



## IMPACT OF PREOPERATIVE EDUCATIONAL SESSIONS ON ANXIETY AND PAIN OUTCOMES IN CESAREAN SECTION PATIENTS

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### Abstract

**Background:** Anxiety and pain are significant concerns for women undergoing cesarean sections. This study aimed to evaluate the effect of the impact of educational interventions on reducing pre-operative anxiety and postoperative pain among cesarean section patients.

**Methods:** A randomized controlled trial was conducted in the OPD Department of Gynaecology & Obstetric, Varun Arjun Medical and Rohilkhand Hospital, involving 90 women scheduled for cesarean sections. Participants were divided into a Group-I (n=45), receiving standard care, and an Group-II (n=45), participating in four educational sessions about the cesarean process and operating room environment. Anxiety levels were assessed using the Hamilton Anxiety Rating Scale (HAM-A), and pain intensity was measured post-cesarean using Visual Analog Scale (VAS).

**Results:** Group-II subjects reported significantly reduced anxiety post-education ( $p < 0.01$ ), with HAM-A scores decreasing from  $17.7 \pm 3.2$  to  $13.6 \pm 2.6$ . Similarly, post-cesarean VAS pain scores were significantly lower in Group-II at  $4.8 \pm 1.0$  compared to Group-I at  $6.4 \pm 1.4$  ( $p < 0.001$ ).

**Conclusion:** The study indicates that educational interventions can effectively reduce anxiety and pain in women undergoing cesarean sections. This suggests incorporating educational programs into pre-operative care may enhance patient experience and recovery outcomes. However, limitations such as the small sample size and the study's single-centre nature necessitate further research for more generalized conclusions.

**Keywords:** Cesarean section, Anxiety, Pain Management, Educational Interventions, Pre-operative Care.

### Introduction

The experience of childbirth, mainly through cesarean section (C-section), is a significant event in the lives of many women. While this surgical procedure is commonplace, accounting for about 21.9% of all births in India in 2021 [1], it is not challenging. Chief among these are the anxiety experienced prior to the surgery and the pain encountered afterwards. These factors are crucial not only for the mother's physical health but also for her emotional well-being and the bonding process

with the newborn [2]. The present study focuses on these two critical aspects - anxiety and pain intensity - in the context of cesarean section.

Anxiety prior to surgery is a well-documented phenomenon affecting a significant proportion of patients. In the case of cesarean sections, this anxiety can stem from various sources, including fear of the unknown, concern for the baby's health, or apprehension about the surgery itself [3]. The intensity of pain experienced post-surgery is another significant concern. Effective management of this pain is essential for the mother's comfort, recovery, and ability to care for and bond with her newborn [4].

Recent studies have suggested that familiarity with surgical procedures and the environment in which they are conducted can play a role in mitigating pre-operative anxiety and improving postoperative outcomes [5]. This concept forms the basis of our study, which aims to investigate the impact of educational interventions on anxiety and pain levels among women undergoing cesarean sections. The intervention involves familiarizing prospective mothers with the cesarean process and the operating room environment.

In this context, a clinical trial was conducted at Varun Arjun Medical and Rohilkhand Hospital in 2023. The trial involved 90 women scheduled for cesarean sections, who were randomly assigned to either a control group or an intervention group. Group-I subjects received the hospital's standard care. Group-II subjects participated in four educational sessions to familiarize them with the cesarean process and operating room setting. The Hamilton Anxiety Rating Scale (HAM-A) was employed to assess anxiety levels before and after the intervention, while the Visual Analog Scale (VAS) was used to gauge pain intensity post-cesarean section [6][7].

The justification for this research lies in the substantial impact that cesarean sections can have on maternal health and the early stages of motherhood. Understanding and addressing the factors that contribute to anxiety and pain in this context are crucial for improving maternal care. Our study aims to provide insights into whether educational interventions can effectively reduce anxiety and pain, thereby contributing to better health outcomes for mothers and their newborns.

The purpose of this study is to assess the effectiveness of educational interventions in reducing anxiety and pain among women undergoing cesarean sections. This research aims to contribute to the broader efforts to improve maternal care and the cesarean section experience.

## **Materials and Methods**

This study was conducted at the OPD Department of Gynaecology & Obstetric, Varun Arjun Medical and Rohilkhand Hospital for six months, focusing on the impact of educational interventions on anxiety and pain in women undergoing cesarean sections. The study design was a randomized controlled trial (RCT) and was carried out from July 2023 to December 2023. The study adhered to the ethical standards of the institutional research committee and the 1964 Helsinki Declaration and its later amendments.

## **Subjects and Study Design**

A total of 90 women scheduled for cesarean sections were enrolled in the study. Eligibility criteria included age between 18 and 45 years, a singleton pregnancy, and a scheduled cesarean delivery. Exclusion criteria comprised pre-existing medical conditions potentially influencing anxiety or pain perception, such as psychiatric disorders or chronic pain conditions. The participants were randomly assigned to Group-I or Group-II using computer-generated random numbers.

## Intervention

The Group-I subjects received the standard care provided by the hospital, which included routine pre-operative and postoperative instructions without the additional educational component.

Group-II subjects participated in four educational sessions, each lasting about 30 minutes, conducted by a trained midwife. These sessions, held over two weeks, included information about the cesarean process, pain management strategies, and a tour of the operating room.

## Measurements

Anxiety was assessed using the Hamilton Anxiety Rating Scale (HAM-A) before and after the intervention. Pain intensity post-cesarean was measured using Visual Analog Scale (VAS). Data were collected by nurses blinded to the group allocation.

## Drugs and Dosage Regimen

No new drugs were introduced as part of this study. Standard postoperative pain management at the hospital included acetaminophen (paracetamol) 1000 mg (p.o.) and ibuprofen 400 mg (p.o.), administered every 6 hours as needed for pain.

## Statistical Methods

Data were analyzed using SPSS software, version 25. Continuous variables were expressed as mean  $\pm$  standard deviation (SD), and categorical variables as frequencies and percentages. The independent t-test was used to compare continuous variables between the two groups, The dependent t-test to compare continuous variables between the groups, and the chi-square test for categorical variables. A repeated-measures ANOVA was utilized to assess changes in anxiety and pain scores over time within and between groups. A p-value of less than 0.05 was considered statistically significant. The number of observations (n) for each analysis was noted.

## Ethical Considerations

The institutional ethics committee of Varun Arjun Medical and Rohilkhand Hospital approved the study. Written informed consent was obtained from all individual participants included in the study. All procedures were followed by the ethical standards of the institutional research committee, along with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Confidentiality of participant data was maintained throughout the study.

## Results

The study's results are presented below, focusing on the primary outcomes of anxiety and pain scores.

The baseline characteristics of the participants in both the Group-I and Group-II were comparable. The average age, gestational age, and other demographic parameters were similar across both groups, as shown in Table 1.

**Table 1: Baseline Characteristics of Participants**

Parameter	Group-I (n=45)	Group-II (n=45)	P-value
Age (years)	29.2 $\pm$ 4.15	30.0 $\pm$ 3.89	0.336
Gestational age (weeks)	38.5 $\pm$ 1.10	38.6 $\pm$ 1.42	0.793
Body Mass Index (kg/m <sup>2</sup> )	25.37 $\pm$ 4.02	25.74 $\pm$ 3.98	0.662
Parity	1.05 $\pm$ 0.58	1.01 $\pm$ 0.59	0.359
Previous Cesarean section (%)	19 (42.22%)	21 (46.66%)	0.180

Values are expressed as mean  $\pm$  SD or number (percentage); P-value <0.05 is considered significant.

**Table 2: Anxiety Scores Before and After Intervention**

Group	Pre-Cesarian HAM-A Score	Post-Cesarian HAM-A Score	P-value
Group-I	18.2 ± 3.5	18.7 ± 3.1	0.543
Group-II	17.7 ± 3.2	13.6 ± 2.6	0.0001

The HAM-A scores for anxiety before and after the intervention are shown in Table 2. A statistically significant reduction in anxiety scores in Group-II participated post-education compared to the Group-I.

Values are expressed as mean ± SD; P-value <0.05 is considered significant.

**Table 3: Pain Scores & Maternal Satisfaction Score Post-Cesarean section**

Parameter	Group-I	Group-II	P-value
Post-Cesarean VAS Score	6.4 ± 1.4	4.8 ± 1.0	<b>0.0001</b>
Maternal Satisfaction Score	70 ± 15	85 ± 10	<b>0.0001</b>

The post-cesarean VAS pain scores are summarized in Table 3. The Group-II participated reported significantly lower pain scores than the Group-I.

Values are expressed as mean ± SD; P-value <0.05 is considered significant.

The Group-II participants demonstrated significantly lower anxiety and pain scores post-cesarean section compared to the Group-I. These results suggest that the educational intervention had a positive impact on reducing anxiety and pain among women undergoing cesarean sections.

## Discussion

The findings of this study highlight the beneficial impact of educational interventions on reducing anxiety and pain in women undergoing cesarean sections. These results are consistent with previous research indicating that patient education can effectively mitigate pre-operative anxiety and enhance postoperative recovery in various surgical contexts [8][9].

In our study, Group-II subjects significantly reduced anxiety levels post-intervention, as measured by the Hamilton Anxiety Rating Scale (HAM-A). This is in line with the findings of C. Ramesh, et al., who reported that pre-operative education and familiarization with the surgical process can significantly reduce anxiety in surgical patients [10]. The anxiety reduction is likely due to the demystification of the surgical process and the empowerment gained through knowledge, which aligns with the conclusions drawn by Kiyohara LY et al. in their study on pre-operative anxiety [11]. Similarly, the Group-II participants experienced less pain post-cesarean section, as indicated by lower scores on Visual Analog Scale (VAS). This observation corroborates the research by Burgess LC, which suggested that informed patients are more likely to have adequate pain management strategies and, consequently, experience less postoperative pain [12]. The educational sessions possibly contributed to better pain management by informing patients about pain expectations and management.

In addition to the observed reductions in anxiety and pain levels, the significantly higher Maternal Satisfaction Scores in Group-II (85 ± 10) compared to Group-I (70 ± 15) (P<0.001) underscore the broader benefits of preoperative educational sessions. These findings suggest that informed patients not only experience less pain and anxiety but also report higher satisfaction with their care, aligning with studies indicating that patient education enhances overall satisfaction with the surgical experience [13].

However, there are limitations to this study. First, the sample size was relatively small, and the study was conducted at a single institution, which may limit the generalizability of the findings. Additionally, the study did not account for individual differences in pain perception and anxiety levels, which could have influenced the outcomes. Future research should consider a larger, more diverse sample and possibly a multicenter approach to enhance the generalizability of the findings. Another limitation is the reliance on self-reported measures for anxiety and pain, which are subjective and might be influenced by individual patient characteristics or situational factors.

Objective measures, such as physiological indicators of stress and pain, could be incorporated in future studies to provide a more comprehensive assessment.

### **Conclusion**

The study provides evidence that educational interventions can significantly reduce anxiety and pain in women undergoing Cesarean sections. These findings suggest incorporating such educational programs into pre-operative care for Cesarean section patients could benefit clinical practice. The study's limitations, particularly its sample size and scope, suggest that further research is needed to fully understand the implications of these findings and explore the potential for broader application.

### **Conflict of Interest**

The authors declare that they have no conflict of interest.

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