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ORIGINAL ARTICLE

Assessment of Preoperative Anxiety Among Surgical Patients

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Abstract

Objective: This study aims to assess preoperative anxiety among surgical patients.

Method: This descriptive cross-sectional study was conducted at the Dr. Suat Gunsel University of Kyrenia Hospital and Near East University Hospital from October 2020 toJanuary 2021. A total of 81 patients voluntarily participated in this study. Data were collected by Personal Information Form and Amsterdam Preoperative Anxiety and Information Scale. Descriptive statistics, Student's *t*-test, Mann–Whitney *U* Test, Kruskal–Wallis test, and post hoc test were used to compare the data, while Pearson's correlation was used to evaluate the correlation between the continuous variables.

Results: The average Amsterdam Preoperative Anxiety and Information Scale anxiety level was found to be 10.6 ± 6.5, the average scores of Amsterdam Preoperative Anxiety and Information Scale sub-dimensions were 4.9 ± 2.5 for anesthesia-related anxiety, 5.6 ± 2.4 for anxiety about the surgery, and 6.1 ± 2.4 for the information desire. The result of the study showed that there was a statistically significanct relationship between gender and the patient's level of preoperative anxiety among preoperative surgical patients.

Conclusion: Based on the results of the study, it may be recommended to assess the patient's anxiety and provide appropriate and necessary information.

Keywords: Anxiety, nursing, preoperative anxiety, surgery

Introduction

Anxiety is an unpleasant feeling of dread or pressure on human behavior and actions that can be caused by being placed in a stressful situation such as surgery (Bailey, 2010; Eberhart et al., 2020; Sigdel, 2015). Preoperative anxiety can be defined as a tensed, unpleasant, and uncomfortable feeling before surgery. It is a common phenomenon during surgical experiences. Most patients have perceived the day of surgery as the biggest and most threatening day in their lives, and 11%–92.6% experienced preoperative anxiety due to uncertainty and fear of disability and death (Gürler et al., 2022). Anxiety before surgery can lead to different complications during or after surgery. Lack of adequate assessment and care can in turn bring about a poor surgical outcome (Caumo et al., 2001; Eberhart et al., 2020; Matthias & Samarasekera, 2012; Pokharel et al., 2011). Preoperative anxiety can be triggered by a lack of knowledge concerning diagnosis, procedure, and operating room. The patient also gets worried about the success of the surgery, recovery after surgery, cost of operation, and the inability to be with family (Aykent et al., 2007; Fathi et al., 2014). The atmosphere of the operation room often causes patient anxiety, that is, the vibration of computer and device alarms and numerous uncommon instruments; equipment and attires will also raise patient's distress rates (Caumo et al., 2001; Gürsoy et al., 2016; Kiyohara et al., 2004).

Several postoperative complications can arise as a result of unattended preoperative anxiety. One of these complications is pain. Other complications include vomiting, increased risk of infection, tachycardia, and hypertension. Different studies have shown that more than half of surgical patients experience considerable preoperative anxiety (Bailey, 2010; Mulugeta et al., 2018; Pokharel et al., 2011). In a study conducted by Gürler et al. (2022), it was determined that the majority (70.8%) of the participants had fears associated with surgery and anesthesia and nearly half of them had a moderate level of preoperative anxiety.

Due to the complications that preoperative anxiety is likely to cause surgical patients, nurses must play a crucial role in

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the prevention of preoperative anxiety throughout the perioperative cycle. Nurses should employ interventions to help prevent preoperative anxiety, thereby minimizing the risk of postoperative complications. Effective care and management of preoperative anxiety brings about a shorter stay, less expensive health care, need for more analgesic postoperatively, fewer complications, and quick recovery (Bailey, 2010; Gürsoy et al., 2016; Kindler et al., 2005; Mulugeta et al., 2018; Pokharel et al., 2011). Determination of preoperative anxiety among the surgical patients regarding preoperative anxiety may be useful in improving their preoperative anxiety and prevention strategies, thus increasing the quality of perioperative care. Determining the level of anxiety before surgery is important to reduce postoperative morbidity, mortality, and hospital stay with appropriate nursing interventions. This study aims to assess the anxiety levels of preoperative patients.

Material and Methods

Study Design
The study was designed as a cross-sectional descriptive study.

Study Setting
The study was conducted between October 2020 and January 2021 at the surgical services (Orthopaedic, General, Gynaecological, Plastic, Urologi) of two University Hospitals in North Cyprus. There is no preoperative anxiety assessment tool used by the hospitals during the preoperative period.

Sample Selection
The study was performed on 81 patients who received surgical treatment in the two university hospitals. The convenience sampling method was used based on the fact that participants were willing to take part in the study.

Inclusion criteria for the study include male and female hospitalized patients and patients 18 years and older who will undergo surgery in university hospitals.

Exclusion criteria include patients less than 18 years of age, who did not consent to participate in the study, patients with difficulty in communicating, unconscious patients, and patients with mental illness.

Study Tools
The Patient Questionnaire and Amsterdam Preoperative Anxiety and Information Scale were used to collect the data.

Patient Questionnaire
It consists of questions developed by the researcher, including the socio-demographic characteristics (age, gender, education, marital status, social security, and socioeconomic status) and causes of the patients' anxiety (type of procedure, previous experience with surgery, training on anesthesia and surgical intervention before surgery, and satisfaction with the nursing care provided and who gave information) (Aykent et al. 2007; Eberhart et al., 2020; Maheshwari & Ismail, 2015).

Main Points

- Patients have high anxiety levels in the preoperative period.
- Assessment of patient's preoperative anxiety is important.
- Appropriate and necessary information should be given to the patient before the surgery.

The Amsterdam Preoperative Anxiety and Information Scale
The APAIS was fashioned in 1996 by Dutch experts. Four items represented fear of anesthesia and fear of the surgical procedure (Cronbach's alpha .86). Two items represented the need for information (Cronbach's alpha .72) (Moerman et al., 1996). The APAIS is a six-item questionnaire about patient's concerns and information about surgery and anesthesia. It is concise, easy to understand, and can be applied in many healthcare settings. The analysis of results is simple. The APAIS is considered an effective, reliable, and hands-on tool for the assessment of preoperative anxiety and information needs (Boker et al., 2002).

It contains six statements in order of objective to the questionnaire; each statement is given a numerical value based on the Likert scale of 5 based on severity. These values range from 1 to 5; 1=none, 2=mild, 3=moderate, 4=severe, and 5=extreme.

The lowest score is 6; the highest score is 30. It was translated into Turkish and used for the first time in the country by Aykent et al. (2007). In this study, APAIS Cronbach's alpha .86, anesthesia-related anxiety .88, sub-dimensions of anesthesia .88, and surgical request for information .68 were determined. Validity in our study was not examined.

The scores given to the questions are calculated as follows: Questions 1 and 2 are about anesthesia anxiety, questions 4 and 5 are about surgical anxiety, and the total anxiety score is calculated by adding both. Questions 3 and 6 question the desire to get information about anesthesia and surgery. On the anxiety scale, >10 points are considered as high anxiety and ≤10 points as low anxiety (Aykent et al., 2007; Berth et al., 2007; Moerman et al., 1996; Wu et al. 2020).

Data Collection
Data were collected using questionnaires between October 2020 and January 2021 in the general surgical departments of Near East University Hospital and Dr. Suat Gunsel University of Kyrenia Hospital.

The researcher applied data collection tools in the preoperative period, 1 day before the surgery, in the patient's room and lasted 10–15 minutes. In similar studies, APAIS was applied 1 day before or on the day of surgery (Aykent et al., 2007; Berth et al., 2007; Boker et al., 2002; Wu et al. 2020). Since most of the patients in both hospitals speak Turkish and English, the translated English version of the questionnaire was also used.

Data Analysis

Statistical Package for Social Science software version 20.0 (IBM Armonk, New York, USA) was used to perform the statistical analysis. Besides conducting the descriptive statistics (frequency, minimum, maximum, median, mean, and standard deviation), Student's *t*-test was used to compare data of two groups that have a normal distribution. For data that do have a normal distribution, Mann–Whitney *U*-test was used to compare the data of two groups while Kruskal–Wallis test was used to compare the data of three or more groups. Pearson's correlation was used to evaluate the correlation between the continuous variables. For all the tests, $p < .05$ was considered significant.

Ethical Considerations

Ethical approval was obtained from the Near East University Research and Ethics Committee (April 23, 2020/1033). Permission was obtained from the hospital management before carrying out the study at the hospitals. In addition, the researcher explained the purpose of the research and obtained the patient's consent verbally. This study was conducted in accordance with the Principles of the Declaration of Helsinki.

Results

In this descriptive cross-sectional study conducted to assess preoperative anxiety among surgical patients, 51.9% of the participants were female, and their ages ranged from 18 to 83 years with a mean of 38.58 years. The percentage of the single participants was 50.6%. The majority of the patients had a university education (64.2%) and a larger percentage had good social-economic status.

The participants who were having general surgery were 29.6% ($n = 24$), followed by orthopedic surgery 25.9% ($n = 21$). Participants were mostly anxious about postoperative pain, while 80.2% ($n = 65$) of participants had training concerning surgery and anesthesia.

About 92.6% of participants were satisfied with the nursing care given before surgery. According to the collected data, preoperative information was given by doctor (95%) and together by the nurse and the doctor (5%).

The average APAIS anxiety level was found to be 10.6 ± 6.5, the average scores of APAIS sub-dimensions were 4.9 ± 2.5 for anesthesia-related anxiety, 5.6 ± 2.4 for anxiety about the surgery, and 6.1 ± 2.4 for the information desire.

In the distribution, the total APAIS score of our patients ranged between 4 and 20, and the scores for desire for information ranged between 2 and 10.

The majority of the patients had high anxiety level (52%).

There was statistical significance between patients' genders showing higher anxiety among the female respondent than the male in all the components of the APAIS subscale (anesthesia-related anxiety, surgery-related anxiety, and the information desire component). Between the age and total scores, there was a statistical significant correlation; as the age increased, their desire for information decreased. There was no significance between the patient's level of education, marital status, and social-economic status and the patient's anxiety scale (Table 3).

Also, based on the Pearson's correlation test, no statistically significant correlation was detected between the anxiety sub-scores in terms of age ($p > .05$). Between the age and desire for information sub-scores, a negative correlation statistically significant by 30% was detected (r: –.300; $p = .007$).

Those patients who have indicated that they have been trained and educated on anesthesia and surgical intervention before surgery showed a statistically significantly higher desire for information than those who have not been trained and educated on anesthesia and surgical intervention before surgery ($p < .05$). The patients who were given surgical training by a doctor showed statistically lower anxiety compared to the patients trained by both a doctor and a nurse ($p < .05$)

There was a statistically significant difference between patients' concerns about anesthesia and surgery and their desire for information. According to the post hoc comparison for Kruskal–Wallis test, patients with concern that they may not be able to wake up after surgery (8.5000 ± 1.3) have statistically significantly ($p < .05$) higher desire for information compared to patients with all other concerns (postoperative pain, medication, the surgery success, full recovery, nausea and vomiting, and others). There was no evidence of a statistically significant difference between the other pairs.

Discussion

Preoperative assessment is essential to enable the identification of at-risk patients. Since nurses play a primary role in caring for and monitoring patients throughout the perioperative continuum, a better understanding of nurses' knowledge and practices of preoperative anxiety is an important part of improving patient outcomes (Bailey, 2010; Basak, 2015; Ramesh et al. 2017). The focus of the study is to assess the preoperative anxiety among surgical patients using the APAIS scale to evaluate the causes of patient's anxiety. The Amsterdam Preoperative Anxiety and Information Scale is an effective scale for calculating anxiety scores; it is also great to identify anxiety and desire for information at the same time when comprehensive answers are planned. They are easily carried out and easy to understand (Aykent et al. 2007; Berth et al. 2007; Wo et al. 2020). The study was conducted with 81 surgical patients of various gender, ages, levels of education, social-economic status, and marital status.

In this study, the mean anxiety score of the participants was 10.6 (Table 1). The study by Moerman set a suitable predictive value of 11 to identify patients with anxiety; patients with >11 should be considered high anxiety cases (Moerman et al., 1996). Anxiety is a universal normal response to interventional and life-threatening procedures such as surgery

Table 1.
Amsterdam Preoperative Anxiety and Information Scale Showing Anxiety Levels (N = 81)

APAIS	Mean ± SD
Anesthesia-related anxiety	4.9 ± 2.5
Surgery-related anxiety	5.6 ± 2.4
Information desire component	6.1 ± 2.4
Total	10.6 ± 6.5

Note: SD = standard deviation; APAIS = Amsterdam Preoperative Anxiety and Information Scale.

and anesthesia. However, when anxiety is at a high level and lasts for a prolonged time, it affects the neuroendocrine functions and increases the need for anesthesia and analgesics, postoperative pain severity, recovery time from anesthesia, and postoperative mortality, and it causes postoperative delirium.Therefore, the determination of preoperative anxiety level is important (Gürler et al., 2022).

In the distribution, the total APAIS score of our patients ranged between 4 and 20, and the scores for desire for information ranged between 2 and 10 (Table 2).

Our analysis revealed that 52% of the preoperative patients had high anxiety; this result is similar to a study that reported a prevalence of 50% of anxiety among patients awaiting coronary artery bypass graft surgery (Koivula et al., 2001). Studies have shown that participants have high and common anxiety scores, are more worried about anesthesia, and want more information about surgery (Ebirim & Tobin, 2010; Matthias & Samarasekera, 2012; Moerman et al., 1996; Perks et al., 2009; Pokheral et al., 2011).

There was a statistically significant negative correlation between the patients' age and information desire (Table 3). This suggests that as age increases, the desire for information decreases. In other words, older patients appear to show less desire for information. This is thought to be due to changes in cognition with aging and a decline in one's performance on cognitive tasks for making decisions, acquiring information, and learning. However, it must be noted that correlation analysis does not show a causal effect but only provides an indication that there is a relationship between two variables.

There is no statistical significance between anxiety score and age in our study (Table 3). Similarly, Nigussie reported that age does not affect a patient's anxiety level statistically; Eberhart found an inconsistent result between age and anxiety and concluded that age is not a factor or a predictor of preoperative anxiety (Eberhart et al., 2020; Nigussie et al., 2014). Contrary to those studies, some other studies have reported that age is a predictor of preoperative anxiety (Başak et al., 2015; Maheshwari & Ismail, 2015).

Results regarding anxiety in the genders reveal that females had greater anxiety scores than males (Table 3). Similar findings were recorded in previous studies (Gallagher & MacKinley, 2009). The present study identifies a significant association between gender and patient's anxiety. This finding is confirmed by many studies recognizing gender as a preoperative anxiety factor. Gender is, in fact, the variable that by far had the greatest effect on preoperative anxiety, with a comparable effect on anesthesia, desire for information, and anxiety related to surgery (Caumo et al., 2001; Karanci & Dirik, 2003). Some authors believe it because traditionally males find it difficult to express weaknesses, and some state that it is because women can be more sensitive toward a stressful situation. It was suggested that fluctuation in hormones in women can also be a cause of the increase (Ebirim & Tobin, 2010; Mavridou et al., 2013; Matthias & Samarasekera, 2012). However, a study indicates that there is no connection between sex and preoperative anxiety (Kiyohara et al., 2004).

With respect to education, a higher percentage of participants have had tertiary education. There was no statistical significance between the level of patient's education and patient's anxiety in the present study (Table 3); this result is similar to previous studies indicating education as a non-predictor for patient's anxiety (Eberhart et al., 2020; Maheshwari & Ismail, 2015). To the other socio-demographic variables (marital status, social-economic status), there was no significant connection or association between them, and

Table 2.
The Amsterdam Preoperative Anxiety and Information Scale with Patients Score Distributions (n = 81)

	Not At All						Extreme			
	None		Mild		Moderate		Severe		Extreme Violence	
APAIS	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
I am worried about the anesthetic	29	35.8	11	13.6	19	23.5	16	19.8	6	7.4
The anesthetic is on my mind continually	24	29.6	21	25.9	14	17.3	17	21.0	5	6.2
I would like to know as much as possible about the anesthetic	19	23.5	9	11.1	21	25.9	20	24.7	12	14.8
I am worried about the procedure	19	23.5	13	16.0	18	22.2	22	27.2	9	11.1
The procedure is on my mind continually	18	22.2	13	16.0	25	30.9	18	22.2	7	8.6
I would like to know as much as possible about the procedure	13	16.0	9	11.1	23	28.4	25	30.9	11	13.6

Note: APAIS = Amsterdam Preoperative Anxiety and Information Scale.

Table 3.
Comparison of Demographic Data and APAIS Subscales (n = 81)

Demographic Data	*n*	APAIS Subscales: Anesthesia-Related Anxiety Min-Max (Median) Mean ± SD	Surgery-Related Anxiety Min-Max (Median) Mean ± SD	Information Desire Component Min-Max (Median) Mean ± SD	Total Anxiety Min-Max (Median) Mean ± SD
Gender					
Male	39	2–8 (4) 4.1282 ± 2.1	2–10 (5) 4.9744 ± 2.4	2–10 (6) 5.3846 ± 2.4	4–16 (9) 9.1026 ± 4.1
Female	42	2–10 (6) 5.7619 ± 2.6	2–10 (7) 5.5597 ± 2.3	2–10 (7) 6.7857 ± 2.2	4–20 (13.5) 12.0476 ± 4.6
p[a]		**.003****	**.015***	**.008****	**.003****
Education					
Not educated	6	2–9 (2) 4.1667 ± 3.4	2–8 (6) 5.5000 ± 2.6	2–8 (4.5) 4.6667 ± 2.7	4–16 (8.5) 9.6667 ± 5.3
Primary school	5	2–10 (3) 5.2000 ± 3.6	2–10 (4) 5.6000 ± 3.3	3–8 (6) 5.4000 ± 2.3	4–20 (7) 10.8000 ± 6.8
High school	18	2–10 (4) 3.5770 ± 2.5	2–10 (6) 5.7222 ± 2.6	2–10 (6) 5.3333 ± 2.1	4–20 (9.5) 10.5556 ± 4.7
University	52	2–10 (5) 5.0962 ± 2.4	2–10 (6) 5.6538 ± 2.4	2–10 (7) 5.9558 ± 2.4	4–17 (11) 10.7500 ± 4.4
p[b]		.783	1.000	.061	.969
Marital status					
Single	41	2–10 (5) 5.0000 ± 2.5	2–10 (6) 5.4878 ± 2.5	2–10 (6) 6.0976 ± 2.4	4–20 (11) 11.9802 ± 4.7
Married	40	2–10 (4.5) 4.9500 ± 2.5	2–10 (6) 5.8250 ± 2.4	2–10 (6.5) 6.1250 ± 2.4	4–20 (10.5) 12.2189 ± 4.5
p[a]		.929	.538	.959	.781
Social security					
Yes	56	2–10 (5) 5.2857 ± 2.5	2–10 (6) 5.9286 ± 2.3	2–10 (6) 6.0714 ± 2.3	4–20 (11) 11. 2143 ± 4.5
No	25	2–8 (3) 4.2800 ± 2.6	2–10 (5) 5.0400 ± 2.4	2–10 (6) 6.2000 ± 2.6	4–17 (10) 9.3200 ± 4.7
p[a]		.097	.132	.825	.089
Socio-economic status					
Bad	1	-	-	-	-
Good	69	2–10 (4) 4.8291 ± 2.5	2–10 (6) 5.4348 ± 2.4	2—10 (6) 5.4661 ± 2.4	4-20 (10) 10.2609 ± 4.6
Very good	11	2–10 (6) 5.8182 ± 2.6	2–10 (6) 6.8182 ± 2.5	2–10 (7) 6.5455 ± 2.5	4–20 (12) 12.6364 ± 4.6
p[c]		.245	.112	.521	.120

[a]Student's *t*-test; [b]Kruskal–Wallis test; [c]Mann–Whitney *U* test.
Note: SD = standard deviation; APAIS = Amsterdam Preoperative Anxiety and Information Scale.

the patient's anxiety in the result is similar to other studies (Berth et al., 2007; Matthias & Samarasekera, 2012).

In the present study, the highest procedure undergone was general surgery followed by orthopedic procedures. However, there was no significant effect of any of the surgical procedures in the study on the preoperative anxiety of the patient (Table 4). This finding was also indicated by Eberhart et al. (2020). Some other studies recorded a moderate effect of the surgical disciple on the anxiety of patients (Aust et al., 2018; Laufenberg & Kappis, 2013).

Those patients who have indicated that they have been trained on anesthesia and surgical intervention before surgery showed statistically significantly ($p < .05$) higher desire for information than those who have not been trained on anesthesia and surgical intervention before surgery. This can probably be possible due to a misunderstanding, insufficient of information, or given too much information. Provision of preoperative information can alleviate patients' anxiety (Jlala et al., 2010). Providing accurate and sufficient information about the cause of anxiety that has been identified will help to minimize preoperative anxiety; such

Table 4.
Comparison of Anesthesia and Surgical Features and APAIS Subscales (n = 81)

Anesthesia and Surgical Features	*n*	APAIS Subscales			
		Anesthesia-Related Anxiety Min–Max (Median) Mean ± SD	Surgery-Related Anxiety Min–Max (Median) Mean ± SD	Information Desire Component Min–Max (Median) Mean ± SD	Total Anxiety Level Min–Max (Median) Mean ± SD
Type of procedure					
Pulmonological	5	2–4 (4) 2.6000 ± .9	2–10 (3) 4.2000 ± 3.3	2–6 (3) 3.8000 ± 2.0	4–14 (5) 6.8000 ± 4.2
Orthopaedic	21	2–8 (4) 4.5238 ± 2.4	2–10 (6) 5.5238 ± 2.7	2–10 (6) 6.0476 ± 2.5	4–16 (10) 10.0476 ± 4.7
General	24	2–10 (6) 5.7917 ± 2.6	2–8 (6) 5.7083 ± 2.0	2–10 (7) 6.4583 ± 2.2	4–16 (13) 11.5000 ± 4.2
Gynecological	13	2–10 (6) 5.6923 ± 2.6	2–10 (7) 6.6923 ± 2.5	3–9 (7) 6.6154 ± 2.0	4–20 (13) 12.3846 ± 4.8
Plastic	7	2–10 (4) 4.4286 ± 2.9	2–10 (6) 5.7143 ± 2.8	2–10 (6) 5.8571 ± 3.0	4–20 (10) 10.1429 ± 5.2
Gastrointestinal	6	2–8 (4.5) 4.8333 ± 2.0	2–9 (6) 5.5000 ± 2.3	5–10 (7) 7.3333 ± 2.0	4–17 (10.5) 10.3333 ± 4.3
Urological	5	2–8 (4) 4.4000 ± 2.2	2–8 (4) 4.8000 ± 2.6	2–8 (3) 4.6000 ± 2.7	4–16 (8) 9.2000 ± 4.5
p[a]		.155	.601	.210	.333
Previous experience with surgery					
None	52	2–10 (4) 4.7115 ± 2.3	2–10 (6) 5.5962 ± 2.5	2–10 (6) 6.1731 ± 2.5	4–20 (10.5) 10.3077 ± 4.4
Yes	29	2–10 (6) 5.4483 ± 2.8	2–10 (6) 5.7586 ± 2.5	2–10 (6) 6.0000 ± 2.3	4–20 (13) 11.2069 ± 5.0
p[b]		.248	.739	.800	.341
Train on anesthesia and surgical intervention before surgery					
No	16	2–8 (5.5) 5.0625 ± 2.5	2–8 (7) 5.4375 ± 2.6	4–10 (8) 7.3750 ± 2.0	4–16 (11) 10.5000 ± 4.7
Yes	65	2–10 (4) 4.9538 ± 2.5	2–10 (6) 5.7077 ± 2.4	2–10 (6) 5.8000 ± 2.4	4–20 (10) 10.6615 ± 4.6
p[b]		.856	.853	**.027***	.943
Satisfaction with the nursing care provided					
No	6	2–9 (4) 4.8333 ± 3.0	2–8 (5.5) 5.0000 ± 2.5	4–8 (6) 4.4385 ± 1.3	4–16 (9.5) 9.8333 ± 5.4
Yes	75	2–10 (5) 4.9867 ± 2.5	2–10 (6) 5.7067 ± 2.4	2–10 (6) 6.1333 ± 2.5	4–20 (11) 10.6933 ± 4.6
p[b]		.898	.512	.560	.690
Who gave information					
Doctor	77	2–10 (4) 4.8182 ± 2.5	2–10 (6) 5.5195 ± 2.4	2–10 (6) 6.0519 ± 2.4	4–20 (10) 10.3377 ± 4.5
Both doctor and nurse	4	7–10 (7.5) 8.0000 ± 1.41	6–10 (8.5) 8.2500 ± 1.7	6–8 (7.5) 7.2500 ± .96	13–20 (16) 16.2500 ± 2.9
p[b]		**.023***	**.030***	.332	**.016***
Concerns about anesthesia and surgery					
Post-operative pain	38	2–10 (4.5) 4.9737 ± 2.6	2–10 (6) 5.6316 ± 2.4	2–10 (6) 6.1842 ± 2.3	4–20 (11) 10.6053 ± 4.7
Medication	7	2–8 (5) 4.5714 ± 2.6	2–8 (5) 5.0000 ± 2.5	2–8 (6) 5.7143 ± 2.2	4–16 (10) 9.5714 ± 5.0
Whether the surgery will be a success	10	2–8 (4) 4.3000 ± 2.1	2–9 (5) 5.2000 ± 2.1	2–8 (6) 5.5000 ± 2.2	4–16 (9.5) 9.5000 ± 4.1
Can I fully recover?	5	2–6 (4) 3.6000 ± 1.7	2–8 (4) 4.4000 ± 2.6	2–9 (4) 4.8000 ± 2.6	4–14 (8) 8.0000 ± 3.7

(Continued)

Table 4.
Comparison of Anesthesia and Surgical Features and APAIS Subscales (n = 81) (Continued)

Anesthesia and Surgical Features	*n*	APAIS Subscales			
		Anesthesia-Related Anxiety Min–Max (Median) Mean ± SD	**Surgery-Related Anxiety Min–Max (Median) Mean ± SD**	**Information Desire Component Min–Max (Median) Mean ± SD**	**Total Anxiety Level Min–Max (Median) Mean ± SD**
Nausea and vomiting	7	2–8 (6) 5.7143 ± 2.4	2–10 (8) 7.2857 ± 2.7	2–9 (8) 6.8571 ± 2.5	4–17 (15) 13.0000 ± 4.9
Not being able to wake up after surgery	8	2–10 (7) 6.7500 ± 2.8	6–10 (7) 7.1250 ± 1.4	7–10 (8) 8.5000 ± 1.3	8–20 (14.5) 13.8750 ± 3.6
Others	6	2–8 (4) 4.5000 ± 2.5	2–10 (3.5) 4.500 ± 3.1	2–10 (3.5) 4.1667 ± 2.4	4–20 (11) 10.6933 ± 4.6
p[a]		.371	.145	**.019***	.161

*Others (staying in intensive care, sleeping for a long time after surgery or not being able to wake up, anesthetists' and staff's attitudes, anesthetists' and surgeons' lack of information and experience).
[a]Kruskal–Wallis test; [b]Student's *t*-test.
Note: SD = standard deviation; APAIS = Amsterdam Preoperative Anxiety and Information Scale.

education should be patient-centered and suited to the needs of the patients (Mulugeta et al., 2018).

In this study, there was no significance between the level of preoperative anxiety and the patient's previous experience with surgery (Table 4). This result is also seen in a couple of studies (Jafar & Khan, 2009; Nigussie et al., 2014), while some studies state otherwise. It was reported by some authors in their studies that there is a significance between previous surgical experience; some stated a decrease in anxiety due to experience and increase in anxiety in patients who had no experience and history with surgery. The authors in other studies indicated that previous experience has a significant effect on the patients' preoperative anxiety level (Hamzova & Zelenikova, 2015; Matthias & Samarasekera, 2012).

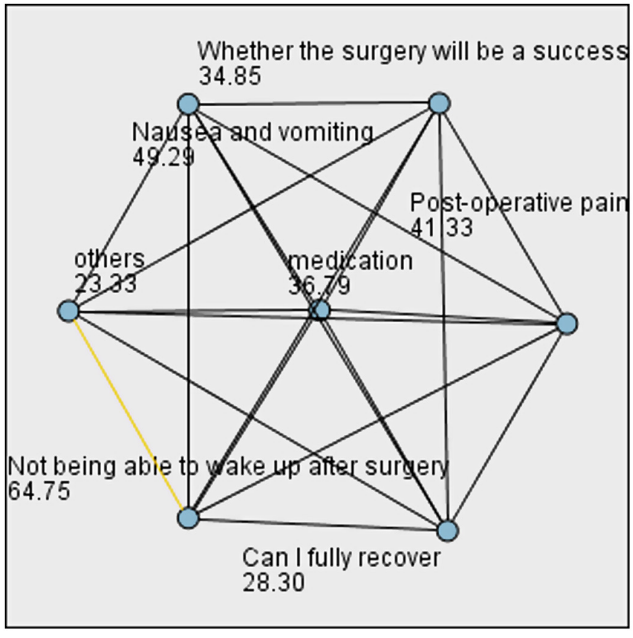

Figure 1.
Post Hoc Pairwise Comparisons of Concerns About Anesthesia and Surgery and Their Desire Information.

In patients undergoing surgery, the most common causes of anxiety in the preoperative period are a lack of information, risk of death, pain, deterioration in comfort, intensive care, development of complications, anesthesia anxiety, and disability. In our study, there were different concerns about anesthesia and surgery that cause preoperative anxiety in patients undergoing surgery. The concerns mentioned in this study include anesthetist's and surgeon's lack of information and experience, not being able to wake up after surgery, postoperative pain, waking up during surgery, nausea and vomiting, the attitude of anesthetist's and staff, staying in intensive care, sleeping for a long time after surgery or not being able to wake up after medication, whether the surgery will be a success, and fear of not recovering fully. The most common concern among these was postoperative pain followed by whether the surgery will be a success. Excessive anxiety can lead to physiological and psychological responses including hypertension, arrhythmias, severe postoperative pain, and depression that may impact patients' prognosis and postoperative satisfaction (Wo et al., 2020). Therefore, it is very important to inform patients. In our study, there was a statistically significant difference between patients' concerns about anesthesia and surgery and their desire for information. Patients with concern that they may not be able to wake up after surgery had statistically significantly higher desire for information compared to patients with all other concerns (postoperative pain, medication, the surgery success, full recovery, nausea and vomiting, and others) (Figure 1)

A strong degree of anxiety is rather harmful to the well-being of patients. Identifying factors responsible for high anxiety levels is therefore important so that appropriate management can be implemented. Proper identification can bring about a reduction or prevention in the effect of patient's anxiety (Ebirim & Tobin, 2010; Woldegerima et al., 2018).

According to the research results, anxiety scale scores were found to be high among preoperative surgical patients, and the patients needed additional preoperative information regarding anesthesia and surgery.

Recommendations

Based on the results of this study, the following recommendations were made:

- More studies should be carried out with a larger sample size in other to be able to generalize the data to the whole society, and more health institutions should be included to generalize the required data.
- A collaborative anxiety assessment tool be should used to efficiently assess the anxieties of patients going through surgery, and nurses should give intentional attention to patients' anxieties and their need for information.
- Preoperative anxiety assessment should also be integrated into standard preoperative nursing care.

Limitation

The regulations placed during the coronavirus disease 2019 pandemic limited the number of departments in hospitals where questionnaires could be administered. Also, the length of wait before surgery was not considered.

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Informed Consent: Informed consent was obtained from patients.

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