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Evaluation of anxiety and fear about anesthesia in adults undergoing surgery under general anesthesia

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Abstract : *Purpose :* Fear and anxiety before a surgical procedure is one of the important issues for patients. The present study aimed at identifying the factors that make patients being afraid of anesthesia, and determining whether these fears are associated with patients' gender, age, education level, and previous experience of anesthesia.

Methods : This cross-sectional study was conducted in the hospitals of Shiraz University of Medical Sciences in 2015. During routine screening one day before surgery, 436 adult patients were asked about fear, worry, and anxiety by anesthesiologists using a questionnaire.

Results : In the present study, 99% of patients suffered from different levels of anxiety. There was a significant relationship between gender and the level of fear and anxiety. Anxiety decreased with age ($r=-0.21$, $p<0.001$). Patients' education level also had a significant effect on anxiety. The majority of patients (78.4%) wished to meet the anesthesiologist before surgery, while more than 45% of those who were visited by the anesthesiologist stated that this visit failed to reduce their anxiety.

Conclusion : Age, gender, educational level, pre-op visit by the anesthesiologist, and previous experience of surgery under general anesthesia variably affect patient preoperative feelings. Current practices in our Institution are not efficient at alleviating their anxiety and fear, and there is a need to implement improving programs.

Key words : anxiety ; fear ; general anesthesia ; adults.

Introduction

According to Millan et al. anxiety is defined as "a transitory emotional condition consisting of feelings of tension, apprehension, nervousness, fear and high autonomic nervous system activity" (1). Anesthetic-surgical procedures cause anxiety in patients (2). Fear and anxiety before surgery is one of the important issues for patients undergoing surgery, which has been studied in recent years (1). Previous studies have shown that anxiety exists in patients who are candidate for surgery, at least one week before the procedure (2). Besides, most patients (75%) have anxiety from the moment they are told they need surgery, to the time they enter the operating room (1). In non-life-threatening procedures, the main cause of preoperative anxiety is anesthesia (62%) rather than surgery itself (15%) (3). In most cases, this anxiety results from lack of proper information about the anesthetic procedure (4). Fear and anxiety mainly originate in the unanswered questions and simple issues related to anesthesia, which may be addressed during the pre-anesthetic visit. This visit is usually the only chance for patients to receive accurate information on anesthesia. As a consequence, pre-anesthetic visits have reassuring effects (5), and must be oriented to address patients' concerns to help them cope with their fears and reduce their anxiety. In many countries, anesthesiologists spend too little time on the pre-anesthetic visit, and usually do not seek at determining whether patients' anxiety is due to anesthesia or surgery.

Anxiety may occur in any individual, may be transient or chronic, may cause adverse reactions, and may increase patients' stress. This may lead to difficulties in managing pain during the postoperative period, for example (6). Preoperative anxiety and fear can also result in difficult anesthesia and post-operative management (4). It has been proven that stress causes an increase in post-operative pain, analgesic agents consumption, and length of hospital stay, which leads to a direct increase in

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healthcare costs (7). Therefore, emphasis should be laid on reducing anxiety in patients. This can be achieved through adequate medical care, which includes efficient consultation before anesthesia, and proper pharmaceutical and psychological preparation of patients (2). It has been shown that visits by anesthesiologists are sometimes more effective as compared to medications for the reduction of anxiety (8). Patients' premedication can also result in sedation. Consequently, they more efficiently cooperate with the treatment team, and are more satisfied with the health services they receive (9, 10). In the studies where patients were informed about the details of anesthesia and surgical technique, beneficial changes were achieved in anxiety levels after surgery (10). Therefore, it is absolutely necessary for anesthesiologists to identify and prevent the factors that cause anxiety in all patients who are candidate for surgery with anesthesia.

The present study aimed at identifying factors that make patients being afraid of anesthesia, and determining whether these fears are associated with patients' gender, age, education level, previous experience of anesthesia, occupation, and marital status. This will provide a basis for defining means that might help minimizing patients' fear, eventually providing them with reassurance, and creating a trustful relationship with their physicians. Such measures have the potential of increasing patient satisfaction, comfort, and willingness to cooperate with the treatment team.

Methods

This cross-sectional study was conducted in the hospitals of Shiraz University of Medical Sciences from the 9th of March, 2015 to the 20th of March, 2016. During routine screening one day before surgery, 436 adult patients were asked about fear, worry and anxiety by anesthesiologists using a questionnaire containing open and closed questions.

The inclusion criteria were age between 18 and 85 years, and being a candidate for elective surgery under general anesthesia. Exclusion criteria included refusal to participate in the study, inability to fill in the study questionnaire, and anti-anxiety and anti-depression medications consumption. Written informed consent was obtained from each participating patient. The reliability and validity of the questionnaire were confirmed by calculating the Cronbach's alpha in a pilot study. This alpha was 0.89.

Considering the incidence of preoperative anxiety (22%) and a type I error of 5%, and using, a 400-subject sample size was determined for the study (1). To measure anxiety, the patients were asked to mark their anxiety level on a scale ranging from zero to ten. An expert also measured the patient anxiety level using Visual Analog Scale (VAS) numbered from 0 to 10. This project was approved by the Ethics Committee of Vice-Chancellor for Research Affairs of Shiraz University of Medical Sciences, Shiraz, Iran (grant no. 92-01-60-6585).

The SPSS® statistical software (version 19) was used for data analysis. Qualitative variables were presented as number and percentage, and quantitative variables as mean and standard deviation. The answers were classified and analyzed using Chi-square tests. In addition, Pearson's correlation coefficient was used to examine the relationship between the self-reported anxiety and the one measured by the anesthesiologist. Finally, a multivariate regression analysis was used to determine the relationship between anxiety level and gender, education level, income level and previous anesthesia. Two-tailed P-values lower than 0.05 were considered to be statistically significant.

Results

In this study, 431 questionnaires were collected and analyzed. The patients' demographic characteristics are presented in Table 1. The patients'

Table 1

The patients' demographic characteristics

Gender	
Male	141(33.3)*
Female	282(66.7)
Age (years)	
18-45	317(76.4)
>45	98(23.6)
Education level	
≤Diploma	344(79.8)
>Diploma	87(20.2)
Previous experience of anesthesia	
Yes	245(73.79)
No	87(26.21)
Marital status	
Single	79(18.5)
Married	438(81.5)
Occupation	
Medical	21(4.9)
Non-medical	410(95.1)
Living place	
City	308(74.0)
District	53(12.7)
Village	55(13.2)

*Number (%)

reasons for fear in total and based on gender are shown in Table 2.

According to the study findings, 11.3% of the participants used sedatives one night before surgery. In addition, 27.7% of the patients stated that they were not visited by an anesthesiologist or a resident before surgery. Among the patients who were visited by an anesthesiologist, 45.7% stated that the visit did not reduce their anxiety. Also, 78.4% of the patients did not want to meet their anesthesiologists. Overall, 77.5% of the participants reported worry and anxiety about anesthesia.

We observed a significant relationship between the patients' gender and level of fear and anxiety. Female patients felt significantly more anxious when compared with males ($p<0.001$) (Table 3). There was also an inverse relationship between age and self-evaluated anxiety, in such a way that anxiety decreased with age ($r=-0.21$, $p<0.001$). This relationship was also observed with respect to the anxiety as evaluated by the anesthesiologist ($r=-0.20$, $p<0.001$). The patients with a higher education level showed higher levels of anxiety (Table 3). A previous history of anesthesia had no significant effects on patient anxiety (Table 3). The participants' living place (city, district, and village) had also no significant impact on anxiety levels.

Discussion

The majority of patients included in the present study (over 77.5%) were anxious about anesthesia before surgery. Preoperative anxiety has been studied for many years. Accordingly, anxiety is known to be more intense in younger patients (11), and is mainly related to anesthesia (62%) rather than surgery itself (15%) (3). In a study conducted in 2010, 76% of the patients reported preoperative anxiety due to anesthesia. Additionally, females had higher levels of anxiety as compared to males (1). In the present study, 99% of the patients suffered from different levels of anxiety. The propensity of female participants to feel more anxious as compared to

Table 2

The patients' reasons for fear in total and based on gender

Questions	Total (n=431)	Male (n= 147)	Female (n=284)	P-value
1. Nausea after surgery	218 (50.6)*	69 (46.9)	149 (52.5)	0.277
2. Vomiting after surgery	239 (55.5)	79 (53.7)	160 (56.3)	0.607
3. Pre-anesthesia serum and needle	203 (47.1)	61 (41.5)	142 (50.0)	0.09
4. Absence of a full-time anesthesiologist at the patient's bedside during the operation	243 (56.4)	84 (57.1)	159 (56.0)	0.818
5. Inadequate post-operative care	280 (65.0)	97 (66.0)	183 (64.4)	0.749
6. Waking up during surgery (inadequate anesthesia)	276 (64.0)	99 (67.3)	177 (62.3)	0.303
7. Remembering memories during anesthesia	214 (49.7)	73 (49.7)	141 (49.6)	0.998
8. Intellectual power loss due to anesthesia	251 (58.2)	89 (60.5)	162 (57.0)	0.485
9. Dizziness and drowsiness a few hours after surgery	240 (55.7)	76 (51.7)	164 (57.7)	0.231
10. Hospitalization in the intensive care unit after surgery	248 (57.5)	82 (55.8)	166 (58.5)	0.595
11. Paralysis due to anesthesia	258 (59.9)	97 (66.0)	161 (56.7)	0.062
12. Inability of the anesthesiologist to manage the patient's condition during anesthesia	265 (61.5)	96 (65.3)	169 (59.5)	0.241
13. Inability of the surgeon to perform the surgery correctly	273 (63.3)	93 (63.3)	180 (63.4)	0.981
14. Not coming back to consciousness	296 (68.7)	103 (70.1)	193 (68.0)	0.654
15. Perioperative pain	279 (64.7)	108 (73.5)	171 (60.2)	0.006**
16. Post-operative pain	331 (76.8)	108 (73.5)	223 (78.5)	0.239
17 Anesthesiologist gender	158 (36.7)	46 (31.3)	112 (39.4)	0.096

*Number (%) for each column, ** $p<0.05$

Table 3

The relationship between gender, education level and history of anesthesia with anxiety

	Gender			Education level			History of anesthesia		
	Male	Female	P	>diploma	≤diploma	p	Yes	No	p
Scores given by the patients	3.83±2.79*	4.67±2.78	0.001	5.02±2.93	4.24±2.75	0.035	4.21±2.74	4.40±2.83	0.669
Scores given by the anesthesiologist	3.67±2.41	4.62±2.61	0.001	5.02±2.69	4.15±2.51	0.007	4.06±2.48	4.36±2.71	0.455

*Mean ± SD

the males is also confirmed in the present study. The reasons for patients' fear we noted are similar to those reported in other studies, with only a few items being different. For example, the patients in this study were afraid of pain after the operation, not coming back to consciousness, perioperative pain, insufficient anesthesia, and inadequate care after surgery. In this regard, the highest percentage was related to fear of not coming back to consciousness (68.7%). These results are almost similar to those of studies conducted in several countries from 1972 to 2009, and only the importance of the items is different (12-20).

The findings of the present study indicate a significant relationship between anxiety and gender, namely increased anxiety in female participants as compared to males. Similar results were also obtained in other studies (11, 19). One reason for this gender difference can be related to the fact that men, in our culture, are not prone to explicitly show their fears, because it shows their vulnerability and weakness. Contrarily, women are not influenced by this cultural caveat. Age and education level also had effects on the patients' anxiety, but not the living place, or a previous history of anesthesia. Multiple experiences of anesthesia does not seem to reduce fear. This can be related to the fact that patients usually did not have the opportunity to be properly informed before their previous surgeries.

Preoperative anxiety has been investigated in numerous studies. Indicators such as visual analogue scale (21), Spielberg's State-Trait Anxiety Inventory (STAI) for adults (22) and Amsterdam Preoperative Anxiety and Information Scale (APAIS) (23), have been used to measure the level of anxiety. In the present study, however, no specialized scale was utilized. The majority of patients (mostly women) stated that they were afraid of and worried about anesthesia, which caused anxiety before surgery. This is a very important issue that requires attention. Two approaches are currently practiced to reduce preoperative anxiety; psychological and pharmacological. Both methods have some limitations in achieving all purposes of preoperative preparedness. Overall attention is devoted to the visit of patients by an anesthesiologist, in order to decrease the need for pharmacological premedication. According to our study, 78.4% of patients wished to meet the anesthesiologist before surgery, while more than 45% of those who were visited by the anesthesiologist stated that this visit failed to reduce their anxiety. This indicates that those patients were not provided with enough reassuring information. A general principle is that patients should be provided with information by someone who is responsible for anesthesia (24). Establishment of a good relationship between physicians and patients can help patients overcome their fear and anxiety, feel safe, and have confidence.

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