

Research Article

The Effects of Anesthesiologist on Anxiety Level in Patients Undergoing *In-Vitro-Fertilization* Therapy

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Abstract

Background: *In Vitro* Fertilization (IVF) treatment is an assisted reproductive technique applied in infertile couples. According to World Health Organization reports, infertility affects 50 to 80 million women worldwide. The hopelessness of patients treated with IVF determines the severity of anxiety. Although anxiety is functional up to a certain level, higher preoperative anxiety levels have been associated with increased anesthetic requirement. In order to reduce the level of anxiety, patients should be prepared psychologically and pharmacologically for surgery. The aim of this study was to investigate the awareness of anesthesiologists about perioperative anxiety of patients undergoing surgery for IVF.

Materials and methods: Forty-two volunteers and 33 anesthesiologists who received IVF treatment were included in the study. In the preoperative questionnaire, 14 sociodemographic and 5 likert scale questions were asked to the participants. The Beck Anxiety Inventory was applied. In the postop questionnaire applied to the patients, 9 questions were asked, 7 of them were likert-sized, and 2 of them were open-ended. In our questionnaire applied to anesthesiologists, 5 sociodemographic, 7 likert-scale and 12 open-ended questions were asked.

Results: Of the attending physicians, 51.52% were female, 48.48% were male and 81.25% were ready to deal with anxiety related complications during anesthesia. There was no significant correlation between educational status and anxiety levels of the patients ($p=0.20$). 47.62% of the patients were primary school, 14.29% were middle school, 16.67% were high school and 21.43% were university graduates, 95.4% had previously undergone anesthesia for different reasons. There was a positive relationship between preoperative and postoperative anxiety levels of the patients ($p=0.0315$). There was no significant relationship between anxiety awareness of physicians ($p=0.72$).

Conclusion: It was observed that the patients who had high anxiety during the preoperative period maintained their anxiety levels in the postoperative period and affected the anesthesiologist's methods. However, the fact that the continuation of anxiety in the postoperative period was not related to any demographic data indicates that this issue is still controversial.

Keywords: Anxiety; Anesthesiologist; *In-vitro* fertilization

Introduction

Anxiety is a natural reaction that an individual develops against situations in which he/she does not feel safe. They can have varying densities ranging from low tension and uneasiness to panic. There are types of panic attacks, generalized anxiety disorder, anxiety-depressive disorder. Anxiety is associated with increased postoperative morbidity and mortality and increased anesthetic requirement. In addition, the duration of hospital stay, patient satisfaction, stress, postoperative pain level, hemodynamic instability and nausea and vomiting frequency are directly effective. Preoperative anesthesia consultation is mostly limited to technical and medical evaluation, and the patient

may have to struggle with anxiety causing serious complications in the postoperative period. For this reason, it is especially important to prepare patients in the preoperative period.

Infertility is associated with high-frequency psychosomatic and somatic disorders that reduce the sense of well-being. According to the literature, women are generally more affected from infertility than men and deal with them differently. Cousineau and Domar reported that infertility is as stressful as a serious disorder such as cancer [1]. The results of a study by Bennon revealed that the failure of the treatment program was associated with increased anxiety [2]. Nourani et al. [3] showed that infertility is an important problem in the area of reproductive health. Although infertility is not accepted as a disease, it can lead to emotional disorders and psychosocial consequences. Chen et al. [4] evaluated the prevalence of anxiety and depressive disorders in an assisted fertility clinic in 2004 and the results of the study found that the prevalence of general anxiety disorders was 23.2%. Yassini et al. [5] in 2005, the majority of women were identified as mild (76%) and severe (12%). Both in the treatment process and the results of treatment stressed infertility can lead to psychological disorders [6,7].

A clinical study that assesses anxiety scores with Beck Anxiety Scale before and after egg collection in patients undergoing *In-Vitro* Fertilization (IVF) treatment, and which determines the effect of the awareness of the anesthesiologist is not yet included in the literature.

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In our study, it was planned to apply a questionnaire aiming to measure the perceptions of anesthesia physicians on patient anxiety. In addition, it was aimed to determine the factors such as the number of failed IVF, if any, the number of children, education level, operation history, age, the cause and duration of infertility and the effects of anesthesia doctor on the anxiety and mood in the preoperative and postoperative periods.

The kind of surgery, the fear of the hospital environment and the distrust of the quality of medical support can lead to anxiety. Preoperative anxiety frequency varies between 60% and 92% in patients undergoing surgery. IVF treatment is an assisted reproductive technique performed by applying general anesthesia or deep sedation in couples with little or no pregnancy chance. According to World Health Organization estimates, infertility affects 50 to 80 million women worldwide [8]. According to this, the rate of infertility in the world is between 8% to 12%. In Turkey occurs in 10% to 20% of married couples [9].

Patients with IVF treatment despair of the disease, feeling outside the control of events in the course of their own control, the body will be damaged as a result of surgical procedures, the operation will not benefit from the operation or fear of death determines the severity of the patient's anxiety. Although anxiety was functional and healthy up to a certain extent, high preoperative anxiety level was associated with increased morbidity and mortality as well as increased anesthetic requirement. On the other hand, hospital stay has a direct effect on patient satisfaction, stress and postoperative pain level. For this reason, in order to reduce the level of anxiety during the pre-anesthetic consultation, patients should be prepared for the psychological and pharmacologically appropriate operation. There are some scales that measure the level of preoperative anxiety. Amsterdam Preoperative Anxiety and Information Scale (APAIS), Anxiety Visual Analogue Scale (VAS) and Anxiety Scale (Anxiety Scale) measurement.

In our study, it was aimed to determine whether preoperative and post operative anxiety levels of the patients undergoing IVF were related to the awareness of anesthesia physicians.

Materials and Methods

After the ethics committee approval, 42 patients and 33 anesthesiologists who received IVF treatment were included in the study. In the preoperative patient questionnaire, 14 sociodemographic and 5 likert scale questions were asked to the participants. The Beck Anxiety Inventory was applied. In the questionnaire administered to the patients postoperatively, 9 questions were asked and 7 of them were likert-sized and 2 of them were open-ended. In our questionnaire applied to anesthesiologists, 5 sociodemographic, 7 likert scale and 12 open-ended questions were asked.

The inclusion criteria were ASA I or II, 18 years of age and over, and IVF treatment between the dates of November 5th, 2018 to December 9th, 2018. Volunteers' reading and writing in Turkish was accepted as the criterion for inclusion in the study. The fact that the volunteers did not give written informed consent, no co operations, mental retardation or psychiatric illness, and the inability to read or write in Turkish was accepted as the criteria for exclusion from the study.

The results were analyzed with Mann Whitney U, Kruskal Wallis, Spearman, Chi Square and Fisher's exact test using Stata 15.1 program. P<0.05 was considered statistically significant.

Results

Of the 42 responding patients, 47.62% (n=20) were between 25 to 30, 38.10% (n=16) 30 to 35, 14.29% (n=6) 35 to 40 years of age. Of the 42 responding patients, 47.62% (n=20) were in primary school, and 16.67% (n=7) in high school, 21.43% (n=9) was a university graduate (Figures 1-3).

Of the 42 patients, 96.86% did not have a biological child (n=39) and 7.14% (n=3) had a child. Of the 42 patients, 57.14% (n=24) did not work and 42.86% (n=18) were working. The patients were asked about the causes of infertility and 38.1% (n=16) had infertility reason, 28.57% (n=12) were co-originating, 11.9% (n=5) head endocrine, 11.9% (n=5) of the Arcuate Uterus, 4.76% (n=2) of the exogenous, 2.38% (n=1) of the thyroid hormone disorder, 2.38% (n=1) adrenal gland pathology (Figures 4 and 5).

28.57% (n=12) of patients were in 0 to 1 years, 23.81% (n=10) in 1 to 2 years, 16.67% (n=7) in 2 to 3 years, 7.14% (n=3) for 3 to 4 years, 9.52% (n=4) for 4 to 5 years, 7.14% (n=3) for 5 to 6 years, 4.76% (n=2) 6 to 7 years, 2.38% (n=1) reported infertility problem for 7+ years.

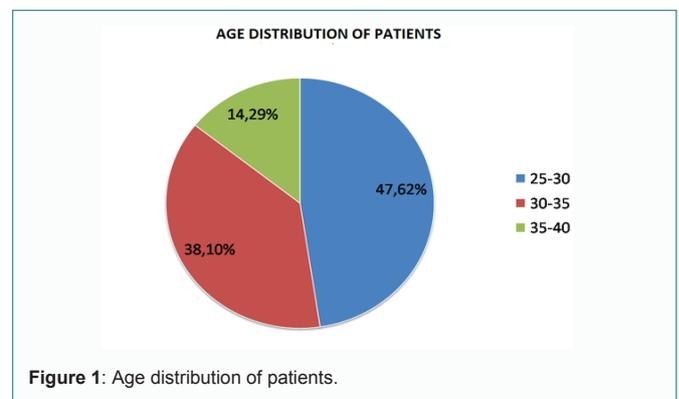


Figure 1: Age distribution of patients.

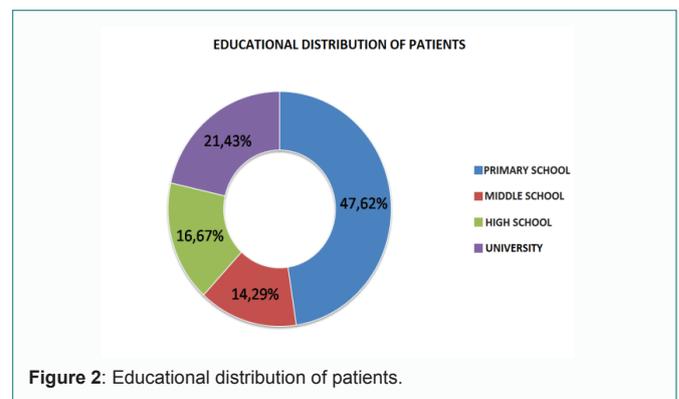


Figure 2: Educational distribution of patients.

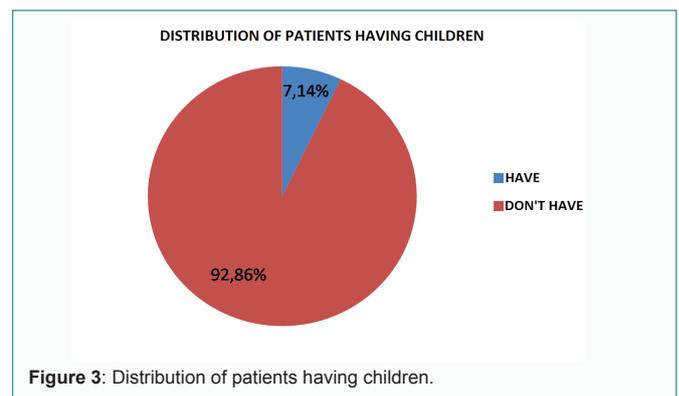


Figure 3: Distribution of patients having children.

The patients were asked whether they had received anesthesia before and the number of anesthesia they received. 4.76% (n=2) of the patients did not receive any anesthesia. 50% (n=21) 1, 16.67% (n=7) 2, 11.9% (n=5) 3, 11.9% (n=5) 4 and 4.76% (n=2) stated that they received 5 times anesthesia (Figure 6).

33.33% of the patients (n=14) had never tried IVF treatment before. 16.67% (n=7) 1, 30.95% (n=13) 2, 9.52% (n=4) 3, 7.14% (n=3) 4, 2.38% (n=1) tried 5 times IVF treatment (Figure 7).

When "Have you tried any other technique than IVF?" was asked, 54.76% (n=23) of patients answered no, 45.24% (n=19) answer edyes. Forty-two patients also responded to the questionnaire which was prepared in order to learn the effect of physicians on the anxiety levels at the preoperative period of IVF treatment.

The patients had the lowest score of 0 and the highest score of 10. Of the 42 responding patients, 4.76% (n=2) answered no, 95.24% (n=40) yes. The patients had the lowest score of 0 and the highest score of 23. Of the 42 patients, 69.05% (n=29) showed mild, 23.81% (n=10) mild anxiety, 7.14% (n=3) had moderate anxiety (Figure 8).

Of the 42 responding patients, 90.48% (n=38) had no nausea, and 9.52% (n=4) responded to nausea. None of the patients had vomiting (Figure 9).

The questionnaire, which was prepared for the purpose of learning the sociodemographic characteristics of physicians working in Marmara University Faculty of Medicine Education and Research Hospital, was answered by 33 doctors. 42.42% (n=14) 25 to 26, 30.30% (n=10) 27 to 28, 6.06% (n=2) 29 to 30, 12.12% (n=4) 31 to 32, 3.03%

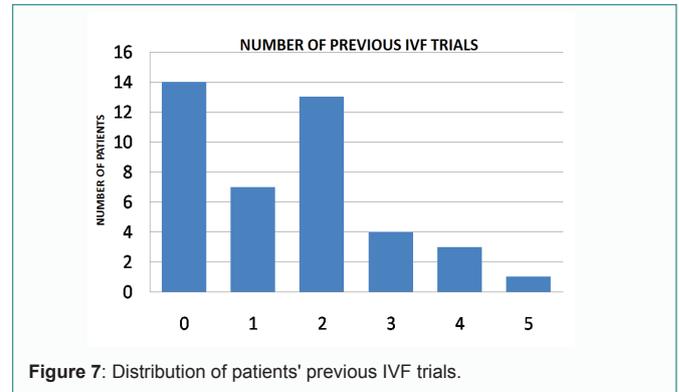


Figure 7: Distribution of patients' previous IVF trials.

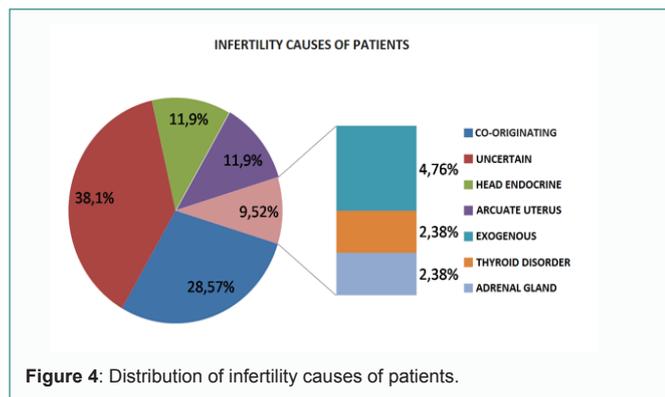


Figure 4: Distribution of infertility causes of patients.

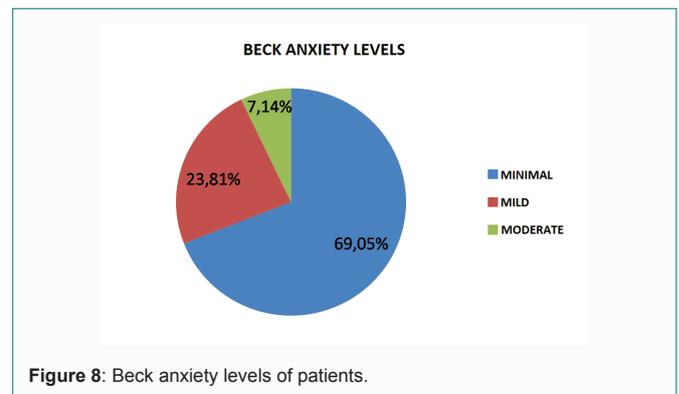


Figure 8: Beck anxiety levels of patients.

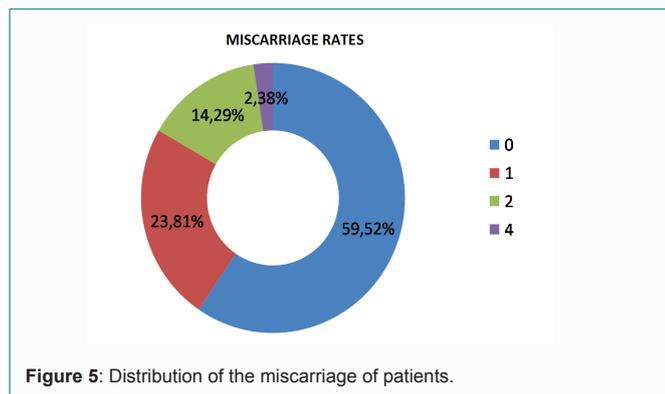


Figure 5: Distribution of the miscarriage of patients.

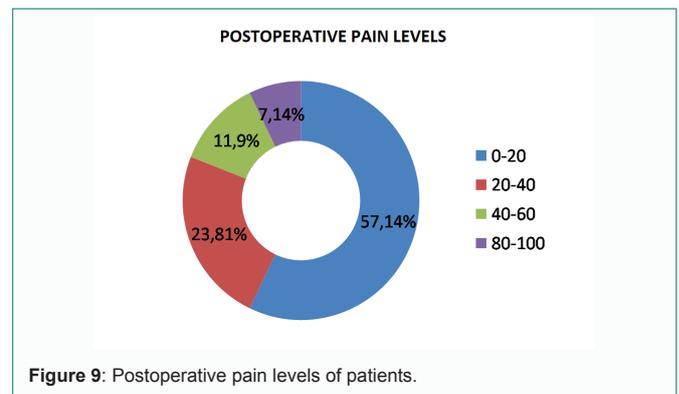


Figure 9: Postoperative pain levels of patients.

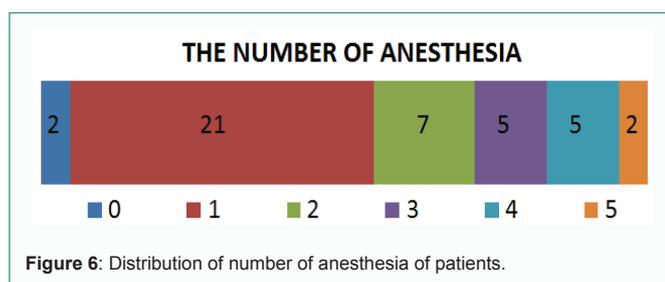


Figure 6: Distribution of number of anesthesia of patients.

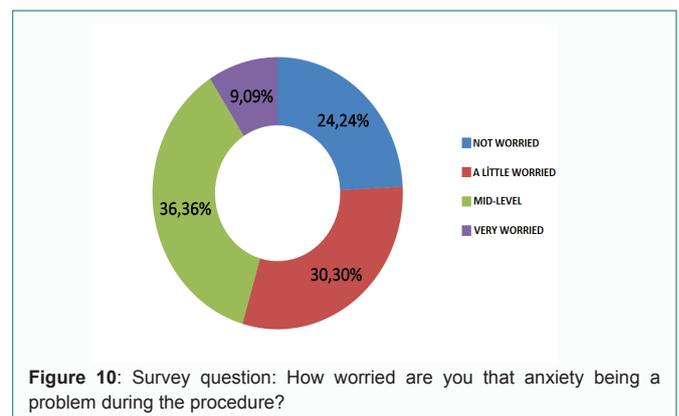


Figure 10: Survey question: How worried are you that anxiety being a problem during the procedure?

(n=1) 33 to 34, 3.03% (n=1) 35 to 36, 3.03% (n=1) was in the 40+ age range. 81.82% (n=27) of the physicians were single and 18.18% (n=6) were married. Of the 33 doctors, 51.52% (n=17) were female and 48.48% (n=16) were male.

Of the 33 physicians who answered, 66.67% (n=22) were assistant and 33.3% (n=11) were specialist physicians. 87.88% (n=29) had no children, 12.12% (n=4) had children. 45.45% (n=15) 0 to 2, 36.36% (n=12) 2 to 5, 9.9% (n=3) stated that he had been in the profession for 10+ years (Figures 10-14).

Discussion

In this questionnaire which was applied to patients receiving IVF treatment, it was revealed that the patients who had high

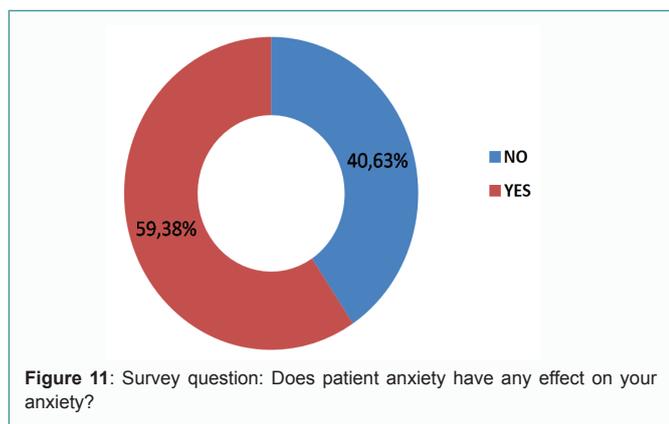


Figure 11: Survey question: Does patient anxiety have any effect on your anxiety?

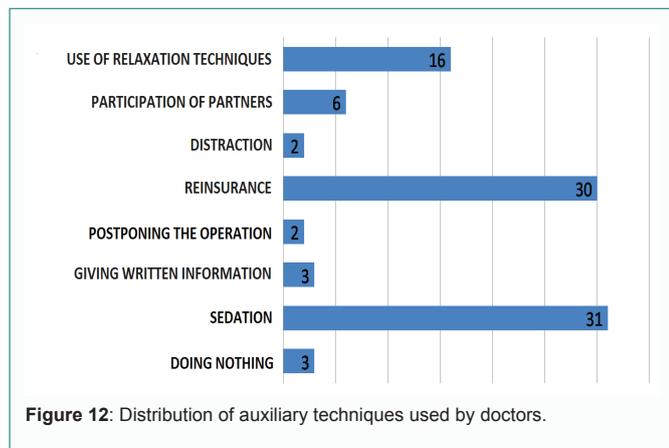


Figure 12: Distribution of auxiliary techniques used by doctors.

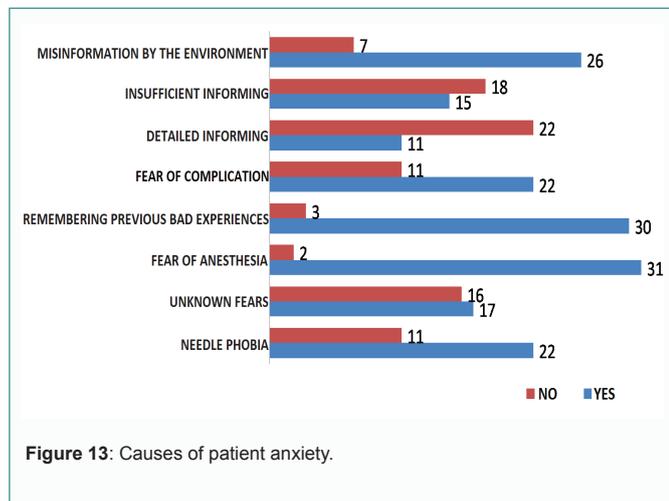


Figure 13: Causes of patient anxiety.

infaure	Obs	Rank Sum
0-1	12	284.00
1-2	10	279.50
2-3	7	132.50
3-4	3	32.50
4-5	4	76.00
5-6	3	59.00
6-7	2	37.50
+7	1	2.00

chi-squared = 8.574 with 7 d.f.
probability = 0.2847

chi-squared with ties = 8.658 with 7 d.f.
probability = 0.2782

Figure 14: Kruskal-Wallis analysis results between beck anxiety scores and infertility times.

anxiety in the operation in the preoperative period maintained their anxiety levels in the postoperative period and this effected the anesthesiologist's methods. Post-operative anxiety was not associated with any demographic data. It was observed that the patients who had high anxiety during the preoperative period maintained their anxiety levels in the postoperative period and influenced the methods of anesthesiologists. However, the persistence of anxiety in the postoperative period is not related to any demographic data and this issue shows different results in different studies.

Pain triggers fear. Fear is one of the most important causes of anxiety. Pre-anesthetic fear is more common in women [10,11]. In our study, it was revealed that the most common cause of patient anxiety was fear related to anesthesia or other factors. In a meta-analysis of 15,623 patients with chronic musculoskeletal pain in seventy studies, it was demonstrated that the severity of pain was higher in those with fear of pain and those with pain related anxiety [12]. In our study, 57.14% of patients with IVF had mild pain (VAS 0-20), 7.14% had severe pain (VAS 80 to 100), and 11.9% had moderate postoperative pain with a VAS severity of 40 to 60. Nausea was another contributing factor as well as pain that caused increased anxiety.

Postoperative nausea was recorded in 9.52% of the patients and the risk of anxiety increased. It has been reported that nausea in patients with breast cancer leading to mastectomy is correlated with pain intensity in patients [13]. In an experimental study, it was revealed that nausea and pain could be reduced together with 5-HT1A activation in rats and explain the correlation between the two findings [14].

In our study, not only the anxiety levels of the patients were determined but also the awareness of the anesthesiologists about the patient's anxiety was investigated. According to anesthesiologists, 46.88% of patients with anxiety had different complications from other patients. This study also showed that there are differences in the anxiety levels of IVF patients among anesthesiologists. Anxiety

was 9% of the anesthesiologists who were very concerned about the problem during the procedure. However, the percentage of physicians who did not worry at all was found to be 24%. The most probable cause of this difference was that the anesthesiologist could have demographic characteristics. For this reason, correlation analyzes between the demographic characteristics and anxiety awareness was performed. However, no significant relationship was found between the age of anesthesiologists and anxiety awareness. Similarly, there was no significant relationship between anesthesiologist gender and anxiety awareness. In addition, no significant relationship was found between the number of children and physicians. The fact that different anesthesiologists have taken different trainings in different hospitals during their specialization period suggested that they might play a role in the emergence of this situation.

Patient dissatisfaction is an important cause of anxiety. In a study in which 4006 survey results were analyzed, it was reported that the factor affecting the patient satisfaction was the communication skills at the pre-anesthesia visit [15,16]. Postoperative satisfaction may affect the results of the patients as well as the preoperative period. In our study, it was revealed that 30% of anesthesiologists did not follow patient satisfaction after general anesthesia. Work load and working environment stress are thought to play a role in this.

There are controversial results in the literature about other causes of anxiety. There was no significant relationship between Beck anxiety scores and the number of operations. In our study, no significant relationship was found between infertility duration and anxiety level. This result is in contradiction with the research conducted by Domar and Abedinia in 2013 and Hashemieh and Ramezanzadeh in 2014 [17-20].

On the other hand, the lack of a relationship between the occupation levels of the patients and their peers and the level of anxiety was consistent with the study of Ramezanzadeh et al. [20]. When the methods of coping with the anxiety of the patients were examined, it was revealed that 90% of the anesthesiologists used the sedation method with 93% reinsurance.

The insufficiency of the duration of the study affected the results of the study. It should be considered that conducting the study in a longer time, with a multicenter sample size and larger sample size may change the results. Therefore, further multicenter studies with larger sample size are needed.

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Appendix

Appendix 1: Preoperative Patient Survey

Name Surname: Protocol:
 Age: Gender:
 Marital Status: Number and ages of children:
 Education level: Occupation:
 Age of the partner: Education level of the partner:
 Old surgeries: Occupation of the partner:
 Reason of the infertility: Duration of infertility:
 Duration of infertility treatment: Count of IVF:
 Count of Miscarriages: ASA:
 Did you have another assisted reproductive technique you tried? If so how many times?
 Have you ever had anesthesia before?
 How many times if you took it?
 Have you had any problems with post-operative anesthesia?
 Did you have a relative who had complications before or after the surgery?

	0	1	2	3
1. I feel social pressure due to infertility.				
2. The doctor informed me well about anesthesia before surgery.				
3. I'm afraid of anesthesia.				
4. I have knowledge about the risks of anesthesia.				
5. I am under pressure from my partner because of my infertility.				

Appendix 2: Beck Anxiety Scale

Patient Name and Surname: Protocol Number:

	0	1	2	3
1. Numbness or tingling in any part of your body				
2. Hot / hot flashes				
3. Fever, weakness in the legs				
4. Uncontrollability				
5. Fear of bad things will happen				
6. Dizziness				
7. Palpitations				
8. Sense of losingbalance				
9. Feelingterrified				
10. Beingangry				
11. Feeling of drowning				
12. Tremors on hands				
13. Shakiness				
14. Sense of losingcontrol				
15. Difficultybreathing				
16. Fear of dying				
17. Beingscared				
18. Indigestion or discomfort in the stomach				
19. Fainting				
20. Redness of the face				
21. Sweating (not temperature dependent)				

Appendix 3: Postoperative Patient Survey

Patient Name and Surname: Protocol Number:
 Age:

	0	1	2	3
I was worried about anesthesia.				
I was informed as much about anesthesia as possible.				
I was worried about the success of the surgical procedure.				
I was informed as much as possible about the surgical procedure.				
I feel safe.				
I'm in a sense of regret.				
I feel relieved.				
Please tick the following:				
Pain (Scale from 0 to 100.)				
Nausea	Present	Not Present		
Vomiting	Present	Not present		

Appendix 4: Survey for anesthesiologists

Age: Gender:
 Title: Age and Number of Children:
 Current year of medicine:

	0-2 years	2-5 years	5-10 years	+10 years
	0	1	2	3
I think that I can correctly evaluate the anxiety of patients before surgery.				
I think that the high anxiety of the patient increases the complications.				
I think the patient's high anxiety increases post-op pain.				
I think that the patient's high anxiety makes the waking process difficult for the patient.				
As the number of failed unsuccessful IVF increases, I think that patients have increased anxiety.				
I think the patient's anxiety level decreases as the level of education increases.				
I think that the psychological state of the patient's wives has a negative effect on the patients.				

Answer the following questions.

- Does the patient's anxiety affect the anesthetic method you are applying? How do you manage?
- Have you observed complications from other patients in anxiety patients?
- How worried are anxiety being a problem during the procedure?
- How anxious are your patients before anesthesia?
- Do you feel anxious to react to different types of patient behavior when you are worried during anesthesia?
- Does the doctor and the anesthesiologist perform different procedures for various anesthesia techniques increase the patient's anxiety?
- Does patient anxiety have any effect on your anxiety?
- How important is the patient satisfaction of your application?
- Do you follow the satisfaction of the patients after a general anesthesia procedure?
- Do you use the following techniques to reduce the anxiety of patients? Do nothing.

- Giving Sedation
- Written Information
- Postponing the procedure
- Communication / Reassurance
- Distraction (reading, listening to music, ...)
- Support (partner / friend / relative)
- Encourage relaxation techniques (eg deep breathing / meditation)

11. What are the causes of patient anxiety?

- Needlephobia
- Unknown fear
- Fear of anesthesia
- Remembering old bad experiences
- Fear of complication (pain / nerve damage)
- Giving too much information about anesthesia
- Giving too little information about anesthesia
- Misinformation of people, family members, friends and the surrounding media.

12. Please add any other comments.