



Original Article

Evaluating the Impact of Pre-Operative Patient Education and Counselling on Anxiety and Post-Operative Pain in Patients Undergoing Surgery Under Spinal Anaesthesia

Dr. Arun Kumar¹, Dr. Sofia Batool², Dr. Tsering Yougyal³, Dr. Meyong Pincho Bhutia⁴, Dr. Arati Rai⁵, Dr. Lhamo Dolma⁶, Dr. Sanya Bose⁷, Dr. Amit Kumar⁸

¹Postgraduate Resident, Department of Anaesthesia, Sikkim Manipal Institute of Medical Sciences, 5th Mile Tadong, Gangtok, 737102, Sikkim

^{2,5,6}Associate Professor, Department of Anaesthesia, Sikkim Manipal Institute of Medical Sciences, 5th Mile Tadong, Gangtok, 737102, Sikkim

³Assistant Professor, Department of Anaesthesia, Sikkim Manipal Institute of Medical Sciences, 5th Mile Tadong, Gangtok, 737102, Sikkim

⁴Professor, Department of Anaesthesia, Sikkim Manipal Institute of Medical Sciences, 5th Mile Tadong, Gangtok, 737102, Sikkim

⁷Senior Resident, Department of Anaesthesia, Sikkim Manipal Institute of Medical Sciences, 5th Mile Tadong, Gangtok, 737102, Sikkim.

⁸ Assistant Professor, Department of Community Medicine Shri Siddhi Vinayak Medical College, Sambhal, Uttar Pradesh

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Corresponding Author:

Dr. Sofia Batool

Associate Professor, Department of Anaesthesia, Sikkim Manipal Institute of Medical Sciences, 5th Mile Tadong, Gangtok, 737102, Sikkim

Email: batoolsofia@gmail.com

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ABSTRACT

Background: Preoperative anxiety is common among patients undergoing surgery under spinal anaesthesia and may adversely affect perioperative hemodynamic stability, postoperative pain, and overall patient experience. Structured preoperative education and counselling have been proposed as effective non-pharmacological interventions to alleviate anxiety; however, evidence in patients undergoing spinal anaesthesia remains limited.

Methods: This randomized controlled trial was conducted among 120 patients (ASA physical status I–II) aged 18–65 years undergoing elective surgery under spinal anaesthesia. Participants were randomly allocated to either the Detailed Counselling Group (Group D, n = 60) or the Routine Information Group (Group R, n = 60). Preoperative anxiety was assessed using the Amsterdam Preoperative Anxiety and Information Scale (APAIS) one day before surgery and on the day of surgery. Perioperative hemodynamic parameters, including heart rate, systolic blood pressure, diastolic blood pressure, mean arterial pressure, and peripheral oxygen saturation, were recorded. Postoperative pain was evaluated using the Visual Analogue Scale (VAS) at 0, 6, 12, 18, and 24 hours.

Results: Baseline demographic characteristics were comparable between the groups. One day before surgery, both groups had high APAIS scores (Group D: 19.73 ± 4.22 vs. Group R: 20.15 ± 3.66 ; $p > 0.05$). On the day of surgery, anxiety scores decreased in both groups but were significantly lower in Group D than in Group R (13.20 ± 3.87 vs. 17.75 ± 4.66 ; $p < 0.001$), indicating that detailed preoperative counselling was more effective in reducing preoperative anxiety. Patients receiving detailed counselling also exhibited greater perioperative hemodynamic stability, with lower heart rate and blood pressure parameters during most perioperative time points. Early postoperative pain scores were significantly lower in Group D at 0, 6, and 12 hours ($p < 0.05$), whereas differences at 18 and 24 hours were not statistically significant.

Conclusion: Structured preoperative education and counselling significantly reduced preoperative anxiety, improved perioperative hemodynamic stability, and decreased early postoperative pain in patients undergoing surgery under spinal anaesthesia. Incorporating standardized counselling into routine pre-anaesthetic assessment may enhance perioperative patient care

INTRODUCTION

A significant percentage of surgery patients worldwide suffer from preoperative anxiety, a prevalent psychological phenomenon. This psychological anguish is a clinically serious issue with well-established physiological and psychological after effects that affect perioperative outcomes, rather than only being a subjective sensation.¹ Increased preoperative anxiety not only causes emotional distress but is also associated with autonomic disturbances, such as increased heart rate, hypertension and arrhythmias. It raises cortisol and catecholamine levels leading to increased anesthetic and analgesic requirements, perioperative haemodynamic instability and higher healthcare costs.² It also increases analgesic requirement leading to increased healthcare burden and cost.³ Optimizing anxiety management is essential in resource-limited settings like India for improved patient outcomes and system efficiency.⁴

Preoperative education reduces fear and anxiety by providing clear information about surgery, anesthesia, and recovery, thereby limiting sympathetic hyperactivation and improving psychological and physiological responses.⁵ Spinal anesthesia is the preferred technique for surgeries involving the lower abdomen, pelvis, and lower limbs. In India, over 60% of surgeries are performed under regional anesthesia.⁶ Its advantages include rapid onset, effective postoperative analgesia, fewer systemic side effects, preserved airway reflexes, cost-effectiveness, and suitability for patients with comorbidities.⁷ Unlike general anesthesia, spinal anesthesia maintains consciousness and awareness, which, despite its clinical advantages, may increase preoperative anxiety.⁸ Despite growing evidence that preoperative education reduces anxiety and postoperative pain, studies specifically evaluating its effectiveness in patients undergoing surgery under spinal anesthesia remain limited.⁹ Thus, by assessing the effects of preoperative education and counselling on anxiety levels, postoperative pain tolerance, and perioperative hemodynamic changes in patients undergoing surgery under spinal anesthesia, this study aims to fill in current data gaps.

Aim and Objective Aim

To assess the effects of pre-operative patient education and counselling on anxiety and post-operative pain in patients undergoing surgery under spinal anaesthesia.

Objective

- To evaluate the effect of preoperative patient education and counselling on anxiety and postoperative pain (VAS score) in patients undergoing surgery under spinal anesthesia.
- To compare perioperative hemodynamic changes between the study groups

METHODS

This randomized controlled trial was conducted in the wards and operation theatres of Central Referral Hospital. The study included patients aged 18–65 years with American Society of Anesthesiologists (ASA) physical status I or II who were scheduled for elective surgery under spinal anesthesia. Patients with at least matriculation-level education who were able to understand Hindi, English, or Nepali were eligible for inclusion. Patients who refused to participate, were pregnant, belonged to ASA physical status III or IV, underwent emergency surgery, had a diagnosed psychiatric illness receiving treatment, or had hearing impairment or difficulty in verbal communication were excluded from the study.

The sample size was calculated based on the study by Guo et al.¹⁰, using a 95% confidence interval and 90% statistical power. A minimum of 60 participants was required in each group, resulting in a total sample size of 120 patients. After obtaining written informed consent, participants were randomly allocated in a 1:1 ratio using sealed opaque envelope randomization into either the Detailed Counselling Group (Group D, n = 60) or the Routine Information Group (Group R, n = 60).

Preoperative anxiety was assessed using the Amsterdam Preoperative Anxiety and Information Scale (APAIS) one day before surgery and reassessed on the day of surgery. Participants in Group D received structured preoperative counselling that included detailed information regarding spinal anesthesia, fasting guidelines, expected perioperative events, anticipated intraoperative sensations, postoperative recovery, pain management, details of the surgical procedure, potential complications, and financial aspects of treatment. In contrast, participants in Group R received routine preoperative information consisting of standard instructions regarding fasting, spinal anesthesia, and usual perioperative care.

The primary outcome measures were preoperative anxiety assessed using the APAIS and postoperative pain evaluated with the Visual Analogue Scale (VAS) at 0, 6, 12, 18, and 24 hours after surgery. Secondary outcomes included perioperative hemodynamic parameters, namely heart rate, systolic blood pressure, diastolic blood pressure, mean arterial pressure, and

peripheral oxygen saturation (SpO₂), which were recorded preoperatively, intraoperatively at 5-minute intervals, in the post-anesthesia care unit, and during the first 24 hours after surgery. Data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) version 25.0. Continuous variables were expressed as mean $\pm$ standard deviation (SD) and compared using the Student's t-test, whereas categorical variables were expressed as frequencies and percentages and analyzed using the Chi-square test or Fisher's exact test, as appropriate. Repeated-measures analysis was performed to evaluate serial changes in hemodynamic parameters and VAS scores over time. A p-value of <0.05 was considered statistically significant.

The study protocol was approved by the Institutional Research Committee and Institutional Ethics Committee (Approval No. SMIMS/IRC/ADRD/2024-84). Written informed consent was obtained from all participants before enrollment, and confidentiality of participant information was maintained throughout the study in accordance with ethical principles

RESULT

A total of 120 patients were randomized equally into the Detailed Counselling (Group D, n = 60) and Routine Information (Group R, n = 60) groups, and all participants completed the study. The two groups were comparable with respect to age (39.08 ± 12.72 vs. 38.18 ± 12.95 years; $p = 0.698$) and gender distribution ($p = 0.361$). (Table 1).

Preoperative anxiety, as measured by the APAIS, was relatively high and comparable between the two groups one day before surgery (19.73 ± 4.22 vs. 20.15 ± 3.66 ; $p > 0.05$). On the day of surgery, anxiety scores declined in both groups; however, the reduction was significantly greater in Group D, resulting in significantly lower APAIS scores compared with Group R (13.20 ± 3.87 vs. 17.75 ± 4.66 ; $p < 0.001$). (Table 2)

Perioperative hemodynamic changes are illustrated in Figures 2–6. Heart rate remained comparable between the groups during most intraoperative time points but was significantly lower in Group D during recovery and the early postoperative period. Systolic blood pressure, diastolic blood pressure, and mean arterial pressure were significantly lower in Group D at most perioperative time points, while peripheral oxygen saturation was significantly higher during the recovery and early postoperative periods. Postoperative pain scores measured using the VAS were significantly lower in Group D at 0 hours (0.75 ± 0.99 vs. 3.20 ± 1.46 ; $p < 0.001$), 6 hours (3.12 ± 1.57 vs. 4.42 ± 1.39 ; $p < 0.001$), and 12 hours (4.97 ± 1.46 vs. 5.68 ± 1.26 ; $p = 0.010$). No significant differences were observed at 18 hours ($p = 0.430$) or 24 hours ($p = 0.070$) (Table 3).

Figure 1: Consort Flow Diagram
CONSORT Flow Diagram
Detailed counselling (Group D) vs Routine information (Group R)

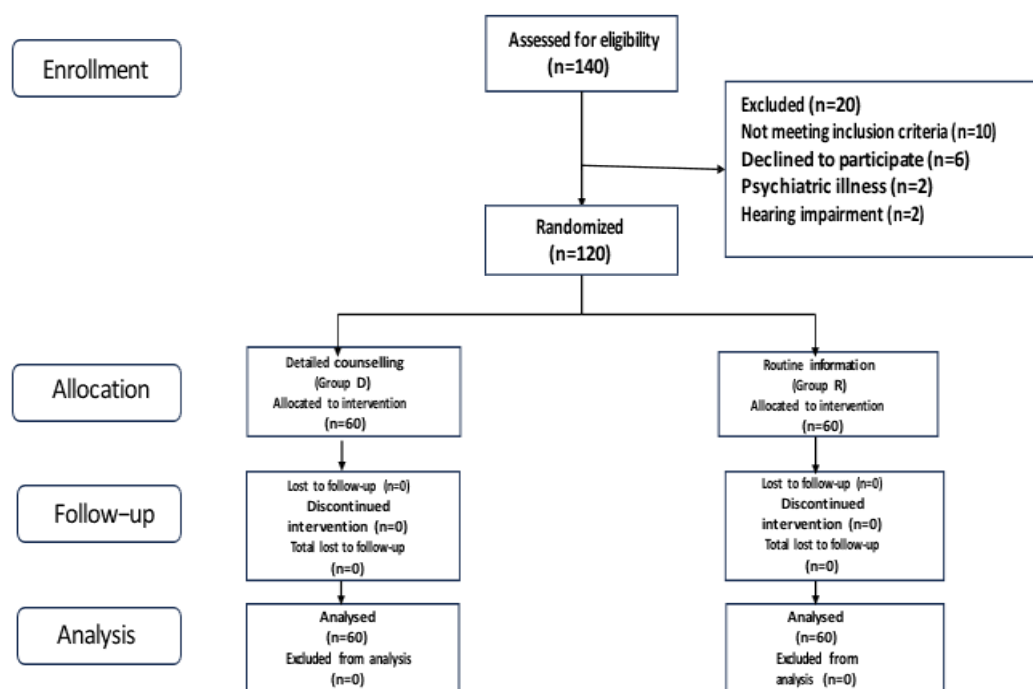


Table 1: Baseline characteristics of patients in the Detailed Counselling (Group D) and Routine Information (Group R) groups

Characteristic	Group D (n = 60)	Group R (n = 60)	Test statistic	p value
Age (years), Mean $\pm$ SD	39.08 $\pm$ 12.72	38.18 $\pm$ 12.95	t = 0.38	0.698
Gender, n (%)				
Male	34 (56.67)	32 (53.33)	$\chi^2 = 0.83$	0.361
Female	26 (43.33)	28 (46.67)		

Table 2: Comparison of Total APAIS Scores Between the Detailed Counselling (Group D) and Routine Information (Group R) Groups

Time of Assessment	Group D (n = 60) Mean $\pm$ SD	Group R (n = 60) Mean $\pm$ SD	t value	p value
One day before surgery	19.73 $\pm$ 4.22	20.15 $\pm$ 3.66	-3.35	>0.05
Day of surgery	13.20 $\pm$ 3.87	17.75 $\pm$ 4.66	-5.82	<0.001

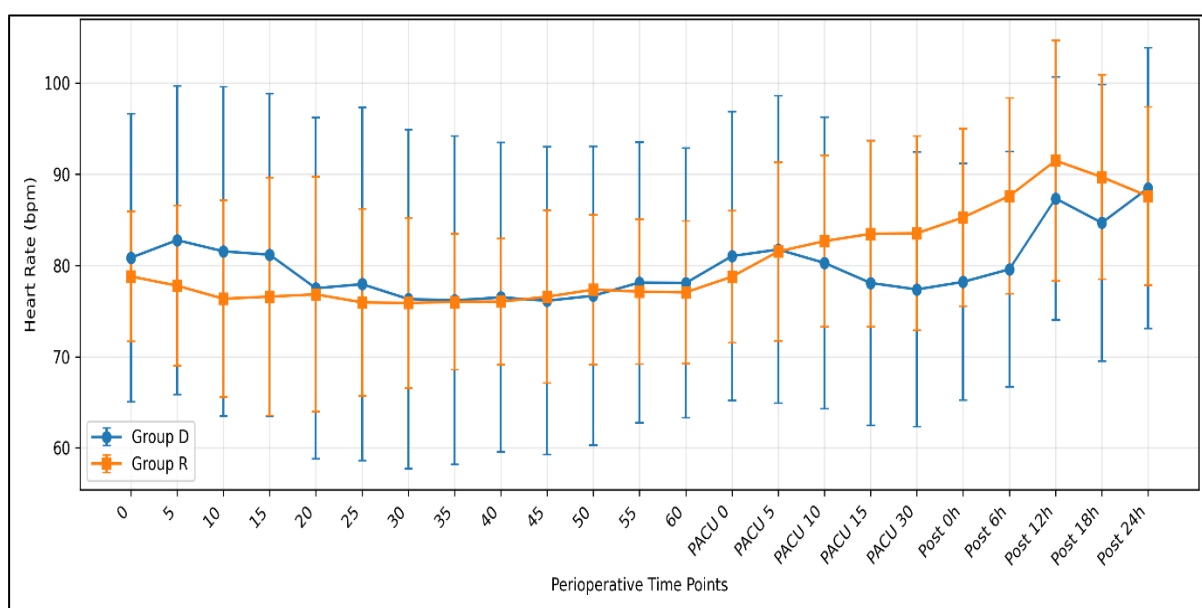


Figure 2: Comparison of Heart Rate between Detailed counselling (Group D) and Routine information (Group R) Groups

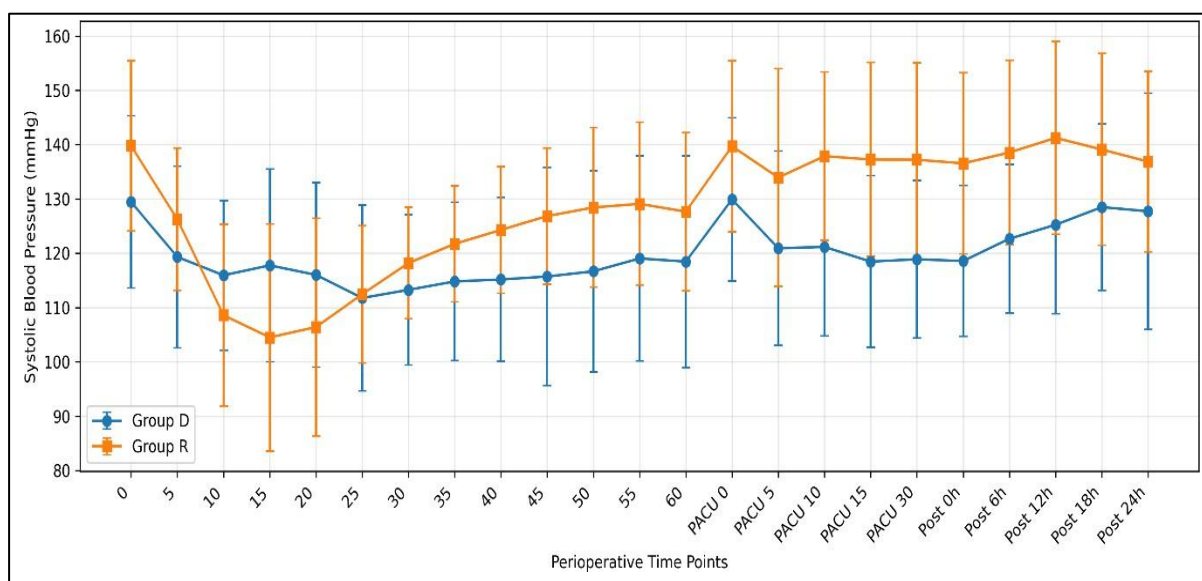


Figure 3: Comparison of Systolic Blood Pressure(mmHg) between Detailed counselling (Group D) and Routine information (Group R) Groups

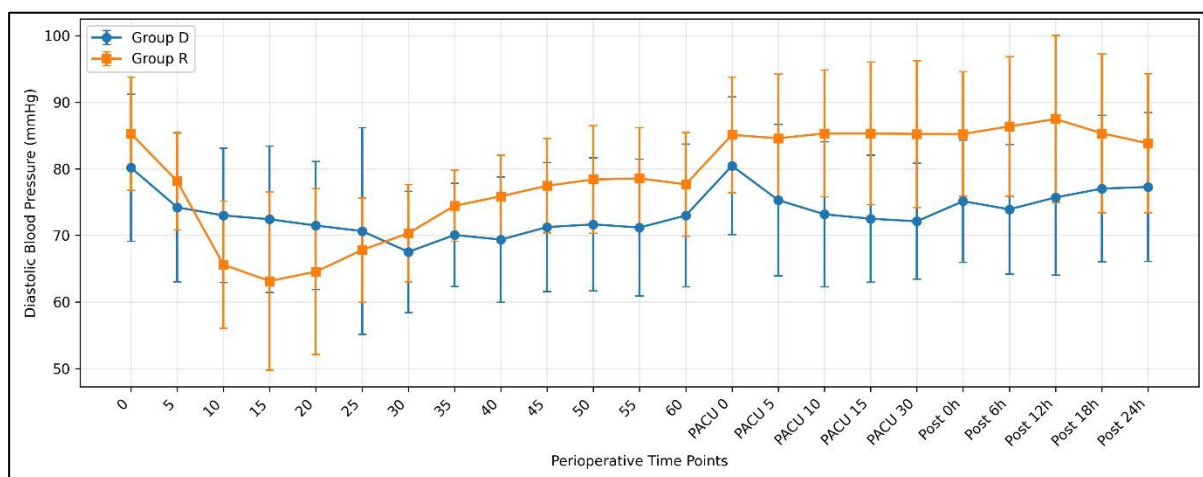
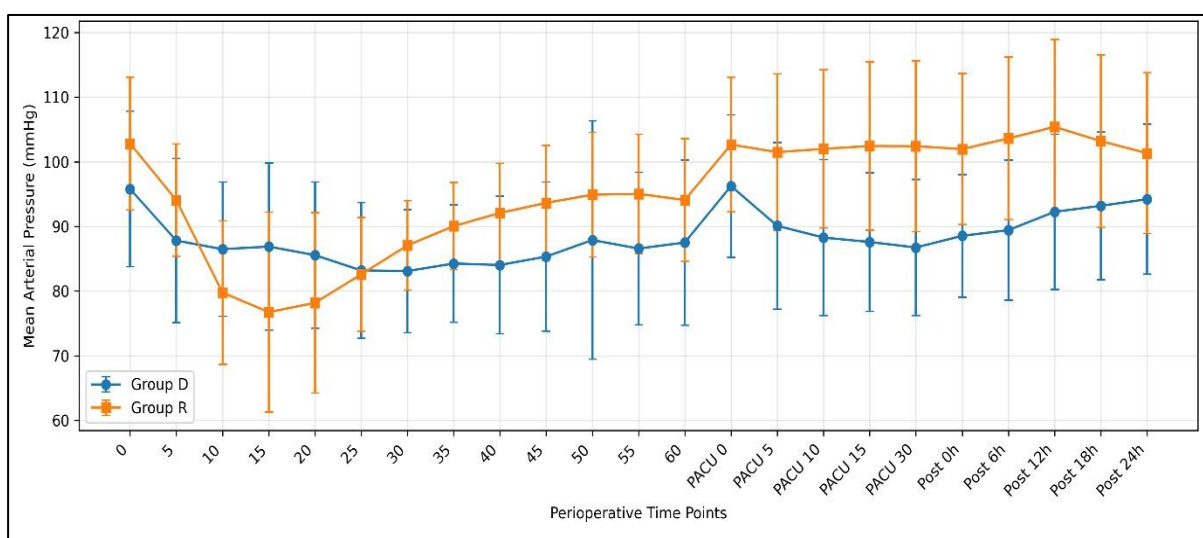


Figure 4: Comparison of Diastolic Blood Pressure(mmHg) between Detailed counselling (Group D) and Routine information (Group R) Groups



Figure

5: Comparison of Mean Arterial Pressure(mmHg) between Detailed counselling (Group D) and Routine information (Group R) Groups

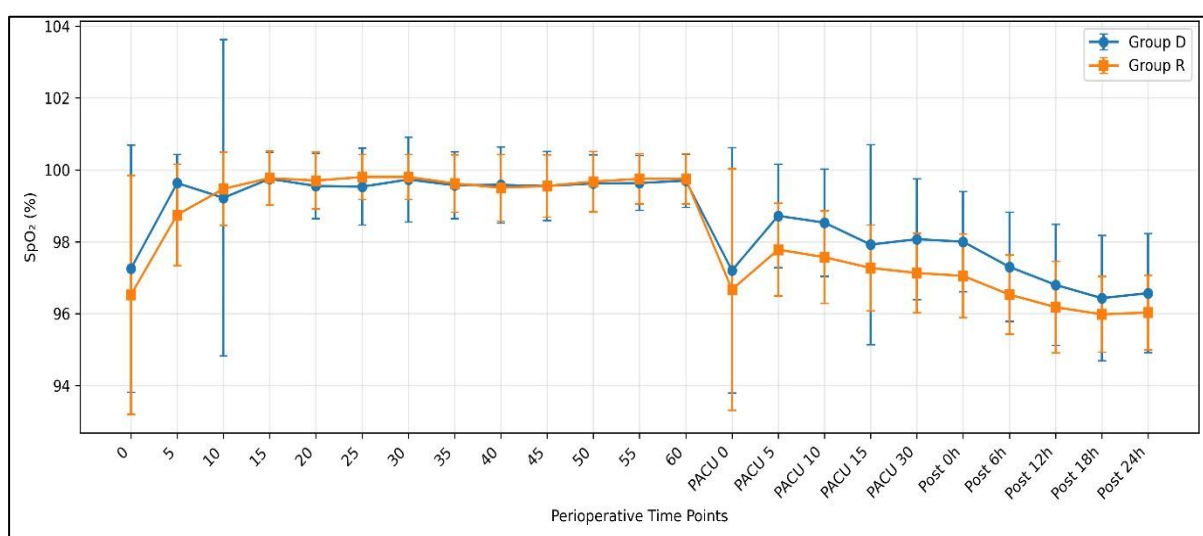


Figure 6: Comparison of SpO₂ between Detailed counselling (Group D) and Routine information (Group R) Groups

Table 3: Comparison of VAS Score for pain between Detailed counselling (Group D) and Routine information (Group R) Groups

VAS Score Time Point	Counselling Group (N=60)	Mean	Std. Deviation	t - statistics	p-value
VAS_0 hrs	Group D	0.75	0.99	116.21	<0.001
	Group R	3.2	1.46		
VAS_6 hrs	Group D	3.12	1.57	22.94	<0.001
	Group R	4.42	1.39		
VAS_12 hrs	Group D	4.97	1.46	8.31	0.010
	Group R	5.68	1.26		
VAS_18 hrs	Group D	5.13	1.43	0.64	0.430
	Group R	5.32	1.05		
VAS_24 hrs	Group D	5.5	1.43	3.32	0.070
	Group R	5.05	1.27		

DISCUSSION

In patients undergoing surgery under spinal anesthesia, the current randomized controlled trial showed that structured preoperative education and counselling significantly reduced preoperative anxiety, enhanced perioperative hemodynamic stability, and lowered early postoperative discomfort. These results corroborate the mounting evidence that proper psychological preparation and preoperative education improve perioperative outcomes by lowering anxiety and boosting patient confidence.¹¹

The substantial decrease in APAIS scores among patients receiving thorough counselling was one of the study's main conclusions. When compared to the standard information group, the counselling group had lower total APAIS scores the day before and the day of the procedure.¹² These findings are consistent with the original work of Moerman et al., who developed the APAIS as a reliable and valid instrument for assessing preoperative anxiety and patients' informational needs. Subsequent randomized controlled trials have similarly demonstrated that structured educational interventions, including verbal counselling, multimedia presentations, and audiovisual aids, significantly reduce preoperative anxiety among patients undergoing surgery under spinal anaesthesia.¹³ Subsequent randomized studies have consistently shown that structured education, particularly using multimedia or audiovisual aids, significantly reduces APAIS scores before spinal anaesthesia.¹⁴

In addition to reducing anxiety, detailed counselling was associated with improved perioperative hemodynamic stability. Patients receiving structured counselling demonstrated lower heart rate, systolic blood pressure, diastolic blood pressure, and mean arterial pressure during most perioperative time points compared with those receiving routine information. Similar observations have been reported by Jjala et al., who demonstrated that multimedia-assisted preoperative education attenuated perioperative cardiovascular responses in patients undergoing spinal anaesthesia.¹⁵ The improved hemodynamic profile observed in the present study is likely attributable to reduced sympathetic activation secondary to diminished anxiety, resulting in lower catecholamine-mediated cardiovascular stimulation.

The present study demonstrated significantly lower postoperative VAS pain scores in the detailed counselling group during the early postoperative period. Pain scores were significantly lower at 0 hours (0.75 ± 0.99 vs. 3.20 ± 1.46 ; $p < 0.001$), 6 hours (3.12 ± 1.57 vs. 4.42 ± 1.39 ; $p < 0.001$), and 12 hours (4.97 ± 1.46 vs. 5.68 ± 1.26 ; $p = 0.010$), whereas no significant differences were observed at 18 and 24 hours. Similar findings have been reported by Sadeghi et al., who observed significantly lower postoperative pain following multimedia-based preoperative education.⁵ Feninets et al. also demonstrated reduced postoperative pain after structured preoperative educational briefings in patients undergoing spinal surgery.¹⁶ Furthermore, Darville-Beneby et al., in a narrative review, concluded that preoperative educational interventions consistently reduce postoperative pain intensity and analgesic requirements across a wide range of surgical procedures.¹⁷

CONCLUSION

Structured preoperative education and counselling is an effective, low-cost intervention that significantly reduces preoperative anxiety, improves perioperative hemodynamic stability, and decreases early postoperative pain in patients undergoing surgery under spinal anaesthesia. Routine incorporation of standardized counselling protocols into pre-anaesthetic assessment may enhance patient-centred perioperative care and improve both psychological and clinical outcomes. Further multicentre studies with larger sample sizes are warranted to validate these findings and assess their long-term clinical impact.

Limitation

This was a single-center study with a relatively small sample size, which may limit the generalizability of the findings. Additionally, only short-term postoperative outcomes (up to 24 hours) were assessed, and long-term effects of preoperative counselling were not evaluated.

DECLARATIONS

Conflicts of Interest: The authors declare that they have no conflicts of interest.

Author Contributions: All authors contributed substantially to the conception, study design, data collection, analysis, manuscript preparation, and approved the final version of the manuscript.

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