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Research

The Effect of Surgical Fear Level Before Abdominal Surgery on Postoperative Recovery

Abdominal Cerrahi Öncesi Cerrahi Korku Düzeyinin Ameliyat Sonrası İyileşme Üzerine Etkisi

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ABSTRACT

Objective: Surgical fear, which is common before abdominal surgery, adversely affects postoperative recovery and prolongs hospital stay. This study was conducted to determine the effect of preoperative fear level on recovery after abdominal surgery. This study employed a prospective, correlational design.

Methods: The researcher conducted the study involving 200 patients undergoing abdominal surgery. Data were collected using the patient information form, Surgical Fear Questionnaire, and postoperative recovery index.

Results: The mean preoperative total surgical score among patients was 27.22±22.73. Analyses of univariate linear regression models found that fear of surgery complicates patients' postoperative recovery [(T_1, β=0.234; p=0.001; R^2=0.055); (T_2, β=0.195; p=0.006; R^2=0.038)].

Conclusion: The study showed that preoperative fear of abdominal surgery increased patients' difficulty during postoperative recovery.

Keywords: Abdominal surgery, postoperative recovery, surgical

ÖZ

Amaç: Abdominal cerrahi öncesinde yaygın olan cerrahi korku, hastaların ameliyat sonrası iyileşmesini olumsuz yönde etkiler ve hastanede kalış sürelerinin uzamasına neden olmaktadır. Bu çalışma, abdominal cerrahi sonrası iyileşme üzerine ameliyat öncesi korku düzeyinin etkisini belirlemek amacıyla yürütüldü. Bu çalışma prospektif ve ilişkisel tipte bir tasarım kullanılarak uygulandı.

Gereç ve Yöntem: Araştırmacı, abdominal cerrahi geçiren 200 hasta ile çalışmayı uyguladı. Veriler hasta bilgi formu, Cerrahi Korku Anketi ve ameliyat sonrası iyileşme indeksi kullanılarak toplandı.

Bulgular: Hastaların ameliyat öncesi toplam cerrahi korku düzeyi ortalaması 27,22±22,73 olarak bulunmuştur. Tek değişkenli doğrusal regresyon modeli analiz sonuçlarına göre, ameliyat korkusunun hastaların postoperatif iyileşme sürecini zorlaştırdığı bulunmuştur [(T_1, β=0,234; p=0,001; R^2=0,055); (T_2, β=0,195; p=0,006; R^2=0,038)].

Sonuç: Çalışmada, karın ameliyatı öncesi ameliyat korkusunun hastaların ameliyat sonrası iyileşme sürecindeki zorluk düzeyini artırdığı görüldü.

Anahtar Kelimeler: Abdominal cerrahi, ameliyat sonrası iyileşme, cerrahi korku

INTRODUCTION

Emergency or elective abdominal surgery constitutes a controlled trauma that affects patients both physiologically and psychologically. Despite advances in technology and surgical techniques, patients undergoing surgery today may experience problems such as fear of pain and anesthesia, separation from family, and interventions that alter body image, which can lead to fear of surgery (1-4). In patients undergoing abdominal surgery, Factors that may cause fear

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of surgery—unlike in other types of surgery—include the possibility of impairing the functions of vital organs, such as digestion and excretion, and concern that abdominal pain will restrict movement. Surgical fear is defined as the excessive fear experienced by a person anticipating surgical interventions (5). This condition, which varies from patient to patient, may negatively affect patient outcomes during and after surgery (6). Studies have reported that preoperative fear negatively affects the patient's recovery, increases the use of anesthetic drugs during surgery, and causes surgical complications (5,7). In addition, surgical fear may lead to increased postoperative pain, delayed wound healing, and increased need for analgesics. It may prolong hospital stays and adversely affect recovery (8,9). In the preoperative period, each patient should be carefully evaluated for surgical anxiety, and postoperative recovery should be supported by nursing care tailored to the patient's needs (10). Delayed recovery is associated with problems such as delayed return to home and work activities, difficulty moving, fatigue, the belief that more time is needed for recovery, loss of appetite, nausea, and pain (10,11). The majority of studies on anesthesia and postoperative recovery have focused on physiological parameters, recovery time, and rates of adverse outcomes, including serious complications and mortality. It has been emphasized in the literature that fear of surgery negatively affects postoperative recovery (1,8,11,12). Unlike other studies, it aimed to answer how fear-induced stress before abdominal surgery would affect the patient and their recovery. We aimed to evaluate the effect of preoperative fear on postoperative recovery.

METHODS

Study Design, Population, and Sample Size

The study was conducted the general surgery departments of a training and research hospital in Türkiye from March to August 2024. This study employed a descriptive, relational design. The population comprised patients undergoing abdominal surgery in the general surgery department of a training and research hospital in Türkiye from March to August 2024. The sample size was determined to be 196 patients using G*Power 3.1, with a margin of error of 0.05, an 80% confidence level, and a power of 80%. A total of 205 patients who met the inclusion criteria were enrolled to account for potential withdrawals or exclusions during the study. During data collection, two patients had previously used antipsychotic and antidepressant drugs, two had speech problems and one refused to participate; therefore, the study was completed with 200 patients. This study addressed the following questions.

Study Inclusion Criteria

Participants aged 18-70 years who underwent elective abdominal surgery (appendectomy, cholecystectomy, total gastrectomy, hemicolectomy) and had no hearing or speech problems impairing communication or psychiatric illness were included.

Exclusion Criteria

Patients with psychiatric disorders who underwent emergency surgery were excluded from the study.

Instruments

Research data were collected using the patient identification form, the Surgical Fear Questionnaire (SFQ), and the postoperative recovery index (PoRI).

Patient Identification Form

The researcher developed the patient information form based on data from the literature (1,2,13). It consists of 11 questions assessing age, gender, education, profession, marital status, type of surgery, previous hospitalizations, previous surgeries, chronic diseases, preoperative pain, and current medications.

Surgical Fear Questionnaire

Theunissen and colleagues designed this scale to examine levels of surgical fear in patients undergoing surgery. The original scale's Cronbach's alpha was 0.87 (14). Construct validity and internal consistency for Turkish were assessed by Bağdigen and Karaman Özlü (15). It is a Likert-type scale consisting of eight items. The questionnaire is scored on a scale from 0 to 10 (0=not at all; 10=very afraid). Scores range from 0 to 80, depending on the patient's level of fear. A higher score indicates a higher level of fear. The Cronbach's alpha coefficient for the adapted scale is 0.93 (15). In this study, Cronbach's alpha was determined to be 0.98.

Postoperative Recovery Index

The PoRI, whose validity and reliability were tested by Butler et al. (16) in 2012, consists of five subdimensions: psychological symptoms, physical activities, general symptoms, bowel symptoms, and appetite symptoms. Scores for items included in each subdimension are summed, averaged, and used to determine their subdimension scores. The statistical validity and reliability of the Turkish adaptation of PoRI were assessed by Cengiz and Aygin (17). The scale consists of 25 items. Items 1-4 of the scale include psychological symptoms; items 5-12 include physical symptoms; and items 13-25 include general symptoms, bowel symptoms, and desire symptom (17). High scores on the scale indicate difficult postoperative recovery, whereas low scores indicate easier postoperative recovery. Cronbach's alpha reliability coefficient was calculated as α=0.967.

In this study, Cronbach's alpha (α) values for the total PoRI score at the first and second postoperative evaluations were 0.932 and 0.935, respectively.

Ethical Considerations

Ethics committee approval was obtained prior to data collection from İstanbul Atlas University Non-Interventional Scientific Research Ethics Committee (approval no: 02/08, date: 08.02.2024). Before surgery, patients were provided with necessary explanations about the study. Both verbal and written consent were obtained. This scientific study was completed in accordance with the Declaration of Helsinki.

Data Collection

Before surgery, the researcher administered the patient identification form (SFQ) to the patients. Postoperatively, PoRI was administered to evaluate both early and late recovery outcomes. The scale was administered face-to-face by the researcher on postoperative day 2 to evaluate early recovery, and once by phone between postoperative days 15 and 30 to evaluate late recovery. All patients were given research information and informed that they could withdraw from the study at any time. Data entry was performed by a researcher not involved in data collection.

Statistical Analysis

SPSS 27.0 was used to analyze the data. Normality was assessed using the skewness and kurtosis coefficients, which ranged from -1.5 to +1.5. Categorical data are presented as frequencies and percentages, and continuous data are presented as means and standard deviations. Independent-samples t-tests were used for two-group comparisons, one-way analysis of variance was used for more than two groups, paired t-tests were used for repeated measures, and Pearson correlation analysis was used for inter-variable relationships. The effect of fear of surgery on postoperative recovery was examined using linear regression analysis.

RESULTS

The mean age of patients in the study was 53.75±12.35 years. Of the participants, 55.5% were female, 81% were married, 60% were high school graduates, and 44.5% had chronic diseases. 62% of participants had prior surgical experience, and 137 (68.5%) had been hospitalized for at least one day. No statistically significant differences were found in mean PoRI scores among patients according to their descriptive characteristics ($p>0.05$). Female patients ($t=2.225$; $p=0.027$) and patients with no previous hospitalization experience ($t=2.653$; $p=0.009$) had significantly higher levels of surgical fear (Table 1).

A statistically significant positive correlation was found between the patients' PoRI level and their total [(T_1, $r=0.234$; $p=0.001$); (T_2, $r=0.195$; $p=0.006$)], short-term [(T_1, $r=0.222$; $p=0.002$); (T_2, $r=0.186$; $p=0.008$)], and long-term [(T_1, $r=0.242$; $p=0.001$); (T_2, $r=0.202$; $p=0.004$)] surgical fear levels. A statistically significant positive correlation was found between the patients' PoRI levels and their long-term surgical fear levels. A statistically significant but weak positive correlation was observed between patients' level of surgical fear and the PoRI (Table 2).

The patients' PoRI scores had a mean of 2.88±0.55 (range, 1.3-4.2) at the first measurement and 1.74±0.43 (range, 1-3) at the second measurement. A statistically significant improvement of approximately 39.6% in patients' postoperative recovery difficulty was observed at the second measurement compared with the first ($t=39.468$; $p<0.001$). Findings for the PORI subscales paralleled those obtained from the total scale score (Table 3). According to the results of the univariate linear regression analysis, preoperative surgical fear increased the level of difficulty experienced by patients during postoperative recovery (T_1: $\beta=0.234$; $p=0.001$; $R^2=0.055$; T_2: $\beta=0.195$; $p=0.006$; $R^2=0.038$). When subgroup analyses were examined, surgical fear was identified as causing the greatest difficulty experienced by patients in recovery with respect to psychological symptoms [(T_1, $\beta=0.273$; $p<0.001$; $R^2=0.074$); (T_2, $\beta=0.307$; $p<0.001$; $R^2=0.094$)] (Table 4).

DISCUSSION

Multiple reasons underlie patients' fear of surgery, which often begins when they decide to undergo the procedure. These reasons include anticipation of surgery, risks of surgery, fear of disability, fear of pain, distorted body image, and previous surgical experiences. Fear of surgery leads to postoperative morbidity and prolonged hospital stay, which negatively impact postoperative recovery (18). Postoperative recovery is defined as patient-centered care aimed at improving an individual's quality of life. Therefore, surgical fear and its impact on postoperative recovery should be considered fundamental factors in the care of patients undergoing surgery (19).

The findings of this study indicate that pre-surgery fear levels were not elevated. Based on the average scores obtained from the scale, patients exhibited low levels of fear. This may be attributed to differences in levels of surgical fear according to the extent of the surgical procedure. When the literature was reviewed, no studies were found investigating the level of surgical fear among patients undergoing abdominal surgery. Kapıkıran et al. (20) reported

Table 1. Patient descriptive characteristics PoRI and SFQ score mean

Descriptive characteristics		n	PoRI-T_1	PoRI -T_2	SFQ
Age	20-49	52	2.84±0.55	1.64±0.34	30.58±22.22
	50-54	28	2.87±0.54	1.74±0.43	30.04±25.27
	55-60	45	2.86±0.45	1.75±0.40	26.33±22.22
	61-70	75	2.93±0.60	1.80±0.48	24.37±22.41
	Test value[b]		0.341[b]	1.444[b]	0.936[b]
	p-value		0.795	0.231	0.424
Gender	Female	111	2.91±0.51	1.75±0.42	30.34±23.87
	Male	89	2.86±0.59	1.72±0.44	23.33±20.68
	Test value[a]		0.664[a]	0.464[a]	**2.225[a]**
	p-value		0.507	0.643	**0.027****
Marital status	Married	162	2.86±0.54	1.74±0.43	27.22±22.34
	Single	38	2.97±0.57	1.74±0.39	27.24±24.61
	Test value[a]		1.074[a]	0.030[a]	0.005[a]
	p-value		0.284	0.976	0.996
Educational level	Literate	11	2.89±0.68	1.59±0.32	31.55±26.48
	Primary education	69	2.98±0.51	1.79±0.44	29.42±22.21
	High school and above	120	2.83±0.55	1.72±0.43	25.56±22.70
	Test value[b]		1.659[b]	1.294[b]	0.842[b]
	p-value		0.193	0.277	0.432
Working status	Yes	90	2.85±0.53	1.74±0.44	24.76±19.64
	No	110	2.91±0.56	1.74±0.41	29.24±24.87
	Test value[a]		0.810[a]	0.037[a]	1.423[a]
	p-value		0.419	0.970	0.156
Chronic illness	Yes	89	2.88±0.57	1.74±0.44	27.09±22.48
	No	111	2.89±0.53	1.74±0.41	27.32±23.02
	Test value[a]		0.073[a]	0.076[a]	0.072[a]
	p-value		0.942	0.939	0.942
Use of medicines	Yes	91	2.87±0.58	1.74±0.45	26.43±22.27
	No	109	2.90±0.52	1.74±0.40	27.88±23.18
	Test value[a]		0.437[a]	0.137[a]	0.449[a]
	p-value		0.663	0.891	0.654
Previous surgery	Yes	124	2.88±0.51	1.72±0.44	25.51±22.22
	No	76	2.90±0.60	1.78±0.41	30.01±23.41
	Test value[a]		0.288[a]	0.925[a]	1.364[a]
	p-value		0.773	0.356	0.174
Previous hospitalization	Yes	137	2.89±0.54	1.70±0.43	24.37±21.39
	No	63	2.87±0.57	1.83±0.42	33.41±24.43
	Test value[a]		0.185[a]	1.957[a]	**2.653[a]**
	p-value		0.854	0.052	**0.009***

*: p<0.01, **: p<0.05, [a](t): Independent sample t-test, [b](F): One-way analysis of variance test, SD: Standard deviation, T_1: Postoperative 2nd day, T_2: Postoperative 15th-30th day, PoRI: Postoperative recovery index, SFQ: Surgical Fear Questionnaire

moderate levels of surgical fear among patients undergoing gastrectomy, cholecystectomy, hepatectomy, and excision of liver cysts. The results differ from those reported in this study. The sociodemographic characteristics of the patients in the sample group differed. Scientific studies conducted with various sample groups using the same scale have also found surgical fear scores similar to those in this study (19,21-24). Taylan and Çelik (5) highlighted surgical fear

Table 2. The relationship between patients level of surgical fear and PoRI

		SFQ short term		SFQ long term		SFQ-total score	
Scales and subscales	**Time**	**r**	**p**	**r**	**p**	**r**	**p**
PoRI-psychological symptoms	T_1	0.247	**<0.001***	0.295	**<0.001***	0.273	**<0.001***
	T_2	0.281	**<0.001***	0.329	**<0.001***	0.307	**<0.001***
PoRI-physical activities	T_1	0.107	0.131	0.115	0.104	0.112	0.114
	T_2	0.065	0.361	0.080	0.261	0.073	0.304
PoRI-general symptoms	T_1	0.199	**0.005****	0.220	**0.002****	0.211	**0.003****
	T_2	0.039	0.580	0.054	0.447	0.047	0.508
PoRI-bowel symptoms	T_1	0.062	0.380	0.056	0.427	0.060	0.397
	T_2	0.168	**0.017*****	0.155	**0.029*****	0.162	**0.022*****
PoRI-appetite symptoms	T_1	0.220	**0.002****	0.231	**0.001****	0.227	**0.001****
	T_2	0.224	**0.001****	0.238	**0.001****	0.233	**0.001****
PoRI-total score	T_1	0.222	**0.002****	0.242	**0.001****	0.234	**0.001****
	T_2	0.186	**0.008****	0.202	**0.004****	0.195	**0.006****

*: p<0.001, **: p<0.01, ***: p<0.05, r: Pearson correlation test, T_1: Postoperative 2nd day, T_2: Postoperative 15th-30th day, PoRI: Postoperative recovery index, SFQ: Surgical Fear Questionnaire

Table 3. PoRI and surgical fear score

Scales and subscale scores	**Time**	**Mean±SD**	**Median (min-max)**	α	**T_1 vs. T_2**
PoRI-psychological symptoms	T_1	1.78±0.72	1.5 (1-4)	0.906	t=10.353
	T_2	1.36±0.43	1.2 5 (1-3.5)	0.855	p<0.001*
PoRI-physical activities	T_1	3.61±0.74	3.75 (1.3-5)	0.952	t=30.376
	T_2	2.14±0.66	2 (1-3.8)	0.962	p<0.001*
PoRI-general symptoms	T_1	2.87±0.85	3 (1-5)	0.955	t=19.760
	T_2	1.74±0.68	2 (1-4)	0.964	p<0.001*
PoRI-bowel symptoms	T_1	3.12±0.96	3 (1-5)	0.979	t=25.674
	T_2	1.80±0.75	2 (1-4)	0.977	p<0.001*
PoRI-appetite symptoms	T_1	2.26±0.83	2 (1-5)	0.963	t=19.868
	T_2	1.25±0.46	1 (1-3)	0.959	p<0.001*
PoRI-total score	T_1	2.88±0.55	2.92 (1.3-4.2)	0.932	t=39.468
	T_2	1.74±0.43	1.68 (1-3)	0.935	p<0.001*
Short-term surgical fear score	T_0	13.55±11.51	10 (0-44)		N/A
Long-term surgical fear score	T_0	13.67±11.38	10 (0-40)		N/A
Surgical fear scale total score	T_0	27.22±22.73	20 (0-80)	0.985	N/A

*: p<0.001, t: Paired sample t-test, T_0: Preoperative period, T_1: Postoperative 2nd day, T_2: Postoperative 15th-30th day, SD: Standard deviation, N/A: Not available, PoRI: Postoperative recovery index

scores among patients undergoing cataract surgery. A study of patients undergoing urological surgery found that their levels of surgical fear were low (7).

Despite advancements in technology, surgical fear remains a significant problem. Surgical fear varies according to the patient's personality, age, gender, type of anesthesia, previous surgical experience, extent of surgery, and sociocultural factors (1,23,25-28). In this study, levels of surgical fear in women were found to be significantly higher than those in men (p<0.05). In previous studies, preoperative surgical fear was found to be higher in women, similar to this study (1,3,7,19,24,25,27). This result is consistent with the literature. Biochemical changes in estrogen and progesterone hormones in women can cause women to become more sensitive and have difficulty coping with stress (29). Because they are more sensitive and emotional, they experience surgical fear when away from their loved ones and families and when anxious about not being able to return to their roles in the family. Patients' experiences in the preoperative period are also among the factors affecting surgical fear. In the relevant study, higher levels of surgical fear were found among patients without prior

Table 4. The effect of preoperative surgical fear on postoperative recovery level (linear regression analysis results)

Variables	Time	B	SE	β	t	p-value	R^2	Model
Psychological symptoms	T_1	0.009	0.002	0.273	3.990	**<0.001***	0.074	$F_{(1-198)}$=15.921*
	T_2	0.006	0.001	0.307	4.545	**<0.001***	0.094	$F_{(1-198)}$=20.660*
Physical activities	T_1	0.004	0.002	0.112	1.589	0.114	0.013	$F_{(1-198)}$=2.526
	T_2	0.002	0.002	0.073	1.031	0.304	0.005	$F_{(1-198)}$=1.062
General symptoms	T_1	0.008	0.003	0.211	3.040	**0.003****	0.045	$F_{(1-198)}$=9.242**
	T_2	0.001	0.002	0.047	0.663	0.508	0.002	$F_{(1-198)}$=0.439
Bowel symptoms	T_1	0.003	0.003	0.060	0.849	0.397	0.004	$F_{(1-198)}$=0.720
	T_2	0.005	0.002	0.162	2.317	**0.022*****	0.026	$F_{(1-198)}$=5.367***
Appetite symptoms	T_1	0.008	0.003	0.227	3.280	**0.001****	0.052	$F_{(1-198)}$=10.761**
	T_2	0.005	0.001	0.233	3.368	**0.001****	0.054	$F_{(1-198)}$=11.342*
PoRI-total score	T_1	0.006	0.002	0.234	3.385	**0.001****	0.055	$F_{(1-198)}$=11.456*
	T_2	0.004	0.001	0.195	2.804	**0.006****	0.038	$F_{(1-198)}$=7.863*

*: p<0.001, **: p<0.01, ***: p<0.05, B: Unstandardised regression estimate, β: Standardised regression estimation, SE: Standard error, PoRI: Postoperative recovery index

hospitalization. No study in the literature has investigated the surgical fear scores of patients who underwent abdominal surgery and were hospitalized. However, studies of patients undergoing elective surgery found high levels of surgical fear among those with no prior hospital experience, as observed in this study (27,29).

The postoperative recovery process begins when the patient decides to undergo surgery. Postoperative recovery is a process involving physical, psychological, and social dimensions. Fear of surgery heightens the body's stress response, leading to elevated levels of hormones such as cortisol and adrenaline and rendering the individual more psychologically vulnerable. The results of this study showed that the higher the patients' preoperative surgical fear levels, the more difficult it was for them to recover after surgery. Similarly, Gümüs (11) investigated fear of surgery in 80 patients who underwent abdominal surgery and emphasized that recovery quality was lower in patients with high anxiety levels than in patients with lower anxiety levels.

Surgical fear, which affects psychological well-being, may impair postoperative recovery and delay the healing process. A scientific study has shown that fear of surgery causes delayed recovery due to psychological symptoms. A study evaluating the effect of anxiety levels on the quality of recovery in patients undergoing abdominal surgery emphasized that anxiety and recovery quality should be investigated (11). The postoperative recovery status of patients who underwent elective major surgery in the general surgery, orthopedics, and traumatology clinics was evaluated, and these patients experienced substantial difficulty in their postoperative recovery (30). A study using a different sample group showed that preoperative patient anxiety negatively affected the emotional-state dimension of the quality of recovery three days after surgery (12). A patient-centered approach for patients undergoing surgical intervention may accelerate postoperative recovery and reduce the fear and anxiety they experience.

Study Limitations

Given these limitations, this study was conducted among patients undergoing abdominal surgery in the general surgery department at a single hospital. Therefore, future multicenter studies including patients undergoing major abdominal surgery may be important to increase the generalizability of the findings.

CONCLUSION

The results indicate that preoperative fear of abdominal surgery increases the difficulty experienced by patients during postoperative recovery.

Future research should focus on developing effective nursing care to reduce patients' fear prior to abdominal surgery. Possible causes of preoperative fear should be identified and addressed, and measures should be taken to improve patients' psychological state.

ETHICS

Ethics Committee Approval: Ethics committee approval was obtained prior to data collection from İstanbul Atlas University Non-Interventional Scientific Research Ethics Committee (approval no: 02/08, date: 08.02.2024).

Informed Consent: Both verbal and written consent were obtained.

FOOTNOTES

Authorship Contributions

Surgical and Medical Practices: Ç.T., A.Y.G., Concept: Ç.T., İ.Ç., A.Y.G., Design: Ç.T., İ.Ç., A.Y.G., Data Collection or Processing: Ç.T., İ.Ç., E.H., A.Y.G., Analysis or Interpretation: Ç.T., İ.Ç., E.H., A.Y.G., Literature Search: Ç.T., A.Y.G., Writing: Ç.T., İ.Ç., A.Y.G.

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