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ARAŞTIRMA / RESEARCH

The relationship between preoperative anxiety and gastrointestinal system symptoms

Ameliyat öncesi anksiyete ile gastrointestinal sistem belirtileri arasındaki ilişki

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Abstract

Purpose: This study aimed to examine the relationship between preoperative anxiety and gastrointestinal symptoms.

Materials and Methods: The sample of this descriptive, comparative research study comprised 270 preoperative patients in a state hospital located in northeast Turkey. First, the Trait Anxiety Scale and Gastrointestinal Symptom Rating Scale-1 were used to collect data from patients at the time of admission. Then, the State Anxiety Scale and Gastrointestinal Symptom Rating Scale-2 were completed 8–10 hours before surgery (on the night before surgery).

Results: The total score mean was calculated as 39.57±6.80 on the State Anxiety Scale, 48.84±7.45 on the Trait Anxiety Scale, 28.00±14.94 on the Gastrointestinal Symptom Rating Scale-1, and 28.71±16.47 on the Gastrointestinal Symptom Rating Scale-2. These results showed that a positive and low level of significant correlation was found between preoperative anxiety and gastrointestinal symptoms in the patients in this study.

Conclusion: This study shows that the patients' Trait Anxiety Scale results were moderate, while their State Anxiety Scale results were low. Patients with high preoperative anxiety also had a high number of gastrointestinal symptoms. Patients with high anxiety levels in the preoperative period experienced more gastrointestinalsymptoms than those with low anxiety levels.

Keywords: Anxiety, functional gastrointestinal disorders, gastrointestinal tract, nursing,

Öz

Amaç: Bu çalışma ameliyat öncesi anksiyete ile gastrointestinal sistem belirtileri arasındaki ilişkinin incelenmesi amacıyla yapılmıştır.

Gereç ve Yöntem: Bu tanımlayıcı, karşılaştırmalı araştırmanın örneklemi, Türkiye'nin kuzeydoğusunda bulunan bir devlet hastanesinde yatmakta olan ameliyat öncesi dönemdeki 270 hasta oluşturmuştur. Araştırmada hastaların kliniğe ilk yatışında; Sürekli Anksiyete Ölçeği ve Gastrointestinal Semptom Derecelendirme Ölçeği-1, ameliyattan 8-10 saat önce (ameliyat gecesi) ise Durumluk Anksiyete Ölçeği ve Gastrointestinal Semptom Derecelendirme Ölçeği-2 doldurulmuştur.

Bulgular: Çalışmada toplam puan ortalamaları Durumluk Anksiyete Ölçeğinde 39,57±6.80, Sürekli Anksiyete Ölçeğinde 48.84±7.45, Gastrointestinal Semptom Derecelendirme Ölçeği-1'de 28.00±14.94 ve Gastrointestinal Semptom Derecelendirme Ölçeği-2'de ise 28.71±16.47 olarak hesaplanmıştır. Çalışmada hastalarda preoperatif anksiyete ile gastrointestinal sistem semptomları arasında pozitif ve düşük düzeyde anlamlı ilişki bulunmuştur.

Sonuç: Bu çalışmada, hastaların sürekli anksiyetelerinin orta, durumluk anksiyetelerinin ise hafif düzeyde olduğu belirlenmiştir. Yüksek preoperatif anksiyetesi olan hastaların aynı zamanda daha fazla gastrointestinal sistem semptomlarına sahip olduğu sonucuna ulaşılmıştır. Ameliyat öncesi dönemde anksiyete seviyesi yüksek hastaların, anksiyete seviyesi düşük olanlara göre daha fazla gastrointestinal sistem belirtileri yaşadığı saptanmıştır.

Anahtar kelimeler: Anksiyete, fonksiyonel gastrointestinal bozukluklar, gastrointestinal sistem, hemşirelik

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INTRODUCTION

Hospitalization and surgery are among the critical and negative life events leading to serious anxiety experiences in patients. Patients can perceive the day of surgery as the biggest and most threatening day in their life[1]. There are several reasons for this perception in the literature[2,3]. In patients who would undergo surgery, causes such as the effects of anesthesia, fear of not waking up, loss of body functions, inability to work after surgery, pain after surgery, and loss of control and sexual function in the body[3,4] have been shown to affect surgical procedures and recoveries negatively[5]. Anxiety is defined as a state of emotion that causes the person to have problems physiologically and psychologically in many ways by stimulating the sympathetic and parasympathetic nerves in the body, which is manifested by tension and anxiety[6,7].

In addition to physiological findings, such as dizziness, headache, and nausea in a person with anxiety[2,7], symptoms such as restlessness, fatigue, impaired concentration, and irritability[8] also increase. The scope of anxiety levels varies individually and over time. This starts before surgery and continues until the late postoperative period[2]. Preoperative and postoperative anxiety are related to each other[9]; both prolong the length of hospitalization[9,10] and increase the need for postoperative analgesia[11]. High anxiety levels in the preoperative period may cause an increase in morbidity and mortality[12]. For these reasons, evaluating anxiety has an important place in the care of the patient[11].

In the literature, the frequency of anxiety in patients who will undergo surgery varies between 23% and 89%[1,4,6,11-14]. Symptoms of the gastrointestinal system (GIS), which are very common in the world, include disorders related to the esophagus, stomach, duodenum, jejenium, ileum, large intestines, sigmoid colon, and rectum[15-16]. The most obvious GIS disorders are reported as abdominal pain, nausea, heartburn, bloating, diarrhea, and constipation[17]. These problems lead to decreased food intake and malnutrition in patients[18].

Identifying GIS symptoms and related factors associated with surgery are seen as important in preoperative and postoperative patient care. The presence of this information before surgery may be helpful in choosing surgical procedures to manage patient expectations[19]. It is stated that there is a strong correlation between anxiety and GIS symptoms[17]. Anxiety affects sympathetic activity, causing GIS-related symptoms such as dry mouth, stomach pain, diarrhea, nausea, and vomiting[20], thus negatively affecting the surgical process[21]. Evaluating GIS symptoms provides important information about the patient's health status and how the patient perceives treatment[22].

In the literature review, no study investigating the correlation between preoperative anxiety and GIS symptoms was found. However, there are a limited number of studies investigating the correlation between anxiety and GIS symptoms in different sample groups[22-25]. In the light of these, ignoring GIS symptoms in the preoperative evaluation of the patient may prolong the patient's healing process, and thus the length of hospitalization, and negatively affect patient safety and the patient's quality of life. In this context, it is thought that these research results, which were conducted to determine the correlation between preoperative anxiety and GIS symptoms, will not only contribute to the literature and nursing knowledge but will also be a guide in a patient's preoperative assessment.

The research questions are as follows: Is there a correlation between trait anxiety and GIS symptoms in the preoperative period? Is there a correlation between state anxiety and GIS symptoms in the preoperative period? Do the demographic characteristics of the patients have an effect on anxiety? Do the demographic characteristics of the patient have an effect on GIS symptoms?

MATERIALS AND METHODS

This study was conducted to examine the correlation between preoperative anxiety and gastrointestinal symptoms. The research was conducted in a descriptive and comparative design. The study was approved by the Ethics Committee of the Faculty of Medicine of Kafkas University (No: 80576354-050-99/90, Date: April 27, 2017) and written permission was obtained from the hospital management. The purpose of the study was explained to the patients who voluntarily agreed to participate in the study, and their verbal and written consent was obtained.

Sample

This study was conducted in northeast Anatolian province of Turkey. The research was carried out at

the 328-bed Kars Harakani State Hospital, in Kars, Turkey a subregion of northeast Anatolia. The population of the study comprised 3,013 patients who would undergo surgery in orthopedics, general surgery, urology, ear-nose-throat (ENT), and neurosurgery clinics in 2018. There are ten surgical units in the hospital where the study was conducted. Due to the fact that the number of patients who had surgeries planned in the thoracic surgery, plastic surgery, or eye clinic was very low, that the number of patients who had planned surgery in the gynecology and obstetrics clinic could not be reached, and that those who had planned surgery in the pediatric surgery clinic were under 18 years of age, these patients were not included in the study. The sample of the study was calculated based on the formula whose population was known[26] and was found to be 264 patients. The study included 286 patients who were admitted to the clinic for scheduled surgery between 22 April and 7 August 2019 and who agreed to participate in the study voluntarily. Four of the patients left the study in the second stage of data collection, while 16 patients were excluded from the study because they used proton-pump inhibitors; therefore, the study was completed with 270 patients.

$$n = \frac{Nt^2pq}{d^2(N-1)+t^2pq} \frac{3013.(1,96)^2.025.075}{(0,05)^2.3012+(1,96)^2.025.075} = 263.05$$

The inclusion criteria for patients to participate in the study were as follows: an age of at least 18 years, no cognitive, affective, and verbal communication problems, no psychiatric disorders, no Zollinger–Ellison syndrome, no esophageal stenosis, no Barrett's metaplasia, no esophagoduodenal ulcer or celiac disease, no use of proton pump inhibitors in the previous month, no stomach bleeding within one week prior to surgery, and no history of alcohol or drug use for at least two months prior to the onset of the study.

Measures

In the study, the demographic characteristics form (DCF), Gastrointestinal Symptom Rating Scale (GSRS) and State-Trait Anxiety Scales (STAI) were used as data collection tools. The data collection process consisted of three consecutive parts: the DCF in the first part; the Trait Anxiety Scale (STAI TX-2) and GSRS-1 in the second; and the State Anxiety Scale (STAI TX-1) and GSRS-2 in the third.

Demographic form (DCF)

The original form of the DCF consisted of 29 open- and closed-ended questions (age, gender, educational status, body parameters, income status, preoperative gastrointestinal medication use) prepared by researchers in line with the relevant literature[5,16,27,28]. In this study, 18 questions from the original form were used for collecting demographic information.

Gastrointestinal Symptom Rating Scale (GSRS)

The GSRS was developed by Revicki et al.[29] based on GIS symptoms and clinical experience to evaluate common symptoms of GIS diseases. The Turkish validity and reliability of the scale was performed by Turan and Aşti[16]. The GSRS consists of 15 items and 5 subdimensions, ranging from "no disturbance" to "very severe discomfort" on the seven-point, Likert-type scale. The subdimensions are reflux, indigestion, diarrhea, constipation, and abdominal pain. The total GSRS score ranges from 15 to 105. As the score increases, the severity of symptoms increases[16,29]. Turan and Aşti[16] found Cronbach's α value as 0.82 for the GSRS scale. The value of GSRS Cronbach's α obtained from this study was found to be 0.94 (first hospitalization) and 0.95 (night before surgery).

State-Trait Anxiety Scales (STAI)

The STAI was developed by Speilberger and Gorsuch (1964) in order to measure the levels of trait and state anxiety in individuals. Öner and Le Compte (1983) conducted the Turkish validity and reliability study[30]. The scale consists of 40 items. To answering the STAI TX-1, one chooses "none," "some," "many," or "all"; to answer the STAI TX-2, one chooses "almost never," "sometimes," "too much," or "almost always". The scale includes direct and inverted statements. Ten items on the State Anxiety Scale (1, 2, 5, 8, 10, 11, 15, 16, 19, and 20) and seven items on the Trait Anxiety Scale (21, 26, 27, 30, 33, 36, and 39) are reversed statements. From the total score obtained for direct expressions, the total score of the reversed expressions is subtracted and a constant value is added to this number. This value is 50 for the STAI TX-1 and 35 for the STAI TX-2. The total score value obtained from the scale varies between 20 and 80. A high score indicates that the level of anxiety is high. The Cronbach's α value was found to be 0.94 to 0.96 for the STAI TX-1 by Öner and Le Compte, while the Cronbach's α value was found to be 0.83 to 0.87 for the STAI TX-2 by Öner and Le Compte[30].In this study, the Cronbach's α

value was found to be 0.71 for the STAI TX-1 and 0.75 for the STAI TX-2.

Procedure

The DCF, GSRS and STAI were completed by obtaining informed consent forms from the patients. The data collection process consisted of three consecutive parts: the DCF in the first part; the STAI TX-2 and GSRS-1 in the second; and the STAI TX-1 and GSRS-2 in the third.. The first and second parts of the data collection tools were filled out and left in the desk drawer of the patient's room immediately after the patient was admitted to hospital. Approximately 8–10 hours before the operation, the third part of the previously released form was completed by researchers by going to the patient's room in face-to-face interviews to obtain the research data. The total time for implementation varied between 15–30 minutes. All of the patients participating in the study had undergone surgery one day after their hospitalization. Preoperative procedures were given by the doctor and nurse. There was an average of 8–14 hours between the data collected on the patient's first admission to the clinic and the data collected on the night before surgery.

In order to determine the comprehensibility of the DCF, a pilot study was completed with 42 patients who were hospitalized in the university hospital's orthopedics, general surgery, ENT, urology, neurosurgery clinics and who agreed to participate in the study. According to the results obtained from the pilot study, necessary corrections were made on the form.

Statistical analysis

The data obtained from the study were transferred to the computer and evaluated by the researchers. Data were analyzed using the IBM Statistical Package for Social Sciences (SPSS) for Windows Version 20.0. Frequencies and percentages of the questions in the DCF were examined. The total scores of the scales were taken and they were tested with the Kolmogorov–Smirnov (KS) and Shapiro–Wilk tests to show whether distribution was normal according to the independent variables.

Non-parametric tests, the Kruskal–Wallis H and Mann–Whitney U tests were used in the analysis of the data not showing normal distribution. In the analysis of normally distributed data, ANOVA and t-test were used. The presence of the correlation between the STAI and the GSRS total scores was examined with Spearman's correlation, and the $p<0.05$ value was accepted for the significance level of statistical tests[31]. In evaluating the data, mean values in the data with normal distribution and median values in the data without normal distribution were taken.

RESULTS

The mean scores of the STAI TX-2 and STAI TX-1 are shown in Table 1. When the table is examined, the STAI TX-2 mean score was found to be 48.84±7.45 (min: 20.00, max: 66.00), while the STAI TX-1 mean score was found to be 39.57±6.80 (min: 25.00, max: 63.00).

Table 1. Patients' STAI TX-2 and STAI TX-1 mean scores (n=270)

Scales	Mean±SD*	Min.- Max.
STAI TX-1	39.57±6.80	25.00-63.00
STAI TX-2	48.84±7.45	20.00-66.00

*SD: Standard Deviation

The total score mean and subdimension mean scores of the GSRS-1 and GSRS-2 are shown in Table 2. When we look at the table, the GSRS-1 total score mean was 28.00±14.94, while the GSRS-2 total score mean was found to be 28.71±16.47.

Table 2. Patients' GSRS-1, GSRS-2, and subdimension mean scores (n=270)

Subdimensions	Mean±SD*	Min. – Max.
Indigestion	8.37±4.94	4.00-28.00
Abdominal Pain	6.06±4.00	3.00-21.00
Constipation	4.72±2.53	3.00-20.00
Diarrhea	4.51±3.66	3.00-21.00
Reflux	4.32±2.68	2.00-14.00
GSRS-1	28.00±14.94	15.00-93.00
Indigestion	8.70±5.35	4.00-28.00
Abdominal Pain	6.40±4.14	3.00-21.00
Constipation	4.61±2.84	3.00-21.00
Diarrhea	4.51±3.66	3.00-21.00
Reflux	4.47±2.98	2.00-14.00
GSRS-2	28.71±16.47	15.00-101.00

*SD: Standard Deviation

The correlation between the STAI and GSRS scores is shown in Table 3. In this study, a positive and low level of significant correlation was found between preoperative anxiety and gastrointestinal system symptoms ($p<0.05$).

Table 3. Correlation values between STAI scores and GSRS scores (n=270) (H2-Ö2)

Scales	STAI TX-1	STAI TX-2	GSRS-1	GSRS-2
STAI TX-1	-	-	-	-
STAI TX-2	r= 0.320*, p= 0.001	-	-	-
GSRS-1	r=0.134*, p=0.027	r=0.121*, p=0.047	-	-
GSRS-2	r=0.131*, p=0.031	r=0.160*, p=0.008	r=0.891**, p=0.001	-

* Low level of meaningful relationship in a positive direction, ** Excellent level of meaningful relationship in a positive direction

Table 4. STAI TX-2, STAI TX-1, GSRS-1 and GSRS-2 scores of tpatients (n=270)

Variable	n (%)	STAI TX-2	STAI TX-1 Med./Mean (SD/SE*)	GSRS-1 Median (SE*)	GSRS-2 Median (SE*)
Gender					
Female	137 (50.7)	50.00 (0.656)	40.00 (0.624)	25.00 (1.242)	25.00 (1.366)
Male	133 (49.3)	48.00 (0.623)	39.00 (0.540)	23.00 (1.332)	22.00 (1.471)
Test		0.216 Z=-1.238	0.334 Z=-0.967	0.122 Z=-1.546	0.093 Z=-1.677
Marital status					
Married	224 (83.0)	49.53 (7.086)	40.00 (0.464)	25.00 (1.028)	24.00 (1.146)
Not married	46 (17.0)	45.45 (8.299)	39.00 (0.873)	20.50 (1.729)	22.50 (1.795)
Test		0.001 t=3.450	0.105 Z=-1.619	0.014 Z=-2.469	0.105 Z=-1.620
Family type					
Nuclear	210 (77.8)	49.00 (0.514)	39.00 (0.471)	24.00 (1.007)	23.00 (1.093)
Extended	60 (22.2)	50.50 (0.944)	40.00 (0.869)	25.00 (2.068)	25.50 (2.361)
Test		0.075 Z=-1.782	0.379 Z=-0.880	0.216 Z=-1.237	0.039 Z=-2.065
Income status					
More than expenses	9 (3.4)	50.22 (8.422)	40.00 (1.653)	35.00 (4.935)	29.00 (4.143)
Equivalent to expenses	181 (67.0)	48.03 (7.460)	40.00 (0.516)	23.00 (1.149)	23.00 (1.282)
Less than expenses	80 (29.6)	50.51 (7.104)	39.00 (0.750)	25.00 (1.523)	25.00 (1.690)
Test		0.039 F=3.286	0.742KW=0.596	0.121 KW=4.225	0.180 KW=3.425
Working status					
Employed	146 (54.1)	48.02 (7.542)	39.00 (0.541)	21.00 (1.334)	22.00 (1.463)
Unemployed	88 (32.6)	50.20 (7.471)	40.00 (0.749)	28.00 (1.489)	28.00 (1.669)
Retired	36 (13.3)	48.80 (6.696)	40.00 (1.247)	25.00 (1.888)	25.00 (2.027)
Test		0.096 F=2.368	0.865 KW=0.290	0.006KW=10.338	0.001KW=13.444
Last completed education					
Illiterate	38 (14.1)	50.31 (7.774)	41.00 (1.224)	30.50 (1.832)	28.00 (2.224)
Literate	25 (9.3)	50.16 (8.065)	36.00 (1.436)	24.00 (1.989)	25.00 (2.993)
Primary education	78 (28.9)	49.52 (6.591)	39.00 (0.691)	23.50 (1.397)	23.00 (1.590)
High school	79 (29.2)	48.12 (8.145)	40.00 (0.835)	20.00 (1.535)	21.00 (1.518)
University	43 (15.9)	47.16 (7.151)	40.00 (0.879)	25.00 (3.507)	26.00 (3.823)
Other	7 (2.6)	46.85 (4.413)	42.00 (2.600)	21.00 (4.930)	20.00 (3.695)
Test		0.276 F=1.273	0.336 KW=5.708	0.008KW=15.712	0.004KW=17.356
Leisure time					
Social and cultural activities	73 (27.0)	47.15 (8.653)	39.00 (0.805)	23.00 (2.126)	24.00 (2.243)
Sports activities	27 (10.0)	47.59 (6.203)	40.00 (1.138)	16.00 (2.004)	18.00 (2.483)
Other	170 (63.0)	49.76 (6.942)	40.00 (0.532)	25.00 (1.059)	25.00 (1.200)
Test		0.028 F=3.634	0.878 KW=0.259	0.005KW=10.538	0.028KW=7.120
Smoking status					
Smoking	113 (41.9)	48.00 (0.602)	39.82 (6.661)	21.00 (1.174)	22.00 (1.347)
Non-smoking	157 (58.1)	50.00 (0.649)	39.38 (6.928)	25.00 (1.297)	25.00 (1.403)
Test		0.570 Z=-0.569	0.606 t=-0.517	0.009 Z=-2.617	0.001 Z=-3.331
Mean Age	48.30 (18.62) (min:18, max:92)				

*Med. = Not normal data distribution, Mean: Normal data distribution; SE: Standard Error, significance level as p <0.05.

Table 5. STAI and GSRS scores according to some independent variables (n=270)

Independent Variables	n (%)	STAI TX-2 Med./Mean (SD/SE*)	STAI TX-1 Med./Mean (SD/SE*)	GSRS-1 Median (SE*)	GSRS-2 Median (SE*)
Chronic disease status					
No	184 (68.1)	48.09 (7.636)	39.00 (0.473)	22.00 (1.055)	23.00 (1.149)
Yes	86 (31.9)	50.43 (6.810)	40.00 (0.812)	28.50 (1.677)	27.00 (1.919)
Test		0.016 t=-2.418	0.144 Z=-1.462	0.001 Z=-4.151	0.001 Z=-3.252
Clinic					
Brain surgery	54 (20.0)	48.00 (0.819)	39.25 (6.901)	25.00 (1.765)	25.00 (1.904)
General surgery	56 (20.7)	51.00 (1.059)	40.33 (6.801)	27.00 (3.080)	27.00 (3.450)
ENT	50 (18.5)	51.00 (1.054)	39.84 (6.993)	19.00 (1.399)	19.50 (1.282)
Orthopedics	57 (21.1)	48.00 (1.014)	39.03 (6.377)	25.00 (1.484)	25.00 (1.723)
Urology	53 (19.6)	48.00 (1.043)	39.39 (7.163)	24.00 (1.399)	24.00 (1.221)
Test		0.024 KW=11.277	0.865 F=0.320	0.028 KW=10.844	0.004 KW=15.601
History of prior hospitalization					
No	133 (49.3)	47.59 (7.935)	39.00 (0.589)	23.00 (1.308)	23.00 (1.386)
Yes	137 (50.7)	50.05 (6.759)	40.00 (0.584)	25.00 (1.266)	24.00 (1.449)
Test		0.007 t=-2.742	0.675 Z=-0.420	0.112 Z=-1.590	0.277 Z=-1.087
History of prior surgery					
No	194 (71.9)	49.00 (0.559)	39.00 (0.487)	25.00 (1.128)	24.00 (1.230)
Yes	76 (28.1)	50.00 (0.732)	40.00 (0.790)	23.00 (1.447)	23.50 (1.674)
Test		0.153 Z=-1.429	0.486 Z=-0.696	0.303 Z=-1.030	0.342 Z=-0.951
Stool elimination status					
In 1–2 days	132 (48.9)	50.04 (6.802)	40.00 (0.549)	23.00 (1.299)	23.50 (1.376)
In 3–4 days	94 (34.8)	48.17 (8.194)	37.00 (0.732)	23.00 (1.413)	23.00 (1.519)
In 5–6 days	34 (12.6)	46.82 (7.605)	41.50 (1.358)	31.50 (1.961)	28.50 (2.143)
7 days or more	10 (3.7)	46.10 (5.486)	40.00 (1.712)	40.00 (6.965)	47.00 (9.102)
Test		0.044 F=2.738	0.117 KW=5.896	0.001 KW=20.452	0.001 KW=18.494
Continuous medication use					
Yes	80 (29.6)	50.03 (6.514)	40.00 (0.822)	27.50 (1.780)	26.00 (2.032)
No	190 70.4)	48.33 (7.772)	39.00 (0.477)	22.00 (1.033)	23.00 (1.128)
Test		0.087 t=-1.719	0.496 Z=-0.681	0.001 Z=-3.771	0.008 Z=-2.654
Accompanied by companion					
No	6 (2.2)	43.50 (3.927)	38.50 (2.625)	25.50 (11.987)	25.50 (12.703)
Yes	264 (97.8)	49.00 (0.450)	40.00 (0.419)	24.00 (0.890)	24.00 (0.987)
Test		0.043 Z=-2.025	0.356 Z=-0.924	0.530 Z=-0.627	0.573 Z=-0.563
Received preoperative information					
Yes	255 (94.4)	48.84 (7.546)	40.00 (0.419)	24.00 (0.942)	24.00 (1.049)
No	15 (5.6)	48.80 (5.796)	34.00 (2.005)	24.00 (3.407)	24.00 (2.837)
Test		0.983 t=-0.022	0.028 Z=-2.196	0.432 Z=-0.785	0.366 Z=-0.905

*Med. = Not normal data distribution, Mean: Normal data distribution;
SE: Standard Error, significance level as $p < 0.05$.

Table 4 shows that 50.7% of the patients were women, 83.0% were married, and 77.8% had a nuclear family structure. In addition, 29.2% of the patients were high school graduates, 63.0% spent their free time with activities other than social and sports activities, and 58.1% did not smoke. The mean age of the patients was 48.30 ± 18.62 (min: 18, max: 92).

In the study, some variables related to patients were examined in Table 5, and 31.9% of the patients were found to have a chronic disease. In addition, 20.0% of patients were in neurosurgery clinics, 20.7% in general surgery, 18.5% in ENT, 21.1% in orthopedics, and 19.6% in urology.

It was determined that 50.7% of the patients had been previously hospitalized, 28.1% had a history of surgery, 48.9% had stool output within 1–2 days, 29.6% had continuous medication use, and 97.8% had someone accompanying them during hospitalization. In addition, 94.4% of the patients were informed about the preoperative procedures, and 57.8 of the patients were informed about possible postoperative complications.

DISCUSSION

Anxiety is defined as a state of emotion that causes a person to have problems physiologically and psychologically in many ways by stimulating the sympathetic and parasympathetic nerves in the body, which is manifested by tension and anxiety[6, 7]. The total mean scores on the STAI ranged from the lowest (20) to the highest (80). It is stated that anxiety levels increase as the total score approaches 80 and that anxiety levels decrease as the score approaches 20[30]. In this study, the STAI TX-2 mean score was found to be 48.84±7.45, while the STAI TX-1 mean score was found to be 39.57±6.80. Accordingly, the STAI TX-1 score was low, while the STAI TX-2 score was high. The mean score of the STAI TX-1 in this study is similar to the literature[5,6,27,32-34]. The mean score of the STAI TX-2 in this study is similar to the literature, also[1,3,33-35]. It is thought that a low STAI TX-1 score may result from the patient's acceptance of the surgery and that uncertainties experienced in the patient's social life, difficulties experienced in the decision-making process, and negative pain experiences are the reasons for the high score on the STAI TX-2. In the present study, it is thought that there is no relationship between the time when the scales were administered and the scores, and this was due to the measurement of the patient's state and different types of anxiety traits.

In this study, indigestion, abdominal pain, constipation, diarrhea, and reflux were the most common symptoms of GIS in patients. In the literature review, no studies using GSRS before surgery were found in patients. However, in studies conducted in different countries to determine the incidence of GIS symptoms, the prevalence varied between 10% and 89% [17,22,23,25,28,36-39]. Haug et al.[17] found the GIS prevalence at 48%, with reflux, constipation, diarrhea, and nausea as the most common GIS symptoms. Kulich et al.[22] stated in their study with 142 patients that the symptoms of GIS were most often reflux and indigestion. Mussel et al.[23] stated that most of the patients experienced at least one GIS symptom in the preceding month, the three most common being nausea, constipation, and abdominal pain. In their research, Çam and Nur[28] found that 70.2% of the participants experienced GIS symptoms in the preceding three months, the four most common being indigestion, diarrhea, nausea, and vomiting.

Common worldwide, GIS symptoms affect daily activities and quality of life negatively[28,40]. Werden[24] stated that people experience temporary symptoms of GIS during especially emotionally difficult periods in their lives. Therefore, it is necessary to take a nursing history to determine and reduce/eliminate the problems that may develop in the preoperative period.

In this study, a low level of positive correlation was found between preoperative anxiety and GIS symptoms. In the literature, no national nor international studies were found investigating the relationship between preoperative anxiety and GIS symptoms. However, a limited number of studies were found examining the correlation between anxiety and GIS symptoms in different sample groups[17,22-25]. In a study conducted in Norway, Haug et al.[17] determined that anxiety strongly affected the symptoms of GIS in individuals over the age of 20 and reported that anxiety is an important factor for GIS symptoms. In their study with 142 patients, Kulich et al.[22] found that the rate of GIS symptoms was 70% and that there was a positive correlation between GIS symptoms and anxiety. Mussel et al.[23] stated in their study with 2,091 patients who applied to 15 primary health care institutions in the United States that GIS symptoms were high in patients with high anxiety levels, and especially constipation and

diarrhea occurred in patients with anxiety. In a study with university students, Werden[24] stated that while anxiety was an important variable in predicting GIS symptoms and that people with anxiety experienced significant stomach cramps, there was no correlation between anxiety and constipation. Bener and Dafeeah[25] found the frequency of GIS symptoms in their study with 934 patients in primary healthcare institutions to be 41.1%, and the rate of anxiety was 21.4% higher in those with GIS symptoms.

In this study, it was determined that the groups with high anxiety scores in the preoperative period also had high GSRS scores, but this correlation was low. For this reason, the patient should be evaluated as a whole in order to prevent the problems that may be experienced before the operation. In the preoperative period, the anxiety levels of patients should be determined, the symptoms of GIS experienced should be evaluated, and individual nursing care plans should be formulated. It is thought that eliminating or minimizing the uncertainties experienced by the patient before the surgery may be effective in preventing the problems that will be experienced after the operation.

In this study, it was found that trait anxiety scores were higher in patients who did not smoke and that state anxiety scores were higher in those who did. However, it was determined that both the GSRS-1 and GSRS-2 scores were significantly higher in non-smoking patients. Caumo et al.[6] and Çaykara et al.[41] reported that smokers had higher anxiety levels. Haug et al.[17], Özden et al.[42], and Köksal et al.[43] reported that smokers experienced more GIS symptoms; the data collection continued, and smokers continued to smoke before hunger restrictions, thus showing no difference in anxiety scores between smokers and non-smokers. In addition, it was assumed in the study that smokers often experienced symptoms of GIS; however, because they viewed this situation as normal, GSRS scores were lower.

The trait anxiety, GSRS-1, and GSRS-2 scores were found to be significantly higher in patients with chronic disease, and while state anxiety scores were also higher in patients with chronic disease, there was no statistical difference. It was determined that GSRS scores were higher in patients with cardiovascular, respiratory, and endocrine system diseases. Similar to our study, Dayılar et al.[3] reported that those with a concomitant disease experienced higher anxiety in the preoperative period. In the studies of Budak[44] and Bayad[45], the state anxiety scores of those with a concomitant disease were found to be higher. Kelleci et al.[46] reported that the level of anxiety was higher in patients with heart disease and endocrine system diseases, such as diabetes, preoperatively. In their study, Özden et al.[42] determined that more than half of the patients with GIS symptoms had also chronic diseases such as cardiovascular (e.g., hypertension), endocrine (e.g., diabetes), and respiratory (e.g., asthma). Oğuz et al.[47] determined that approximately one-third of patients experiencing GIS symptoms similarly had chronic diseases such as hypertension, diabetes and asthma. In the present study, it is thought that in patients with chronic disease, factors such as uncertainty during and after surgery and the ability of the individual to cope with the existing disease would be affective in increasing anxiety levels. However, GIS problems are thought to have arisen as a side effect of the medications used for the patients' chronic diseases or because of the high anxiety levels of those with chronic diseases.

In this study, uncertainties such as difficulty in breathing, aesthetic appearance, and hearing problems after surgery are thought to increase anxiety in patients due to the higher number of previous operations, such as thyroidectomy, rhinoplasty, and tympanoplasty in the ENT clinic. In the general surgery clinic, , cholecystectomy and pancreatectomy, as well as operations related to polyps, hemorrhoids, or pinoleidal sinus, are thought to increase anxiety when patients experience violation of privacy and/or pain more intensely, and it is thought that the patients experiencing more GIS symptoms may also be due to the patients having bowel and biliary surgery. Turhan et al.[48] reported that preoperative anxiety was higher in obstetric surgery, plastic surgery, and general surgery clinics, respectively. Both Akbulut[49] and Budak[44] found that there was no difference between the state anxiety scores between the clinics before the surgery. In the present study, uncertainties such as difficulty in breathing, aesthetic appearance, and hearing problems in ENT patients were thought to increase anxiety. While it is thought that general surgery patients' violation of privacy and more intense level of pain increased their anxiety, their experiencing higher GIS symptoms may have resulted from them having more intestinal and bile surgeries.

In the present study, it was found that patients with a previous history of hospitalization had significantly higher anxiety scores. The state anxiety, GSRS-1, and GSRS-2 scores were determined to be close to each

other with or without a history of hospitalization. Unlike our study, Nigussie et al.[1] found that a previous history of hospitalization had no effect on anxiety. In our study, it is thought that those who had been hospitalized before may have had negative hospital experiences in their past, which increased their anxiety.

Trait anxiety scores were found to be significantly lower in patients with stool outlet frequency of five days or more, and no difference was found between the state anxiety scores. The GSRS-1 and GSRS-2 scores were found to be significantly higher in patients with stool output of five days or more. In the literature review, results of research examining the effect of stool outlet on anxiety were not found. However, there are research results examining the effect of stool output on GIS symptoms. Özden et al.[42] reported that approximately two-thirds of patients with GIS symptoms had a stool outlet every four days. In our study, it is thought that patients with stool output of five days or more experienced a GIS symptom due to reasons such as being embarrassed to share this situation or having long periods of immobility during their stay in hospital. However, because of this high anxiety, GSRS scores were also considered to be high.

Anxiety scores were found to be higher in patients who used medication continuously. The GSRS-1 and GSRS-2 scores were found to be significantly higher in patients who used medication continuously. There were no research results in the literature examining the effect of continuous medication on anxiety. However, Köksal et al.[43] found that medication users experienced more GIS symptoms, while Oğuz et al.[47] found that very few patients with GIS symptoms used medication. The idea that the chronic diseases in patients may affect surgery negatively may increase anxiety undesirably. In addition, it is thought that the medications used by patients for these diseases may have had a side effect on GIS, so as GIS symptoms may have occurred, anxiety may have increased GIS symptoms.

It was determined that the trait anxiety scores were significantly higher in patients with a companion. It was found that the state anxiety scores were higher in those with a companion, but the result was not significant. However, the GSRS-1 and GSRS-2 scores were found to be higher in those without a companion. Akbulut[49] found that there was no significant difference between the state anxiety scores according to the companion status in the study, in which the causes of preoperative anxiety and the effects of the preoperative visit on anxiety were examined. In our study, it is thought that the reason for high anxiety scores in patients with a companion may be due to a more extensive surgery or having to become highly dependent upon others after the surgery.

In the study, trait anxiety scores were found almost the same in patients who were informed about preoperative procedures as in those who were not. State anxiety scores were found to be significantly higher in those who were informed. However, the GSRS-1 and GSRS-2 scores were similar in the group with and without information. Similarly, Kiyohara et al.[50] found that there was no difference in the level of persistent anxiety between patients with and without accurate knowledge of preoperative procedures. Sigdel[2] stated that providing information at an insufficient and inappropriate time increased anxiety. Among the reasons for higher anxiety in patients who are informed, factors such as giving information in the period immediately prior to the operation where the patient perceptions decrease, insufficient information, and not giving opportunity for patients to ask questions may be considered.

The research is limited to the neurosurgery, orthopedics, general surgery, ENT, and urology clinics of Kars Harakani State Hospital in Kars, Turkey.

In accordance with the results obtained from the study, it has been concluded that patients with high preoperative anxiety also have a higher number of GIS symptoms. This study concludes that the patients' Trait Anxiety results were deemed moderate and their State Anxiety results were deemed low. It was determined that the most common GIS symptoms before surgery were indigestion, abdominal pain, constipation, diarrhea, and reflux, respectively.

According to the results obtained from the study, we recommend the following: giving appropriate and accurate information to patients at an appropriate time before, during, and after the surgery; encouraging enough time for the patient to ask questions and allowing enough time for answers; taking a complete history of patients in the preoperative period; evaluating the patient in terms of anxiety and GIS symptoms; and formulating the necessary nursing care plan.

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