

## Study of Pregabalin as Premedication for Anxiolysis in Patients Undergoing Elective Surgery

Amit Chaudhary<sup>1</sup>, Amit Sharma Bhattarai<sup>2</sup>, Pankaj Joshi<sup>2</sup>, Anil Shrestha<sup>3</sup>

<sup>1</sup>Consultant Anaesthesiologist, Narayani Subregional Hospital, Birgunj, <sup>2</sup>Assistant Professor, Department of Anaesthesiology, Maharajgunj Medical Campus, Institute of Medicine, Maharajgunj, Kathmandu, Nepal, <sup>3</sup>Professor, Department of Anaesthesiology, Maharajgunj Medical Campus, Institute of Medicine, Maharajgunj, Kathmandu, Nepal

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### ABSTRACT

**Introduction:** Preoperative anxiety affects 25–80% of surgical patients, impairing postoperative recovery. Pregabalin, by modulating neuronal excitability, may alleviate this anxiety. This study evaluated the efficacy of pregabalin 150 mg in reducing preoperative anxiety.

**Methods:** A prospective observational study included 50 ASA I/II patients scheduled for elective surgery under general anesthesia. Preoperative anxiety was assessed using the Beck Anxiety Inventory (BAI-Nepali), a 21-item self-report scale (scores 0–3 per item). Baseline BAI scores, heart rate, and blood pressure were recorded. Patients received oral pregabalin 150 mg as premedication, and BAI scores and hemodynamic parameters were reassessed after 120 minutes.

**Results:** At baseline, 94% (n=47) had minimal anxiety (BAI:  $2.22 \pm 2.85$ ), 4% (n=2) mild, and 2% (n=1) moderate. Post-intervention, all patients (100%) exhibited minimal anxiety (BAI:  $1.4 \pm 1.41$ ,  $p=0.003$ ). Hemodynamic parameters (heart rate, systolic/diastolic blood pressure, mean arterial pressure) remained stable.

**Conclusion:** A single dose of pregabalin 150 mg significantly reduced preoperative anxiety in elective surgical patients, with no adverse hemodynamic effects. These findings support its use as an effective anxiolytic premedication.



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**Corresponding Author:** Amit Sharma Bhattarai, Assistant Professor, Department of Anaesthesiology, Maharajgunj Medical Campus, Institute of Medicine, Maharajgunj, Kathmandu, Nepal. Email: [amit.bhattarai@mmc.tu.edu.np](mailto:amit.bhattarai@mmc.tu.edu.np)

## Introduction

Anxiety is a common experience before surgery, encompassing stress, fear and increased autonomic activity. The perioperative period tends to evoke anxiety responses in many patients. Managing this is crucial for a successful recovery. [1,2]

Many studies done in various countries have shown the overall prevalence of preoperative anxiety to be 61-89%. (3-5) A study done in Nepal indicated a high prevalence of preoperative anxiety. The factors elevating preoperative anxiety are mostly familial and social support. Understanding these factors can be crucial for improving perioperative care. [3]

BAI, among many other standardized anxiety measuring tools, is validated among Nepalese adults for Generalized Anxiety Disorder (GAD). BAI is a 21-item self-reported scale having four-point Likert scale from "0" (Not at all) through "3" (Severely-it bothered me a lot). [4,5]

Pregabalin (PGB) is a gamma-aminobutyric acid (GABA) analog and has anticonvulsant, analgesic, sleep-modulating and anxiolytic properties. [6,7,8]

## Methods

This prospective observational analytic cohort study was conducted in operating rooms and surgical wards of Tribhuvan University Teaching Hospital for a duration of six months

(January 1- June 30, 2023). A prior ethical approval was obtained from Institutional Review Committee of Institute of Medicine, Kathmandu (Reference number: 309(6-11) E2). Total 50 patients of either gender aged 18-65 years were included in the study. Written informed consent was taken from all the participants eligible for the study. All the patients were scheduled to undergo elective surgeries and were categorized as either ASA I or II patients. Patients who did not give consent, who were taking sedatives and psychotropic medications were excluded from the study. The sample size was calculated by using G power software 3.1.9.4. With effect size of 0.5, level of significance 5% and power 95%, the sample size was calculated to be 50 including 10% loss to follow up. The patients were assessed preoperatively in the wards. Baseline BAI score (Nepali version) was recorded using questionnaire tool by attending resident. The anxiety in BAI was classified as follows:

0-7: minimal anxiety

8-15: mild anxiety

16-25: moderate anxiety

26-63: severe anxiety

Similarly, baseline vitals (systolic, diastolic and mean arterial pressure as well as heart rate) were measured and recorded. After 120 minutes of premedication with pregabalin, BAI and vitals were again measured and recorded. The data

were analyzed with SPSS 16. A p value of  $<0.05$  was considered statistically significant.

## Results

Out of 50 patients who were enrolled in the study, 16 (32%) were male and 34 (68%) were females. The mean age of the patients was  $47.8 \pm 11.54$  years. Out of 50 patients who were enrolled and analyzed, 47 (94%) had minimal, 2 (4%) had mild and 1 (2%) had moderate anxiety as a baseline level of anxiety as recorded by BAI. After 120 minutes of administration of pregabalin, however, all 50 patients (100%) patients had minimal anxiety. (Table 1)

**Table 1: Anxiety before and after pregabalin (n=50)**

BAI	Minimal	Mild	Moderate	Severe
Before	47	2	1 (2%)	0
pregabalin	(94%)	(4%)		
(%)				
After	50	0	0	0
pregabalin	(100%)			
(%)				

Wilcoxon signed rank test used for analysis of median showed that differences in the median score before and after 120 minutes were statistically significant. (Table 2)

**Table 2: Difference in median score before and after 120 minutes (n=50)**

BAI	Median	Q1	Q2	P-value
score				

Baseline	1.5	1	3	0.003
After 120 min	1	0.75	2	

There were no statistically significant differences between vital parameters (systolic, diastolic and mean blood pressures and heart rate) before and after administration of pregabalin.

## Discussion

Preoperative anxiety is characterized by feelings of fear, apprehension, or nervousness experienced by patients prior to undergoing surgical procedures. Clinical anxiety represents a more severe manifestation of this state, often leading to significant distress and functional impairment in daily life activities.[9] The primary objective of this study was to assess the anxiolytic effect of pregabalin when administered as premedication in patients scheduled for elective surgery.

Various tools have been employed in previous studies to quantify preoperative anxiety, including the State-Trait Anxiety Inventory (STAI), Visual Analog Scale (VAS), and the 5-point Likert scale. [10,11] In this study, the Beck Anxiety Inventory (BAI) was chosen due to its simplicity, reliability, and validated Nepali version. The BAI is a 21-item self-reported questionnaire designed to assess the severity of

anxiety symptoms, typically requiring approximately 15 minutes to complete. Originally developed for the evaluation of clinical anxiety, the BAI has gained wide acceptance as a screening and outcome measurement tool in anxiety research.[12]

A meta-analysis conducted by Bardhoshi et al. demonstrated that the BAI exhibits excellent internal consistency and good test-retest reliability in both clinical and non-clinical populations.[9] Given its ease of administration, cost-effectiveness, and robust psychometric properties, the BAI was deemed appropriate for use in the present study. We hypothesized that premedication with pregabalin would result in a reduction of preoperative anxiety levels in patients undergoing elective surgery, as measured by the BAI score.

The mean baseline Beck Anxiety Inventory (BAI) score among patients undergoing elective surgery was  $2.22 \pm 2.85$ , which decreased to  $1.4 \pm 1.41$  after 120 minutes of premedication. The median baseline BAI score was 1.5, with an interquartile range (IQR) of 1 (Q1) to 3 (Q3), while the median BAI score after 120 minutes was 1, with an IQR of 0.75 (Q1) to 2 (Q3).

Statistical analysis using the Wilcoxon signed-rank test demonstrated a significant reduction in the median BAI score following pregabalin administration, with a p-value of 0.003,

indicating a statistically significant anxiolytic effect.

The incidence of preoperative anxiety has been reported as variable (60%-92%). [2,13] The incidence of preoperative anxiety in our study, however, was found to be only 6%. The difference observed depends upon various factors such as type of surgery, education, age, gender, family status, past surgical history among many. Preoperative anxiety also depends upon many factors like fears associated with surgical outcomes, postoperative pain, anesthesia-related risks, financial burdens, and concerns about family obligations. The preoperative anxiety not only contribute to emotional distress, but also compromise clinical outcomes because of stress related immunosuppression. [14] Apart from this, the impact of undiagnosed and untreated preoperative anxiety increases the odds of acute as well as long term impact such as difficult postoperative pain management, increased hemodynamic fluctuations like tachycardia and hypertension and nausea and vomiting. [15]

Similarly, many studies have been done comparing various anxiety scales perioperatively and show variable results, which, in turn also depend upon the factors described above. [16]

In psychiatric practice, pregabalin has been used successfully in patients with generalized anxiety disorders (both acute treatment as well as relapse

prevention) as well as in perioperative setting in spine surgery and vitreoretinal surgery patients and have been found to be comparable to benzodiazepines like alprazolam and lorazepam in improving somatic anxiety symptoms.[17–20]

Pregabalin has shown promising potential in reducing preoperative anxiety, particularly with a dosage of 150 mg administered at least one hour before surgery, which significantly reduced anxiety compared to placebo. [21,22] Similarly, pregabalin has been shown to not only reduce preoperative anxiety but also contribute to better postoperative pain control and lower analgesic requirement. [23]

There are a few studies which show no change in anxiety levels or scores with administration of pregabalin. These studies, however, have not utilized proper anxiety assessment tool to support or refute their ideas.[24,25]. Moreover, these studies concentrated more on pain assessment and opioid consumption with pregabalin use.

Hence we can see that there are multiple studies which have used different doses of pregabalin and drawn multiple conclusions based on their analysis. The anxiety levels, as mentioned before, depends upon multiple factors which needs to be taken into account.

## Conclusion

According to the current study, pregabalin 150 mg is a safe and efficient way to help patients who are having elective surgery feel less anxious before their procedure. When compared to the control group, pregabalin premedication dramatically reduced Beck's anxiety levels. Even though only 6% of participants in our study had preoperative anxiety, there was a statistically significant difference in anxiolysis across the groups. It is advised that further extensive research be done to validate these results and clarify the function of pregabalin in the treatment of preoperative anxiety.

## CONFLICT OF INTEREST

None

## SOURCES OF FUNDING

None

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