



# A comparison of preoperative and postoperative anxiety levels affecting preoperative and postoperative processes of orthopedics patients

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## Abstract

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**Aim:** Different anxiety levels come up, and many of the patients become worried before operations. If there was anxiety, the patients should be relieved by diagnosing, and the negative anxiety should be turned into a positive form. It will cause positive reactions of the patients and make the treatment gains increase. We aimed to compare the anxiety levels of the patients about the orthopedic operations according to the sex, age, and education levels of the patients.

**Materials and Methods:** 122 patients who underwent knee arthroscopy under spinal anesthesia in the Orthopedics and Traumatology operating room were included in the study. Patients aged between 18 and 55 years, included in ASA I and II classes, literate, not having any psychiatric and neurological problems, not using psychiatric drugs, and not using chronic alcohol, were included in the study. The patients' anxiety levels were assessed before and after surgery with the "State-Trait Anxiety Inventory Test (STAI TX-1 Anxiety Skala)".

**Results:** It was found that there was no significant difference between patients' pre and post-test state anxiety levels; however, the post-tests put forward that patients' anxiety levels after the operation were a little higher than their pre-tests' state anxiety levels before surgery.

**Conclusion:** The patients should be informed about the problems, limitations, advantages, and disadvantages of surgery before and after the procedure. The patients should also receive psychological support to reduce their anxiety about the surgical procedure.



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## Introduction

Professionals often conduct studies to learn and evaluate the level of patients satisfaction with health care services [1, 2]. Patient satisfaction is necessary evidence to decide on the efficient use of available resources as costs increase [3]. When patients think intensely about the overall dimensions of their illnesses and the operations they should undergo, it affects their psychological state. Almost everybody has faced such kind of situation once in a lifetime. A patient who is under the control of a doctor takes part in a different and foreign environment. Environmental change, the uncertainty of an operation, experiences of others can make patients feel anxious. Anxiety is a type of situation that results from the reaction to dangers that disturb the

balance of the body. In other words, it is a situation that worries the organism. This situation is perceived when the organism feels in danger. Surgeries and treatments trigger discomfort, fear, doubt, pain, and loss of independence, especially in orthopedic events/diagnoses. Everyone can not have enough information about health services. However, it is an essential service [4]. Since there is no socialization in the hospital, other health professionals should communicate with patients [5]. It is quite normal for the patient to feel negative anxiety, making patients' live helplessness syndrome. Before they come to the hospital, patients perceptions and prejudices also aggravate the situation [6]. Sometimes the expectations of patients and the health care services provided do not match each other [7]. Although the service provided in hospitals is similar to that provided in other institutions, it is more complex [8].

For most patients it is almost inevitable for most patients to have anxiety at certain levels before an operation. The

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important that the stress be directed in a positive direction. The most important thing is that patients receive psychological support. This support aims to transform psychological well-being into biological well-being by relieving the patients, reducing the contractions and stresses to the lowest levels, and facilitating rehabilitation [9]. The stress hormones which have the potential to have a negative effect at an ordinary level should also be restricted. This support for patients may translate into informing patients about the goal. People who are informed about the goals related to a particular issue and situation create important motivation. At the same time, they become the positive actors of the process. It is an indispensable fact that this kind of fellowship will be important for the operation process and a positive rehabilitation phase. This study aimed to compare the anxiety levels of the patients before and after orthopedic surgery according to gender, age, and education level.

## Materials and Methods

After the approval of Atatürk University Faculty of Medicine Research Ethics Committee, dated 31.05.2016 and numbered B.30.2.ATA.0.01.00/81 and decision number 21, patients who underwent knee arthroscopy under spinal anesthesia in the Orthopedics and Traumatology operating room were included in the study. Patients aged between 18-55 years, included in ASA I and II classes, literate, not having any psychiatric and neurological problems, not using psychiatric drugs, and not using chronic alcohol, were included in the study. Patients met with an orthopedist (MCE) before entering the operating room. In this interview, the age, gender, and education level of the patients were documented. This orthopedist also informed patients about their surgeries. The patients were given the Spielberger State-Trait Anxiety Inventory Form (STAI FORM TX-I) (10) and were asked to complete this form. Researchers used this scale in some studies in the past, and they conducted reliability and validity before. This study used the scale because it was accepted and used to collect data as a valid and reliable instrument.

STAI FORM TX-I was filled to define the patients' anxiety levels before the operation. This form comprises 20 items, and each item includes four multiple-choice options. The document was read to the patients clearly, and their preferences were checked with no intervention. All patients included in the study were taken to the operating room. Spinal anesthesia was applied to the patients. All patients were operated on through the anterolateral and anteromedial portals used in standard knee arthroscopy. Meniscus repair was performed in all patients. The knee joint was debrided. Tissues were duly closed. After dressing and bandaging, the operation was ended.

In the first 24 hours after the surgery, an orthopedist (MCE) administered the same scale to the patients and meticulously documented the data got from the patients. Thus, the patients' anxiety levels were defined before and after the operations. The same researcher (MCE) analyzed the results and calculated the score.

**Table 1.** The Introductory Information of Investigated Patients (N=122)

	N	Mean	sd	t	p
Preoperative test					
Male	76	41.79	6.372	1.671	0.100
Female	46	39.26	4.444		
Postoperative test					
Male	76	42.55	6.471	0.775	0.140
female	46	41.17	7.146		

N: Population; sd: Standard Deviation; t: T Value; p: P-Value

**Table 2.** The Differences Between the Preoperative and Postoperative test State Anxiety Scores

	N	%
Sex		
Male	76	62.3
Female	46	37.7
Age		
18-25	12	9.8
25-35	28	23.0
35-45	36	29.5
45-55	46	37.7
Education Position		
Primary School	48	39.3
Secondary School	14	11.5
High School	26	21.3
University Graduate	20	16.4
Post Graduate	14	11.5

N: Population

### Statistical analysis

Based on the findings of a previous study [11], a priori power analysis was done, and 122 patients in our investigation gave a power of 95% at the 5% significant level.

The IBM SPSS version 22.0 software was used for statistical analysis (IBM Corp., Armonk, NY, USA). The data collected by the STAI TX-1 Anxiety Level Scale were analyzed with the descriptive method and dependent t-test. Statistical significance was defined as a p-value of  $< 0.05$ .

## Results

It could be understood that the sample group of this study comprises 122 participants (76 males and 46 females). There were 46 participants at 45-55 years, 36 participants at 35-45 years, 28 participants at 25-35 years, and 12 persons at 15-25 years. Regarding the educational backgrounds, it could be understood that most participants were primary school graduates (Table 1). Table 3. The Difference Between Male and Female Patients' Preoperative and Postoperative Test State Anxiety Levels

There was a difference between the participants' anxiety levels before the surgery and the postoperative test after the surgery. Furthermore, it was observed that there was a slight increase in the patients' anxiety levels ( $p > 0.05$ ) (Table 2).

**Table 3.** The difference Between Male and Female Patients' Preoperative and Postoperative test State Anxiety Levels

	N	Mean	sd	t	p
Preoperative test	122	40,84	5,814	1.290	0.202
Postoperative test	122	42,03	6,708		

N: Population; t: T Value; p: P-Value

**Table 4.** The Difference Between the Patient's Preoperative and Postoperative test State Anxiety Levels According to Their Age Positions

Age	N	Mean Rank	p
<b>Preoperative test</b>			
18-25	12	2.58	0.459
25-35	28	34.89	
35-45	36	26.89	
45-55	46	33.26	
<b>Postoperative test</b>			
18-25	12	19.00	0.087
25-35	28	31.71	
35-45	36	38.36	
45-55	46	27.93	

N: Population; t: T Value; p: P-Value

There was no significant difference between male and female participants' pre and postoperative test state anxiety levels according to gender ( $p > 0.05$ ). On the other hand, there is a slight increase in favor of the male and female participants' preoperative and postoperative test scores of state anxiety levels. The mean of male participants' state anxiety preoperative test is 41.79, and for the postoperative test, it is 42.55. From the same point of view, female participants' preoperative and postoperative test state anxiety levels are 39.26 and 41.17, respectively. As a result, male and female patients' state anxiety levels increased after the surgery (Table 3).

According to preoperative and postoperative test state anxiety levels, there was a slight difference, but there was no significant difference in terms of the ages of patients. State anxiety levels of only the patients at the age of 25-35 were more than the other patients. The mean anxiety level of those patients was 34.89. However, as for the postoperative test, it might be said that the patients at the age of 35-45 have more state anxiety levels than the other participants, and their score was 38.36 (Table 4).

According to their educational backgrounds, there was no significant difference among the participants' state anxiety scores ( $p > 0.05$ ). However, the postgraduate participants' state anxiety scores' mean of preoperative (41.00) was a little higher than the other participants with the educational status of primary school, secondary school, high school, and university graduate before the operation. The same participants' state anxiety levels were like the preoperative test scores. There was no significant difference among their postoperative test state anxiety scores ( $p > 0.05$ ). Such as preoperative test scores, postgraduate participants' state anxiety scores were slightly higher than the

**Table 5.** The Differences Between the Preoperative and Postoperative test State Anxiety Scores According to Their Education Status

	N	Mean Rank	p
<b>Preoperative test</b>			
Primary School	48	31.04	0.426
Secondary School	14	31.14	
High School	26	30.92	
University/Graduate	20	23.90	
Post Graduate	14	41.00	
<b>Postoperative test</b>			
Primary school	48	32.21	0.434
Secondary school	14	19.79	
High school	26	30.54	
University/Graduate	20	32.30	
Post Graduate	14	37.07	

N: Population; p: P-Value

other participants' mean after the operation (Table 5).

## Discussion

This study found out that there was not a significant difference between the patients' state anxiety levels before and after the operation. Thus, the patients' pre and postoperative test state anxiety levels did not show any meaningful difference. On the other hand, the patients' postoperative test state anxiety levels after the operations were slightly higher than their preoperative test anxiety levels before the procedure. It might be said that there was a crucial problem here because it might be thought that the patients were not informed enough about the operation and its success. If patients had been informed about the advantages and disadvantages of the procedure before and after the process, their postoperative anxiety levels would not have been lower or higher than their pre-operative anxiety levels.

On the other hand, there might be another variable to affect the patients' anxiety levels. It was the patients' feelings about the operation. If the patients had been informed of surgery results, their anxiety levels could be lower than before the operation. In other words, there was a health literacy and communication problem.

One method to measure service quality is the SERVQUAL method. This method and some differently developed forms of this method have been used widely all over the world. Some researchers prefer this method. However, some researchers have contra ideas too. Measuring the service quality at hospitals includes some different forms. The technical evaluation of hospital services makes these services better and functional. There are many kinds of research to measure hospital service quality.

According to the Health Ministry, the health services are inpatient treatment services [12]. Researches show that the patients who experienced this condition and had an operation felt anxiety, although they were not at a very high panic level [13]. Levels of stress felt by patients waiting for an operation show significant differences. After an operation, the patients fear death, inability to heal, disability, and having ache at the beginning of anxiety [14,

15]. Patients' anxiety waiting for an operation that can turn into panic concerns must be considered; otherwise, it can create negligible effects. As adverse effects were observed in many events, it was emphasized that it would negatively affect the healing process [16]. The inputs of hospitals such as institutions are patients, human power, materials, physical and financial sources, but the outputs are the treatment of patients and injured ones, the in-service training, the students' clinic educations, research and development activities, and raising the health level of society [17].

On the other hand, it is crucial to define the patients' expectations and solve developing services in hospitals [18]. Quality for hospital services is the most critical variable. Quality may be thought to be a systematic approach to excellent-searching/guessing and the relevance of aim [19]. The quality evaluations can also be done according to the medical outputs, cost analysis, and patients' satisfaction [20]. It is possible to examine the service quality at hospitals in two dimensions. These are the technical dimension and accommodation dimension [21]. The technical extent includes doctors' and nurses' services. The accommodation dimension includes administrative activities such as food services, noise, room temperature, cleaning, and the patients' parking areas [22, 23]. Patients and doctor relations are formed by giving enough information, spending sufficient time with patients, interest, kindness, friendliness, and privacy.

Tasdemir, A. et al. [11] found out that female participants' state anxiety levels were higher than male participants before and after the surgery. However, this difference was not significant. On the other hand, the patients' anxiety levels before the surgery were higher than those after the surgery. However, after the procedure, the patients' anxiety levels were lower than before the process. This result was meaningful.

The researchers from two different centers studied "The Effect of Pre and Postoperative Anxiety in Quality of Recovery in Undergoing Surgery". They pointed out that the patients' state anxiety levels before and after the surgery were similar, and there was no significant difference statistically. Because the mean of the patients' anxiety levels before the surgery was  $40.59+4.05$ , continuous state anxiety levels were  $41.43+4.00$ . The mean of DK-40 score was  $158.45+20.39$  (Yılmaz & Aydın, 2016).

According to a study, the doctor factor was the most effective positive factor for the patients. When the patients came to the doctor, they expected to diagnose and treat them correctly. However, it was defined that the patients could not evaluate the process [24].

This study puts forward that there was not a significant difference between the patients' pre and postoperative test state anxiety levels. However, the postoperative test results put forward that the patients' state anxiety levels after the operation were slightly higher than their preoperative tests' state anxiety levels before the procedure. There is crucial importance; because the expected result is that the patients must have higher or lower state anxiety levels. If the patients have enough health literacy, they must have some objective information about their problems. If their illness or problems are reasonably severe,

painful, and continuous, naturally, they must have higher state anxiety levels. Thus, it can be said that it is quite a normal situation. However, if they have a successful operation, their state anxiety levels after the successful operation must decrease with the contribution of the patient-doctor relationship. If not, it means there might be some more communication and information problems. Thus, the health workers must have education about communication with patients and understand their psychological positions and anxieties, especially before and after the operation. The students may be given more courses about human psychology, developmental psychology, social psychology, and successful communication in the undergraduate education process. In other words, beyond the students, all teachers in charge of medicine faculties must have enough knowledge regarding pedagogic formation to solve these problems quickly.

If the patients' state anxiety levels after the operation were not lower than their preoperative test state anxiety levels before the procedure, they would not believe the operation's success; they would not feel comfortable and have persistent problems. Thus, it could be said that the patients might not be informed clearly about their serious issues. They assumed that some patients had too serious health problems and minimal treatment methods. In this situation, the patients must be given psychological support to decrease their anxieties. Even this one might comfort the patients and reduce their anxiety levels.

Many studies have been conducted on patient satisfaction and the quality of hospital services [25-29]. In these studies, service quality and patient satisfaction were evaluated from different perspectives, and some instruments and criteria were developed. According to nearly all of these studies, it was clearly understood that service quality development was the most critical factor, and its influence on customer satisfaction, worker satisfaction, institution performance, and productivity was examined [26]. On the other hand, the results of these studies showed that measuring service quality was also tricky.

#### *Limitations*

This study was limited to the patients included in the process. On the other hand, this study was determined by the preferences of the patients.

#### **Conclusion**

Based on these results;

- It could be said that the patients must be informed about their problems, limitations, the advantages and disadvantages of the problem, and the operation before and after the procedure.
- Therefore, hospitals need to take precautions to eliminate the problems, such as; developing more functional medicine education programs and getting more support from developmental and behavioral psychologists.
- On the other hand, medical and educational departments should be reorganized and expanded. These



departments must include sufficient area experts in curriculum development.

- The programs must be continuously developed with the help of new scientific, psychological and technological improvements.

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#### Conflict of interest

The authors declare no potential conflicts of interest concerning this article's research, authorship, and/or publication.

#### Ethical approval

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