



EFFECT OF PREOPERATIVE COUNSELING ON ANXIETY LEVELS AND POSTOPERATIVE RECOVERY: A RANDOMIZED CONTROLLED TRIAL

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Abstract

This randomized controlled trial demonstrated that structured preoperative counselling significantly reduced anxiety levels and positively influenced several important postoperative recovery outcomes among patients undergoing elective surgery. Anxiety before surgery is a well-recognized psychological response that can adversely affect perioperative experiences, increase postoperative pain perception, elevate analgesic requirements, and delay functional recovery. The findings of the present study indicate that patients who received structured counselling experienced a substantial reduction in preoperative anxiety, as evidenced by significantly lower STAI-S scores compared with those receiving routine care alone. The observed reduction in anxiety highlights the value of providing patients with clear, organized, and individualized information regarding the surgical procedure, anaesthetic management, expected postoperative course, pain control strategies, and recovery expectations. Such interventions may reduce uncertainty, enhance understanding, and improve patients' sense of control over the surgical experience. Beyond the psychological benefits, the counselling intervention translated into meaningful clinical improvements in postoperative recovery. Patients in the counselling group achieved earlier ambulation, suggesting enhanced confidence, reduced fear, and greater readiness to participate in postoperative rehabilitation activities. Early mobilization is a critical component of enhanced recovery pathways because it contributes to improved circulation, reduced pulmonary complications, lower risk of thromboembolic events, and faster return to normal activities. Additionally, reduced opioid consumption observed in the intervention group suggests that lower anxiety levels may diminish pain perception and improve coping mechanisms, thereby decreasing reliance on opioid analgesics. This finding is clinically important given the growing emphasis on opioid-sparing approaches and the need to minimize opioid-related adverse effects such as nausea, vomiting, constipation, sedation, and delayed recovery. Patient satisfaction was also significantly higher among participants who received counselling, indicating that improved communication and psychological preparation contribute substantially to the overall quality of perioperative care. Satisfaction is increasingly recognized as a key indicator of healthcare quality and is closely linked to patient engagement, adherence to postoperative instructions, and positive healthcare experiences. Furthermore, improvements in recovery parameters may contribute to reduced healthcare utilization and more efficient hospital resource management. The findings support the integration of structured counselling programs into routine perioperative practice as a simple, low-

cost, and non-pharmacological intervention capable of producing measurable benefits. The randomized design and intention-to-treat analysis strengthen the validity of the results and reduce the likelihood of selection and attrition bias. Nevertheless, certain limitations should be acknowledged. The study was conducted among elective surgical patients within a specific clinical setting, which may limit the generalizability of the findings to emergency surgeries or different healthcare environments. Anxiety assessment relied on self-reported measures, which may be influenced by individual perceptions and reporting tendencies. Future multicentre studies involving larger and more diverse patient populations are warranted to confirm these findings and explore the long-term effects of counselling on postoperative recovery, quality of life, and healthcare costs. Structured preoperative counselling significantly reduced preoperative anxiety and improved key recovery outcomes, including earlier ambulation, lower opioid consumption, and greater patient satisfaction. These findings support the routine incorporation of structured counselling into perioperative care pathways to enhance patient-centred outcomes, optimize recovery, and improve the overall surgical experience.

Keywords: Preoperative anxiety; Patient counselling; STAI; Postoperative recovery; Randomized controlled trial; Patient education

1. Introduction

Preoperative anxiety is one of the most common psychological responses experienced by patients awaiting surgery and affects a substantial proportion of individuals regardless of the type or complexity of the planned procedure. The anticipation of surgery, concerns regarding anaesthesia, fear of postoperative pain, uncertainty about surgical outcomes, potential complications, and worries about recovery often contribute to elevated levels of anxiety before an operation. Numerous studies have demonstrated that excessive preoperative anxiety is associated with a range of adverse perioperative consequences, including increased perception of pain, higher analgesic and sedative requirements, exaggerated haemodynamic responses such as tachycardia and hypertension, delayed wound healing, prolonged hospital stay, and reduced patient satisfaction with care [1,2]. Furthermore, heightened anxiety may negatively influence postoperative recovery by impairing physical mobilization, increasing stress-related hormonal responses, and reducing overall quality of life during the recovery period. Consequently, the identification and management of preoperative anxiety have become important components of contemporary perioperative care aimed at optimizing both psychological well-being and clinical outcomes [3]. Various strategies have been proposed to alleviate anxiety before surgery, including pharmacological sedation, relaxation techniques, psychological support, patient education, and structured counselling interventions. Among these approaches, structured preoperative counselling represents a practical, cost-effective, and non-pharmacological method that can be readily incorporated into routine clinical practice. By providing patients with accurate information regarding the surgical procedure, anaesthetic management, expected perioperative events, postoperative pain control, rehabilitation plans, and anticipated recovery milestones, counselling may reduce uncertainty, address misconceptions, and enhance patients' confidence and perceived control over the surgical experience [4,5]. Such interventions may foster a more positive psychological state and improve cooperation with healthcare providers throughout the perioperative period. The assessment of anxiety levels can be performed using validated psychometric instruments, among which the Spielberger State-Trait Anxiety Inventory (STAI) is one of the most widely accepted and extensively utilized tools. The State Anxiety component (STAI-S) specifically evaluates an individual's current level of anxiety and has demonstrated excellent reliability and validity across diverse clinical settings, making it particularly suitable for evaluating the effectiveness of anxiety-reducing interventions in surgical patients [6]. Although several studies have reported beneficial effects of counselling on anxiety reduction, the extent to which these psychological improvements translate into measurable postoperative recovery benefits remains inconsistent across the literature. Variations in study design, patient populations, counselling methods, and outcome measures have contributed to heterogeneous findings, highlighting the need for further controlled investigations [7]. Therefore, the present randomized controlled trial was undertaken to evaluate the

effectiveness of structured preoperative counselling compared with routine perioperative care among adult patients undergoing elective surgery. The primary aim of the study was to determine whether structured counselling could reduce preoperative anxiety as measured by STAI-S scores. Secondary objectives were to assess its impact on clinically relevant recovery outcomes, including time to ambulation, postoperative opioid consumption, patient satisfaction, and length of hospital stay. We hypothesized that structured preoperative counselling would significantly reduce anxiety levels and improve postoperative recovery outcomes compared with routine care. The null hypothesis (H_0) stated that counselling would have no significant effect on anxiety or recovery parameters, whereas the alternative hypothesis (H_1) proposed that counselling would reduce preoperative anxiety and lead to improved postoperative recovery and patient-centred outcomes.

2. Materials and Methods

This randomized controlled trial was conducted and reported in accordance with the Consolidated Standards of Reporting Trials (CONSORT) guidelines for randomized clinical studies to ensure methodological rigor, transparency, and reproducibility. The study employed a parallel-group, two-arm randomized controlled design and was carried out in the Department of Anaesthesiology at over the period from. Participants were randomly assigned in a 1:1 ratio to either a structured preoperative counselling intervention group or a routine care control group. The trial was registered prospectively under, where applicable. Ethical approval for the study was obtained from the Institutional Ethics Committee and all procedures were conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and its subsequent amendments. Prior to enrolment, all participants received detailed information regarding the study objectives, procedures, potential risks, and benefits, and written informed consent was obtained from each participant. Adult patients scheduled to undergo elective major surgical procedures under anaesthesia were screened for eligibility. Inclusion criteria comprised adults aged 18 years and above who were scheduled for elective surgery and were capable of understanding the study procedures and providing informed consent. [8] Patients undergoing emergency surgery, those with a documented psychiatric disorder, individuals currently receiving anxiolytic or psychotropic medications, patients with cognitive impairment that could interfere with questionnaire completion, and those unable or unwilling to provide informed consent were excluded from participation. A total of 120 eligible participants were enrolled and randomized into the study, with 60 participants allocated to each study group. Participants assigned to the intervention arm received structured preoperative counselling delivered by a trained healthcare professional. The counselling session followed a standardized format and included detailed explanations regarding the planned surgical procedure, anaesthetic techniques, expected perioperative events, postoperative pain management strategies, recovery expectations, mobilization plans, and opportunities for patients to ask questions and express concerns. The objective of the counselling intervention was to improve patient understanding, alleviate uncertainty, enhance psychological preparedness, and reduce surgery-related anxiety. In contrast, participants in the control group received routine preoperative care, which consisted of standard institutional information and perioperative instructions without the additional structured counselling component. Randomization was performed using a computer-generated random allocation sequence prepared by an independent investigator not directly involved in participant recruitment or outcome assessment. Allocation concealment was maintained using sequentially numbered, opaque, sealed envelopes to minimize selection bias. [9] Whenever feasible, investigators responsible for outcome assessment and data analysis remained blinded to group allocation to reduce observer bias. The sample size was calculated based on the primary outcome measure, namely the difference in preoperative State Anxiety scores measured using the Spielberger State-Trait Anxiety Inventory-State (STAI-S). Assuming a clinically meaningful difference of six points between groups, a standard deviation of approximately eleven points, a two-sided alpha level of 0.05, and a statistical power of 90%, a minimum of 58 participants per group was required. To compensate for potential dropouts, withdrawals, or incomplete data, the final sample size was increased to 60 participants in each group. Data analysis was performed according to the intention-to-treat principle using. Continuous variables were assessed for normality and presented as mean $\pm$

standard deviation or median with interquartile range, as appropriate. Comparisons between groups were performed using independent-samples t-tests for normally distributed variables or Mann–Whitney U tests for non-normally distributed data. Categorical variables were expressed as frequencies and percentages and analysed using chi-square or Fisher’s exact tests as appropriate. All statistical tests were two-sided, and a p-value of less than 0.05 was considered statistically significant.

3. Results

3.1 Participant flow and baseline

Of 120 randomized participants (60 per group; mean age 44 ± 13 years; 62 [52%] female), baseline anxiety was similar (Table 1).

Table 1. Anxiety and recovery outcomes by group (60 per group).

Outcome	Counselling	Control	p
Baseline STAI-S, mean $\pm$ SD	46 ± 10	45 ± 11	0.62
Pre-op STAI-S, mean $\pm$ SD	34 ± 9	44 ± 10	<0.001
Time to ambulation (h)	8.5 ± 2.6	11.2 ± 3.1	<0.001
24 h opioid use (mg morphine eq.)	30 ± 12	42 ± 15	<0.001
Patient satisfaction (0–10)	8.6 ± 1.1	7.2 ± 1.4	<0.001

3.2 Anxiety reduction and recovery

Preoperative anxiety fell substantially in the counselling group (Figure 1), and recovery outcomes were better, including earlier ambulation and lower opioid use (Figure 2). Length of stay was shorter (4.1 vs 4.9 days; $p = 0.02$).

Figure 1. State anxiety (STAI) before and after intervention by group

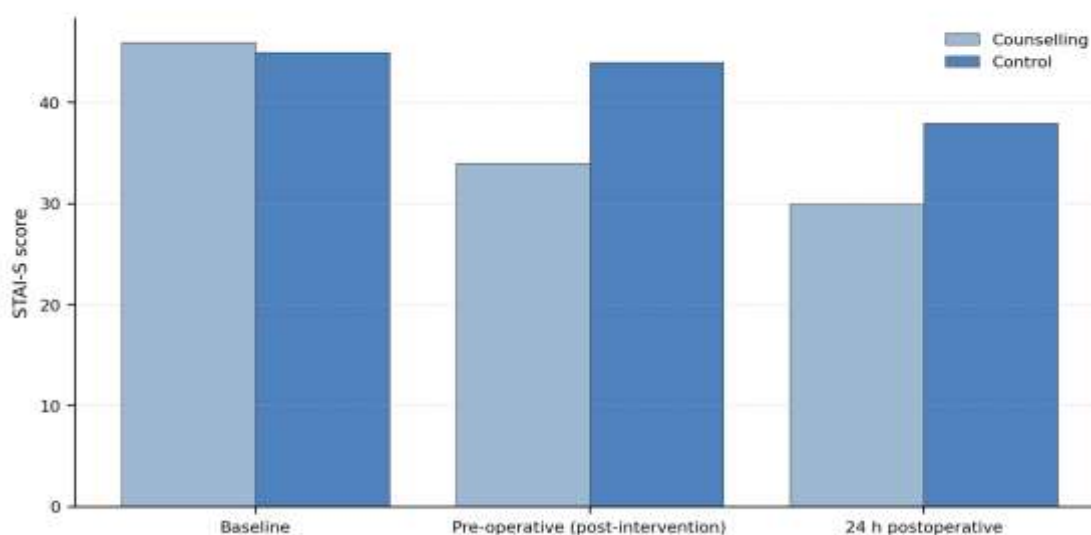


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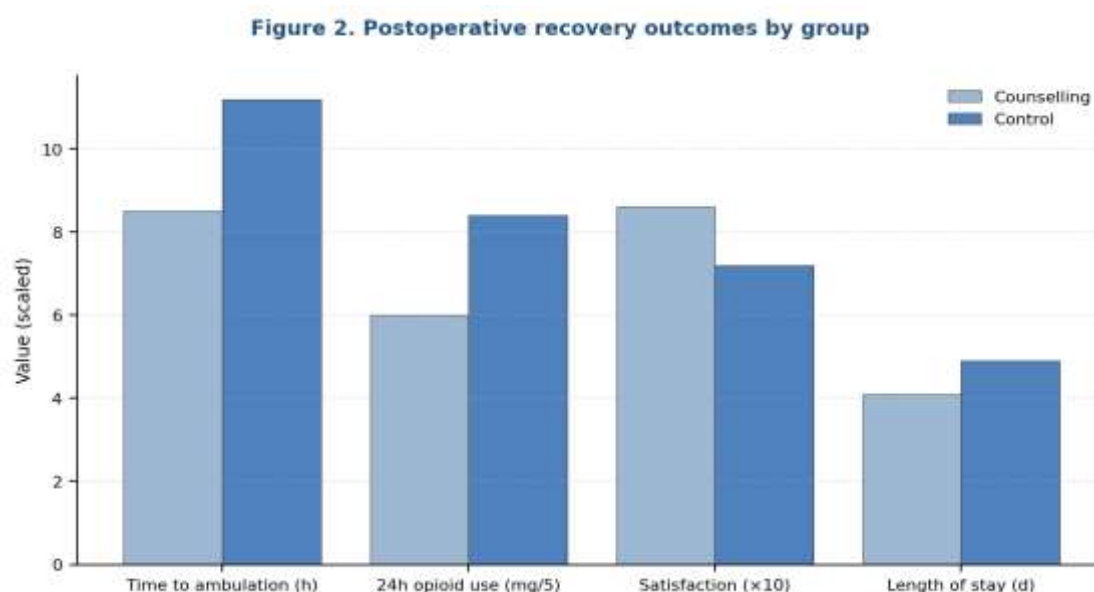


Figure 2. Postoperative recovery outcomes by group.

4. Discussion

The present randomized controlled trial demonstrated that structured preoperative counselling significantly reduced preoperative state anxiety and was associated with meaningful improvements in several important postoperative recovery outcomes, including earlier ambulation, reduced opioid consumption, higher patient satisfaction, and a shorter duration of hospital stay. These findings reinforce the growing body of evidence supporting the integration of psychological preparation into perioperative care and highlight the important relationship between emotional well-being and surgical recovery. Preoperative anxiety is a common yet often under-recognized problem among surgical patients and has been linked to adverse physiological and psychological responses, including increased sympathetic nervous system activity, elevated stress hormone release, heightened pain perception, greater analgesic requirements, and delayed postoperative recovery [10]. By providing accurate information regarding the planned surgical procedure, anaesthetic management, expected postoperative experiences, pain control measures, and recovery expectations, structured counselling appears to reduce uncertainty and fear while enhancing patients' sense of preparedness and control. Such improvements in psychological readiness may explain the significant reduction in anxiety scores observed among participants who received the intervention. [11] The beneficial effects of counselling extended beyond anxiety reduction and translated into clinically relevant recovery advantages. Patients who underwent counselling were able to ambulate earlier following surgery, an outcome that is particularly important because early mobilization is associated with improved pulmonary function, reduced thromboembolic risk, enhanced gastrointestinal recovery, and shorter hospitalization. [12-13] Furthermore, the lower opioid consumption observed in the intervention group suggests that reduced anxiety may lessen pain perception and improve coping mechanisms, thereby decreasing reliance on opioid analgesics and potentially reducing opioid-related adverse effects such as nausea, vomiting, sedation, and constipation. [14-15] The significantly higher satisfaction scores reported by counselled patients further emphasize the importance of effective communication and patient-centred care in the perioperative setting. Satisfaction is increasingly recognized as a key quality indicator in modern healthcare systems and reflects patients' perceptions of safety, trust, understanding, and involvement in decision-making. The shorter length of hospital stay observed in the intervention group may also have important economic implications by reducing healthcare resource utilization and facilitating more efficient patient throughput. Collectively, these findings support the concept that addressing psychological factors before surgery can have measurable effects on both subjective and objective recovery outcomes. The study therefore provides strong support for the routine incorporation of structured counselling into perioperative pathways as a low-cost, non-pharmacological intervention that can complement existing pharmacological strategies and enhanced

recovery after surgery (ERAS) protocols [16]. The intervention is practical, requires minimal equipment or infrastructure, and can be implemented across a wide range of surgical specialties with appropriate staff training. Several methodological strengths enhance the credibility of the present findings. The randomized controlled design minimized selection bias, the use of the validated Spielberger State–Trait Anxiety Inventory ensured reliable assessment of anxiety, the intention-to-treat approach preserved the benefits of randomization, and the inclusion of objective recovery outcomes strengthened the clinical relevance of the results. Nevertheless, certain limitations should be considered when interpreting the findings. Complete blinding of participants was not feasible because patients were aware of receiving counselling, which may have introduced performance and reporting bias. The study was conducted at a single centre, potentially limiting the generalizability of the results to other healthcare settings and patient populations. Additionally, although the counselling intervention followed a structured framework, its effectiveness may have been influenced by the communication skills and experience of the individual provider delivering the intervention. Future research should focus on large multicentre randomized trials employing standardized counselling protocols to improve external validity and reproducibility. Longer follow-up periods are also warranted to evaluate the sustained effects of preoperative counselling on chronic postoperative pain, functional recovery, health-related quality of life, psychological well-being, healthcare utilization, and long-term patient satisfaction. Overall, the findings of this study demonstrate that structured preoperative counselling is an effective and feasible strategy for reducing anxiety and enhancing postoperative recovery, supporting its broader adoption as an integral component of comprehensive perioperative care.

5. Conclusion

The findings of this randomized controlled trial demonstrate that structured preoperative counselling is an effective intervention for reducing anxiety among patients undergoing elective surgery and for improving several important aspects of early postoperative recovery. Patients who received structured counselling experienced significantly lower levels of preoperative state anxiety, accompanied by beneficial recovery outcomes including earlier ambulation, reduced postoperative opioid requirements, higher levels of patient satisfaction, and shorter hospital stays. These findings highlight the important influence of psychological preparedness on perioperative outcomes and emphasize that anxiety management should be considered an integral component of comprehensive surgical care rather than a secondary consideration. By providing patients with clear information, realistic expectations, emotional support, and opportunities to address concerns before surgery, structured counselling helps reduce uncertainty and enhances patients' confidence and perceived control over the surgical process. Such improvements in psychological well-being may contribute directly to better pain management, increased participation in postoperative rehabilitation, and faster recovery. Importantly, structured preoperative counselling is a low-cost, safe, non-pharmacological, and easily implementable intervention that requires minimal resources and can be incorporated into existing perioperative workflows without substantial disruption. Given its demonstrated clinical benefits and practical feasibility, routine incorporation of structured counselling into standard perioperative care pathways should be strongly considered across a broad range of surgical specialties. Nevertheless, while the present findings provide encouraging evidence, further research is needed to strengthen the evidence base and establish the broader applicability of this approach. Future multicentre randomized controlled trials involving larger and more diverse patient populations, different healthcare settings, and standardized counselling protocols are warranted to confirm the generalizability of these findings. Additionally, studies examining long-term outcomes such as chronic postoperative pain, quality of life, psychological well-being, healthcare utilization, and cost-effectiveness would provide a more comprehensive understanding of the sustained benefits of preoperative counselling. Overall, structured preoperative counselling represents a valuable patient-centred strategy that has the potential to enhance both psychological and clinical outcomes, supporting its inclusion as a routine element of modern perioperative practice.

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