

## **Evaluation of preoperative anxiety and factors influencing geriatric surgery patients and their families**

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### **ABSTRACT**

**Introduction:** *Surgical procedures are stressful for both patients and their relatives who are hospitalized for surgery. In preoperative period uneventful physiologic and psychologic reactions and in postoperative period increased sense of pain was observed due to these procedures. In the present study, we evaluated presurgical anxiety and the factors affecting its severity in geriatric patients and their first-degree relatives.*

**Materials and Methods:** *A series of 100 American Society of Anesthesiologists class I–III patients aged > 65 years, scheduled for elective surgery under general anesthesia, and their first-degree relatives were included in this single-center study. Participant characteristics including age, sex, education, and type of surgery were recorded. Preoperative anxiety was evaluated using State Trait Anxiety Inventory.*

**Results:** *We observed mild anxiety in geriatric patients, and moderate anxiety in their relatives. The highest anxiety scores were observed in patients aged 70–75 years. The State Trait Anxiety Inventory anxiety scores of the relatives of patients with previous anesthesia were significantly lower. In both group no significant differences in anxiety scores of women and men were found.*

**Conclusion:** *We believe that preoperative preparation including provision of adequate information to both patients and their relatives together with providing opportunities for them to spend time together may decrease anxiety levels.*

**Keywords:** *Geriatrics; Anesthesia; Anxiety*

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### **I. Introduction**

Anxiety is a natural and universal emotion that fosters in situations that are perceived as unsafe, and it is often caused by lack of knowledge. Acute physical disorders and restrictions caused by disease, fear of possible injury, and fear of death affect the degree of presurgical anxiety(1). Owing to aging of the population worldwide, the number of geriatric patients who are administered general anesthesia for surgery has significantly increased. These patients experience anxiety because of the fear of pain, death, loss of sexualability, and disability(2).

More than 80% patients scheduled to undergo surgery have been reported to experience preoperative anxiety(3). The level of anxiety was higher in individuals with families than in those without families; in addition, preoperative anxiety levels are also high in cardiac surgery patients, individuals with anesthesia-related problems, and young patients(4). Anxiety is a normal, healthy response, but severe preoperative anxiety, especially in geriatric patients, can affect the surgical procedures, anesthetization, postoperative healing, and mortality. Anxiety can also cause hypertension and dysrhythmia and may result in the patient refusing surgical treatment(5), or the developing anxiety may also increase the requirement of anesthesia and risk of awareness during surgery(6). Accurate assessment and reduction of patient stress and anxiety before elective surgery might decrease organ dysfunction and complications by decreasing the neurohumoral response(7). Preoperative assessment of geriatric patients should include an explanation regarding anesthetic and perioperative procedures to patients and their families, and they should have a say in choosing the method of anesthetization and type of

premedication. We evaluated anxiety levels in geriatric patients and their first-degree relatives and factors affecting anxiety in this study.

## **II. Materials And Methods**

The study was conducted according to the Declaration of Helsinki and after the Institutional Ethics Committee approval, we included 100 ASA I–III patients aged > 65 years and their family members and relatives who could complete the anxiety evaluation questionnaire. The patients were scheduled for elective surgery under general anesthesia at the Kartal Dr. Lutfi Kirdar Education and Research Hospital.

The inclusion criteria included the following: (i) the patient should be literate; (ii) the patient should have no psychiatric or neurologic disorder; (iii) the patient should not be using psychiatric drugs; and (iv) the patient should not be an alcoholic. Patients who met the inclusion criteria were enrolled and interviewed 2 days before surgery to record their demographic characteristics and for administration of State Trait Anxiety Inventory (STAI) questionnaire to assess preoperative anxiety levels. STAI is a self-administered questionnaire in Turkish(8) STAI test is commonly used for the determination of preoperative anxiety, and it includes two parts, each comprising 20 items that separately measure state anxiety and trait anxiety. It is easily self-administered, with each response consisting of a choice of a four-point scale of intensity. The choices include “not at all,” “somewhat,” “moderately so,” and “very much so” for state anxiety and “almost never,” “sometimes,” “frequently,” and “almost always” for trait anxiety. Ten items on each form score the intensity of feelings associated with anxiety (positive scores) and ten score the intensity of feelings associated with absence of anxiety (negative scores). The total score for each patient was calculated as the sum of the positive and negative scores for each item on the questionnaire and adding 50. The highest possible point score was 80 and the lowest was 20. Patient scores of 20–39 indicated mild, 40–59 indicated moderate, and 60–79 indicated severe anxiety.

Data analysis was performed using SPSS Version 16.0 (SSPS, Inc. Chicago, IL, USA). The difference between the qualitative groups was evaluated by chi-square test. ANOVA and t-test were used to compare anxiety scores of patients and their relatives. The level of significance in the statistics was accepted as  $p < 0.05$ .

## **III. Results**

The study included 100 geriatric patients with mean age  $69.6 \pm 11.3$  years and their first-degree family members. Demographic data of the patients is shown in Table 1.

The mean anxiety score of the patients was  $33.2 \pm 12.82$  and that of the first-degree relatives was  $41.5 \pm 12.11$ , which showed that most patients awaiting elective surgery experienced mild preoperative anxiety and their relatives experienced moderate anxiety (Table 2).

The mean STAI scores in men patients ( $33.4 \pm 8.6$ , range: 23–62) and men relatives ( $34.5 \pm 7.1$ , range: 23–62) were not significantly different ( $p = 0.308$ ). In addition, these scores were not different in women patients ( $34.4 \pm 8.2$ , range: 25–65) and women relatives ( $37.4 \pm 9.3$ , range 23–62) ( $p = 0.364$ ). However, the difference in the preoperative anxiety scores of the geriatric patients and their direct family members was significant ( $p < 0.05$ ) (Table 3).

The education levels and anxiety scores of the patients and their first-degree relatives are shown in Table 3. Twenty-nine percent of the geriatric patients ( $n = 29$ ) had received primary school education, 11% ( $n = 11$ ) had elementary school diplomas, 35% ( $n = 35$ ) had high school diplomas, and 25% ( $n = 25$ ) had university degrees. Seventeen percent of the relatives ( $n = 17$ ) had received primary school education, 15% ( $n = 15$ ) had elementary school diplomas, 47% ( $n = 47$ ) had high school diplomas, and 21% ( $n = 21$ ) had university degrees. There were no significant differences in the anxiety scores of geriatric patients who had different education levels ( $p > 0.05$ ). Anxiety scores were the lowest in patients who received primary school education and highest in those who had university degrees, but the difference was not significant ( $p > 0.05$ ). Anxiety scores of family members followed a pattern similar to that observed in the patients. No significant relation between education level and anxiety level was found in either the patients or their relatives.

In geriatric patients, the highest anxiety scores were observed in patients aged 70–75 years, but the age group differences were not significant ( $p = 0.285$ ) (Table 3). In family members, the highest anxiety scores were seen in the relatives of patients over 85 years of age, and the difference was significant ( $p = 0.671$ ). There is no significant difference in anxiety scores of patients and their relatives in all these age groups (Table 3).

Anxiety scores of patients and their relatives with a history of previous anesthesia were not significantly different. However, anxiety scores of the patients without a previous anesthesia were significantly lower than those of the relatives of patients without a previous anesthesia ( $p < 0.001$ ) (Table 3).

Anxiety scores of patients waiting for major, moderate or minor surgery did not differ significantly from the scores of their relatives ( $p = 0.372$ ,  $p = 0.505$ , and  $p = 0.618$ , respectively) (Table 3).

#### **IV. Discussion**

The level of anxiety before surgery vary in geriatric patients. Major life changing events are among factors that cause anxiety, and these include surgery. Anxiety is the most common emotional response among hospitalized geriatric patients, especially if they are scheduled to undergo surgery (9,10). Management of preoperative anxiety in geriatric patients is challenging. Factors affecting the development of anxiety in geriatric patients include leaving home and family, interruption of daily activities, lack of knowledge regarding anesthesia and surgical procedures, possibility of intraoperative and postoperative complications, fear of not recovering from the anesthesia, and fear of intraoperative and postoperative pain (11). Informing patients about hospital procedures and surgical interventions decreases anxiety levels and increases patient satisfaction (12).

STAI test, which was developed by Spielberg, is the most common scale used to assess patient anxiety. This scale determines how an individual feel at a specific time and under specific conditions (13).

It is the gold standard test for measuring preoperative anxiety. The threshold score for clinically significant anxiety is 39–40 because the test enables assessment of how a patient feels independently, regardless of the situation (14). Preoperative anxiety may affect 60%–92% of patients, and the incidence may vary with the type of surgery (15). Anxiety levels have been reported to be higher in women than in men, and higher patients who have families than in those without families; anxiety levels are also high in cardiac surgery patients, patients with a history of anesthesia problems, and young patients(4). Anxious patients require higher doses of anesthesia during induction(16) and high preoperative anxiety levels in adults increase postoperative pain and demand for analgesics and sedatives(17). The most common causes of anxiety in relatives of patients include thoughts that the patient might die, fear of treatment failure, and inadequate knowledge of the disease. Health problems of geriatric patients and their hospitalization affect the daily lives of relatives, causing feelings of anger, guilt, and desperation. Mild anxiety may prompt relatives to spontaneously increase their attention and support towards the patient, but with increase in anxiety levels, their ability to understand the patient's decisions decreases. Additionally, increased anxiety also decreases the ability of relatives to understand explanations about the operations and their participation in postoperative care. Studies on the effects of preoperative anxiety on surgical treatment and methods that can decrease it are increasing. The primary approach to reduce preoperative anxiety is to provide adequate information to patients and relatives. It is crucial to choose the method of communication which is easily understood by the patient, one in which the patient's fear and anxiety decreases within a short time.

Previous studies have reported higher anxiety levels in women than in men(18,19) and our findings of higher anxiety scores in both female patients and relatives in this study are consistent with these reports. The ease of expressing feelings of anxiety using STAI is most likely an important factor in identifying differences in anxiety levels in women and men. Others have reported an association of increase in the frequency of anxiety periods and increased education level, but this finding has been inconsistent(20). We found no relationship between education level and degree of anxiety. In both patients and relatives, anxiety levels were the lowest in those who received primary school education and highest in those who had university degrees, but the difference was not statistically significant. Grabow et al. Found that the preoperative anxiety level was higher in younger patients than in the general population(19). Geriatric patients are more fatalistic than young individuals, and younger patients may be more cognizant of the possible negative effects of health care than geriatrics, owing to the use of communication tools; both these factors may contribute to age-related differences in preoperative anxiety(20,21).

Intuitively, patients with previous surgical experience would have lower anxiety levels than those awaiting surgery for the first time. However, surgical history of patients does not affect anxiety levels (22,23). We found no statistical significance between surgical history and anxiety levels in 67 of 110 patients who had a history of surgery and 43 of them who were awaiting their first surgery. Similarly to Matthias AT et al(24), we found no statistically significant relation between surgical history and anxiety levels.

Anxiety levels increase in patients scheduled to undergo oncologic surgery or procedures that involve possible loss of an organ (25). In the present study, 20% patients underwent major, 50% patients underwent moderate, and 30% patients underwent minor surgical procedures. We found no statistically significant difference between the anxiety levels and type of surgical procedure (Table 2). This result is consistent with that reported by Moerman et al., in which the relationship between anxiety levels and surgery types was examined (26).

Most geriatric patients awaiting elective surgery experienced mild levels of preoperative anxiety, and their first-degree relatives experienced moderate anxiety. Preoperative anxiety in geriatric patients, especially those with additional diseases, may result in physical and psychological problems. Preoperative preparation that provides adequate information to both patients and their relatives and allows for time together may decrease their anxiety and improve their ability to cope with the perceived problems.

**Conflict of interest**

The authors have no conflicts of interest to declare.

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**TABLES**

**Table1.**Demographic characteristics of geriatric patients

		<b>Geriatric patients (n = 100)</b>
Gender	Male n, (%)	51
	Female n, (%)	49
	Total	100
Marital status	Married n, (%)	43
	Unmarried n, (%)	57
	Total	100
Education level	Primary school n, (%)	23
	Elementary school n, (%)	11
	High school n, (%)	25
	University n, (%)	41
	Total	100
ASA*		
ASA I	Male/Female	24/22

ASA II	Male/Female	18/16
ASA II	Male/Female	9/11
	Total	100

(\*) ASA, American Society of Anesthesiologist

**Table 2.** Comparison of the preoperative anxiety scores of geriatric patients and their relatives

	Geriatric patients(n = 100)	Relatives(n = 100)	p
<b>Anxiety scores</b>			
STAI ±SD	33.2±12.82	41.5±12.11	<0.001*
SD	7,785	7,421	
Minimum	20	24	
Maximum	67	78	

STAI: State-Trait Anxiety Inventory, SD: Standard deviation.

P<0.05; significant by ANOVA test

**Table 3.** Comparison of the preoperative anxiety scores of geriatric patients and their relatives according to education level, gender, age, previous surgery, surgery type

Education level	Geriatric patients(n = 100)	Relatives(n = 100)	p
Primary school	36.1±12.2 (n=29)	33.8±11.4 (n=17)	0.302
Elementary school	38.6±9.9 (n=11)	36.6±8.7 (n=15)	0.261
High school	39±10.3 (n=35)	35.6±9.3 (n=47)	0.391
University	42.9±11.3 (n=25)	37.6±9.6 (n=21)	0.442
<b>Gender</b>			
Male	33.4±8.6	34.5±7.1	0.308
Female	34.4±8.2	36.4±9.3	0.364
<b>Age groups</b>			
65-70(n=33)	41±10.6	39±8.6	0.292
70-75(n=41)	43±11.6	40±7.3	0.315
75-80(n=21)	40±9.6	38±8.5	0.491
80-85(n=3)	38±8.6	36±9.4	0.589
>85 (n=2)	37±11.6	48±10.2	0.216
<b>Previous surgery</b>			
(+)	38±9.6	35±8.9	0.471
(-)	46±10.5	49±11.7	<0.001*
<b>Surgery type</b>			
Major	41±10.5	47±12.5	0.372
Moderate	43±11.4	48±10.3	0.505
Minor	45±10.7	48±12.6	0.618
Total	100	100	

No significant differences between anxiety scores by ANOVA test

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