

Effectiveness of Preoperative Audiovisual Information in Reducing Patient Anxiety about Spinal Anaesthesia: A Randomized Controlled Study

Bharat Kumar¹, Basavaraj Padara², Ajay BC³

¹Consultant Anaesthesiologist, Shimogga. ²Assistant Professor, ³Senior Resident, Dept. of Anaesthesia, SN Medical College, Bagalkot, Karnataka 587102, India.

Abstract

Aims: A high incidence of anxiety about anesthetic procedure is seen in patients undergoing surgical procedures, which can be related to their unawareness about anaesthesia and anaesthetist's role in perioperative care. We aimed at assessing the effectiveness of a simple informative audiovisual clip as preoperative educational tool in reducing the anxiety in patients undergoing surgical procedures under spinal anaesthesia. **Methods:** A prospective randomized study involving 200 patients undergoing surgery under spinal anaesthesia was conducted. 2 groups with 100 patients in each group were formed and named as group AV (those who were shown audiovisual clip) and group NV (patients in this group were not shown the audiovisual clip). Anxiety scores were assessed using the Spielberger state - trait anxiety inventory at both preoperative visit and just before the surgery. Hemodynamic parameters like Heart rate and mean arterial pressures were recorded. Appropriate statistical tests were applied for analysis of the obtained data. **Results:** Baseline anxiety scores and hemodynamic parameters were comparable in both the groups. Compared to AV group the patients in NV group showed statistically significant rise in anxiety scores when measured before the spinal anaesthesia ($p < 0.001$). Hemodynamic parameters were stable in AV group when compared to NV group ($p < 0.001$). Patients in AV group showed statistically significant decrease in anxiety scores from baseline values, when measured just before the spinal anaesthesia. **Conclusion:** Preoperative education in the form of informative audiovisual clip is effective in reducing patient anxiety about spinal anaesthesia.

Keywords: Anxiety; Audiovisual clip; Spinal anaesthesia; Spielberger state - trait anxiety inventory.

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Introduction

Significant number of patients (incidence of 60%-80% reported by many observers [1,2]) undergoing surgical procedures experience anxiety. Anxiety

by increasing the levels of corticosteroids and stimulating sympathetic nervous system can lead to many undesirable effects like intraoperative hemodynamic disturbances, increased requirements of analgesics, prolongation of

Corresponding Author: Basavaraj Padara, Assistant Professor, Dept. of Anaesthesia, SN Medical College, Bagalkot, Karnataka 587102, India.

E-mail: drbasupadara@gmail.com

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hospital stay and overall dissatisfaction about their perioperative course [3].

Because of short period of contact with the patients not much of information can be given to them and many a times patients will not understand whatever is explained to them due to many constraints.

Many methods of communication have been used to convey the relevant information to the patients about the perioperative care. one page information handout by Fitzgerald and elder 4, explaining about anaesthesia and common worries about the surgery and anaesthesia was a successful trial with significant reduction (40%) of preoperative anxiety. Others have studied the beneficial effects of video based information on reducing the anxiety scores [5,6]. We assumed that a audiovisual clip depicting the usual course of perioperative care from the time of patient's admission till discharge, including the preoperative visit, preoperative preparation, spinal anaesthesia procedure, intraoperative and postoperative care will be better understood and remembered by the patients.

We intended to develop a simple informative audiovisual clip of about 3 minutes, in locally spoken Kannada language and study the impact of the same in reducing the anxiety scores and hemodynamic stability. A well known psychological tool Spielberger State Trait Anxiety Inventory (STAI) was used to assess the baseline anxiety scores and scores before giving spinal anaesthesia.

Methods

After obtaining institutional ethical committee approval, we conducted this prospective randomized controlled study involving 200 patients divided into two groups of 100 each, who were posted for elective surgery under spinal anaesthesia. ASA I and II class Patients aged 18-60 years of either sex and those who could read Kannada or English language and able to complete the questionnaires were included in the study. Patients who were not willing to participate in the study, patients with significant Co-morbidity and those who underwent surgery under spinal anaesthesia were excluded from the study. Selected patients were enrolled for the study during pre anaesthetic visit a day before the surgery and a written informed consent for participation was taken. By using computerized table they were divided into two groups, group NV (Non Video) and group AV (Audio Visual) of 100 each. Group allocation was kept confidential

by maintaining a sealed opaque covers and both patients and investigator were blinded till baseline anxiety scores were recorded. During preanaesthetic check up baseline vitals like Heart rate (HR) and mean arterial pressures (MAP) were recorded. Patients were given 2 questionnaires (STAI -T and STAI -S) containing 20 questions each in local Kannada language and they were explained about filling it. principal investigator assessed the baseline anxiety scores from the completed questionnaires. Then they were taken to a room where their group identity was revealed by another investigator after opening the allotment cover. Group NV patients were explained about the perioperative events, spinal anaesthesia procedure, it's effects, side effects and possible complications verbally and were asked to clarify the doubts if any.

Patients of AV group were taken to audiovisual room and were shown a audiovisual clip in Kannada language explaining the perioperative events, spinal anaesthesia procedure, it's effects, side effects and possible complications and the events were elaborated verbally also. Again patients were asked to clarify doubts if any and patients of both groups were ensured that qualified anaesthesiologist will take care of them during intraoperative and postoperative period.

On the day of surgery, STAI-S was repeated before taking the patients inside the operation theatre. Main investigator conducted this assessment in preoperative waiting room, patients of both groups were given STAI -S questionnaire and were asked to fill the form after reading questions carefully. After completion of questionnaire, NBM status of patients confirmed and patients were taken inside the operation theatre.

Standard monitoring devices like electrocardiography, pulse oxymetry, and NIBP were applied and pre SAB (Sub Arachnid Block) vitals like Heart rate and mean arterial pressures were recorded. Intravenous fluids started after securing intravenous cannula of appropriate size. Patients were seated in sitting position, parts painted, draped and spinal anaesthesia was given at appropriate level using appropriate sized spinal needles and appropriate dose of 0.5% of bupivacaine. This spinal anaesthesia procedure was conducted by another anaesthetist not knowing the patient's group identity. Intraoperative monitoring done and after completion of surgery, patients were shifted to appropriate postoperative area for monitoring.

Specially developed audiovisual clip shown to patients of AV group consisted of all important

perioperative events in easily understandable manner. It begins with patient's admission and consists of preoperative visit to Anaesthetist, recording of vitals, entry into the operation theatre, application of monitors, securing intravenous lines, painting of back, draping under aseptic precautions, palpation of landmark, administration of local anaesthesia, lumbar puncture and injection of spinal drug. After assessing the adequate sensory and motor block positioning for surgery done. It also included the model postoperative care and discharge of patients to home. All these events were elaborated in local Kannada language.

For sample size estimation we referred to a similar study by JIala *et al.* [3] who reported a prevalence of anxiety by STAI -S in low anxiety group (STAI <37) to be 58% among preoperative video group and 38% in patients of non video group. With type I error at 5% level of significance and 80% power of study, sample size of 98 in each group was obtained and to round off it was made to 100 patients in each group. Data was expressed in standard units like Mean \pm standard deviation (SD) and percentage. Quantitative data was compared using student's t -test, when values were normally distributed. Mann-Whitney U test was used when values were nonnormally distributed. For categorical values, Chi-Square test was used. p value less than 0.05 was considered statistically significant.

Results

All the 200 participants enrolled for the study participated in the study completely and submitted

the questionnaires back. Both the groups were comparable with respect to age, sex, ASA physical status classification and technical procedures undertaken inside the operation theatre (Table 1).

Basal anxiety scores of both the groups measured using A -Trait and A- State at enrollment for the study during pre anaesthetic visit were comparable.

Compared to group NV, patients of AV group showed statistically significant reduction in the anxiety scores at Pre -SAB assessment (Table 1 and Fig. 1).

Our secondary aim of the study was to assess the variation in hemodynamic parameters and baseline heart rate (HR) and mean arterial pressures (MAP) were comparable in both the groups. Patients of group AV showed 3.6% increase in mean heart rate from basal levels to pre spinal anaesthesia level. Mean heart rate was 85.20 ± 9.12 at preanaesthetic check up and raised to 88.12 ± 6.1 when measured just before the spinal anaesthesia procedure. However group NV patients showed statistically significant ($p < 0.05$) increase in mean heart rate from 86.80 ± 8.20 at pre anaesthetic visit to 104.82 ± 10.20 when measured during pre spinal anaesthesia procedure (Table 1 and Fig. 3). Increase in mean arterial pressures (MAP) from basal levels to pre spinal anaesthesia level was also statistically significant ($p < 0.05$) in NV group compared to AV group. Baseline mean arterial pressure was 94.16 ± 6.21 in NV group which increased to 116.71 ± 8.92 at pre spinal anaesthesia level, amounting to an increase by 22% from baseline values. Change in the mean arterial pressure in AV group was not statistically significant, which increased from

Table 1:

Parameter	Group NV	Group AV
Age (Years mean \pm SD)	36.17 \pm 10.92	37.08 \pm 10.54
Gender (Male:Female)	54:46	49:51
ASA status (1/2)	70/30	68/32
STAI-T (mean \pm SD)	54.12 \pm 10.21	53.16 \pm 10.56
Baseline STAI-S (mean \pm SD)	55.30 \pm 9.26	56.24 \pm 9.27
STAI-S pre SAB (mean \pm SD)	61.82 \pm 10.12	52.12 \pm 9.40
Baseline HR (mean \pm SD)	86.80 \pm 8.20	85.20 \pm 9.12
HR pre SAB (mean \pm SD)	104.82 \pm 10.20	88.12 \pm 6.4
Baseline MAP (mean \pm SD)	94.16 \pm 6.21	101.76 \pm 8.21
MAP pre SAB (mean \pm SD)	116.71 \pm 8.92	102.17 \pm 9.24

Table 2:

Degree of Anxiety	Baseline		Pre SAB %	
	Group NV	Group AV	Group NV	Group AV
Low anxiety (STAI-S: 20-37)	5	13	2	10
Moderate anxiety (STAI-S: 38-44)	12	16	5	28
High anxiety (STAI-S : 45-80)	83	81	93	62

101.76 ± 8.21 at baseline level to 102.17 ± 9.24 at pre spinal anaesthesia level, a mere increase of only 2% (Table 1, Fig. 2) suggesting a stable hemodynamic status.

STAI scores are usually divided into three categories (Table 1) as high anxiety (45-80), moderate anxiety (38-44) and no or low anxiety (20-37) based on the computed scores from the questionnaire containing 20 questions with answers expressed in 1-4 points for each question. When the prevalence of different degrees of anxiety was looked into, baseline anxiety scores in each of the no or low, moderate and high anxiety scores, both the groups were comparable with no statistically significant difference. High anxiety was prevalent in 83% of

the patients in NV group compared to 81% among AV group. When the same high anxiety prevalence was calculated at pre spinal anaesthesia procedure level it was 93% in NV group compared to 62% in AV group, with a significant statistical difference (Table 2).

Females showed high prevalence (Table 3) of anxiety both at basal levels and pre spinal anaesthesia procedure level compared to males (Table 3). STAI-T and STAI-S were significantly less in males compared to females (p < 0.05). At pre spinal anaesthesia level also females had statistically significant increase in STAI-S scores compared to males (p < 0.05).

Table 3:

Anxiety score	Male	Female	p value
STAI-T	42.26 ± 9.02	55.18 ± 9.08	<0.001
STAI-S			
Baseline	43.86 ± 8.0	59.26 ± 7.6	<0.001
Pre- SAB	45.82 ± 7.0	61.34 ± 8.26	<0.001

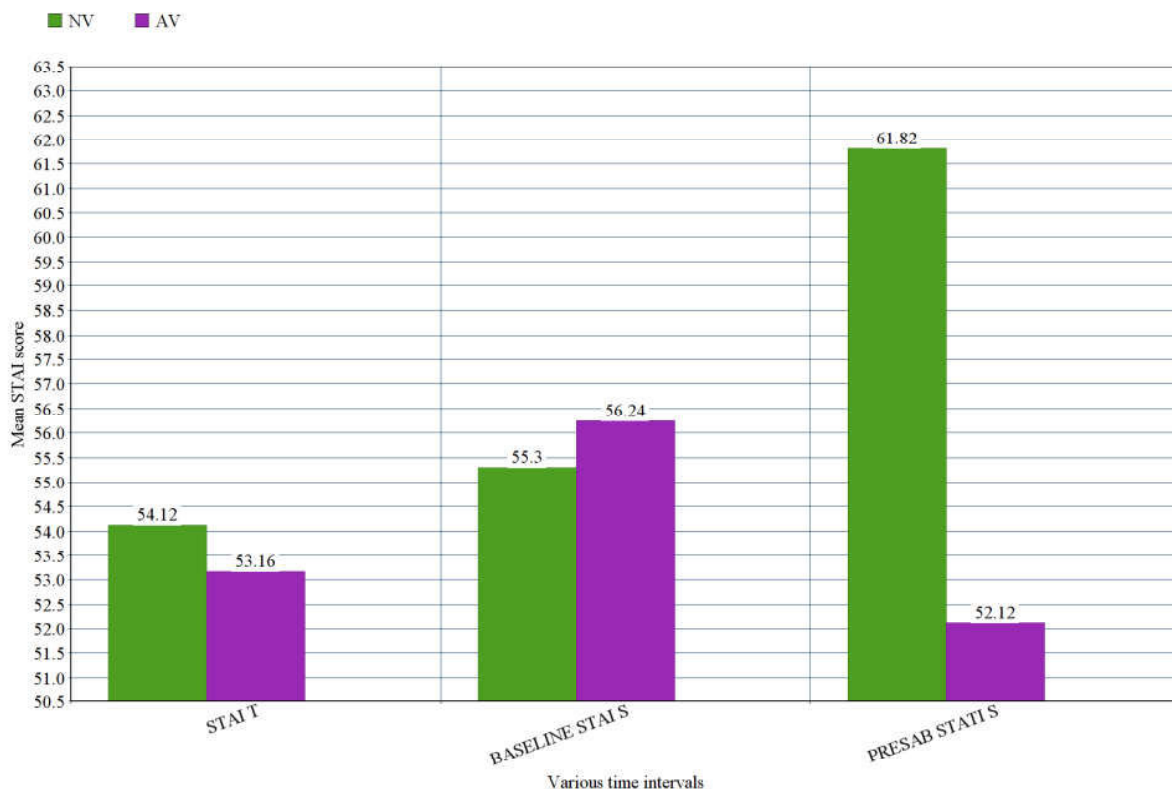


Fig. 1:

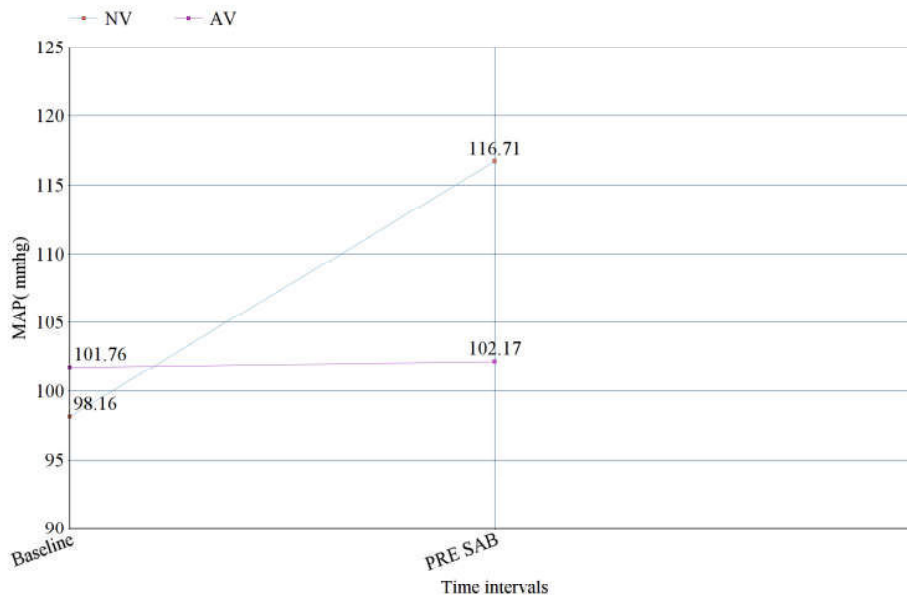


Fig. 2:

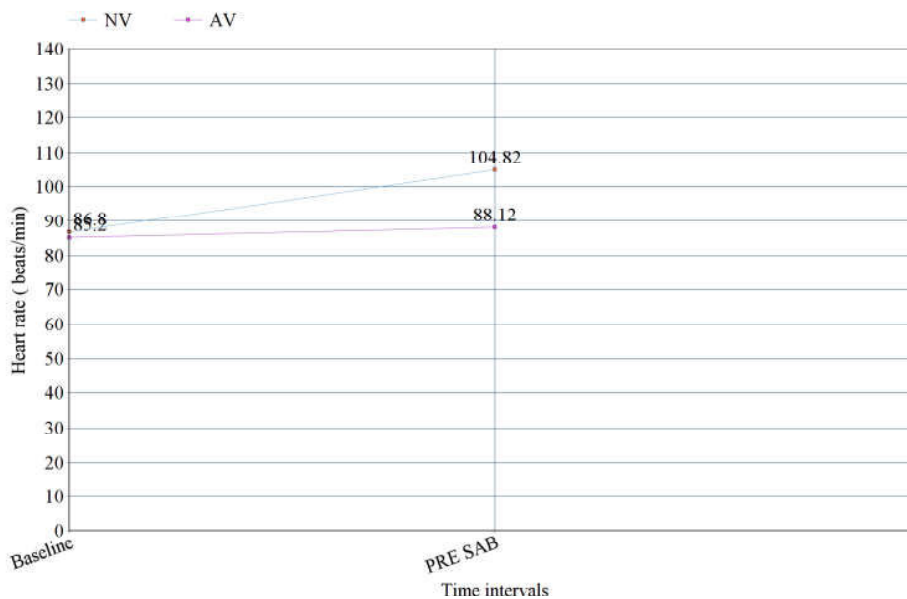


Fig. 3:

Discussion

Our study demonstrated that preoperative educational tool like audiovisual clip is effective in reducing patient anxiety. Reduction in the anxiety scores at the pre spinal anaesthesia level compared to basal values was statistically significant in those who saw the audiovisual clip and there was a similar statistically significant increase in the anxiety scores in those who didn't see it. This useful effect of the

audiovisual clip can be related to its specific effect or to the more quantity of preoperative educational information about the perioperative events. This is in accordance with the study done by Jjala HA *et al.*, who studied the effect of multimedia information on perioperative anxiety in patients undergoing procedures under regional anaesthesia [3], where they noticed reduction in the anxiety scores at pre anaesthesia procedure level and it was observed to be effective in the post operative period also. Similarly many international researchers have

studied the beneficial effects of such pre operative educational tools [4-8]. Due to limitations like illiteracy and complex structure of STAI in evaluation of perioperative anxiety, many Indian researchers have used visual analogue scores for the same. Not many studies have been done in our Indian setting and moreover we wanted to study the local population many of whom are not able to read the brochure materials and cannot search for it in the internet. Our present study revealed that female population had more anxiety scores both at basal and pre spinal anaesthesia level indicating the higher prevalence of anxiety in that group and also highlights the need for education focussing more on them through the possible educational portals. And when compared to other studies done outside the india [3], Indian studies revealed higher prevalence of anxiety overall. Above observations of higher prevalence of anxiety in females and among overall population points at importance of focusing more on health related education.

There was also a better hemodynamic stability following the use of audiovisual clip, which can be attributed to the reduction in the anxiety which in turn reduces the activation of hypothalamo pituitary axis and consequently decreased adrenocorticotrophin release and less cortisol levels. Finally there is reduced activation of sympathetic nervous system and evidently stable hemodynamic parameters.

We concluded from the present study that preoperative educational information in the form of audiovisual clip, is an effective way of reducing perioperative anxiety. We also concluded that routine use of such educational system can reduce patient discomfort about hospital stay and it can increase patient satisfaction.

Limitations of our study included, not focusing on the completely illiterate population which forms major section of population in our setting. Also we could not differentiate the anxiety related to surgery from the anxiety related to anaesthesia. Future scope of this study includes extending the follow up till sufficient time to evaluate the effects of such preoperative educational tool in reducing the incidence of postoperative stress disorder and also effect on the long term psychological behavior.

Conclusion

We concluded from the present study that preoperative educational information in the form of audiovisual clip, is an effective way of reducing perioperative anxiety. We also concluded that routine use of such educational system can reduce patient discomfort about hospital stay and it can increase patient satisfaction.

Conflicts of interest: nil

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