

## Efficacy of Preoperative Audiovisual Counselling on Perioperative Anxiety, Satisfaction and Stability on Patients Undergoing LSCS with AV Counselling versus Patient Undergoing LSCS Without AV Counselling

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### Abstract

**Background:** The study objective involves the evaluation of the preoperative audiovisual information on the operation theatre environment as a tool to relieve anxiety in patient posted for LSCS under spinal anaesthesia. perioperative anxiety is detrimental to both intraoperative hemodynamic instability and postoperative recovery

**Methods:** In this randomized control trial 100 parturient in the age group 18-40 years, American Society of Anaesthesiology (ASA) II, and admitted for Caesarean section under spinal anaesthesia. Patients were randomized into two groups: those who were not exposed to an audiovisual tour (NA) (n=50) and those exposed to audiovisual tour (A) (n=50). The measurements were based on demographic details; visual analogue score (VAS); and Amsterdam Preoperative Anxiety and Information Scale (APAIS) for anxiety, hemodynamic parameters, and patient satisfaction score (PSS) on five-point Likert scale.

**Results:** The main results depicted significant decrease in VAS score and APAIS for anxiety, hemodynamic parameters, and satisfaction level ( $p < 0.05$ ) during intra-operative and post-operative periods in cases of group-A (with audiovisual counselling) than group NA (without audiovisual counselling).

**Conclusion:** A preoperative audiovisual virtual tour of the operation theatre effectively reduces perioperative anxiety and stabilizes Heart rate; it also improves the satisfaction of patients undergoing elective surgery under spinal anaesthesia.

**Keywords:** Surgery, Fear, Unfamiliar Environment, Audiovisual, Spinal Anaesthesia, Audiovisual Virtual Tour, Anxiety

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### Introduction

Approximately 25.0% of parturients reported experiencing anxiety during pregnancy, which is associated with increased risk of maternal complications e.g., pre-eclampsia and emergency cesarean delivery.[1] Additionally, parturients with pre-existing anxiety had significantly higher pain scores following cesarean delivery, which may in turn increase their risk of developing persistent pain and postpartum depression. [2] The unfamiliar operating theatre makes surgery a potentially unpleasant experience causing high levels of anxiety in patients.[3] The prevalence of anxiety preoperatively in patients ranges from 11.0% to 80.0%. [4] Increased anxiety before surgery is associated with pathophysiological responses such

as hypertension, dysrhythmias, increased requirements for post-operative analgesia and may cause patients to refuse planned surgery. By providing information about anaesthesia patients feel more reassured. [5]

Anxiety is frequent in preoperative patients, which can be multifactorial in origin, including ignorance and misinformation about procedures, fear of surgery and anaesthesia, complications including nausea or inadequate analgesia, unfamiliar environment, separation from close ones, poor rapport with caregivers, or previous unpleasant experience. [6,7] Preoperative anxiety may cause an aggravated stress response that leads to increased

catecholamine release, higher pulse rate, blood pressure, and respiratory rate: more autonomic fluctuations burdening patients cardiorespiratory and overall physiology. [8] An anxious patient may be uncooperative and affect the success of blocks while increasing the demand for perioperative anaesthetics and analgesics, making it challenging for the caregiver to manage the patient to the best outcome. [9] Higher anxiety can make the perioperative course unpleasant and traumatic for awake patients undergoing surgery in regional anaesthesia, hampering their overall satisfaction. [10]

The two most common stressors that cause preoperative anxiety are (1) lack of knowledge and (2) fear of the unknown. Education is the most effective method to reduce anxiety. [11] Entering an unfamiliar and closed space with a lot of machines, monitors, and personnel usually makes an individual anxious. These factors play an important and additive role in increasing the patients' anxiety other than the procedure itself. With technological advancements, creative methods have been developed to decrease anxiety in surgical patients. For instance, audiovisual multimedia technology is an effective tool to provide patients with some idea about the operation theater environment. It is an easy, time-saving method and has good retention capacity. Education via video gets easily incorporated into the patients' minds and helps alleviate their fear of the unknown. The preparation and information strategies for the patient in the perioperative period improve the outcome of surgical interventions, shorten hospital stays, and increase patient satisfaction levels. [12]

One of the major goals in the practice of administration of anesthesia is reducing the level of the patient's anxiety. A preoperative assessment provides this unique opportunity to reduce the patient's anxiety by building a fine relationship and by providing information regarding the environment of the operation theater, the anesthesia administration, and the surgery procedure. This present study was planned to compare the satisfaction of the patient as it plays the crucial component in determining the quality of health care in anaesthesia service and intra op stability to avoid unnecessary use of extra drugs and also to compare efficacy pre-operative counselling on perioperative anxiety in patients undergoing regional anaesthesia [13]

### Material and Methods

In this randomized control trial 100 parturient in the age group 18-40 years, American Society of Anaesthesiology (ASA) II, and admitted for Caesarean section under spinal anaesthesia of American Society of Anaesthesiologists (ASA) class I-II. Patients who had a prior visit to the operation theater, those

who are visual and hearing impaired, those with a history of psychiatric/neurological disorder, those with a history of head injury, those with a history of drug abuse, those with a history of alcohol abuse or any psychological trauma in past six months were excluded from the study. The patients who were scheduled for elective surgery under spinal anaesthesia were randomly divided into two groups: Group-I was composed of patients who were not exposed to the audiovisual tour (NA) (n=50). Group-II was composed of patients exposed to the audiovisual tour (A) (n=50). Demographic details of the patient (age and sex), blood pressure (BP), heart rate (HR), and respiratory rate (RR) were noted preoperatively. All patients were asked to fill out the six-item questionnaire from APAIS (Amsterdam preoperative anxiety and information score) for the assessment of their baseline anxiety:

1. I am worried about the anesthesia,
2. The anesthesia is on my mind continuously,
3. I would like to know as much as possible about the anesthesia,
4. I am worried about the procedure,
5. The procedure is on my mind continuously,
6. I would like to know as much as possible about the procedure.<sup>1</sup>

The measurement of agreement with these statements was graded on a five-point Likert scale from 1 ("Not at all") to 5 ("Extremely"). A score of >11 identify anxious patients in clinical practice. The group allocations were sealed in serially numbered opaque envelopes prepared by the research coordinator who was not involved in the study.

Group-NA were patients who underwent routine bedside pre-anesthetic consultation the day before the surgery. On the other hand, Group-A included the patients who, along with the routine bedside pre-anesthetic consultation, were shown a five minutes video clip containing a virtual tour of the preoperative room, the operation theater, and the recovery room using a tablet with a 10-inch screen size during the pre-anesthetic checkup visit on the day before the surgery. A video clip was accompanied by auditory information related to the operation theater environment like monitors, lights, tables, and staff. A prerecorded video clip was validated and standardized by five anesthesiologists with more than five years of experience in anesthesia administration. On the day of the surgery, APAIS for anxiety was noted before the patients were given anesthesia. The HR, BP, and RR were noted at the start of the anesthesia procedure and repeated every five minutes for 20 minutes and then every 10 minutes until the end of the intraoperative surgery for both groups. Postoperatively, 10 mins after shifting from the operation theatre (OT) for both groups, the patients were asked to give an estimate of their anxiety based on the visual analogue score (VAS) and to rate their satisfaction on a scale of 1-5 Likert scale.

**Statistical Analysis**

Microsoft Excel was used in creating the database and producing graphs, while the data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 23 for Windows. Mean and standard deviation ( $\pm$ SD) were used to describe quantitative data meeting normal distribution. Continuous two independent groups were compared by parametric independent Student's t test. Discrete (categorical) groups were compared by chi-square ( $\chi^2$ ) test. p

values less than 0.05 ( $p < 0.05$ ) was considered statistically significant.

**Results**

A statistically non-significant difference was observed between Group NA and Group A in terms of mean age, mean heart rate, mean respiratory rate, mean arterial pressure, mean VAS and mean APAIS scores at the time of admission ( $p > 0.05$ ).

**Table 1: Baseline characteristics of the studied cases (At admission)**

| Variables         | Group NA         | Group A          | p-value |
|-------------------|------------------|------------------|---------|
| Mean Age in years | 25.36 $\pm$ 1.4  | 26.17 $\pm$ 1.7  | 0.874   |
| Mean HR           | 74.7 $\pm$ 9.3   | 73.6 $\pm$ 8.9   | 0.547   |
| Mean RR           | 13.1 $\pm$ 0.91  | 12.89 $\pm$ 0.87 | 0.241   |
| Mean MAP          | 93.43 $\pm$ 9.23 | 92.79 $\pm$ 8.44 | 0.718   |
| Mean VAS          | 6.6 $\pm$ 0.81   | 6.3 $\pm$ 0.84   | 0.072   |
| APAIS             | 12.1 $\pm$ 1.6   | 11.9 $\pm$ 1.7   | 0.648   |

A statistically significant difference was observed between Group NA and Group A in various preoperative variables, including higher preoperative anxiety (APAIS), higher preoperative pain scores (VAS), higher preoperative heart rates (HR), higher preoperative respiratory rates (RR) and higher preoperative mean arterial pressures (MAP) in Group NA as compared to Group A ( $p < 0.05$ ).

**Table 2: Preoperative assessment (recorded in the preoperative room)**

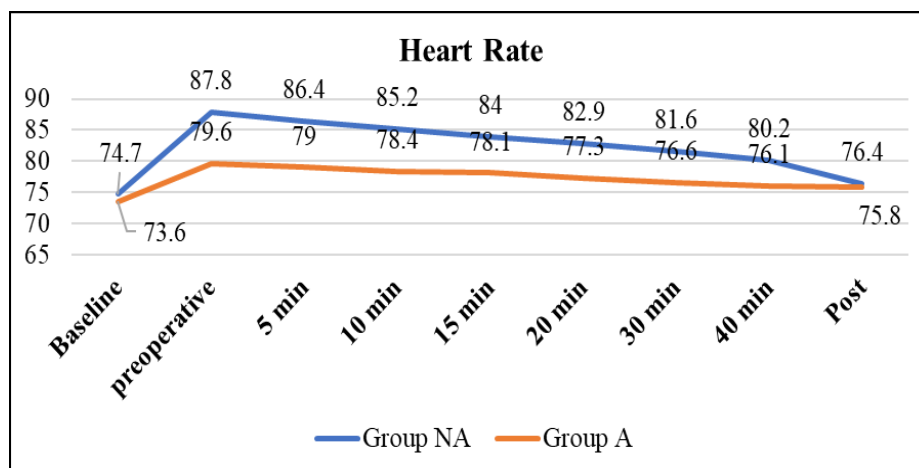
| Variables   | Group NA        | Group A         | p-value |
|-------------|-----------------|-----------------|---------|
| Preop APAIS | 9.58 $\pm$ 0.76 | 7.64 $\pm$ 0.71 | <0.001  |
| Preop VAS   | 6.1 $\pm$ 0.74  | 5.3 $\pm$ 0.67  | <0.001  |
| preop HR    | 87.8 $\pm$ 11.3 | 79.6 $\pm$ 9.4  | <0.001  |
| Preop RR    | 12.4 $\pm$ 0.88 | 12.0 $\pm$ 0.79 | 0.019   |
| Preop MAP   | 99.8 $\pm$ 9.87 | 88.3 $\pm$ 8.79 | <0.001  |

A statistically significant difference was found between Group NA and Group A in various postoperative variables. Group A has lower postoperative anxiety (APAIS) and lower postoperative pain scores (VAS), indicating better psychological and pain outcomes after surgery compared to Group NA. However, Group A also exhibits higher perceived stress levels (PSS) after the surgery compared to Group NA.

**Table 3: Postoperative assessment**

| Variables    | Group NA        | Group A         | p-value |
|--------------|-----------------|-----------------|---------|
| Postop APAIS | 6.18 $\pm$ 0.68 | 4.31 $\pm$ 0.45 | <0.001  |
| Postop VAS   | 3.53 $\pm$ 0.93 | 1.31 $\pm$ 0.81 | <0.001  |
| PSS          | 2.32 $\pm$ 0.69 | 3.97 $\pm$ 0.57 | <0.001  |

Group NA generally had higher heart rates than Group A at most time intervals.



**Figure 1: Heart Rate at different time intervals**

Group NA had a higher MAP than Group A before the procedure, but during and after the procedure, the MAP values of Group A were slightly lower than those of Group NA.

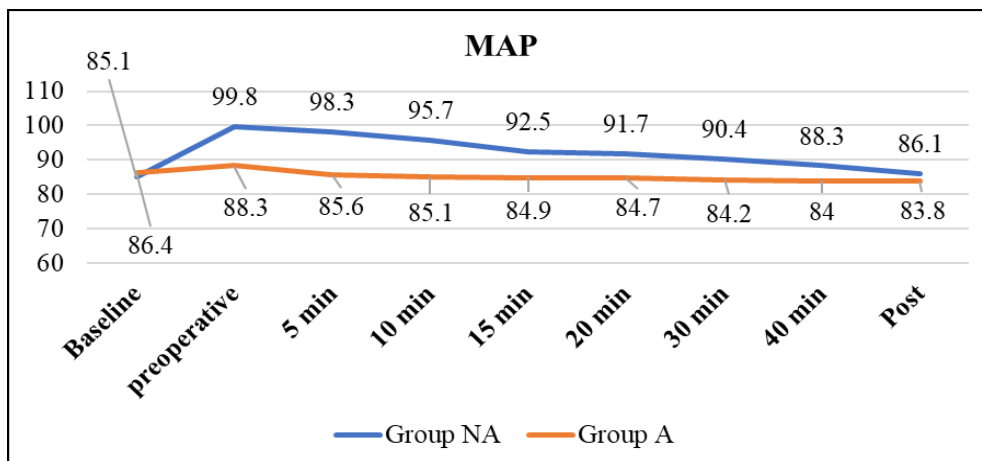


Figure 2: Mean Arterial Pressure at different time interval

Initially, Group A had a slightly lower respiratory rate, and both groups exhibited similar respiratory rates during and after the procedure.

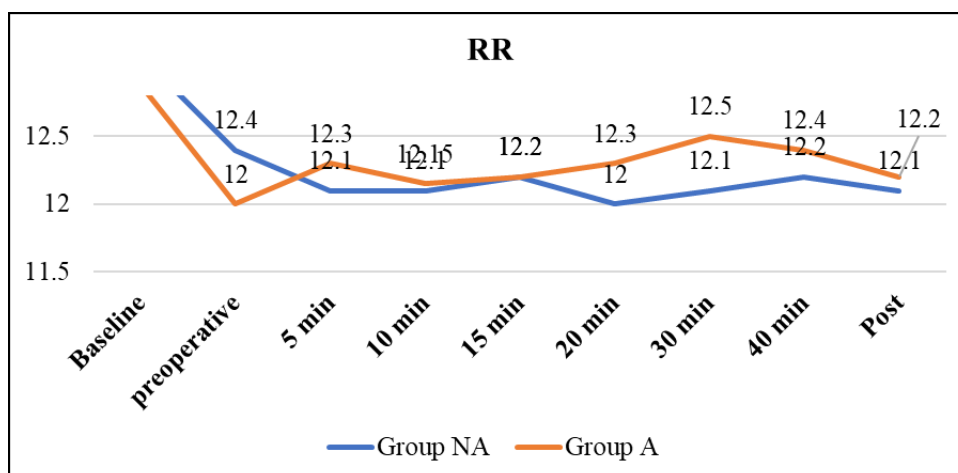


Figure 3: Mean respiratory rate at different time interval

Initially, both groups had similar levels of preoperative anxiety, with Group NA having slightly higher scores. However, Group A experienced a significant reduction in anxiety levels from the preoperative to the postoperative period, while Group NA also showed a reduction but to a lesser extent.

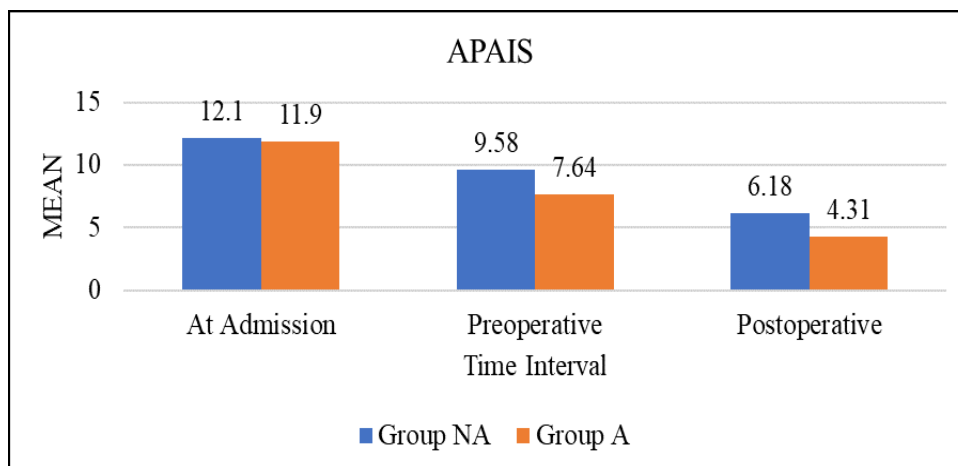


Figure 4: Mean APAIS at different time interval

## Discussion

Perioperative anxiety is very common in surgical patients posted for surgery, particularly those under regional anaesthesia. Perioperative anxiety adds to both the patient's physical, and mental stress, causing delayed surgical healing, physiological challenges, and negative experience of anaesthesia. Unfamiliarity with the operation theatre environment and lack of knowledge seem to be significant contributing factors to patients' anxiety. Taking advantage of advancements in modern technology, audio-visual multimedia with a pre-recorded video of operation theatre could be shown to the patients to make them conscious of their surroundings, easing their anxiety. It's an easy and non-invasive way to calm down patients and tone down their level of anxiety.

The present study assessed the efficacy of showing a pre-recorded audiovisual clip of the operation theatre in reducing perioperative anxiety. In this study, patients in both groups were comparable in age, gender, baseline anxiety score, heart rate, mean arterial pressure, and respiratory rate. A significant decrease in VAS, APAIS for anxiety, heart rate, and PSS was observed during intraoperative and postoperative periods in the audiovisual group in comparison to the control group. A study conducted by Helms LJ [14] evaluated the efficacy of video education in improving preoperative anxiety in a bariatric surgical patient. The results were coherent with our study with a significant reduction in anxiety levels using VAS. Kumar V et al [15] in their study on the Efficacy of a Pre-operative Virtual Operation Theatre Tour on Anxiety and Patient Satisfaction in Adults Undergoing Elective Surgery reported similar findings as in the present study. Sriramka B et al [16], compared three groups of patients undergoing laparoscopic surgery who also received i.v. midazolam (group M), hand holding and conversation (group HC), and i.v. midazolam, hand-holding and conversation (group HCM). The lowest Amsterdam Preoperative Anxiety and Information Scale (APAIS) score was in HCM, followed by group HC, and highest in group M. In their study population, an additional drug was used and the anxiety score used was different from the present study. APAIS scale can only be used in the preoperative period.

The study by Yesilyurt S et al [17] explored the effects of preoperative video information on anxiety and satisfaction in patients who are undergoing abdominal surgery. After the patients in the experiment group watched video information, anxiety specific to surgery questionnaire mean scores of the experimental group were lower than before information ( $p < 0.001$ ). Satisfaction with nursing care scale mean scores were also higher than those of the control group ( $p < 0.001$ ). Our results were coherent with the study conducted by Jjala HA

et al [18], where patients in the control group experienced an increase in their state of anxiety immediately before surgery ( $p < 0.001$ ); the patients in the film group, on the other hand, were less anxious before their operation in comparison to those in the control group ( $p = 0.04$ ). After the operation, there was a decrease in their state of anxiety from baseline in both groups, but patients in the film group were less anxious than those in the control group ( $p = 0.005$ ). A study conducted by Dias R et al [19] showed a significant increase in state anxiety scores before the administration of subarachnoid block in the nonvideo group ( $p < 0.001$ ). Patients in the video group, however, had significantly lower HR and MAP preoperatively ( $p < 0.001$ ). Lin SY et al [20] observed similar results of the lower state of anxiety scores in patients after viewing an anaesthetic patient information video, and the overall satisfaction was significantly higher in the experimental group than in the control group ( $p < 0.00$ ). Moreover, Rajput SK et al [21] conducted a study to assess the efficacy of preoperative multimedia-based video information on perioperative anxiety and hemodynamic stability in patients who are undergoing surgery with spinal anesthesia. Patients in the video group showed better/lower anxiety levels than the nonvideo group. Similarly, the hemodynamic parameters were better controlled and showed lesser deviation from the baseline values in the test group in comparison to the control group and showed significant statistical difference ( $p < 0.001$ ) just before the surgery.

Doering S et al [22] showed a videotape of a patient undergoing a total hip replacement surgery that covered the time from hospital admission to discharge, strictly keeping the patient's perspective in relation to the enrolled patients. In comparison with the control group, the preparation group showed significantly less anxiety in the morning before their surgery and in the mornings of the first two postoperative days, and significantly fewer of them had an intraoperative systolic blood pressure increase of more than 15.0%. The prepared patients also needed less analgesic medication after surgery and had significantly lower cortisol excretion during the preoperative night and the first two postoperative nights.

Simsek BK et al [23] who studied 156 patients to determine the effect of calming conversation on anxiety levels in Caesarean section. They compared groups of 96 patients distracted with calming conversation during surgery and patients whose questions were answered, but no calming conversation was made. Patients completed State-Trait Anxiety Inventory (STAI). Midazolam administration was higher in the control group. Thus, concluding calming conversation helps in reducing anxiety levels.

Thus, as observed in our above-mentioned studies, it is evident that patients experience the highest level of anxiety at the induction of anaesthetics. The impact of the operating theatre environments on patients' anxiety is in less degree influenced by the sight and hearing of the technical equipment and the surroundings. Being continuously informed and being given the opportunity to ask questions reduce patients' anxiety. [24]

#### Limitations of the study

Relatively smaller sample size

Being single-centric study

#### Recommendations of the study

Assessment of more elaborate subjective anxiety scores intraoperatively and biochemical markers like cortisol levels, norepinephrine, epinephrine, etc., can be used to correlate variations in anxiety levels better, which can be taken care of in future studies.

#### Conclusion

A preoperative audiovisual virtual tour of the operation theatre effectively reduces perioperative anxiety and stabilizes Heart rate; it also improves the satisfaction of patients undergoing elective surgery under spinal anaesthesia. Based on the good patient satisfaction and positive feedback received, the use of audiovisual counselling in the obstetric setting is recommended.

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