

Impact of Face-to-Face Educational Outreach Plus Printed Materials on Preoperative Anxiety level in Iranian Parturient Undergoing Elective Cesarean Section Delivery

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Background: Anxiety, in demanding situations such as the perioperative period, can exacerbate underlying diseases and lead to a variety of perioperative complications. Educating patients not only improves the level of knowledge but can also help patients coping skills. The aim of the present study is to determine the effect of face-to-face plus printed educational materials on the anxiety level of Iranian pregnant women undergoing elective cesarean section delivery in the perioperative period.

Methods: STAI questionnaire was distributed to 50 pregnant women undergoing cesarean section on the day before operation, then the intervention group was educated face to face for one session followed by the pamphlet. After training, the STAI questionnaire was again distributed to the intervention group on the same day. For evaluating the level of anxiety, we also used the Visual Analog Scale (VAS). The presence of nausea/vomiting after surgery and the type of anesthesia technique were recorded.

Results: Basic characteristics of the parturient regarding age, education level and the baseline level of anxiety were similar.

In the intervention group, the average anxiety level with STAI(S) questionnaire was 48.1 before the education and 45.2 after face to face outreach ($P = 0.019$).

The average anxiety level with VAS score was 5.6 before the education and 4.8 after the outreach in the interventional group ($P = 0.018$). STAI(S) and VAS scores in the control group were 43.3 and 5.1 respectively which increased to 44.2 and 5.7 in the second survey.

The correlation coefficient between score in the STAI questionnaire and VAS was 0.479.

Conclusion: A single period of face to face education followed by handing out a pamphlet before an operation reduces the anxiety of mothers before cesarean section delivery.

Keywords: Anxiety; Cesarean section delivery; Education

Anxiety is a common emotional reaction. It is described as “an unpleasant state of uneasiness or tension, which may be associated with abnormal hemodynamics as a consequence of sympathetic, parasympathetic, and endocrine stimulation [1-2]. Any unpredictable event can lead to anxiety, perioperative period included.

The level of perioperative anxiety which is experienced by every individual is related to factors such as age, gender, type and extent of the proposed surgery, previous surgical experience, and personal susceptibility to stressful situations. [3].

High levels of preoperative anxiety may lead to preoperative cardiac ischemia, increased postoperative

analgesic requirement, prolonged hospital stay, adverse perioperative outcome, and poor patient satisfaction [4-5].

Reducing perioperative anxiety both helps to reduce neuro-hormonal responses to surgery, and may decrease anxiety-related adverse effects [6].

In our opinion, anesthesiologists play an important role in educating patients to understand the unpredictable upcoming event -surgery- and helping them to experience less anxiety by increasing their knowledge about anesthesia and surgery.

Pregnant mothers experience a high-stress environment. Clearly, the fear of delivery would increase their anxiety. Indeed, in a study, it was shown that most women were anxious about obstetric anesthesia and did not feel adequately informed, which holds out the importance of preoperative education [7].

Furthermore, cultural and religious issues play an important role in the inter-regional differences in patients' responses to stressful situations.

The hypothesis of the present study is that teaching along with printed educational materials reduces parturient anxiety levels preoperatively.

The effect of face to face education on the perioperative stress of pregnant women who undergo cesarean section was considered as the primary outcome.

Its effect on the voluntary acceptance of spinal anesthesia

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was considered as the secondary outcome.

Methods

Approval for the study was provided by Ethics Committee of Tehran University of Medical Sciences and the clinical trial was registered at the Iranian Registry of Clinical Trials (IRCT) before patient recruitment (IRCT number: IRCT2015060622576N1). Written informed consent was obtained from all participants in this randomized clinical trial.

Fifty number of parturient, gravid I, with no history of surgery, American Society of Anesthesiologists (ASA) class I and II candidates for elective cesarean section delivery in Dr. Shariati Hospital were enrolled in the study.

Participants with educational levels below high school diploma were excluded from the study.

Randomization was by means of computer-generated codes. Sealed envelopes containing the information of the randomization code were kept by the staff not involved in the study. Patients were allocated into two groups; Group E (face-to-face education plus printed pamphlets) and Group C (No preoperative education).

To assess the level of anxiety, State-Trait Anxiety Inventory (STAI) questionnaire and visual analog scale (VAS) was used.

The STAI is a validated and widely used questionnaire to measure patients' anxiety.

The STAI-state (STAI-S) consists of 20 statements, and the answers to these are used to determine a patient's current anxiety level (STAI-S); Each questionnaire in the STAI-S is rated on a four-point scale for the subject's agreement with that statement (not at all, somewhat, moderately so, and very much so).

The overall (total) score for STAI(S) ranges from a minimum of 20 to a maximum of 80 [8].

The visual analog scale (VAS) has also been validated as a tool for measuring anxiety. In this study, a scale of 0–10 was used to measure the anxiety level of participants by asking them to quantify their anxiety by putting a mark on a VAS scale, which they felt represented the degree of their anxiety at that moment. One end of the scale was labeled as 'no anxiety' and the other end as 'maximum anxiety imaginable' [9].

The night before surgery, anxiety was assessed using STAI-S, and VAS in all participants. Then parturient in group E were given face to face education followed by delivering the pamphlet. STAI-S and VAS score were then repeated after education on the same day.

Data from a pilot study involving 10 patients were used to perform power analysis to estimate the required sample size. The mean of anxiety score was 46 with a standard deviation of 12. We expected to decrease the mean of anxiety at least 15% i.e. from 46 to 39 because in some studies the cut off point for anxiety level were reported 40.

It was calculated that 25 subjects were required in each group ($\alpha=0.05$, $\beta=0.2$, power=0.80, SD=12).

The distribution of age, STAI and VAS scores were checked by using the Kolmogorov-Simmon test and they followed a normal distribution.

Independent-t-test was used for the comparison of quantitative data between two groups. Chi-square test was used for the comparison of qualitative data between two groups. Statistical significance was evaluated at $p<0.05$. Statistical analysis was performed using SPSS version 19.0.

Results

Basic characteristics of the parturient including age, education level and the baseline level of anxiety are presented in (Table 1).

In the intervention group, the average anxiety level with STAI(S) questionnaire was 48.1 before the education and 45.2 after intervention which was statistically significant. ($P = 0.019$)

The average anxiety level with VAS score was 5.6 before the education and 4.8 after the outreach in the interventional group which was statistically significant in groups ($P = 0.018$).

STAI(S) and VAS scores in the control group were 43.3 and 5.1 respectively which increased to 44.2 and 5.7 in the second survey and not statistically significant.

The level of anxiety after education in the intervention group decreased in 17 patients (68%), with no change in one patient (4%) and with an increase in 7 patients (28%).

Clinically, 15% or more reduction in anxiety score was considered significant (Figure 1).

Table 1- The classification of the participants in the study in terms of age, education level and the level of anxiety in both intervention and control groups.

		Interventional group	Control group	p.value
Age group	20-30	12 (48%)	15(60%)	P=0.395
	30-40	13(52%)	10 (40%)	
Education level	High school-diploma	17(68%)	12(48%)	P=0.393
	Associated degree	2(8%)	2(8%)	
	Bachelor of science and higher	6(24%)	11(44%)	
Baseline Anxiety score	STAI (State)	48.1	43.3	P=0.107
	VAS	5.6	5.1	P=0.415

Nineteen patients (76%) in the interventional group had less than 15% reduction in anxiety level following training.

Of the 6 patients who had 15% or greater reduction in anxiety scores, 3 patients (50%) were in the age group of 20

to 29 years and 3 patients (50%) were in the age group of 30 to 40 years. All the 6 patients with over 15 percent reduction in anxiety were in the educational category of high school diploma.

5 out of 6 of these parturient asked for and accepted spinal anesthesia and general anesthesia was induced for one of them (Figure 2).

The percentage of voluntary acceptance of spinal anesthesia was 17 patients (68%) in the control group and 19 patients (76%) in the intervention group. (p = 0.529)

8 patients of the 50 participants in the study had nausea/vomiting after the operation, 3 patients (12%) of the control group and 5 patients (20%) of the intervention group.

(P = 0.702).

The mean score of anxiety in parturient who had nausea/vomiting in comparison to those without nausea and vomiting was 47 and 43.6 respectively (P = 0.427).

The correlation coefficient between score in the STAI questionnaire and VAS was 0.479.

There was no linear relationship between age and anxiety score in the studied patients (p> 0.05) (Figure 3).

Figure 1- The mean anxiety score by STAI(S) and VAS questionnaire in the intervention group before and after education

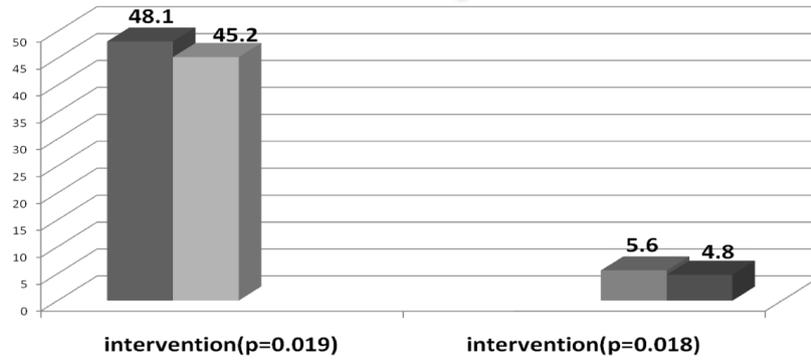


Figure 2- The mean anxiety score by STAI(S) questionnaire in interventional group before and after face to face outreach based on the degree of education

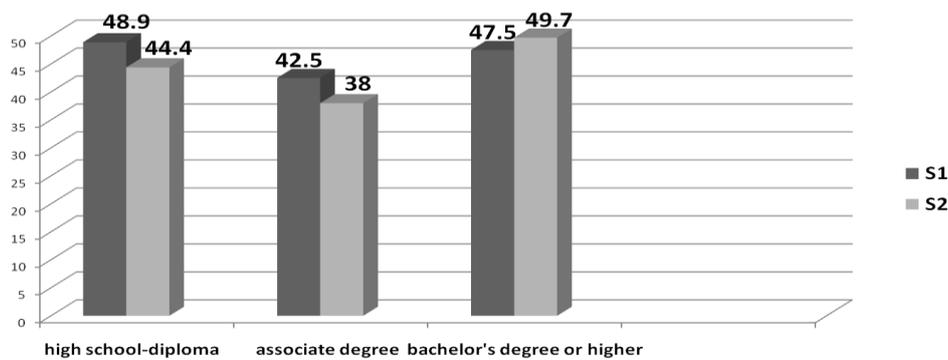
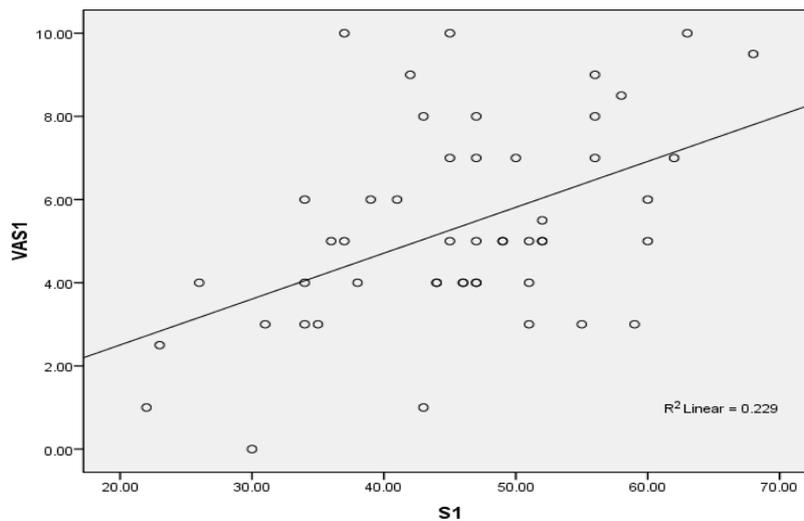


Figure 3- The correlation between the VAS and STAI(S) scores of all participants in the study



Discussion

In this study, it was demonstrated that a single period of

face to face education followed by handing out a pamphlet before the operation reduces the anxiety of mothers before

cesarean section delivery.

The average score of anxiety after training the experimental group, decreased 3 scores in the STAI questionnaire and the VAS score decreased by 0.8; which was statistically significant yet, not clinically significant. However, in the databases we searched we could not find that how much decrease in anxiety level is considered clinically significant.

It was observed that parturient with lower education levels, had more anxiety at baseline and after training the level of anxiety decreased. In those who had higher education, the level of anxiety raised following education. This finding needs to be evaluated with more concentration on the type and content of educational outreach. With regards to education, Tarkan et al. showed the degree of anxiety was highest in patients with low education level and least in patients with university degrees [4].

The percentage of voluntary acceptance of spinal anesthesia was not different between the control and intervention groups, but 83% of mothers who had clinically less significant anxiety reduction following education, underwent spinal anesthesia.

In the present study, we also found a relative positive correlation ($r=0.479$) between the two anxiety measuring instruments (STAI and VAS), which needs to be confirmed and validated with more powered studies and probably higher number of participants. Several different methods of education and delivering information consisting of short educational videos, face to face outreach, pamphlets and a mixture of them were studied and different results were illustrated in these studies [10-14]. Some of them have demonstrated that handouts do not reduce anxiety [15].

A study showed that people with or without previous surgery need the same education [16] In another study by Gillies et al. in 2001, 35% of patients who studied the pamphlet before surgery mentioned that the training made them more concerned [17]. So the different effect of education on preoperative anxiety level of patients in different studies can be probably due to the content of education.

We faced some limitations in this study. Anesthesia is just one cause of anxiety; we did not explore the effect of other potential sources of anxiety such as surgical techniques, the success of the operation, fear of any anticipated complication, or amount of information provided to patients. It was observed in this study that there was no significant relationship between age and anxiety, probably the power of this study was not adequate to find this difference. Another limitation was the low number of training sessions which needs to be looked at with more precision because the amount and hours of education are also important and spending too much on preoperative education may not always give favorable results.

It has always been one of the most important goals of every anesthesiologist to make mothers feel most comfortable during the perioperative period. Reducing their anxiety is part of this goal. Knowing the fact that the use of drugs which reduce anxiety during this period, not only helps but also may be hazardous bolds out the importance of other ways of reducing anxiety such as face to face outreach to parturient.

Conclusion

This study shows that a single period of face to face education followed by handing out a pamphlet before an operation reduces the anxiety of mothers before cesarean section delivery

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References

1. Winstone CV, Dennise M, Roberte N, Wayne M. Anxiety and Postoperative Recovery in Ambulatory Surgery Patients. *Anesth prog.* 1988;35(2):61-64.
2. Jawaid M, Mushtaq A, Mukhtar S, Khan Z. Preoperative anxiety before elective surgery. *Neurosciences.* 2007; 12(2):145-8.
3. Caumo W, Schmidt AP, Schneider CN, Bergmann J, Iwamoto CW, Bandeira D, et al. Risk factors for preoperative anxiety in adults. *Acta Anaesthesiol Scand.* 2001; 45(3):298-307.
4. Granot M, Ferber SG. The roles of pain catastrophizing and anxiety in the prediction of postoperative pain intensity: a prospective study. *Clin J Pain.* 2005; 21(5):439-45.
5. Kain ZN, Wang SM, Mayes LC, Caramico LA, Hofstadter MB. Distress during the induction of anesthesia and postoperative behavioral outcomes. *Anesth Analg.* 1999; 88(5):1042-7.
6. Migneault B, Girard F, Albert C, Chouinard P, Boudreault D, Provencher D, et al. The effect of music on the neurohormonal stress response to surgery under general anesthesia. *Anesth Analg.* 2004; 98(2):527-32.
7. Beilin Y, Rosenblatt MA, Bodian CA, Lagmay-Aroesty MM, Bernstein HH. Information and concerns about obstetric anesthesia: a survey of 320 obstetric patients. *Int J Obstet Anesth.* 1996; 5(3):145-51.
8. Spielberger CD. *Manual for the State-Trait Anxiety Inventory.* Palo Alto: Consulting Psychologists Press; 1983.
9. Kindler CH, Harms C, Amsler F, Ihde-Scholl T, Scheidegger D. The visual analog scale allows effective measurement of preoperative anxiety and detection of patients' anesthetic concerns. *Anesth Analg.* 2000; 90(3):706-12.
10. Lee A, Chui PT, Gin T. Educating patients about anesthesia: a systematic review of randomized controlled trials of media-based interventions. *Anesth Analg.* 2003; 96(5):1424-31.
11. Jjala HA, Foxall GL, Hardman JG, Bedforth NM. Effect of preoperative multimedia information on perioperative anxiety in patients undergoing procedures under regional anaesthesia. *Br J Anaesth.* 2010; 104(3):369-74.
12. Giraudet-Le Quintrec JS, Coste J, Vastel L, Pacault V, Jeanne L, Lamas JP, et al. Positive effect of patient education for hip surgery: a randomized trial. *Clin Orthop Relat Res.* 2003; (414):112-20.
13. Lam KK, Chan MT, Chen PP, Ngan Kee WD. Structured preoperative patient education for patient-controlled analgesia. *J Clin Anesth.* 2001; 13(6): 465-9.
14. Bondy LR, Sims N, Schroeder DR, Offord KP, Narr BJ. The effect of anesthetic patient education on preoperative patient anxiety. *Reg Anesth Pain Med.* 1999; 24(2):158-64.
15. Salzwedel C, Petersen C, Blanc I, Koch U, Goetz AE, Schuster M. The Effect of Detailed, Video-Assisted Anesthesia Risk Education on Patient Anxiety and the Duration of the Preanesthetic Interview: A Randomized Controlled Trial. *Anaesth Analg.* 2008; 106(1):202-9.
16. Elsass P, Eikard B, Junge J, Lykke J, Staun P, Feldt-Rasmussen M. Psychological effect of detailed preanesthetic information. *Acta Anaesthesiol Scand.* 1987; 31(7):579-83.
17. Gillies MA, Baldwin FJ. Do patient information booklets increase perioperative anxiety? *Eur J Anaesthesiol.* 2001; 18(9):620-2.