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SCIENTIFIC ARTICLE

Effect of video-based education on anxiety and satisfaction of patients undergoing spinal anesthesia



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Video information;
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Abstract

Background: Providing sufficient information during a preanesthetic interview may help improve patient understanding and decrease anxiety related to spinal anesthesia. We investigated the effect of video-based education on anxiety and satisfaction in patients about to undergo spinal anesthesia.

Methods: A total of 198 patients scheduled for minor elective surgery under spinal anesthesia were prospectively enrolled. The State-Trait Anxiety Inventory (State-Trait Anxiety Inventory/State and State-Trait Anxiety Inventory/Trait) questionnaires and visual analog scale were used to measure anxiety levels before the standard anesthesia evaluation was initiated. Then, 100 patients in Group 1 received written, verbal, and video-based education, whereas 98 patients in Group 2 received only written and verbal instructions regarding spinal anesthesia. Then all participants completed the State-Trait Anxiety Inventory/State and visual analog scale to evaluate anxiety. Finally, a 5-point Likert scale was used to measure satisfaction during postoperative period.

Results: No differences were found in the State-Trait Anxiety Inventory/State, State-Trait Anxiety Inventory/Trait, or visual analog scale scores between the two groups before the information period. The State-Trait Anxiety Inventory/State scores evaluating anxiety during the post-information period were differed in both groups and they found as 36.5 ± 10.0 in Group 1 and 39.6 ± 8.6 in Group 2 ($p = 0.033$). The 5-point Likert scale scores to measure satisfaction were stated as 4.5 ± 0.6 in Group 1 and 3.5 ± 1.2 in Group 2 ($p < 0.001$).

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PALAVRAS-CHAVE

Informação via vídeo;
Anestesia espinal;
Ansiedade;
Satisfação

Conclusions: Providing video-based information during the preanesthetic interview alleviated anxiety and increased satisfaction in patients undergoing spinal anesthesia.

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Efeito de informações por meio de vídeo sobre a ansiedade e satisfação de pacientes submetidos à anestesia espinal

Resumo

Justificativa: Fornecer informação suficiente durante uma consulta pré-anestesia pode aumentar a compreensão do paciente e diminuir a ansiedade relacionada à anestesia espinal. Investigamos o efeito do fornecimento de informação via vídeo sobre a ansiedade e satisfação em pacientes prestes a serem submetidos à anestesia espinal.

Métodos: Foram inscritos prospectivamente 198 pacientes agendados para cirurgias eletivas de pequeno porte sob anestesia espinal. Os questionários de avaliação de estado e traço de ansiedade (*State-Trait Anxiety Inventory/State* e *State-Trait Anxiety Inventory/Trait*) e uma escala visual analógica foram usados para medir os níveis de ansiedade antes da avaliação padrão da anestesia ter sido iniciada. Em seguida, 100 pacientes do Grupo 1 receberam informação por escrito, verbal e via vídeo, enquanto 98 pacientes do Grupo 2 receberam apenas informação por escrito e verbal sobre a anestesia espinal. Em seguida, todos os participantes responderam os inventários de Estado e Traço de ansiedade e a escala visual analógica para avaliar a ansiedade. Por fim, a escala de Likert de 5 pontos foi usada para medir a satisfação durante o período pós-operatório.

Resultados: Não houve diferença nos escores dos questionários de Estado e Traço de ansiedade e da escala visual analógica entre os dois grupos antes do período de informação. Os escores do de Estado e Traço de ansiedade que avalia a ansiedade durante o período pós-informação foram diferentes em ambos os grupos: $36,5 \pm 10,0$ no Grupo 1 e $39,6 \pm 8,6$ no Grupo 2 ($p = 0,033$). Os escores da escala Likert de 5 pontos para medir a satisfação foram: $4,5 \pm 0,6$ no Grupo 1 e $3,5 \pm 1,2$ no Grupo 2 ($p < 0,001$).

Conclusões: Fornecer informação via vídeo durante a consulta pré-anestésica aliviou a ansiedade e aumentou a satisfação em pacientes submetidos à anestesia espinal.

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Introduction

Surgical patients often experience preoperative anxiety, which is believed to begin as soon as the surgical procedure is planned.^{1,2} Fear related to anesthesia and its implications is an important source of this anxiety.³ In a study that evaluated the public's fears and perceptions about regional anesthesia, approximately one-third of patients were very concerned about permanent paralysis, back injury, pain, the needle used for anesthesia, and being awake during the procedure.⁴ Therefore, information provided by the anesthesiologist during the Preanesthetic Interview (PAI) may play an important role in eliminating such misconceptions about spinal anesthesia. In addition, reducing the preoperative anxiety level may be associated with better outcomes.⁵

However, the ideal way to provide anesthesia information remains unclear. Several studies have reported that video-based education results in better patient satisfaction and improves a patient's understanding regarding the anesthesia procedure compared to verbal information alone or a combination of verbal information and a brochure.⁶⁻⁹

In the present study, we investigated the effect of video-based education on anxiety and satisfaction in patients undergoing spinal anesthesia.

Methods**Questionnaires**

The self-reported State-Trait Anxiety Inventory (STAI) was used to measure anxiety levels in patients. The STAI contains two separate 20 item multiple choice subscales that assess state anxiety (STAI-S; state-situational anxiety) and trait anxiety (STAI-T; trait-based anxiety).¹⁰ The STAI-S measures how the patient feels at the moment, whereas general feelings are evaluated by the STAI-T. Turkish validation of the STAI was performed by Oner and Le-Compte.¹¹ The overall score is 20–80. An STAI score ≤ 35 indicates no anxiety, scores of 36–41 indicate moderate anxiety, and scores ≥ 42 indicate severe anxiety.¹² Thus, higher scores indicate a higher anxiety level. The STAI forms are shown in [Appendix 1](#). Patients were asked to complete the STAI-T only during the PAI,

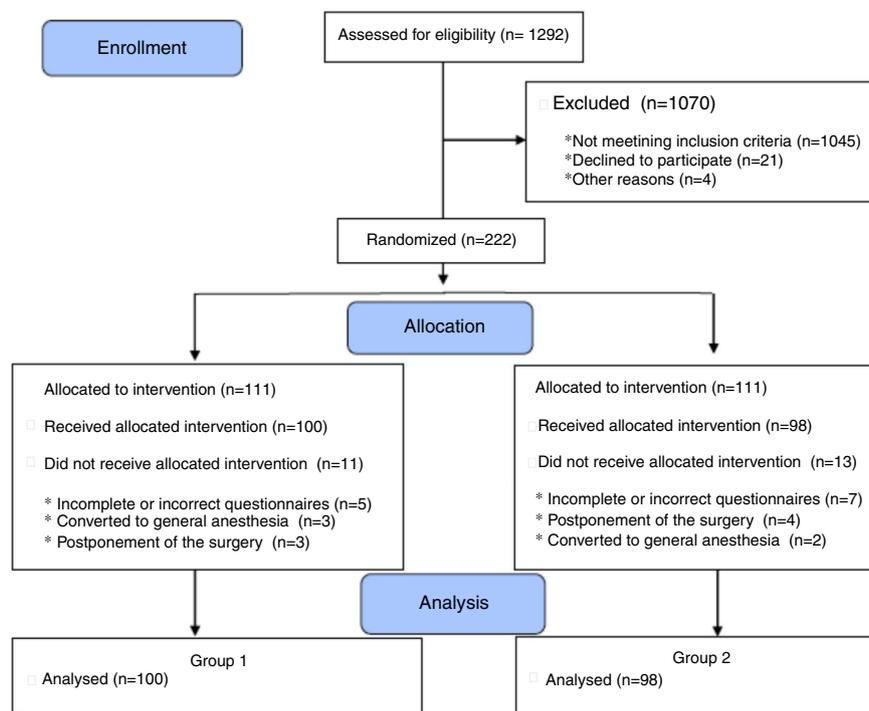


Figure 1 Consort flow diagram.

whereas the STAI-5 was completed both before the PAI and after the information period.

The Visual Analog Scale (VAS) was also used to measure anxiety levels; the VAS has been validated for assessing preoperative anxiety.¹³ Patients were asked to mark their anxiety level along a horizontal line with a scale of 0–10 (0=no anxiety and 10=highest possible anxiety). The VAS was completed before the PAI and after the information period was completed.

In addition, a 5 point Likert scale was used postoperatively to measure satisfaction level (1=very dissatisfied, 5=very satisfied) with the entire anesthesia procedure from the beginning of the PAI to the end of surgery.

Study design

After we obtained the approval from the local ethics committee, 1292 patients referred to the anesthesia clinic during the study period for preoperative evaluation were assessed for eligibility. The study was conducted as a randomized, prospective trial. Exclusion criteria were age < 18 years, patients undergoing oncological surgery, history of surgery under spinal or general anesthesia, incomplete or incorrect questionnaires, history of psychiatric disease, treatment with antidepressant drugs, and patients with cognitive, visual, or speech disorders. Computer-based randomization was used to allocate the participants into one of two groups. All patients were referred to the anesthesia clinic for a standard preoperative evaluation and the PAI, which was performed by an anesthesiologist who was blinded to the patient group assignments. The PAI was performed by nine different anesthesiologists during the study. Patients who had to wait longer than 3 weeks after the PAI for scheduled surgery were not included in the study. All

participants provided written informed consent and were asked to complete the STAI-S, STAI-T, and VAS before the standard anesthesia evaluation and before receiving any information. The selected patients were divided into two groups as described in Fig. 1. Subsequently, the 100 patients in Group 1 received written, verbal, and video-based education, whereas the 98 patients in Group 2 received only written and verbal instructions regarding the anesthesia procedure. After the information period, all study participants were asked to complete the STAI-S and VAS to evaluate anxiety. Finally, the patients were asked to complete the 5-point Likert scale 3–8 h postoperatively.

Video information

All patients in Group 1 watched a video on a personal computer with a monitor and headphones in a private room accompanied by an anesthesiologist. No medical terminology was used to explain the procedure to the patients. Patient preparation, positioning, and the spinal needle used during the procedure were shown in detail. Finally, risks, benefits, and possible complications of spinal anesthesia were explained. The duration of the video was 6 min and 24 s.

Surgery

Patients, who were scheduled to undergo elective surgery under spinal anesthesia, such as inguinal herniorrhaphy repair, anal fissurectomy, pilonidal sinus surgery, varicocelelectomy, hydrocelelectomy, varicose vein surgery, arthroscopy, or non-traumatic lower limb surgery, were enrolled. Patients undergoing major or oncological surgery

were not included due to presumed higher preoperative anxiety.

Statistical analysis

The statistical analysis was performed using SPSS for ver. 17.0 software (SPSS Inc., Chicago, IL, USA). Categorical variables are described using frequencies and percentages, and continuous variables are described using means and standard deviations. The chi-square test was used to detect relationships between categorical variables. Spearman's correlation analysis was performed to test the associations between continuous variables. The Mann-Whitney *U*-test was used to compare two independent means, and the Wilcoxon signed-rank test was used to compare two dependent means. The Kruskal-Wallis test was used to compare more than two independent means. A *p*-value <0.05 was considered significant.

Results

Two hundred and twenty-two patients who were scheduled for elective minor surgery under spinal anesthesia and met the inclusion criteria were enrolled the study. All participants provided written informed consent. Twenty-four patients were excluded from the study due to incomplete or incorrectly filled out questionnaires, need to convert to general anesthesia, postponement of the scheduled surgery. The remaining 198 patients were enrolled. Consort flow diagram was shown in Fig. 1.

Demographic data including age, sex, educational status, surgery type, and ASA (American Society of Anesthesiologists) physical status classification of the patients are shown in Table 1. No differences in the STAI-S, STAI-T, or VAS scores were found between the two groups before the information period. On the other hand, a significant difference was observed in the STAI-S score after the information period was completed. The 5 point Likert scale score to measure post-operative satisfaction was significantly different between the two groups (Table 2). No differences in the VAS score were found between the groups either before or after the information period. However, the change in the STAI-S score was significant in Group 1 ($p < 0.001$).

Discussion

Surgery may cause considerable stress for patients and anxiety levels tend to increase regardless of the type of operation.^{1,2,14} About 80% of adult patients undergoing surgery are anxious. Fear related to surgical and anesthesia procedures, anticipation of pain, the possibility of an altered body image, and lack of information during the preoperative period are the main reasons for preoperative anxiety.¹⁵⁻¹⁷

However, preoperative education about anesthesia may improve compliance with perioperative instructions and increase a patient understands of the anesthesia protocol. The quality of this knowledge transfer is related to the type of information used, the patient's motivation, and the literacy of the patient.

Although it remains unclear which type of patient education is most effective, written and/or verbal information are the most commonly used methods by anesthesiologists during the PAI period.

Anesthesia consent forms have increased in volume and contain sufficient information to fulfill the medico-legal requirements of risk education. However, the complexity of these forms may prevent patients from fully understanding the information provided or patients may refuse to read the material. Nevertheless, written information requires basic literacy skills and motivation to read the material, which must be considered when assessing the efficiency and role of providing information regarding anesthesia procedures. Stanley et al. reported that written and verbal information does not improve patients' perceived understanding of a surgery or its complications.¹⁸ However, we routinely combine verbal and written information during the PAI in our practice.

Considering the misconceptions about spinal anesthesia and the abovementioned drawbacks of written PAI, we conducted this study to evaluate the effect of video-based information on anxiety and satisfaction in patients undergoing spinal anesthesia.

The first objective of this study was to determine the impact of video information on patient anxiety. The psychological status of a patient is crucial before providing any information particularly when evaluating the effect of information method on patients. Therefore, our patients completed the STAI-T and VAS to measure anxiety before receiving any information. The STAI-T and VAS scores were similar in the groups, indicating no difference in baseline anxiety levels before the PAI and information period ($p = 0.533$ and $p = 0.995$, respectively).

The STAI-S scores were also similar in the groups before the PAI ($p = 0.342$). However, the video-informed group had significantly lower STAI-S scores after the information period was completed ($p = 0.033$). In addition, the reduction in STAI-S scores was significant in patients who were informed by video when we compared the changes before and after the information period ($p < 0.001$). These results indicate that video-based information may be an effective method to alleviate preoperative anxiety.

We also evaluated the effects of demographic (age, sex, and educational status) and non-demographic variables (surgery type and ASA physical status classification) on the STAI-S score before and after the information period. However, no significant relationships were observed between STAI-S score and any of the demographic and non-demographic variables.

As preoperative anesthetic information reduces preoperative anxiety, the impact of video-based information on patient anxiety has been a topic of interest in previous reports.¹⁹⁻²² However, several shortcomings of these studies must be considered. Jjala et al. evaluated the effect of preoperative multimedia information on anxiety in patients undergoing regional anesthesia.¹⁹ In that trial, three-quarters of patients had a history of anesthesia and about 20% had undergone regional anesthesia previously. In addition, different types of regional anesthesia, such as peripheral nerve block and spinal anesthesia, were evaluated together. In contrast, we excluded patients with a history of surgery under spinal or general anesthesia.

Table 1 Characteristics of patients in two groups.

| | Group 1 (Video) (n = 100) | Group 2 (No video) (n = 98) | p |
|---------------------------|---------------------------------|-----------------------------------|-------|
| Age (years) (mean ± SD) | 39.3 ± 13.2 | 40.2 ± 14.2 | 0.865 |
| Sex, n (%) | | | 0.342 |
| Female | 37 (37) | 30 (30.6) | |
| Male | 63 (63) | 68 (69.4) | |
| Education, n (%) | | | 0.992 |
| Primary | 46 (46) | 47 (48.0) | |
| Secondary | 17 (17) | 16 (16.3) | |
| High | 28 (28) | 26 (26.5) | |
| University | 9 (9) | 9 (9.2) | |
| Surgery type, n (%) | | | 0.871 |
| General surgery | 31 (31) | 35 (35.7) | |
| Orthopedics | 34 (34) | 30 (30.6) | |
| Urology | 26 (26) | 23 (23.5) | |
| Cardiovascular | 9 (9) | 10 (10.2) | |
| ASA classification, n (%) | | | 0.412 |
| I | 63 (63) | 55 (56.1) | |
| II | 28 (28) | 36 (36.7) | |
| III | 9 (9) | 7 (7.2) | |

ASA, American Society of Anesthesiologists physical status classification system.

Table 2 STAI-T, VAS and STAI-S scores before and after information period and 5 point Likert scale scores after surgery.

| | Group 1 (Video)(n = 100) | Group 2 (No video)(n = 98) | p |
|---|--------------------------|----------------------------|--------|
| VAS before information | 3.2 ± 2.7 | 3.1 ± 2.6 | 0.995 |
| STAI-T | 37.4 ± 10.0 | 38.1 ± 10.3 | 0.533 |
| STAI-S before information | 41.3 ± 8.2 | 40.2 ± 7.3 | 0.342 |
| VAS after information | 3.0 ± 2.3 | 3.2 ± 2.3 | 0.465 |
| STAI-S after information | 36.5 ± 10.0 | 39.6 ± 8.6 | 0.033 |
| 5 point Likert scale after surgery (satisfaction) | 4.5 ± 0.6 | 3.5 ± 1.2 | <0.001 |

All data is presented as mean ± SD.

VAS, Visual Analog Scale; STAI-T, State-Trait Anxiety Inventory-Trait; STAI-S, State-Trait Anxiety Inventory-State.

Moreover, we evaluated the impact of video information on spinal anesthesia alone. Salzwedel et al. studied the effect of video-assisted anesthesia risk education on patient anxiety.²⁰ Despite some similarities with our study design, patients scheduled for major surgery under either spinal or general anesthesia were included in their study. We only included patients about to undergo elective and relatively minor surgeries to minimize anxiety related to surgery, which allowed us to better interpret the effect of video information on patients undergoing spinal anesthesia. A recent study on video information only excluded patients whom scheduled surgery was postponed.²¹ We also excluded patients with a history of psychiatric disease and treatment with antidepressant drugs due to their effect on anxiety.

The second objective of our study was to evaluate the effect of video information on patient satisfaction. Conflicting results have been reported in studies that evaluated satisfaction of patients undergoing anesthesia after video-assisted education. Similar satisfaction levels among groups were reported by Salzwedel et al. regardless of the

information type used.²⁰ In contrast, Lin et al. reported that satisfaction was significantly higher in patients informed preoperatively by video compared to that in the control group.²¹

Fifteen Randomized Controlled Trials (RCTs) on media-based interventions to educate patients undergoing anesthesia were evaluated in a systematic review.⁸ Patient satisfaction with media was not well defined in any of the RCTs and was not measured using validated questionnaires. The authors concluded that satisfaction is a complex psychological phenomenon that should be assessed by a valid and reliable multi-item questionnaire.⁸ In the current study, patient satisfaction with the entire anesthesia procedure from the beginning PAI to the end of the surgery was higher in patients who viewed the video compared to those in the control group ($p < 0.001$). As mentioned previously, we used a 5 point Likert scale to measure satisfaction with the anesthesia period.

Some methodological or patient-related factors may play a role in the discrepancies between the care received by a

patient and the level of satisfaction reported in a single-item rating. Satisfaction ratings can be influenced by a sense of relief that the procedure was completed safely. Furthermore, patients may be reluctant to criticize their care-providers for some reason. As stated by Pascoe, these ‘‘psychosocial artifacts’’ may threaten the validity of all satisfaction measures used in the healthcare system.²³

Our study had some limitations that should be considered when interpreting the findings. First, we presumed that spinal anesthesia would increase patient anxiety pre-operatively. Misconceptions and misunderstandings may contribute to fears related to anesthesia. Nevertheless, patients’ attitudes toward spinal anesthesia are not scientifically proven in our country.^{4,24} Second, use of a more sophisticated information method, such as video-based education, does not guarantee that the patient retains the message; therefore, not using a questionnaire to assess knowledge transfer may be another limitation of our study.

We determined that video education decreased anxiety; however, none of the demographic and non-demographic variables were related with this reduction in anxiety. Factors affecting anxiety may differ among countries and cultures. Therefore, further studies considering anxiety-related factors, such as sociocultural and economic issues, may be warranted to identify subgroups of patients who would benefit from video-based education during the PAI.

Summary

Providing video-based information during the PAI alleviated anxiety and increased satisfaction in patients about to undergo spinal anesthesia.

Conflicts of interest

The authors declare no conflicts of interest.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.bjane.2018.01.004](https://doi.org/10.1016/j.bjane.2018.01.004).

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