Available online at **www.ijmrhs.com**

ISSN No: 2319-5886

International Journal of Medical Research & Health Sciences, 2018, 7(1): 135-143

The Evaluation of Anxiety Levels and Determinant Factors in Preoperative Patients

Banu Cevik*

Specialist, MD, Department of Anaesthesiology and Reanimation, Dr. Lutfi Kirdar Education and Research Hospital, Kartal, Istanbul, Turkey

**Corresponding e-mail: banueler@yahoo.com*

ABSTRACT

Objective: *Preoperative anxiety is a prevalent concern with negative effects on perioperative period but is usually ignored. The objectives of this study are to identify the preoperative anxiety levels of surgical patients and to evaluate the associated factors affecting this level.* ***Methods:*** *One hundred volunteer patients scheduled for elective surgery were included the study. Data were collected by using "Personal Information Form "and "State-Trait Anxiety Inventory-I". Evaluations were based on a significance level of $p<0.05$.* ***Results****: The percentage of female to male patients was 48% and 52%. The mean anxiety levels of both gender were 42.46 ± 8.95 and 42.10 ± 9.49 respectively ($p=0.85$). There was no difference between females and males in terms of anxiety. Age, occupational condition, marital status, and education level was not found as determinant factors on preoperative anxiety levels. Male individuals of large families were more anxious than the others, but this difference was not significant ($p=0.11$). Previous surgical experience was not a predictive factor for preoperative anxiety. The anxiety level was significantly high in men using cigarette and alcohol ($p<0.01$). Fear, apprehension, and stress was highly related with high level of anxiety, but insecurity and inexperience were not a predicting factor. The anxiety levels of cool patients were significantly lower than the others ($p<0.01$).* ***Conclusions:*** *Preoperative anxiety is a multifactorial issue and must be good handled. The aim must be based on reduction strategies. It must be considered that preoperative information is the best way to decrease preoperative anxiety.*

Keywords: Anxiety, State trait anxiety inventory, Surgery

INTRODUCTION

The perception of a surgical procedure as a life-threatening process cause an individual to feel himself under a direct physical constraint. In this period the patients may have several fears and anxieties from mild apprehension, fear of inability of wake up, fear of damage to the body integrity, anxiety of pain, apprehension about sexual life to the severe anxiety of death. These kinds of responses may vary as anxiety, depression, regression, and denegation [1].

The main principal for preoperative assessment is the evaluation of the general situation of a patient by an anesthesiologist and making the proper decision of anesthetic choices for him. This evaluation aims to define the risk factors of the surgical procedure and to minimalize them.

The preoperative evaluation requires a multidisciplinary approach, and this may prolong the procedure which can result with psychosocial problems. It is important to define the sources of the anxieties of the patients and to show maximum effort for relief of them because the anxieties which will not be relieved in this period may have adverse effects on postoperative healing and prolong the postoperative hospitalization of the patients [1-3].

The variability in the anxious situations of the patients preoperatively is related with the property of the disease and whether they had adequate information about the surgical procedure. Proper listening of the anxieties and apprehensions of the patients is one of the most important factors for relief of them. The most important cause of the anxiety about the anesthesia is the lack of the relationship between the patient and the anesthesiologist [4].

The activated metabolic and hormonal systems due to anxiety also activate the sympathoadrenal route and result with increased secretions, increased gastric acidity, increased motility of the gastrointestinal system and increased levels

of catecholamines. These may cause adverse effects during the anesthesia and surgery. For this reason, the control of the anxiety preoperatively is crucial for a safe and unproblematic operation [5].

MATERIALS AND METHODS

Our study is a descriptive, quantitative study managed by collecting data from a Personal Information Form and "State-Trait Anxiety Inventory-I" in 100 patients of General Surgery Department of University of Health Sciences Istanbul Kartal Dr. Lutfi Kirdar Education and Research Hospital on January 2015 - May 2015. These patients were volunteers to reply the questions and they were hospitalized for elective surgery. The inclusion criteria for the study were >18 years of age with no visual and hearing defects of the participants, ability of literacy, no psychiatric disorders, and no history of psychiatric drug usage.

The personal information form used in the study was prepared by the investigators to define the participants' demographic characteristics, habits, and familial features. At the last part of this form there were questions to elucidate the psychologic situation of the individual. For examination of the anxiety state of the patient, State-Trait Anxiety Inventory-I was used. This scale was developed by Spielberger in 1970 and arranged for Turkish population by Oner and Le Compte in 1985 [6]. Higher scores in this scale represent higher levels of anxiety.

For statistical evaluation of the data SPSS for Windows 13.0 program was used. For descriptive parameters (mean, standard deviation, frequency) student's t-test was used for comparison. ANOVA test was used for the comparison of the multivariant analysis. $p<0.05$ was accepted as significant.

RESULTS

There was no statistically significant relationship between the anxiety level and the gender, education level, occupation, number of family members and previous surgery history (Table 1).

Table 1 The relationship between the demographic features and the anxiety level

Gender	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
Female	48	42.46	8.95	0.85
Male	52	42.1	9.49	
Age	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
Age<25	14	42.93	9.43	0.92
25 ≤ Age <35	31	42.13	9.16	
35≤ Age <50	29	41.41	9.13	
50≤ Age	26	43.04	9.61	
Occupation	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
Unemployed	15	44.87	8.79	0.91
Worker	44	42.07	9.92	
Officer	7	42	9.49	
Retired	8	41.38	9.05	
Craft	11	41.64	8.83	
Housewife	9	39.78	8.64	
Student	6	43.67	8.64	
Marital status	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
Single	32	41.84	8.94	0.04*
Married	66	41.98	8.99	
Divorced	2	58.5	9.19	
Education	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
Primary	34	40.82	8.54	0.53
Elementary	27	43.22	10.32	
High school and University	39	42.87	8.99	
Number of family members	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**

Alone (1 person)	2	40	4.24	0.79
Family without children (2 people)	15	42.53	10.79	
Family with 1 or 2 children (3 or 4 people)	43	42.21	9.27	
Multi-child family (5 or 6 people)	32	41.44	8.51	
Crowded family (6<people)	8	46	10.1	
Previous surgery	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
No	64	41.75	8.58	0.45
Yest	36	43.19	10.25	
Number of habits	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
Zero (0)	33	40.24	9.69	0.01*
One (1)	43	41	8.19	
Two (2)	23	47.17	8.8	
*: Significant; P<0.05; one-way ANOVA test				

There was statistically significant relationship between the anxiety level and the marital status, but the number of divorced patients were to low (Table 1).

We observed the increase in anxiety level by the increase in number of harmful habits and this increase was statistically significant (Table 1).

Table 2 The relationship between several parameters and the anxiety level

Alcohol usage	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	74	40.73	8.93	<0.01*
+	26	46.65	8.64	
Cigarette usage	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	38	39.71	9.54	0.03*
+	62	43.84	8.68	
Fear	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	61	39.25	8.3	<0.01*
+	39	47	8.57	
Apprehension	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	72	39.1	7.71	<0.01*
+	28	50.43	7.58	
Stress	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	79	39.71	7.88	<0.01*
+	21	51.9	7.23	
Insecurity	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	94	41.99	9.02	0.23
+	6	46.67	11.6	
Ignorance	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	78	41.49	9	0.11
+	22	45.05	9.54	
Inexperience	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	87	42.26	9.24	0.99
+	13	42.31	9.2	
Coolness	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	45	47.6	9.8	<0.01*
+	55	37.91	5.79	
*: Significant; P<0.05; Student's t-test				

There was statistically significant relationship between drinking and anxiety level in all patients (Table 2). This relationship was significant in males, but it was not significant in females (Tables 3 and 4).

Table 3 The relationship between several parameters and the anxiety level in females

Alcohol usage	Number	Mean anxiety level	Standard deviation (±)	p-value
-	42	42.57	9.38	0.82
+	6	41.67	5.57	
Cigarette usage	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	27	42.44	9.25	0.99
+	21	42.48	8.77	
Fear	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	29	40.28	8.62	0.04*
+	19	45.79	8.61	
Apprehension	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	34	39.18	7.73	<0.01*
+	14	50.43	6.43	
Stress	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	41	40.61	7.88	<0.01*
+	7	53.29	7.3	
Insecurity	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	38	40.2	7.78	0.47
+	10	47.32	6.55	
Ignorance	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	39	41.1	8.78	0.03*
+	9	48.33	7.55	
Inexperience	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	41	42.83	9.09	0.49
+	7	40.29	8.42	
Coolness	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	20	48.95	8.81	<0.01*
+	28	37.82	5.6	

*: Significant; P<0.05; Student's t-test

There was statistically significant relationship between smoking and anxiety level in all patients (Table 2). This relationship was significant in males, but it was not significant in females (Tables 3 and 4).

Table 4 The relationship between several parameters and the anxiety level in males

Alcohol usage	Number	Mean anxiety level	Standard deviation (±)	p-value
-	32	38.31	7.79	<0.01*
+	20	48.15	8.93	
Cigarette usage	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	11	33	6.65	<0.01*
+	41	44.54	8.65	
Fear	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	32	38.31	8.02	<0.01*
+	20	48.15	8.6	
Apprehension	**Number**	**Mean anxiety level**	**Standard deviation (±))**	**p-value**
-	38	39.03	7.79	<0.01*
+	14	50.43	8.84	
Stress	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	38	38.74	7.87	<0.01*
+	14	51.21	7.37	
Insecurity	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	47	41.77	9.24	0.45
+	5	45.2	12.34	
Ignorance	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**

-	39	41.87	9.31	0.77
+	13	42.77	10.37	
Inexperience	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	46	41.76	9.45	0.49
+	6	44.67	10.29	
Coolness	**Number**	**Mean anxiety level**	**Standard deviation (±)**	**p-value**
-	25	46.52	10.58	<0.01*
+	27	38	6.08	
*: Significant; P<0.05; Student's t-test				

There was statistically significant relationship between fear factor and anxiety level and with the presence of the fear factor the anxiety level increased (Table 2). This relationship was significant in males and females (Tables 3 and 4).

There was statistically significant relationship between apprehension factor, stress factor and anxiety level and with the presence of these factors the anxiety level increased (Table 2). This relationship was significant in males and females (Tables 3 and 4).

There was no statistically significant relationship between insecurity, ignorance and inexperience factors and the anxiety level (Table 2). In females, there was statistically significant relationship between ignorance factor and the anxiety level, but this relationship was not significant in males (Tables 3 and 4).

There was statistically significant relationship between coolness and anxiety level and with the presence of coolness the anxiety levels in patients decreased significantly (Table 2). This relationship was significant both in males and females (Tables 3 and 4).

DISCUSSION

There are different views about the preoperative assessment and the time of evaluating the anxiety level in literature but Arellano et al. made observations 1 week, 1 day and immediately before the operation and they found no significant difference between the anxiety levels [7]. Similarly, it was reported that the anxiety level measured one day before the operation was highly correlated with the one measured immediately before the procedure [8,9]. In this study we measured the anxiety levels in patients who were hospitalized one day before the surgery.

In clinically significant anxiety cases the threshold level for STAI is accepted as 39-40 but in preoperative patients this threshold level is determined as 44-45 [10,11]. In our study, 48% of the participants were female and 52% of were male. Mean anxiety scores was 42.46 ± 8.95 in females and 42.10 ± 9.49 in males and these results were found nearly to the threshold levels.

In literature, there are different findings about the relationship between the preoperative anxiety and the gender. In some reports, the anxiety levels were higher in females [12,13]. Our results were in concordance with the studies finding out that there was no relationship between the gender and the preoperative anxiety levels and from this point of view we can claim that a surgical operation can cause anxiety in every individual whether male or female [14-16].

The relationship between the age and preoperative anxiety was also studied previously. In a study with 106 orthopedic patients the anxiety was found to have no relationship with age but in another there was higher anxiety in middle aged people due to their increased responsibility to their families [17,18]. Fatalistic point of view in elderly patients and bad experiences of previous procedures may affect their anxiety levels [19].

We found no relationship between the age and anxiety level in our study in total population (p=0.92). when this factor was studied separately in males and females the result was same (In males, p=0.83, in females, p=0.48). Our results are parallel to the studies reporting that age has no effect on the preoperative anxiety [17-21]. So, we can interpret this result as an operation is a stressful procedure for every person in each age group and young individuals can have same amount of knowledge about the process like middle aged or elder patients.

When the occupation is considered, the highest level of anxiety was in unemployed group (44.87 ± 8.79) and the lowest level was in housewives (39.78 ± 8.64). Unemployed people may have anxiety about the future and the financial problems of the surgical procedures and hospitalization for them and also for their families. But 44 of our patients were workers and they had a higher anxiety levels as (39.78 ± 8.64).

In a study, marital status was found to have effect on anxiety level and the alone people had higher levels of anxiety [17]. But opposite opinions about this concern were also reported [22]. In our results, divorced group had higher levels of anxiety (58.50 ± 9.19). But from total 100 participants in our study, 66 of them were married, 32 of them were single and only 2 of them were divorced and it may be wrong to produce general claims with this very small number of divorced patients. There was no significant difference between single and married groups in anxiety levels. As a result, we can conclude that marital status had no effect on anxiety level of the patients in our work.

When education is concerned, some researches claimed education level did not affect the anxiety level [5,23]. But it can be easily thought that more educated people can think and investigate the surgical procedures more and this may easily increase their anxiety levels [24]. In our study, mean anxiety level was 40.82 ± 8.54 in primary school group and 42.87 ± 8.99 in high school and university group. But this difference was not statistically significant. There was also no difference between females and males.

In this study, 43 patients had children and 32 of them had crowded family. Six patients had family members >6 and they had the highest level of anxiety (46.00 ± 10.10). This result can make us to think that when the number of people whom the patients were responsible from increased, the anxiety level also increased. But the number of patients in this group was too small to show this relationship statistically significant. Advanced studies are required to show this relationship. Additionally, in families with 2 members (no children) the anxiety levels were higher in females, but it was higher in males in families with members more than 2. There was no statistically significant difference in anxiety levels between the families with children and the crowded families. So, we can conclude that our study resulted that the number of family members has no effect on the anxiety level.

Tasdemir, et al. found that the previous surgical experience had no effect in preoperative anxiety level [25]. In another study, the patients without previous surgical experience had more anxiety levels before an operation with moderate risk [26]. Around 66% of our patients had no surgical operation history and mean anxiety level in this group was 41.75 ± 8.58. In other 34% of our patients this level was 43.19 ± 10.25. But this difference was not statistically significant ($p=0.45$).

The habits of our patients were examined about their effects on the anxiety levels. We had no drug and narcotic material users in our patients but smoking and drinking were observed commonly. In smokers, depression, anxiety disorders and psychotic disorders are more common, and they had more anxiety than nonsmokers [27]. Smoking has adverse effects on anesthetic and surgical procedures, so the patients should give up smoking 8 weeks before the operation. But many patients do not obey this rule. Several studies examined the effect of smoking on preoperative anxiety levels and different results were reported [28,29]. In our study 66% of our patients were smokers. This rate was 43.75% in females and 78.85% in males. Smoking had no effect on females ($p=0.99$) but male smokers had higher levels of anxiety ($p<0.01$). Smoking had adverse effect on the level of preoperative anxiety when all patients were concerned whether male or female ($p=0.03$).

Around 26% of patients were alcohol users and their mean preoperative anxiety level was 43.19 ± 10.25. This level was significantly higher than the individuals who were not users ($p<0.01$). 12.5% of females were alcohol users and this rate was 38.46% in males. Alcohol use significantly affect the anxiety level in males ($p<0.01$).

When all participants were concerned, the individuals using both cigarette and alcohol (23.23%) had more anxiety level than the ones using only one of them (43.43%) ($p<0.01$). As a result, cigarette and alcohol use affect the preoperative anxiety level especially in males.

We asked the patients to define their mood with one of the followings like fear, apprehension, stress, loneliness, ignorance, inexperience, coolness, and we examined the relation between the anxiety level and these expressions. 39% of the participants choose fear and their mean anxiety level was 47.00 ± 8.57 and it was significantly higher than the level of the individuals without fear ($p<0.01$). Tomophobia (fear of surgery) is a widespread disorder [30] and it is more observed in females than males [31]. In our study, 39.58% of the females reported fear and their mean anxiety level was 45.79 ± 8.61. This was significantly higher than females without fear ($p=0.04$). About 38.46% of the males had fear and similarly they had significantly higher levels of anxiety (48.15 ± 8) ($p<0.01$). Around 29.17% of the females and 26.92% of the males had apprehension and they had significantly higher levels of anxiety. We can think that fear and apprehension are found together in an individual.

Preparation for an operation and waiting for an appointment for this procedure is a major source of stress in a patient. When this patient comes to the hospital one day before the operation, he will have a basal stress. In our study 21% of the patient reported their stress and their mean anxiety level was measured as 51.90 ± 7.23. This level was significantly higher than the patients without stress ($p<0.01$). It was observed both in males and females.

Only 6 of our patients reported insecurity and their mean anxiety level was higher but this was not statistically significant. This may be due to the low number of patients with insecurity. We think that this number was low because this study was conducted in a big education and research hospital and the patients came this hospital by their choice after a wide research.

The informed consent of the patients before the operations is very important both medically and legally. Inadequate information of the patients before the operations may cause depression, anger and even inabilities in major functions [32,33]. So, the methods of information of the patients should be in a language in which the patient can easily understand, and they should relief their anxiety [34]. Around 22% of the patients reported ignorance and their mean anxiety levels was 45.05 ± 9.54. This was higher than the individuals without ignorance, but it was not statistically significant ($p=0.11$). Only 9 females with ignorance had mean anxiety level of 48.30 ± 7.55 and it was higher than the ones without ignorance ($p=0.03$). In males there was no significant relation between ignorance and the level of the anxiety ($p=0.77$). In our hospital the informed consents of the patients were taken preoperatively by both surgeons and anesthesiologists and every question during this procedure was replied carefully. So, we think that this resulted the low number of patients with ignorance in our study.

Of the total, 22 participants reported inexperience and mean anxiety level in this group was 45.05 ± 9.54. This was higher than the other group without inexperience, but it was not statistically significant. We think that the experiences about the previous surgical operations have no effect on the level of anxiety.

Rosen, et al. reported that the patients without coolness had higher levels of anxiety [35]. They claimed about different thoughts concerning both the surgery and anesthesia. In this study, 35% of the females reported coolness and their anxiety levels were low. In our study, 55 of the patients reported coolness and their mean anxiety level was 37.91 ± 5.79. It was statistically significant that they had lower levels of anxiety ($p<0.01$). The mean anxiety levels of the cool females were 37.82 ± 5.6 and it was el was significantly lower than the group without coolness ($p<0.01$). Similarly, 27 of the males reported coolness and their mean anxiety level was 38.00 ± 6.08 which was significantly lower than the ones without coolness ($p<0.01$).

Limitations of the Study

Our study was conducted in a specific time period in a specific clinic without concerning the severity of the surgical operation. The results of this study can be generalized for the volunteer patients accepted to participate to the study.

CONCLUSION

A surgical operation is anxious because it directly affects the health of an individual. The coolness of a patient and the decrease of the anxiety level are parallel each other and procedures making an individual cool have a role in the decrease of the anxiety. The advanced studies with bigger samples can investigate the anxiety according to the type of the surgery. New advances can be observed increasing the satisfaction of the patients and the quality of both surgical and anesthetic procedures by these future studies.

DECLARATIONS

Conflict of Interest

The authors and planners have disclosed no potential conflicts of interest, financial or otherwise.

REFERENCES

[1] Akıncı SB, Sarıcaoglu F, Dal D, Aypar U. "Preoperative anesthesic evaluation." *Hacettepe Medical Journal,* Vol. 36, 2003, pp. 91-97.

[2] Boeke, Saskia, Marko Jelicic, and Benno Bonke. "Pre-operative anxiety variables as possible predictors of post-operative stay in hospital." *British Journal of Clinical Psychology,* Vol. 31, No. 3, 1992, pp. 366-68.

[3] Goldman, L., T.W. Ogg, and A.B. Levey. "Hypnosis and day case anaesthesia: a study to reduce preoperative anaesthetic requirement." *Anaesthesia,* Vol. 43, No. 6, 1988, pp. 466-69.

[4] Egbert, Lawrence D., and Stephen H. Jackson. "Therapeutic benefit of the anesthesiologist–patient relationship." *Anesthesiology: The Journal of the American Society of Anesthesiologists,* Vol. 119, No. 6, 2013, pp. 1465-68.

[5] Domar, Alice D., Laura L. Everett, and Myra G. Keller. "Preoperative anxiety: Is it a predictable entity?" *Anesthesia & Analgesia,* Vol. 69, No. 6, 1989, pp. 763-67.

[6] Öner, N., Le Compte, A. *Durumluk-sürekli kaygı envanteri el kitabı*. Boğaziçi Üniversitesi Yayınları, İstanbul, 1983.

[7] Arellano, Ramiro, Charles Cruise, and Frances Chung. "Timing of the anesthetist's preoperative outpatient interview." *Anesthesia & Analgesia,* Vol. 68, No. 5, 1989, pp. 645-48.

[8] Lichtor, J. Lance, et al. "Preoperative AnxietyDoes Anxiety Level the Afternoon Before Surgery Predict Anxiety Level Just Before Surgery?" *The Journal of the American Society of Anesthesiologists,* Vol. 67, No. 4, 1987, pp. 595-98.

[9] Badner, Neal H., et al. "Preoperative anxiety: detection and contributing factors." *Canadian Journal of Anesthesia/ Journal canadien d'anesthésie,* Vol. 37, No. 4, 1990, pp. 444-47.

[10] Marteau, Theresa M., and Hilary Bekker. "The development of a six-item short-form of the state scale of the Spielberger State-Trait Anxiety Inventory (STAI)." *British Journal of Clinical Psychology,* Vol. 31, No. 3, 1992, pp. 301-306.

[11] Fekrat, F., et al. "Anaesthetists' and surgeons' estimation of preoperative anxiety by patients submitted for elective surgery in a university hospital." *European journal of anaesthesiology,* Vol. 23, No. 3, 2006, pp. 227-33.

[12] Wetsch, Wolfgang A., et al. "Preoperative stress and anxiety in day-care patients and inpatients undergoing fast-track surgery." *British Journal of Anaesthesia,* Vol. 103, No. 2, 2009, pp. 199-205.

[13] Mitchell, Mark. "Anaesthesia type, gender and anxiety." *Journal of Perioperative Practice,* Vol. 23, No. 3, 2013, pp. 41-47.

[14] Guz, Hatice, Zahide Doganay, Guz T. "Preoperative anxiety in patients operated for lomber disc herniation." *Neuropsychiatry Archieve*, Vol. 40, No. 1-2, 2003, pp. 36-39.

[15] Elbirim L, Tobin M. "Factors responsible for preoperative anxiety in elective surgical patients at a University Teaching Hospital: A pilot study." *International Journal of Anesthesia*, Vol. 29, No. 2, 2010, pp. 25-28.

[16] Erdem D, Ugis. C, Albayrak DM, Akan B, Aksoy E, Gogus N. "The effect of the anesthetic method on preoperative and postoperative anxiety and pain in perianal surgery." *Bakırkoy Medical Journal,* Vol. 7 No. 1, 2011, pp. 11-16.

[17] Demir, Aslı, et al. "Kalp cerrahisi geçirecek olgularda anksiyete sağaltımı [Anxiety therapy in cardiac surgery patients]" *Turkish Journal of Thoracic and Cardiac Surgery,* Vol. 18, No. 3, 2010, pp. 177-82.

[18] Calvin, Rosie Lee, and Patricia L. Lane. "Perioperative uncertainty and state anxiety of orthopaedic surgical patients." *Orthopaedic Nursing,* Vol. 18, No. 6, 1999, pp. 61-66.

[19] Ramsay, M.A.E. "A survey of pre-operative fear." *Anaesthesia,* Vol. 27, No. 4, 1972, pp. 396-402.

[20] Aykent R, Kocamanoglu IS, Ustun E, Tur A, Şahinoğlu H. "Evaluation of the reasons of preoperative anxiety: Comparism of the APAIS and STAI scores." *Türk Anesteziyoloji ve Reanimasyon Dernegi dergisi*, Vol. 5, 2007, pp. 7-13.

[21] Duman A, Ogun OC, Sahin KT, Sarkılar G, Okesli S. "Evaluation of the factors affecting the preoperative fear and anxiety." *Selcuk Medical Faculty Journal,* Vol. 19, 2003, pp. 21-26.

[22] Bahar A. ve Tasdemir HS. "Anxiety and depression in patients of internal medicine and Surgery clinics." *Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi,* Vol. 11, No. 2, 2008, pp. 9-17.

[23] Shevde, Ketan, and Georgia Panagopoulos. "A survey of 800 patients' knowledge, attitudes, and concerns regarding anesthesia." *Anesthesia & Analgesia,* Vol. 73, No. 2, 1991, pp. 190-98.

[24] Caumo, W., et al. "Preoperative predictors of moderate to intense acute postoperative pain in patients undergoing

abdominal surgery." *Acta Anaesthesiologica Scandinavica,* Vol. 46, No. 10, 2002, pp. 1265-71.

[25] Tasdemir A, Erakgun A, Deniz MN, Certug A. "Comparism of the preoperative and postoperative anxiety levels in preoperative assessment by State-Trait Anxiety Inventory Test." *Turkish Journal of the Anaesthesiology and Reanimation,* Vol. 41, 2013, pp. 44-49.

[26] Gursoy AA. "The preoperative anxiety levels of the patients and determination of the factors affecting the anxiety." *Nursing Research Journal,* Vol. 1, 2001, pp. 23-29.

[27] Reddy, Uday Kumar, et al. "Effectiveness of health education and behavioral intervention for tobacco de-addiction among degree students: A clinical trial." *Journal of International Society of Preventive & Community Dentistry* Vol. 5, Suppl 2, 2015, p. S93.

[28] Sagir, Gülten, et al. "The effect of visual information on preoperative anxiety in spinal anesthesia." *Türk Anestezi ve Reanimsyun Dernegi,* Vol. 40, No. 5, 2012, p. 274.

[29] CuvasO, Arslanargun P, Aslan E, Yucel F, Dikmen B, Ceyhan A. "The effect of smoking on preoperative anxiety." *Turkish Journal of the Anaesthesiology and Reanimation*, Vol. 38, No. 5, 2010, pp. 348-55.

[30] Schmid, Markus, et al. "Tomophobia, the phobic fear caused by an invasive medical procedure-an emerging anxiety disorder: a case report." *Journal of Medical Case Reports,* Vol. 3, No. 1, 2009, p. 131.

[31] Mavridou, Paraskevi, et al. "Patient's anxiety and fear of anesthesia: effect of gender, age, education, and previous experience of anesthesia. A survey of 400 patients." *Journal of Anesthesia,* Vol. 27, No. 1, 2013, pp. 104-08.

[32] Özbayır T, Demir F, Candan Y, Çoşkun İ, Dramalı A. "Hastaların perioperatif döneme ilişkin izlenimlerinin incelenmesi [The examination of the impressions of the patients about perioperative stage]." *Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi*, Vol. 6, No. 1, 2003, pp. 14-23.

[33] Uzun Ö. "Ameliyat Öncesi Hasta Eğitimi. [Preoperative patient education]." *Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi*, Vol. 3, No. 2, 2000, pp. 36-45.

[34] Haugen, Arvid S., et al. "Anxiety in the operating theatre: a study of frequency and environmental impact in patients having local, plexus or regional anaesthesia." *Journal of Clinical Nursing,* Vol. 18, No. 16, 2009, pp. 2301-10.

[35] Rosén, Siv, Margita Svensson, and Ulrica Nilsson. "Calm or not calm: the question of anxiety in the perianesthesia patient." *Journal of Perianesthesia Nursing,* Vol. 23, No. 4, 2008, pp. 237-46.