in mild anxiety from 16.9% to 54.2% and the decrease in moderate anxiety from 83.1% to 45.8%. The reduction in the mean score from 14.19 ± 1.55 to 12.29 ± 1.54 provides additional evidence that participants generally became less anxious after receiving the intervention. The findings are consistent not only with previous finger-holding studies but also with broader evidence concerning massage, acupressure, mindfulness, meditation, virtual reality, and other non-pharmacological approaches for preoperative anxiety (Aşkan & Bakar, 2023; Xiang et al., 2024; Rajjoub et al., 2024).

Effect of the Finger-Holding Technique on Preoperative Anxiety

The inferential analysis was preceded by an assessment of data distribution using the Shapiro–Wilk normality test because the study involved 59 participants. The pre-intervention anxiety scores produced a significance value of $p = 0.011$, whereas the post-intervention scores produced $p = 0.037$, with both values below the conventional significance threshold of 0.05. These findings indicated that the pretest and posttest anxiety data were not normally distributed, thereby supporting the use of a non-parametric statistical procedure for paired observations. The selection of an analytical test appropriate to the distribution and measurement characteristics of the data is essential for producing valid conclusions regarding intervention effects (Nursalam, 2017; Sahir, 2021).

The Wilcoxon Signed-Rank Test demonstrated a statistically significant difference between anxiety levels before and after the finger-holding intervention. The test yielded a Z value of -6.439 with $p < 0.001$, indicating that the observed reduction in anxiety scores was unlikely to have occurred by chance under the null hypothesis. The mean anxiety score decreased from 14.19 ± 1.55 before the intervention to 12.29 ± 1.54 after the intervention, representing a mean descriptive reduction of 1.90 points. These results provide statistical support for the conclusion that the finger-holding technique had a significant effect on anxiety levels among preoperative patients in the Bougenville Ward on the 2nd Floor of Kendal Regional General Hospital.

The ranking results provide additional insight into the direction and consistency of the intervention effect. Fifty respondents (84.7%) demonstrated lower anxiety scores following the finger-holding intervention and were therefore classified as negative ranks, while nine respondents (15.3%) had unchanged anxiety scores and were classified as ties. Importantly, no respondent experienced an increase in anxiety after the intervention, as indicated by the absence of positive ranks. The predominance of decreased scores supports previous findings that finger-holding relaxation may provide a beneficial calming effect among patients preparing to undergo surgery (Aditama et al., 2025; Nanda & Rosyid, 2025).

The statistically significant reduction observed in this study is consistent with evidence obtained from several previous investigations specifically examining finger-holding techniques. Hamidah et al. (2023) demonstrated that finger-holding relaxation reduced anxiety in preoperative patients with benign prostatic hyperplasia, while Shifa et al. (2022) reported favorable effects among patients undergoing cesarean section. Salsabilla et al. (2023) similarly identified a significant reduction in preoperative anxiety among cesarean section patients receiving spinal anesthesia, and Sari and Norhapifah (2022) reported comparable findings in pregnant women before cesarean delivery. The consistency of these results across different surgical populations strengthens the evidence that finger-holding may serve as a practical complementary nursing intervention for anxiety management.

Table 3. Normality Test and Wilcoxon Signed-Rank Test for Preoperative Anxiety (N = 59)

Analysis	Pre-intervention	Post-intervention	Test Statistic	p Value
Shapiro–Wilk	0.946	0.957	—	0.011 / 0.037
Mean $\pm$ SD	14.19 ± 1.55	12.29 ± 1.54	—	—
Wilcoxon Signed-Rank Test	—	—	$Z = -6.439$	<0.001
Negative ranks	—	50 (84.7%)	—	—
Ties	—	9 (15.3%)	—	—
Positive ranks	—	0 (0.0%)	—	—

Note. Shapiro–Wilk results: pretest, statistic = 0.946, $p = 0.011$; posttest, statistic = 0.957, $p = 0.037$. Wilcoxon Signed-Rank Test significance was originally reported as $p = 0.000$ in the statistical output and is presented academically as $p < 0.001$.

The effect observed in this study can be interpreted within the broader context of touch-based relaxation interventions. Finger-holding involves sustained tactile stimulation combined with focused attention and controlled breathing, which may help divert attention from threatening thoughts associated with surgery and promote a subjective sense of calm. Aşkan and Bakar (2023) demonstrated that hand massage reduced preoperative anxiety and affected hemodynamic parameters, while Pratiwi et al. (2024) similarly reported that hand massage contributed to reduced preoperative anxiety. Although hand massage and finger-holding are technically distinct procedures, both involve tactile stimulation and relaxation, which may partly explain their comparable psychological benefits.

Evidence from pressure-based interventions further supports the possibility that stimulation of the hands and body can influence anxiety before surgery. Xie et al. (2023), through a systematic review and meta-analysis of randomized controlled trials, concluded that acupressure significantly reduced preoperative anxiety among adults undergoing elective surgery. This evidence is particularly relevant because finger-holding, like acupressure, uses a simple physical stimulus without requiring pharmacological treatment or sophisticated equipment. The present findings therefore contribute to a

broader body of evidence suggesting that tactile and somatosensory interventions can complement conventional preoperative nursing care.

The observed improvement should also be considered in relation to other evidence-based non-pharmacological approaches for preoperative anxiety. Chiu et al. (2023) demonstrated that virtual reality reduced anxiety among adults undergoing elective surgery, Gao et al. (2023) supported its effectiveness through meta-analysis, and Tung et al. (2024) reported beneficial effects of mindfulness-based preoperative interventions. Rajjoub et al. (2024) likewise identified meditation as a potentially effective strategy for perioperative anxiety, while Xiang et al. (2024) demonstrated beneficial effects of music therapy and aromatherapy in reducing perioperative anxiety. Collectively, these findings suggest that interventions capable of redirecting attention, regulating emotional arousal, and facilitating relaxation can meaningfully influence psychological responses before surgery.

Despite the significant overall reduction, nine participants (15.3%) demonstrated no change in anxiety scores after the finger-holding intervention. This finding is important because it indicates that the intervention did not generate an identical response in every patient and should therefore not be interpreted as universally effective in isolation. Preoperative anxiety may be influenced by previous surgical experience, severity of illness, type of operation, anticipated pain, perceived anesthetic risk, social support, coping ability, and individual psychological characteristics, as suggested by Katimenta et al. (2022) and Kok et al. (2023). Mita (2022) also documented anxiety among patients awaiting cesarean section under spinal anesthesia, reinforcing the view that procedure-related and individual factors can sustain anxiety even when supportive interventions are provided.

The results are additionally consistent with higher-level evidence demonstrating the effectiveness of non-pharmacological interventions for preoperative anxiety. Agüero-Millan et al. (2023) concluded that several non-pharmacological interventions can reduce anxiety before surgery, while Verhoeven et al. (2024) reported beneficial effects of preoperative psychological interventions on anxiety and stress. Such findings are important because finger-holding offers several practical advantages compared with more resource-intensive interventions: it is inexpensive, requires no technological equipment, can be taught quickly, and may be delivered directly by nursing staff. These characteristics make it potentially suitable for integration into routine perioperative nursing, particularly in clinical settings where time and resources for elaborate psychological interventions may be limited.

From a clinical perspective, the finding that 84.7% of participants experienced decreased anxiety supports the potential use of finger-holding as an adjunct to standard preoperative nursing care. The intervention should nevertheless be integrated with adequate procedural information, therapeutic communication, family support, and individualized assessment rather than being used as the sole strategy for all forms of preoperative distress. The evidence from Maharani and Maliya (2024), Aditama et al. (2025), and Nanda and Rosyid (2025) further demonstrates that finger-holding can be adapted or combined with other relaxation approaches to strengthen its psychological effect. Accordingly, nurses may consider finger-holding as a low-risk supportive intervention while continuing to assess patients who remain anxious and may require additional psychological or medical management.

The present study demonstrates a statistically significant reduction in preoperative anxiety following the finger-holding intervention, as indicated by the decrease in the mean score from 14.19 ± 1.55 to 12.29 ± 1.54 , the Wilcoxon statistic of $Z = -6.439$, and $p < 0.001$. The finding that 50 patients (84.7%) experienced lower anxiety scores, nine (15.3%) remained unchanged, and none experienced increased anxiety provides consistent evidence regarding the direction of the intervention effect. When considered alongside studies of finger-holding, hand massage, acupressure, meditation, mindfulness, virtual reality, music therapy, and other non-pharmacological approaches, the findings support the integration of simple relaxation-based interventions into perioperative nursing practice (Agüero-Millan et al., 2023; Aşkan & Bakar, 2023; Xie et al., 2023; Rajjoub et al., 2024). Thus, the finger-holding technique represents a feasible, simple, and potentially effective complementary nursing intervention for reducing anxiety among preoperative patients at Kendal Regional General Hospital.

CONCLUSION

The findings demonstrate that the finger-holding technique significantly reduced anxiety among preoperative patients in the Bougenville Ward on the 2nd Floor of Kendal Regional General Hospital. The mean anxiety score decreased from 14.19 ± 1.55 before the intervention to 12.29 ± 1.54 after the intervention, with the Wilcoxon Signed-Rank Test showing $Z = -6.439$ and $p < 0.001$. Furthermore, 50 respondents (84.7%) experienced decreased anxiety scores, nine respondents (15.3%) showed no change, and no respondents experienced increased anxiety following the intervention. These findings confirm that finger-holding can provide a meaningful relaxation effect for patients preparing to undergo surgical procedures.

The finger-holding technique can therefore be considered a simple, practical, low-cost, and non-pharmacological nursing intervention that may complement standard preoperative care. Nurses may incorporate this technique alongside therapeutic communication, adequate procedural information, family support, and individualized psychological assessment to improve patients' comfort and readiness for surgery. However, because several participants showed unchanged anxiety levels, the intervention should not replace comprehensive anxiety management when patients require additional psychological or medical support. Future studies employing controlled experimental designs, larger samples, and more diverse surgical populations are recommended to strengthen evidence regarding the effectiveness and clinical applicability of finger-holding relaxation.

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