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The Effect of Perceived Preoperative Nursing Care and Surgical Anxiety on Postoperative Recovery

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ABSTRACT

Objective: This study was conducted as a cross-sectional and correlational study to determine the effects of preoperative perceived nursing care and surgical anxiety on postoperative recovery. **Materials and Methods:** The population of the study consisted of 405 patients who were treated in the general surgery and urology clinics of two hospitals in Turkey between January and December 2023. Personal information form, Care Behavior Scale-24 (CBS-24), Surgical Anxiety Questionnaire (SAQ), and Postoperative Recovery Index (PoRI) were used to collect data. **Results:** The total mean score of the participants included in the study was 3.19±1.07 in the PoRI, 3.29±2.02 in the CBS-24, and 46.56±7.90 in the SAQ. According to the results of multiple linear regression analysis, the postoperative recovery status of patients undergoing surgical intervention is affected by care behaviors, income status and surgical anxiety levels. **Conclusion**: It was determined that the patients included in this study had great difficulty in recovery and experienced anxiety despite their perception of care being adequate. It was concluded that as the patients' perception of care increased, the difficulty in recovery decreased, and as their anxiety increased, the difficulty in recovery increased.

Keywords: Nursing Care, Surgical Anxiety, Postoperative Recovery.

Ameliyat Öncesi Algılanan Hemşirelik Bakımı ve Cerrahi Anksiyetenin Ameliyat Sonrası İyileşmeye Etkisi

ÖZ

Amaç: Bu çalışma ameliyat öncesi algılanan hemşirelik bakımı ve cerrahi anksiyetenin ameliyat sonrası iyileşmeye etkisini belirlemek amacıyla kesitsel ve ilişki arayıcı olarak yapılmıştır. **Gereç ve Yöntem:** Araştırmanın evrenini Ocak-Aralık 2023 tarihleri arasında Türkiye'de bulunan iki hastanenin genel cerrahi ve üroloji kliniklerinde tedavi gören 405 hasta oluşturmuştur. Verilerin toplanmasında kişisel bilgi formu, Bakım Davranışları Ölçeği-24 (BDÖ), Cerrahi Anksiyete Ölçeği (CAÖ) ve Ameliyat Sonrası İyileşme İndeksi (ASİİ) kullanılmıştır. **Bulgular:** Araştırma kapsamına alınan hastaların ASİİ toplam puan ortalaması 3.19±1.07, BDÖ toplam puan ortalaması 3.29±2.02 ve CAÖ toplam puanı 46.56±7.90 olarak bulundu. Çoklu lineer regresyon analizi sonuçlarına göre cerrahi girişim geçiren hastaların ameliyat sonrası iyileşme durumlarını; bakım davranışları, gelir durumu ve cerrahi anksiyete düzeyleri etkilemektedir. **Sonuç:** Bu araştırma kapsamına alınan hastaların iyileşmede çok güçlük yaşadığı, bakım algılarının yeterli olmasına rağmen anksiyete deneyimledikleri belirlendi. Hastaların bakım algıları arttıkça iyileşme güçlüğünün azaldığı, anksiyeteleri arttıkça iyileşme güçlüğünün arttığı sonucuna varıldı**.**

Anahtar Kelimeler: Hemşirelik Bakımı, Cerrahi Anksiyete, Ameliyat Sonrası İyileşme

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INTRODUCTION

The postoperative recovery process is intricate, involving physiological findings, changes in psychological status, social and habitual functions, and the incidence of side effects (Dığın & Kızılcık Özkan, 2021). The goal of this process is to achieve independence in daily life activities and attain biopsychosocial optimum. Effective postoperative recovery should be supported by a preoperative assessment of the patient and the development of a nursing care plan tailored to individual needs (Gustafsson et al., 2020). Caregiving, a fundamental role of nursing, is the essence of the profession and is central to critical thinking and nursing practices (Chen et al., 2018). The concepts of care and nursing are not separate but parts of a unified phenomenon (Gül & Arslan, 2021). The interaction between nurse and patient during care, including scientific and artistic aspects, supports the healing process and positively affects recovery (Arslan et al., 2014). Nursing care meets patients' expectations and needs, ensuring compliance with treatment, health improvement, and restoration. To enhance the quality of nursing care, it is essential to understand patients' perceptions of the care they receive and investigate factors influencing this perception (Aydın et al., 2019). Research by Kersu et al. indicates that patients perceive nursing care to be of high-quality indicators (Kersu et al., 2020). Another critical factor in providing quality healthcare is managing patients' anxiety levels. During the perioperative process, patients may experience anxiety about loss of control, pain, uncertainties, fear of death, inability to wake up, and disruption of body integrity (Çevik, 2018; Dayılar et al., 2017). Anxiety is known to cause dysfunction in the postoperative period, decrease quality of life, negatively impact disease recovery, prolong hospital stays, and increase healthcare costs (Çevik, 2018). Assessing patients' anxiety levels before surgery and providing psychosocial support can positively prevent the development of postoperative medical complications.

In line with this information, it is believed that determining patients' perceptions of nursing care quality and anxiety levels plays an important role in improving postoperative recovery and the quality of patient care in both the preoperative and postoperative periods. Therefore, this study was conducted to determine the effect of perceived preoperative nursing care and surgical anxiety on postoperative recovery in patients hospitalized in surgical clinics.

Research Questions

•What are the perceptions of nursing care quality, anxiety, and postoperative recovery levels of patients hospitalized in surgical clinics?

•Is there a relationship between nursing care quality perceptions, anxiety, and postoperative recovery levels of patients hospitalized in surgical clinics?

MATERIALS AND METHODS

Type of research

This study was conducted as a cross-sectional and correlational study to determine the effect of perceived preoperative nursing care and surgical anxiety on postoperative recovery. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist was used.

Research population and sample

The study population consisted of patients treated in the general surgery and urology clinics of two hospitals in Turkey between January and December 2023. Participants were included in the study using a simple random sampling method. The study was completed with 405 patients who voluntarily agreed to participate and met the inclusion criteria. The inclusion criteria were volunteering to participate in the study, being 18 years of age or older, having undergone surgical intervention, not having a diagnosis of psychiatric disease, not having a disorder of consciousness due to medication or existing diseases, being open to communication and cooperation, and answering the questions fully and completely.

Data collection and tools

Data were collected using a personal information form, the Caring Behaviors Scale-24, the Surgical Anxiety Questionnaire, and the Postoperative Recovery Index.

The Personal Information Form: This form includes nine questions in total covering sociodemographic information such as age, gender, marital status, educational status, employment status, and the presence of a chronic disease (Çevik, 2018; Çakır et al, 2024).

The Care Behaviors Scale-24 (CBS-24): The Care Behaviors Scale-24, created by Wu et al. (2006), is designed to assess the nursing care process. It is used in various hospital units to evaluate the quality of nursing care provided by both patients and nurses. The Turkish validity and reliability study of the scale was conducted by Kurşun and Kanan (2012). The scale consists of 24 items divided into 4 subgroups: assurance, knowledge-skill, respectfulness, and commitment. Responses are measured using a six-point Likert-type scale. The total scale score, ranging from 1 to 6, is obtained by summing the scores of all items and dividing by 24. Higher average scores indicate a higher perceived quality of care. For this study, the Cronbach Alpha value of the scale was 0.92, with subgroup values ranging between 0.81 and 0.94.

The Surgical Anxiety Questionnaire (SAQ): The SAQ, developed by Burton et al. (2018) and adapted into Turkish by Bölükbaş and Göl (2021), is a five-point Likert-type scale consisting of 17 items. Patients assess the preoperative period based on how much each item reflects their feelings. The scale has three sub-dimensions: health-related anxiety, recovery-related anxiety, and procedure-related

anxiety. The total score is obtained by summing the sub-dimension scores and the scores of three additional items not included in these sub-dimensions. The scale ranges from 0 to 68, with higher scores indicating higher levels of surgical anxiety. In this study, the total Cronbach's alpha value of the scale was 0.891, with subscale values of 0.81 for health-related anxiety, 0.76 for recovery-related anxiety, and 0.76 for procedure-related anxiety.

The Postoperative Recovery Index (PoRI): Developed by Butler et al. (2012) and validated in Turkish by Cengiz and Aygin (2019), the PoRI consists of 25 items. The PoRI has 5 sub-dimensions: psychological symptoms, physical activities, general symptoms, bowel symptoms, and appetite symptoms. Sub-dimension scores are determined by summing and averaging the items in each sub-dimension. The total score is the arithmetic mean of all 25 items. Higher scores reflect more difficulty in postoperative recovery, while lower scores indicate an easier recovery. For this study, the Cronbach's Alpha value of the scale was 0.94, with subgroup values ranging from 0.91 to 0.96.

Statistical analysis

The data obtained from the study were evaluated using the SPSS (Statistical Package for Social Sciences) 27.0 statistical package program. Descriptive statistical methods such as number, and percentage calculations and the arithmetic mean were used. The Skewness-Kurtosis distribution test was used to examine the normal distribution. Student's t-test, one-way ANOVA, Pearson correlation analysis, and linear regression analysis were used to compare variables with a normal distribution between groups. Statistical significance was accepted at the $p < 0.05$ level.

Ethical considerations

Written permission was obtained from the Gumushane University Health Sciences Institute Ethics Committee (Date: 27.12.2022, Approval no: E-95674917-108.99-149334,). Informed consent was obtained from the patients in accordance with the principle of voluntariness. The study was conducted in accordance with the Declaration of Helsinki.

RESULTS

The mean age of the patients included in the study was 48.25±3.16 years (range: 21-78), with 68.4% being male. Among the participants, 57.7% were single, 75.8% had an associate degree, 73.3% had an income equal to their expenses, 75.6% were employed, 77% had no chronic diseases, and 87.9% lived in the city center. The type of surgical intervention was abdominal surgery for 55.6% of the participants, and 66.7% experienced a surgical intervention for the first time. Single patients who underwent surgical intervention had higher PoRI scores than married patients (p=0.047). There was no significant difference in PoRI scores concerning participants' gender, educational status, employment status, place of residence, and surgical experience. Further analysis showed a significant difference between income status and PoRI scores, with participants whose income was higher than their expenses having significantly higher PoRI scores. Participants without chronic diseases had significantly higher PoRI scores than those with chronic diseases (p=0.048). Patients who underwent abdominal surgery had significantly higher PoRI scores than those who underwent orthopedic surgery (p<0.001). There was no significant difference between the sociodemographic characteristics of the participants and their CBI-24 scores (p>0.05).

Female participants had significantly higher SAQ scores than male participants (p=0.002). Participants whose income was lower than their expenditure had significantly higher SAQ scores than those whose income was equal to or higher than their expenditure (p<0.001). Participants with chronic diseases had significantly higher SAQ scores than those without chronic diseases (p<0.001). Participants living in villages had significantly higher SAQ scores than those living in city centers (p<0.001). Patients who underwent abdominal surgery had higher SAQ scores than those who underwent orthopedic surgery and other surgical interventions included in the study.

Participants with three or more surgical interventions had higher SAQ scores than those undergoing surgery for the second time (p<0.001). No significant difference was found between SAQ scores and marital status, educational status, employment status (Table 1).

Table 1. The PoRI, CBS-24, and SAQ scores according to some descriptive characteristics (n=405).

		PoRI	CBS-24	SAQ
Scales	**n (%)**	**Mean±SD**	**Mean±SD**	**Mean±SD**
Gender				
Female	128 (31.6)	3.23±1.09	3.31±1.98	47.39±8.01
Male	277 (68.4)	3.10±1.02	3.26±2.10	44.78±7.38
t; p		1.164; 0.245	0.227; 0.821	3.126; **0.002**
Marital status				
Married	172 (42.5)	3.07±1.14	3.34±2.06	46.41±7.71
Single	233 (57.5)	3.28±1.00	3.23±1.96	46.67±8.05
t; p		-1.991; **0.047**	-0.552; 0.581	-0.326; 0.744

t: student t-test.

Table 1 (Continue) The PoRI, CBS-24, and SAQ scores according to some descriptive characteristics (n=405).

		PoRI	CBS-24	SAQ
	n (%)	Mean±SD	Mean±SD	Mean±SD
Education level				
Primary school	41 (10.1)	3.39±0.80	3.32±1.91	49.04±5.63
High school	24 (5.9)	2.83±0.91	3.29±2.05	45.00±8.17
Associate degree	307 (75.8)	3.19±1.11	3.28±2.04	46.25±8.26
Bachelor's degree	33 (8.2)	3.21±1.02	3.33±1.97	47.57±6.04
F; p		1.374; 0.250	0.008; 0.999	2.020; 0.111
Income level				
Income less than expenses[1]	96 (23.7)	3.34±1.04	3.07±2.02	49.33±5.80
Income equal to expenses[2]	297 (73.3)	3.17±1.26	3.50±2.61	47.58±7.27
Income more than expenses[3]	12 (3)	2.75±1.00	3.35±1.99	43.05±8.96
F; p		11.464; **<0.001**	0.765; 0.466	13.273; **<0.001**
		1>3		3<2; 3<1
Employment status				
Yes	306 (75.6)	3.30±1.04	3.18±2.14	46.79±7.46
No	99 (24.4)	3.16±1.07	3.33±1.98	46.49±8.05
t; p		1.181; 0.238	-0.620; 0.536	0.333; 0.739
Chronic disease				
Yes	93 (23)	3.00±1.05	3.34±2.07	47.37±8.06
No	312 (77)	3.25±1.07	3.28±2.00	43.87±6.71
t; p		-1.984; **0.048**	0.286; 0.775	-3.812; **<0.001**
Place of residence				
City center[1]	356 (87.9)	3.17±1.09	3.28±2.04	46.00±7.94
District[2]	16 (4.0)	3.38±0.61	3.25±1.84	49.33±7.24
Village[3]	33 (8.1)	3.39±0.93	3.42±1.92	53.50±1.54
F; p		0.928; 0.396	0.079; 0.924	9.475; **<0.001**
				(3>1)
Type of surgical intervention	225 (55.6)	3.36±1.0	3.48±2.01	47.80±7.54
Abdominal surgery[1]	136 (33.6)	2.91±1.12	3.01±1.94	45.50±8.72
Orthopedic surgery[2]	44 (10.8)	3.20±1.09	3.23±2.21	43.54±5.51
Other[3]		7.679; **<0.001**	2.315; 1.00	7.443; **<0.001**
F; p		1>2		1>3; 1>2
Surgical experience				
First time[1]	270 (66.7)	3.12±1.09	3.18±2.03	50.30±3.90
Second time[2]	122 (30.1)	3.30±1.03	3.57±2.03	45.37±8.14
3 and above[3]	13 (3.2)	3.69±0.480	3.00±1.58	48.81±7.06
F; p		2.579; 0.077	1.760; 0.173	9.866**;<0.001**
				(3>2)

t: student t-test, F: One-way ANOVA

There was a weakly significant negative correlation between the participants' mean of the PoRI scores and their mean of the CBS-24 scores (p<0.001), and a weakly significant positive correlation between their mean of the SAQ scores (p=0.006) (Table 2).

Table 2. The relationship between the PoRI, CBS-24, and SAQ scores.

	(1)	(2)	(3)
(1) PoRI	1		
(2) CBS-24	r=-0.210 p<0.001	1	
(3) SAQ	r=0.136 p=0.006	r=0.020 p=0.686	1

r: pearson correlation analysis

The mean of the PoRI total score of the patients included in the study was 3.19±1.07, the mean of the CBS-24 total score was 3.29±2.02, and the total SAQ score was 46.56±7.90 (Table 3).

The results of the multiple linear regression analysis indicated that care behaviors, income status, and surgical anxiety levels statistically significantly affect the postoperative recovery status of patients undergoing surgical intervention. These variables account for 11% of the total variance (Table 4).

Table 3. The PoRI, CBS-24, and SAQ scores.

Scales	Mean±SD
The PoRI total score	3.19±1.07
Psychological symptoms	3.61±1.57
Physical activities	3.20±1.22
General symptoms	2.79±1.57
Bowel symptoms	3.19±1.72
The CBS-24 total score	3.29±2.02
Assurance	3.41±1.57
Knowledge-skill	3.57±1.74
Respectfulness	3.07±1.58
Commitment	3.80±1.93
The SAQ total score	46.56±7.90
Health-related anxiety	11.95±4.60
Recovery-related anxiety	10.40±2.88
Procedure-related anxiety	12.73±2.59

Table 4. Multiple regression analysis between the postoperative recovery status of patients and independent variables.

Model	B	SE	β	t	p	VIF
Fixed	2.196	0.371		5.928		
CBS-24	-0.102	0.025	-0.192	4.063	<0.001	1.009
SAQ	0.013	0.007	0.093	1.912	0.052	1.062
Income level	-0.203	0.081	-0.119	-2.525	0.012	1.007
	0.162	0.041	0.193	3.973	<0.001	1.067

Model R=0.339; R^2 =0.115; Adjusted R^2=0.106; F=12.955; p< 0.001; Durbin Watson=0.722. Dependent variable: PoRI

DISCUSSION

Anxiety is one of the most common psychological reactions in patients (80%) scheduled for various surgeries. Increased preoperative anxiety levels are associated with both psychological and somatic negative outcomes and adversely impact the perception of care and postoperative recovery (Zemla et al., 2019).

In this study, the mean of the total score of the PoRI was 3.19±1.07, indicating significant difficulty in recovery. According to the literature, postoperative challenges vary based on the type of surgery, anesthesia, and incision site (Yolcu and Akın, 2015). A study on coronary artery bypass graft surgery patients reported that those with high self-efficacy experienced fewer postoperative recovery difficulties (Çakır et al., 2024). Another study on urological interventions emphasized that patients faced recovery difficulties, with nutrition being a significant factor (Demirdağ et al., 2024). A systematic review highlighted that early mobilization significantly positively impacted recovery difficulties (Uğurlu et al., 2017). Recovery difficulties appear to be common regardless of surgical intervention, influenced by various factors.

The mean of the total score of the patients in this study regarding their perception of care was 3.29±2.02, indicating a slightly high level. Studies on the perception of care in surgical patients found it to be high by Özsoy et al., 2023. Thus, the perception of care among surgical patients can be considered adequate.

The total SAQ score of the patients was found to be 46.56±7.90, indicating that they experienced anxiety. Anxiety develops in every individual hospitalized for medical or surgical reasons due to the unfamiliar environment and disease process (Zemla et al., 2019). A meta-analysis study emphasizes that patients experience preoperative anxiety, which negatively affects the healing process and patient satisfaction, and that social support is crucial in reducing anxiety (Kok et al., 2023). Evaluating anxiety is essential for patients undergoing surgical intervention, and early identification can positively influence the treatment course.

The study found that as patients' perception of care increased, their difficulty in recovery decreased, whereas increased anxiety was associated with greater recovery difficulty. Another study reported that patients with an adequate perception of nursing care had lower levels of anxiety and depression (Buldan & Kurban, 2018). Similarly, a study on the perception of care in patients hospitalized in internal and surgical clinics stated that the perception of care affects patient satisfaction and is an important factor in the healing process (Akışık & Atay, 2022). In a study on patients with gallbladder cancer, it was found that while the perception of nursing care did not significantly affect the quality of life, it had a significant effect on anxiety and depression (Liu et al., 2022), suggesting that the perception of care, anxiety, and the recovery process are interrelated and important factors.

The study showed that single patients, those with higher incomes, and those without chronic diseases had more recovery difficulties than married patients, those with lower incomes, and those with chronic diseases, respectively. Social support improves patients' psychological status and increases their resilience (Kapıkıran & Bulbuloglu, 2024). Similarly, married patients have lower anxiety levels than single patients, positively impacting the recovery process (Karabulut et al., 2023). This finding highlights the positive effect of social support on patient recovery.

Contrary to our study, some other literature indicates that surgical patients with low incomes and chronic diseases experience more recovery difficulties because they cannot meet their care expenses (Burgoon et al., 2021; Karabulut et al., 2023). Factors such as the type and duration of the surgical intervention are thought to influence these results.

The study also revealed that patients who underwent abdominal surgical interventions experienced more recovery difficulties than those who underwent orthopedic surgery. Various factors, such as surgical technique, duration, and type of intervention, affect recovery (Zhang et al., 2022). Collecting data in the early postoperative period may account for the greater recovery difficulties observed in abdominal surgical interventions.

The study revealed that female patients, those whose income was lower than their expenses, those with chronic diseases, those living in villages, and those undergoing abdominal surgical interventions had higher levels of anxiety compared to patients undergoing other surgical interventions. Another study investigating the effect of sociodemographic factors on anxiety, depression, and perceived social support in patients with internal medicine and surgical problems found that more than half of the patients experienced anxiety, with higher levels in women, those with children, those who were divorced, those living in villages, those who were illiterate, had low income, and had chronic diseases (Yüksel & Bahadır Yılmaz, 2020). Additionally, it was emphasized that anxiety and depression are integral to surgical procedures, especially among patients with chronic diseases, suggesting that anxiety is influenced by sociodemographic factors.

Among the patients in the study, those who had undergone three or more surgical interventions had higher anxiety levels than those experiencing a surgical intervention for the second time. In the study by Yüksel & Bahadır Yılmaz (2020), it was found that patients undergoing surgical procedures experience anxiety, with no significant difference in anxiety levels based on the number of surgical interventions. However, anxiety was significantly higher in patients with early hospitalization and early surgical intervention.

In a study evaluating anxiety and depression levels in patients undergoing mastectomy surgery, the number of surgical interventions did not significantly affect anxiety levels, with young age being the most important factor (Stergiannis et al., 2021). Another study on preoperative anxiety and related factors found that patients with more surgical interventions had higher anxiety levels (Mulugeta et al., 2018). Differences in surgical interventions and sampling variations may explain these results.

The multiple linear regression analysis of the study revealed that care behaviors, income status, and surgical anxiety levels have a statistically significant impact on the postoperative recovery status of patients undergoing surgical interventions. These variables account for 11% of the total variance. Regression analysis of a study conducted about the anxiety of surgical patients showed that female gender, provision of preoperative information, and prior surgical experience were related to patient anxiety (Mulugeta et al., 2018). Wang et al. (2021) also concluded that preoperative anxiety decreases physical capacity and increases pain, particularly in elderly patients (Wang et al., 2021). These findings suggest that the type and duration of surgical intervention, along with the sociodemographic characteristics of the patients, significantly influence recovery outcomes.

Limitations and Strengths

The study had some limitations, including focusing only on general surgery and urology patients.

CONCLUSION

It was found that the patients in this study had significant difficulty in recovery and experienced anxiety, despite an adequate perception of care. The study concluded that as patients' perceptions of care improved, their recovery difficulties decreased, and increased anxiety led to greater recovery difficulties. Additionally, single patients, those with higher incomes, and those without chronic diseases who underwent surgical intervention faced more recovery challenges than married patients, those with lower incomes, and those with chronic diseases, respectively. Analyzing the surgical anxiety levels, it was observed that female patients, those with incomes lower than their expenses, patients with chronic diseases, those living in villages, and those who underwent abdominal surgical interventions had higher anxiety levels than those who underwent other types of surgical interventions.

Patients who had undergone three or more surgical interventions had higher anxiety levels than those undergoing their second surgical intervention. Multiple linear regression analyses revealed that care behaviors, income status, and surgical anxiety levels significantly affected the postoperative recovery status of patients who underwent surgical interventions.

It is crucial for nurses to assess anxiety levels in all patients scheduled for surgical interventions and to plan and implement strategies to prevent or reduce anxiety. These measures have a direct impact on patient care perceptions and recovery.

Future studies should focus on identifying factors that can reduce preoperative anxiety and evaluating their effects on a larger sample.

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Conflict of Interest

The author declares no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Author Contributions

Plan, design: NK; **Material, methods and data collection:** NK, AAS; **Data analysis and comments:** NK, AAS; **Writing and corrections:** NK, AAS.

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Ethical Approval

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