



Multimedia education on the day of elective cesarean section increases anxiety scores

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Abstract

Objective: Multimedia-based preoperative education to enhance patient knowledge improves anxiety and satisfaction rates in different clinical scenarios, but the ideal method to decrease pre- and perioperative anxiety remains unclear. In this study, we aimed to find out the effects of operation day multimedia education (MME) on anxiety and satisfaction rates of patients who underwent cesarean section (CS) under general anesthesia.

Methods: One hundred and thirty-two patients were assessed for eligibility and 106 patients who were scheduled for elective CS under general anesthesia were randomized to MME group three hours before the operation or to controls who received solely brief verbal information. After randomization, all patients were asked to fill out State and Trait Anxiety Inventory (STAI). MME patients watched an education video about general anesthesia explaining the procedure in details and also risks and benefits. After video education, all patients in both groups asked to complete STAI-state again. All patients were operated under general anesthesia and after the operation, all patients were asked to fill out a 5-point Likert scale to measure satisfaction level.

Results: There were no statistically significant differences among baseline STAI-state and STAI-trait values and the number of satisfied patients ($p>0.05$ for all comparisons). STAI-state scores following education were significantly increased in group MME group compared to controls (40.3 ± 9.4 vs. 44.5 ± 10.2 respectively, $p<0.05$).

Conclusion: Multimedia education on operation day increases anxiety scores in elective CS patients who were operated with general anesthesia. Further studies are required to address the adequate timing and method of patient education in women undergoing CS under general anesthesia.

Keywords: Anesthesia, patient education, preoperative information, cesarean section.

Özet: Elektif sezaryen günündeki multimedya eğitimi kaygı puanlarını artırmaktadır

Amaç: Hasta bilgisini artırmaya yönelik multimedya tabanlı preoperatif eğitim, farklı klinik senaryolarda kaygı ve memnuniyet oranlarını artırmaktadır, fakat preoperatif ve perioperatif kaygıyı azaltmaya yönelik ideal yöntem hâlâ belirsizdir. Çalışmamızda, operasyon günü multimedya eğitiminin (MME) genel anestezi altında sezaryen doğum gerçekleştiren hastaların kaygı ve memnuniyet oranları üzerindeki etkilerini araştırmayı amaçladık.

Yöntem: Çalışmaya uygunluk için 132 hasta değerlendirildi ve genel anestezi altında elektif sezaryen için planlanan 106 hasta, operasyondan üç saat önce MEE grubuna veya sadece özet sözlü bilgi alan kontrol grubuna rastgele olarak ayrıldı. Rastgele gruplandırma sonrasında tüm hastalardan Durumluk ve Sürekli Kaygı Envanteri (State and Trait Anxiety Inventory, STAI) ölçeğini doldurmaları istendi. MME hastaları, genel anestezi prosedürünü ve riskleri ile faydalarını detaylı şekilde anlatan bir eğitim videosu izledi. Video eğitiminden sonra her iki gruptaki hastalardan STAI-durumluk ölçeğini tekrar doldurmaları istendi. Tüm hastalar genel anestezi altında operasyona alındı ve operasyon sonrasında tüm hastalardan, memnuniyet seviyelerini ölçmek için 5'li Likert ölçeği doldurmaları istendi.

Bulgular: Başlangıç STAI-durumluk ve STAI-sürekli değerleri ve memnun hastaların sayısı arasında istatistiksel olarak anlamlı bir fark yoktu (tüm karşılaştırmalar için $p>0.05$). Eğitim sonrası STAI-durumluk puanları, kontrol grubuna kıyasla MME grubunda anlamlı şekilde arttı (40.3 ± 9.4 'e karşı 44.5 ± 10.2 , $p<0.05$).

Sonuç: Operasyon gününde multimedya eğitimi, genel anestezi altında operasyon geçiren elektif sezaryen hastalarının kaygı puanlarını artırmaktadır. Genel anestezi altında sezaryen operasyonu geçiren kadınlarda yeterli zamanlama ve hasta eğitimi yöntemini araştırmak için ek çalışmalara ihtiyaç duyulmaktadır.

Anahtar sözcükler: Anestezi, hasta eğitimi, preoperatif bilgi, sezaryen.

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Introduction

Anxiety before and during operation is an essential issue affecting more than 60% of surgical patients that might cause different pathophysiological circumstances including hypertension, dysrhythmia, the risk of awareness, changes in perception of pain, difficulties in postoperative analgesia and also decline in overall satisfaction rates.^[1-4] Focusing to decrease pre- and perioperative anxiety might enhance postoperative outcome including hospital stay and lifestyle disruption.^[5,6]

Anxiety is highly prevalent during pregnancy and the mode of delivery may also be related to anxiety thus elective cesarean section (CS) patients are vulnerable to high anxiety levels.^[7,8] Focusing on decreasing maternal anxiety has shown to have favorable effects on fetal health and maternal satisfaction in elective CS patients. Multimedia-based preoperative education to enhance patient knowledge improves anxiety and satisfaction rates in different clinical scenarios but the ideal method and timing of effective preoperative information to decrease pre- and perioperative anxiety remains unclear.^[9-11]

In the majority of multimedia education (MME) studies, the timing of information was within one week before operation and the information was not given on operation day in any of these studies.^[6,7,11] In this study, we aimed to find out the effects of operation day MME on anxiety and satisfaction rates of patients who underwent cesarean section with general anesthesia.

Methods

Subject selection

One hundred and thirty-two patients scheduled for elective cesarean section under general anesthesia in our institute were assessed for eligibility. Age below 18 years, contraindication for regional anesthesia (allergy to local anesthetics, severe hypovolemia, infection at the site of injection, patient refusal, severe valvular heart disease) history of previous surgery, psychiatric disease, treatment with antidepressant drugs, visual, cognitive or speech disorders and being illiterate were exclusion criteria. Using a random allocation software (www.randomization.com) 106 patients who were eligible for the study were randomly assigned to one of the study groups: group 1 involved patients receiving multimedia education (MME) and group 2 involved control patients who did not receive a multimedia education but given a

brief verbal information regarding the procedure before the surgery. The study protocol was approved by the Institutional Ethics Committee (KAEEK/2018.5.03) and registered to the National Ministry of Health, Health Sciences University (Istanbul, Turkey).

Study setting

After randomization, all patients were asked to fill out State and Trait Anxiety Inventory (STAI) which is a validated and widely used self-report questionnaire assessing both state and trait anxiety.^[12] STAI consists of two parts with 20 questions in each; state anxiety (STAI-S) intended to measure anxiety at a specific time and trait anxiety (STAI-T) measures long term anxiety levels and each answer was scored on a scale of 1–4 (ranging from “not at all to very much so”). The overall score is 20–80, a score ≤ 35 indicates no anxiety, 26–41 moderate anxiety, and ≥ 42 severe anxiety. A randomization envelope was then opened to identify the study group of the index patient.

Multimedia education patients watched an information video about general anesthesia explaining the procedure in details and also risks and benefits of the surgical procedure for 4 minutes 15 seconds in a personal computer with headphones with an accompanying anesthesiologist. After video education, all patients asked to complete STAI-S again. All patients were operated under general anesthesia by the same operation team and by the same anesthesiologist. Three hours after the recovery, all patients were asked to fill out a 5-point Likert scale to measure satisfaction level (1; dissatisfied, 5; most satisfied).

Statistical analysis

Statistical analysis was performed using SPSS for Windows, version 17 (SPSS, Chicago, IL, USA). Kolmogorov-Smirnov test was used to determine whether or not the variables are normally distributed. Comparisons among groups with respect to STAI scores were evaluated using Student's t-test and distribution of STAI scores and satisfaction scores were evaluated using chi-square or Fisher's exact test where appropriate. Power calculations based on our pilot study with 50 patients to detect a significant difference in postoperative STAI scores indicated that at least 40 patients were needed in each group (G power 3, Dusseldorf University, Dusseldorf, Germany). Two-sided $p \leq 0.05$ was interpreted as statistically significant.

Results

A total of 106 patients (mean age 31.4±5.4 years) were enrolled in the study (**Fig. 1**). MME was given to 55 patients and there were 51 control patients who did not receive MME. Demographic variables including age, body mass index, American Society of Anesthesiologists (ASA) scores, and cesarean section indications are shown in **Table 1**. There were no significant differences among groups in terms of the demographic characteristics ($p>0.05$ for all comparisons).

STAI-S baseline, STAI-T baseline and STAI-S after multimedia education are shown in **Table 2**. There were no statistically significant difference among baseline STAI-S and STAI-T values and the number of satisfied patients ($p>0.05$ for all comparisons). However, STAI-S scores after video education was significantly higher in MME group compared to group controls (40.3±9.4 vs. 44.5±10.2 respectively, $p<0.05$; **Table 2**).

Discussion

We hypothesized that multimedia-based education program on operation day might affect the anxiety and satisfaction score of cesarean section patients who were operated with general anesthesia. Our findings show that operation day MME given just prior to surgery significantly increases STAI-S scores compared to that of the control group.

Multimedia patient education is increasingly used preoperatively in different surgical operations including obstetric, urologic, cardiac, orthopedic surgeries under different kinds of anesthesia techniques varying from general anesthesia to regional techniques. However, studies investigating the role of preoperative patient education provided conflicting results.^[13-15] Comparing this kind of studies is problematic due to differences in duration, purpose, content, and timing. In many of the above-mentioned studies with favorable results on behalf of anxiety and satisfaction, multimedia informa-

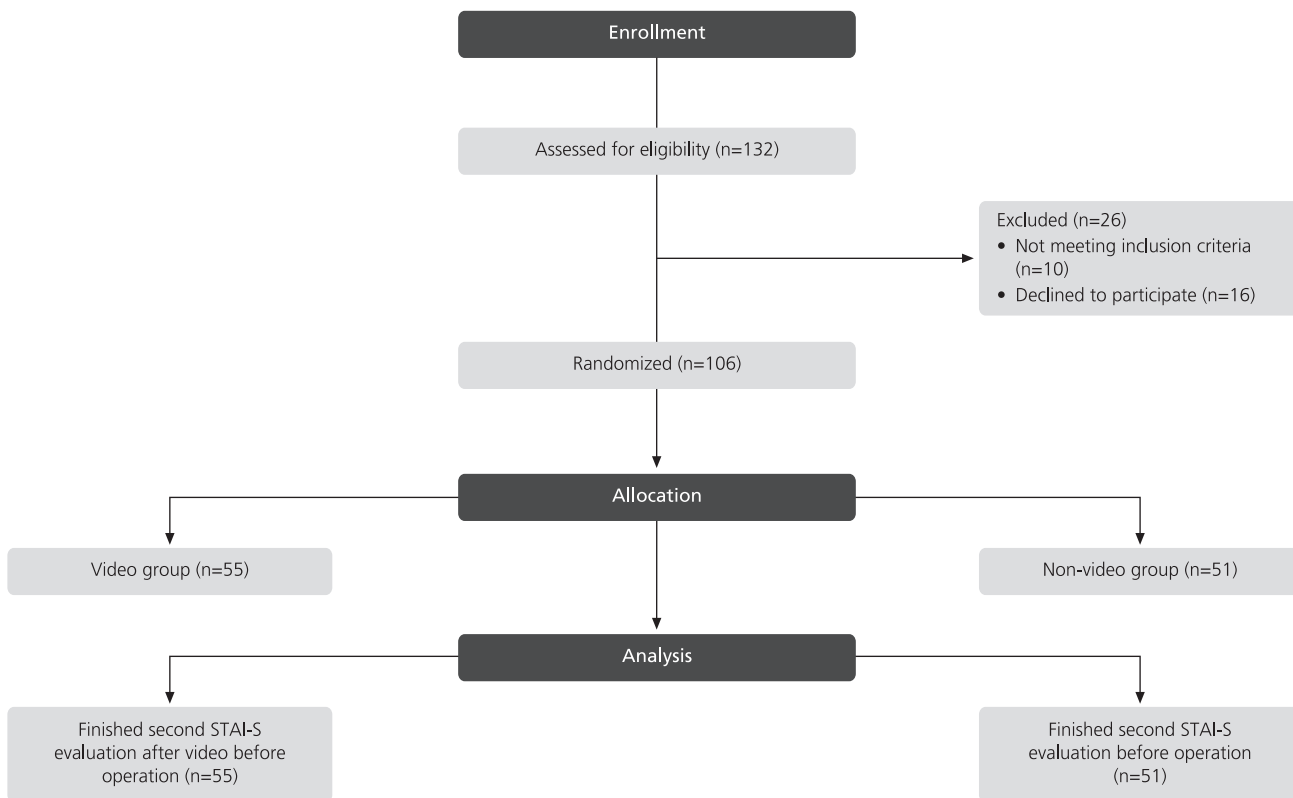


Fig. 1. Flow-chart demonstrating patient allocation.

tion were given in one or two weeks before operation during pre-anesthetic evaluation, thus, it might give the patient an acceptable time to understand the procedure or the techniques. Also, places that are used for education in the studies showing favorable results with MME were mostly pre-anesthetic evaluation room, not a chaotic, populated waiting room in an operation theatre.

Anesthesia technique itself might also affect the anxiety level.^[16] We suggest that general anesthesia might have a positive effect on patients who already have an increased anxiety level. Indeed, despite the proven advantages on patient outcomes of regional anesthesia, many patients have special concerns related to regional anesthesia including permanent paralysis, back pain or being awake during the procedure and this subgroup of patients might require more information about anesthesia technique and they might benefit most from a multimedia education program.

Due to unique characteristics of the obstetric patient population who experience increased anxiety level compared to other patients groups, special effort to decrease anxiety is essential. Lower preoperative anxiety has been shown to be associated with greater maternal satisfaction and better recovery in patients undergoing elective cesarean section.^[7] Preoperative multimedia education program in obstetric patients is limited and majority of studies were in elective CS patients who were operated under regional anesthesia.^[8]

Several studies focusing on multimedia education program have revealed decreased anxiety and increased satisfaction level in patients operated with spinal anesthesia.^[6,17] In a previous study conducted by Eley et al., video information given prior to surgery did not provide a decrease in preoperative anxiety in patients undergoing cesarean section with regional anesthesia.^[8] However, there are also a few studies consistent with our findings which did not show a favorable impact of MME on preoperative anxiety.^[13,18] Our results indicate that detailed multimedia education in operation theatre on operation day shows no favorable influence on behalf of anxiety and satisfaction scores in our study. Our findings are somewhat conflicting with the results of the previous studies. We suppose that the main factors that increased anxiety scores in our study might be attributed to timing, place and the content of the used multimedia. We suggest that MME should be performed days before the surgery in a comfortable and relaxing room with a calming content.

Table 1. Demographic variables of the study group.*

	MME (n=55)	Controls (n=51)	p- value
Age (years)	31.2±5.3	31.6±5.6	0.476
Body mass index (kg/m ²)	31.5±5.8	30.5±5.6	0.346
ASA (n,%)			
1	14 (25%)	17 (33%)	NS
2	29 (53%)	28 (55%)	NS
3	12 (22%)	6 (12%)	NS

*Data are presented as mean ± standard deviation. ASA: acetyl salicylic acid; MME: multimedia education; NS: not significant.

Several limitations of this study should be considered including (i) the lack of participation of illiterate patients who might have benefited the most from multimedia education, (ii) not evaluating the newborn outcome, (iii) and the limited number of anxiety evaluation, and (iv) not comparing hemodynamic data. Finally, the lack of power calculation is an important limitation of this study. Elimination of the limitations mentioned above would provide valuable information concerning the benefit of MME on pregnancy outcomes, maternal outcomes, and intraoperative hemodynamic changes. Further studies evaluating the effect of multimedia education programs on maternal and newborn parameters in different timing with different contents are needed.

Conclusion

In developing countries due to restricted resources, the importance of preoperative information is usually underestimated. Therefore, multimedia education programs constitute one of the simplest solutions for the health-care professional to adequately inform the patient concerning the subsequent surgical procedure and the anes-

Table 2. State and Trait Anxiety Inventory (STAI) scores and satisfied patients.*

	MME (n=55)	Controls (n=51)	p- value
STAI-T baseline	45.4±6.9	44.1±9.8	0.45
STAI-S baseline	40.9±7.4	40.6±8.6	0.36
STAI-S after video	44.5±10.2	40.3±9.4	0.03
Satisfied with operation (n, %)	47 (85%)	46 (90%)	0.71

*Data are presented as mean ± standard deviation. MME: multimedia education; STAI-T: State and Trait Anxiety Inventory-Trait; STAI-S: State and Trait Anxiety Inventory-State.

thetia technique. However, appropriate timing and content of MME are critical to getting the desired favorable effects. Our findings demonstrate that MME given on the day of surgery increases the anxiety score of patients who underwent elective CS under general anesthesia. Further studies are required to address the adequate timing and the method of patient education in women undergoing cesarean section under general anesthesia.

Conflicts of Interest: No conflicts declared.

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