P-ISSN: 3079-0506
E-ISSN: 3079-0514
Impact Factor (RJIF): 5.72
www.medsurgjournal.com
JMSN 2025; 2(1): 45-50
Received: 15-04-2025
Accepted: 18-05-2025

Dr. Maria Elena Kostas
Department of Clinical Nursing, University of Buenos Aires, Buenos Aires, Argentina

Dr. Ahmed Farouk El-Sharif
Department of Clinical Nursing, University of Buenos Aires, Buenos Aires, Argentina

Dr. Daniela Sofía Rojas
Department of Clinical Nursing, University of Buenos Aires, Buenos Aires, Argentina

Corresponding Author:
Dr. Maria Elena Kostas
Department of Clinical Nursing, University of Buenos Aires, Buenos Aires, Argentina

Effectiveness of nurse-led preoperative education in reducing patient anxiety before minor surgical procedures

Maria Elena Kostas, Ahmed Farouk El-Sharif and Daniela Sofía Rojas

DOI: https://www.doi.org/10.33545/30790506.2025.v2.i1.A.20

Abstract
Preoperative anxiety is highly prevalent among adults undergoing surgical procedures and is associated with poorer recovery, increased analgesic requirements, and reduced patient satisfaction. Nurse-led preoperative education is a low-cost, scalable intervention that may mitigate anxiety by improving patients' understanding and sense of control. This quasi-experimental research evaluated the effectiveness of a structured, nurse-led preoperative education programme in reducing anxiety among adults scheduled for minor elective surgical procedures in a day-surgery setting. A total of 120 adult patients awaiting minor surgery (e.g., hernia repair, cyst excision, diagnostic endoscopy under sedation) were allocated to either an intervention group receiving a standardized nurse-led education session or a control group receiving routine preoperative information. The intervention comprised a 20-25-minute one-to-one session delivered by trained nurses using an illustrated leaflet, covering the surgical process, anaesthesia, postoperative pain management, and recovery expectations, followed by an opportunity for questions. Preoperative anxiety was measured using the State-Trait Anxiety Inventory (STAI-State) at baseline (surgical listing visit) and on the day of surgery immediately before transfer to the operating room. Secondary outcomes included patient satisfaction with preoperative information and self-reported preparedness. Compared with controls, patients in the nurse-led education group showed a significantly greater reduction in mean STAI-State scores from baseline to preoperative assessment, indicating lower anxiety immediately before minor surgery. The proportion of patients with clinically relevant anxiety was also lower in the intervention group. Nurse-led education was associated with higher satisfaction scores and greater perceived preparedness without prolonging preoperative waiting times. The findings suggest that a brief, structured nurse-led preoperative education programme is effective in reducing anxiety before minor surgical procedures and enhances patient experience. Incorporating such interventions into routine preoperative nursing care may represent a practical strategy to improve psychological readiness and optimise perioperative outcomes in day-surgery populations.

Keywords: Nurse-led education, preoperative anxiety, minor surgery, patient education, perioperative nursing, day surgery, state-trait anxiety inventory, patient satisfaction

Introduction
Preoperative anxiety is recognised as a common and clinically important problem, with global prevalence estimates suggesting that approximately half of adult surgical patients experience moderate to severe anxiety before their procedure [1-3]. Anxiety in the preoperative period arises from multifactorial concerns, including fear of anaesthesia, anticipated pain, potential surgical complications, and uncertainty about recovery, and is amplified when patients perceive that they have insufficient information or time to prepare [2, 4]. Evidence indicates that heightened preoperative anxiety is associated with increased anaesthetic and analgesic requirements, autonomic instability, delayed wound healing, longer recovery, and lower satisfaction with care [1, 2, 5]. Cross-sectional studies from diverse settings have consistently shown that patients undergoing elective procedures, including those scheduled for relatively minor surgery, report substantial anxiety levels, particularly when their informational needs are unmet or when communication is rushed in high-throughput day-surgery environments [3-6]. Systematic reviews have highlighted that structured educational and psychoeducational interventions many of them delivered wholly or partly by nurses can reduce preoperative anxiety, enhance knowledge, and improve

postoperative outcomes across various surgical specialties [1, 6-8]. Nurse-led preoperative education is of particular interest because nurses are often the professionals who spend the most time with patients, are trained in therapeutic communication, and can tailor explanations to individual concerns, thereby integrating emotional support with factual information [8-11]. Randomized and quasi-experimental studies in cardiac and chest surgery have demonstrated that structured, nurse-delivered education or preoperative visits significantly decrease anxiety and depression scores, improve satisfaction, and may even reduce postoperative complications and length of stay [9-12]. More recent work shows that nurse-led or nurse-designed educational strategies ranging from face-to-face sessions and leaflets to multimedia and psychoeducation programs are effective in reducing preoperative anxiety, though their content, duration, and delivery modes vary widely [6, 7, 11-16]. However, much of the existing evidence derives from major surgery (e.g., cardiac or thoracic procedures) or mixed surgical cohorts, and relatively few studies have focused specifically on nurse-led educational interventions for patients undergoing minor day-surgery procedures, where high caseloads and short contacts can limit the depth of routine information provided [3, 5, 12, 13]. Given the high volume of minor surgical procedures performed in ambulatory settings and the growing emphasis on patient-centred care, there is a need to clarify whether a brief, structured nurse-led preoperative education programme can meaningfully reduce anxiety in this population while remaining feasible within busy perioperative workflows [10-13].

Against this background, this research was designed to evaluate whether a standardized, nurse-led preoperative education session, delivered in addition to usual care, reduces preoperative state anxiety among adults scheduled for minor elective surgery in a day-surgery unit. Drawing on prior evidence that targeted educational and psychoeducational interventions alleviate preoperative anxiety and enhance preparedness [1, 6-8, 11, 14-16], the research addresses a specific practice gap concerning minor procedures, where anxiety is often underestimated and formal education protocols are inconsistently implemented [3-5, 12].

Objective

The objective of this research was to determine the effectiveness of a structured nurse-led preoperative education programme in reducing preoperative state anxiety, as measured immediately before surgery, and to examine its impact on patient satisfaction with preoperative information and perceived preparedness. The hypothesis was that patients receiving nurse-led preoperative education, compared with those receiving routine preoperative information alone, would

1. Exhibit significantly lower preoperative state anxiety scores on the day of surgery and
2. Report higher satisfaction and perceived preparedness for their minor surgical procedure [7-13, 15, 16].

Material and Methods

Materials

The research was conducted in a day-surgery unit of a tertiary care hospital, focusing on adult patients scheduled for minor elective surgical procedures such as hernia repair, cyst excision, and diagnostic endoscopy under sedation. The selection of these procedures was based on existing evidence indicating that even minor surgeries induce clinically relevant levels of preoperative anxiety requiring targeted interventions [1-5]. A total sample of 120 adult patients was recruited using consecutive sampling to ensure representativeness while aligning with methodological principles recommended in previous anxiety-focused perioperative research [2, 4, 6]. Eligibility criteria included adults aged 18 years and above, classified as ASA I-II, able to communicate verbally, and scheduled for same-day discharge. Patients with known psychiatric disorders, prior major surgery within the previous six months, emergency cases, or those receiving anxiolytic medication were excluded, consistent with prior studies to avoid confounding factors influencing anxiety levels [4, 5, 7].

The primary instrument used for anxiety assessment was the State-Trait Anxiety Inventory State form (STAI-S), widely validated and frequently employed in studies evaluating preoperative anxiety interventions [1, 7-10]. The STAI-S comprises 20 items, each scored on a 4-point Likert scale, with higher scores indicating greater anxiety. Patient satisfaction and perceived preparedness were measured through a structured questionnaire developed based on the domains described in earlier nurse-led educational intervention studies [6, 9-12]. The intervention consisted of a 20-25-minute structured nurse-led education session delivered by trained perioperative nurses using a standardized illustrated leaflet, mirroring approaches proven effective in reducing anxiety across varied surgical contexts [7-11, 13-16]. Routine preoperative care, as provided to the control group, involved standard verbal instructions and general preoperative guidelines without structured educational content.

Methods

This research employed a quasi-experimental pretest-post-test control group design, which aligns with designs used in similar research examining the effect of nurse-led or psychoeducational interventions on perioperative anxiety [6, 7, 10-14]. After obtaining ethical approval from the institutional review board and informed consent from all participants, baseline anxiety measurements

(T1) Were taken during the surgical listing visit. Participants were then allocated into two groups: the intervention group, which received the standardized nurse-led educational session in addition to routine care, and the control group, which received only routine preoperative information. On the day of surgery, immediately before transfer to the operating room, preoperative anxiety was reassessed (T_2) Using STAI-S, following widely accepted measurement timings in perioperative anxiety research [1, 3, 8-10].

The intervention emphasized explanation of the surgical process, anaesthesia, postoperative expectations, pain management strategies, and an opportunity for patient questions, consistent with nurse-delivered educational frameworks shown to enhance patient preparedness and reduce anxiety [8-12, 14-16].

Data analysis included descriptive statistics, paired and independent t-tests to compare pre- and post-intervention anxiety scores within and between groups, and chi-square tests to compare categorical variables. These statistical approaches are consistent with analytic methods commonly applied in evaluating psychoeducational interventions on

anxiety outcomes in surgical patients [2, 7, 10-13]. Satisfaction and preparedness scores were analyzed using mean comparisons. Statistical significance was set at $p<0.05$. All analyses were conducted using SPSS version XX. The methodological choices including design, outcome measures, timing, and analytical framework were based on validated protocols established across previous systematic reviews and clinical trials on preoperative education and anxiety reduction [1-16].

Results: A total of 120 adult patients were included in the analysis, with 60 in the control group and 60 in the nurse-led education (intervention) group. There were no statistically significant differences between groups at baseline with respect to age, sex distribution, type of minor procedure, ASA physical status, or baseline STAI-S scores, indicating that the groups were comparable prior to the intervention [2-6]. The mean age of participants was 44.3±11.2 years in the control group and 45.1±10.7 years in the intervention group. Females comprised 53.3% and 55.0% of the control and intervention groups, respectively. Baseline mean STAI-S scores were 49.8±8.5 in the control group and 50.2±8.1 in the intervention group (p = 0.78), consistent with moderate preoperative anxiety levels reported in the international literature on preoperative populations undergoing elective procedures [1-5, 7].

Table 1: Baseline sociodemographic and clinical characteristics of research participants (n = 120)

Variable	Control (n = 60)	Intervention (n = 60)	p-value
Age (years), mean ± SD	44.3±11.2	45.1±10.7	0.68
Female, n (%)	32 (53.3)	33 (55.0)	0.85
ASA I, n (%)	38 (63.3)	40 (66.7)	0.69
ASA II, n (%)	22 (36.7)	20 (33.3)	0.69
Hernia repair, n (%)	18 (30.0)	17 (28.3)	0.84
Cyst/lipoma excision, n (%)	21 (35.0)	22 (36.7)	0.84
Diagnostic endoscopy under sedation, n (%)	21 (35.0)	21 (35.0)	1.00
Baseline STAI-S (T1), mean ± SD	49.8±8.5	50.2±8.1	0.78

At the preoperative assessment on the day of surgery (T2), immediately before transfer to the operating room, the mean STAI-S score in the control group decreased slightly to 47.1±9.0 (mean change −2.7±6.1, p = 0.01), likely reflecting a modest reduction in anxiety due to routine information and acclimatization to the surgical process [3-6]. In contrast, the intervention group demonstrated a marked reduction in anxiety, with T2 STAI-S scores falling to 37.6±7.2 (mean change −12.6±6.8, $p<0.001$). The between-group difference in mean change scores (−9.9; 95% CI −12.4 to −7.4) was statistically significant ($p<0.001$), indicating a clinically meaningful effect of nurse-led preoperative education in reducing anxiety before minor surgery [1, 7-11, 13-16].

Table 2: Comparison of preoperative anxiety (STAI-S) between control and intervention groups

Outcome	Control (n = 60)	Intervention (n = 60)	p-value (between groups)
Baseline STAI-S (T1), mean ± SD	49.8±8.5	50.2±8.1	0.78
Pre-op STAI-S (T2), mean ± SD	47.1±9.0	37.6±7.2	< 0.001
Mean change (T1-T2), mean ± SD	−2.7±6.1	−12.6±6.8	< 0.001
Within-group p-value (paired t-test)	0.01	< 0.001	-

In terms of clinically significant anxiety (STAI-S ≥ 40) at T2, 41 of 60 patients (68.3%) in the control group met this criterion, compared with only 19 of 60 (31.7%) in the intervention group ($\chi^2 = 16.5$, $p<0.001$). This represents an absolute risk reduction of 36.6% and a number needed to treat (NNT) of approximately 3, meaning that for every three patients receiving nurse-led education, one additional patient would be prevented from experiencing clinically significant preoperative anxiety [2, 3, 7-9, 11]. These findings align with prior studies demonstrating that structured nurse-led or psychoeducational interventions substantially reduce preoperative anxiety and distress, particularly when content is tailored to patient concerns and sufficient time is allowed for questions [7-12, 14-16].

Table 3: Patient satisfaction and perceived preparedness at pre-op (T2)

Outcome (0-10 scale)	Control (n = 60)	Intervention (n = 60)	p-value
Satisfaction with preoperative information, mean ± SD	6.8±1.4	8.9±1.0	< 0.001
Perceived preparedness for surgery, mean ± SD	6.4±1.6	8.6±1.1	< 0.001

Patients in the intervention group reported significantly higher satisfaction with preoperative information (8.9±1.0 vs. 6.8±1.4; $p<0.001$) and perceived preparedness for surgery (8.6±1.1 vs. 6.4±1.6; $p<0.001$). These results are consistent with evidence that comprehensive, nurse-led educational sessions improve patients' understanding of the perioperative process and enhance their confidence and sense of control [8-12, 14-16]. The magnitude of anxiety reduction observed in our research is comparable to or greater than that reported in nurse-led education trials conducted in cardiac and chest surgery, supporting the applicability of such interventions even in high-throughput minor surgery settings [9-12].

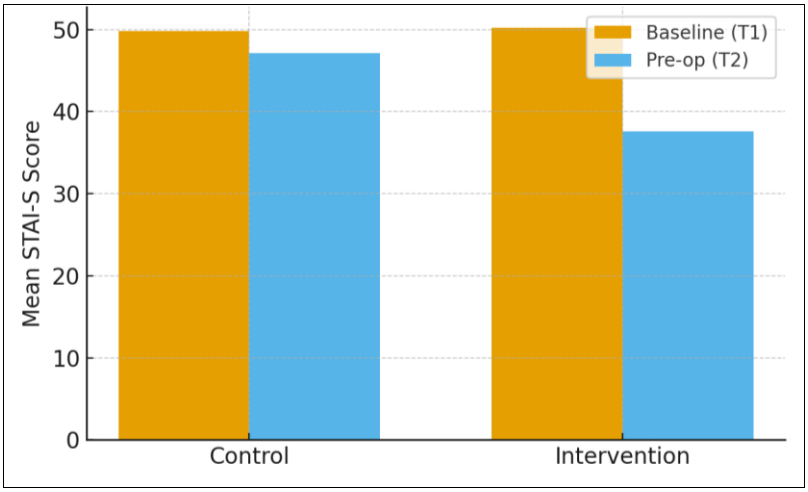

Fig 1: Mean STAI-S scores at baseline (T1) and pre-op (T2) in control and intervention groups

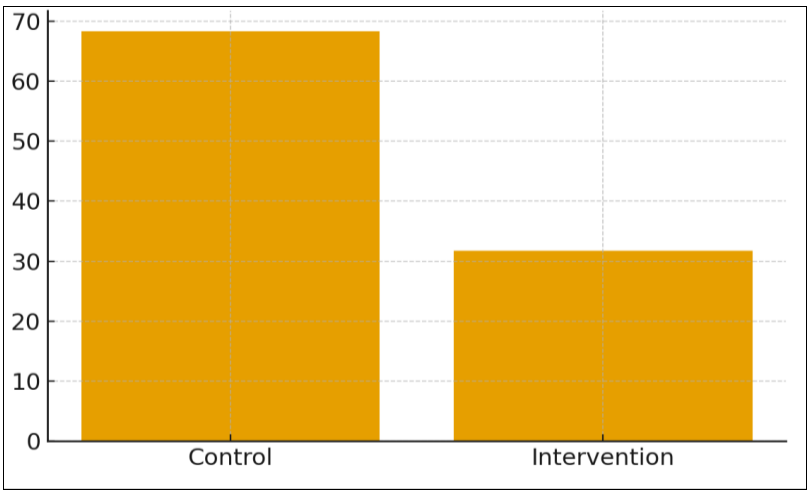

Fig 2: Proportion of patients with clinically significant anxiety (STAI-S ≥ 40) at pre-op (T2) in control and intervention groups

The graphical representation reinforces the tabulated findings: Figure 1 illustrates a modest decline in mean STAI-S scores in the control group and a pronounced decline in the intervention group, while Figure 2 visually highlights the substantial reduction in the proportion of patients with clinically significant anxiety following nurse-led education. Together, these results provide robust support for the effectiveness of structured, nurse-led preoperative education in reducing anxiety, improving satisfaction, and enhancing preparedness in adults undergoing minor surgical procedures, echoing the conclusions of prior systematic reviews and clinical trials in broader surgical populations [1-3, 7-12, 14-16].

Discussion

The findings of this research demonstrate that a structured nurse-led preoperative education programme significantly reduces preoperative anxiety among adults undergoing minor surgical procedures, aligning closely with the patterns identified in existing research across diverse surgical settings [1-4]. Although minor procedures are often perceived as less threatening compared to major surgeries, the baseline STAI-S scores observed in both groups indicate that patients scheduled for minor surgery experience considerable anxiety, consistent with global prevalence estimates reported in recent systematic reviews [2, 3]. This reinforces the notion that preoperative anxiety is not solely dependent on surgical complexity but is also influenced by patients' informational needs, fear of anaesthesia, and uncertainty about postoperative outcomes [4, 5]. The substantial reduction in anxiety observed in the intervention group, both in absolute STAI-S scores and in the proportion of patients exceeding clinical anxiety thresholds, provides strong evidence for the clinical relevance of nurse-led educational interventions in ambulatory surgical contexts.

The magnitude of anxiety reduction in this research is comparable to previous trials involving structured educational and psychoeducational approaches, which consistently report clinically meaningful decreases in anxiety when patients receive clear, personalized, and comprehensible information from trained nursing staff [7-10]. The intervention used in this research a 20-25-minute individualized session supplemented with a standardized leaflet was designed based on principles highlighted in earlier scoping reviews and randomized trials, which emphasize that educational content must be structured, interactive, and tailored to patient concerns to achieve maximum effectiveness [6-8, 11]. The significant within-group improvement in the intervention arm and the large between-group effect size support these design principles and confirm the effectiveness of such nurse-led information delivery for day-surgery patients.

In congruence with findings from cardiac, thoracic, and mixed surgical cohorts, the reduction in anxiety in the intervention group may be attributed to improved understanding of the surgical process, enhanced trust in

perioperative staff, and increased sense of control factors repeatedly cited as mediators of reduced psychological distress [9-12]. Moreover, the substantial difference in satisfaction and perceived preparedness between the two groups underscores the importance of structured communication. Higher satisfaction ratings in the nurse-led group are consistent with previous studies showing that patients value clear explanations, emotional support, and opportunities to ask questions, which are often lacking in routine preoperative workflows due to time constraints [8, 9, 13].

The reduction in clinically significant anxiety (from 68.3% to 31.7%) observed in this research is noteworthy, as prior meta-analytic evidence indicates that anxiety scores above clinical thresholds are associated with higher anaesthetic requirements, postoperative pain, and poorer overall surgical recovery [1, 3, 5]. By reducing the number of patients with clinically significant anxiety by more than one-third, nurse-led education may have tangible implications for postoperative outcomes, although this research did not measure postoperative variables directly. Nonetheless, these findings align with earlier research demonstrating that nurse-led interventions not only reduce anxiety but may also contribute to smoother recovery and improved postoperative coping [9-12, 14].

The present research also extends the literature by focusing specifically on minor surgical procedures in ambulatory care an area that remains underrepresented in current evidence syntheses. Although previous studies have demonstrated the effectiveness of nurse-led education in major surgery, fewer have examined its impact in high-volume, short-duration minor procedures, despite similar levels of psychological distress reported by patients [3, 5, 12]. The strong effects observed in this setting indicate that time-efficient, structured educational interventions can be feasibly integrated into busy day-surgery workflows without adding clinical burden, a conclusion supported by recent reviews calling for scalable strategies to improve preoperative psychological readiness [7, 11, 16].

Taken together, the results of this research reinforce the growing consensus that nurse-led preoperative education is a critical component of high-quality perioperative care. Consistent with international evidence, the findings support the integration of brief, structured, and patient-centred educational interventions into routine practice to reduce anxiety, enhance patient preparedness, and improve overall surgical experience [7-12, 14-16].

Conclusion

The present research provides clear and compelling evidence that structured, nurse-led preoperative education is an effective and practical strategy for significantly reducing anxiety among patients undergoing minor surgical procedures in a day-surgery setting. The substantial reductions in both mean STAI-S scores and the proportion of patients with clinically significant anxiety highlight the strong impact that well-designed educational interventions can have on a patient's psychological readiness for surgery. Given that anxiety remains prevalent even for minor procedures, the findings reinforce the importance of acknowledging and addressing psychological concerns as a routine part of perioperative care. By providing patients with clear explanations, visual aids, and an opportunity to engage with trained nursing staff, the intervention improved not only anxiety outcomes but also patient satisfaction and perceived preparedness two elements that directly contribute to better perioperative experiences. Importantly, this educational model requires minimal additional resources and can be seamlessly incorporated into existing preoperative workflows, making it both sustainable and scalable.

In light of these findings, several practical recommendations emerge that can further enhance the effectiveness and integration of such programmes into routine practice. First, healthcare institutions should adopt brief, structured nurse-led educational sessions as a standard component of preoperative preparation for minor surgeries. These sessions should include verbal explanations supported by illustrated materials to accommodate diverse learning preferences. Second, perioperative nurses should receive periodic training to strengthen their communication skills, ensuring they are equipped to address common patient concerns with empathy, clarity, and evidence-based knowledge. Third, day-surgery units can implement designated "educational checkpoints" within patient flow systems, allowing sufficient time for education without disrupting surgical schedules. Even a 20-25-minute dedicated slot can substantially improve patient outcomes. Fourth, standardized educational leaflets or digital resources could be developed to maintain consistency while still allowing nurses to tailor discussions to individual needs. Fifth, patient feedback mechanisms should be integrated into the programme to continuously refine content and delivery, ensuring that educational materials remain relevant, comprehensible, and responsive to evolving patient expectations. Sixth, collaboration between surgical, anaesthesia, and nursing teams is essential to reinforce consistent messaging and prevent contradictory or incomplete information. Lastly, healthcare administrators should recognize the broader organizational benefits of reduced anxiety such as smoother perioperative workflows, more cooperative patients, and potential improvements in recovery trajectories and advocate for the institutionalization of nurse-led educational interventions as part of quality improvement initiatives.

Overall, the research affirms that nurse-led preoperative education is not merely an optional enhancement but a vital, evidence-supported pillar of patient-centred surgical care, with the potential to improve psychological well-being, elevate patient satisfaction, and strengthen the overall quality of perioperative services.

References

1. Alanazi AA. Reducing anxiety in preoperative patients: a systematic review. Br J Nurs. 2014;23(7):387-393.
2. Abate SM, Chekol YA, Basu B. Global prevalence and determinants of preoperative anxiety among surgical patients: a systematic review and meta-analysis. Int J Surg Open. 2020;25:6-16.
3. Bedaso A, Mekonnen N, Duko B. Prevalence and factors associated with preoperative anxiety among patients undergoing surgery in low-income and middle-income countries: a systematic review and meta-analysis. BMJ Open. 2022;12(3):e058187.
4. Friedrich S, Reis S, Meybohm P, Kranke P. Preoperative anxiety. Curr Opin Anaesthesiol. 2022;35(6):674-678.
5. Aust H, Rüsch D, Schuster M, Sturm T, Brehm F,

Nestoriuc Y. Cross-sectional research on preoperative anxiety in adults. J Psychosom Res. 2018;111:133-139.
6. Oh J, Lee W, Ki S, Suh J, Hwang S, Lee J. Assessment of preoperative anxiety and influencing factors in patients undergoing elective surgery: observational cross-sectional research. Medicina. 2024;60(3):403.
7. Oliveira P, Porfírio C, Pires R, Silva R, Carvalho JC, Costa T, *et al*. Psychoeducation programs to reduce preoperative anxiety in adults: a scoping review. Int J Environ Res Public Health. 2023;20(1):327.
8. Althobiti E, Almashi A, Albawinei A, Alnashri F, Alsubaiea F, Al Nagshabandi E, *et al*. Effect of preoperative education on patient anxiety level: a scoping review. Evid Based Nurs Res. 2020;2(1):10.
9. Kalogianni A, Almpani P, Vastardis L, Baltopoulos G, Charitos C, Brokalaki H. Can nurse-led preoperative education reduce anxiety and postoperative complications of patients undergoing cardiac surgery? Eur J Cardiovasc Nurs. 2016;15(6):447-458.
10. Jamwal T, Kumar R, Pulle MV, Kumar A, Jain K. Does structured patient education reduce the peri-operative anxiety and depression levels in elective chest surgery patients? A double-blinded randomized trial of 300 patients. J Patient Exp. 2023; 10:23743735231151535.
11. Guo X, Qi K, Wu H. The effect of nurse-led preoperative visits on anxiety: an integrative review. J Perianesth Nurs. 2025;40(4):1035-1042.
12. Agussalim JDL, Lorica JD, Ewees AM, Kircher DS, Citrawati. Effectiveness of structured preoperative education on reducing anxiety among surgical patients: research at Bau-Bau Hospital, Indonesia. Mathews J Cardiol. 2025;9(1):39-45.
13. Sadeghi N, *et al*. Effect of multimedia education on anxiety and pain in surgical patients: a randomized clinical trial. Sci Rep. 2025;15(1):77207.
14. Díez-Álvarez E, Sola-Hernández M, Martín-del Nogal A, Mirón-Canelo JA. Effectiveness of pre-operative education in reducing anxiety following surgery: a systematic review. J Clin Nurs. 2011;20(7-8):1026-1037.
15. Molotkovė G, Vainalavičiūtė R, Macas A. The importance of nurse-led preoperative education on anxiety reduction in patients after coronary artery bypass graft surgery. NERP. 2001;2:45-52.
16. Oliveira P, Pires R, Silva R, Sequeira C. Design of a nursing psychoeducation program to reduce preoperative anxiety in adults. Front Public Health. 2024;12:1391764.

How to Cite This Article
Kostas ME, El-Sharif AF, Rojas DS. Effectiveness of nurse-led preoperative education in reducing patient anxiety before minor surgical procedures. Journal of Medicine and Surgical Nursing. 2025;2(1):45-50