The effect of nursing care satisfaction on pain and anxiety levels of patients undergoing orthopedic surgery in the early postoperative period

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Abstract

In our study, we aimed to examine the effect of nursing care satisfaction on the pain and anxiety levels of patients who underwent orthopedic surgery. This descriptive study was conducted with the participation of patients who underwent surgery in the orthopedic clinic of a training and research hospital, and they were in the early postoperative period. Patient information form, Newcastle Satisfaction with Nursing Scale and State-Trait Anxiety Inventory were used in data collection. In this study, we found that 41.2% of the orthopedic patients were between the ages of 36 and 50, and 60.4% of them were women. Both nursing care satisfaction and anxiety levels were found to be higher in women than men (p<0.05). The highest satisfaction rate was found among patients aged 18-35 years old, and the highest anxiety level was found in patients over the age of 66. In our study, we found that higher anxiety levels increased pain intensity, and a high level of nursing care satisfaction could be seen in various pain and anxiety levels. Our study showed that nursing care satisfaction was affected by pain and anxiety in patients who underwent orthopedic surgery. In addition, it showed that pain and anxiety trigger each other. Clinicians should be aware of the negative effects of pain and anxiety on postoperative recovery. Strategies to increase nursing care satisfaction should be developed.

Keywords: Anxiety, care satisfaction, orthopedic surgery, pain, early postoperative period

Introduction

In the literature, it is stated that the duration of hospital stay after orthopedic surgery decreases from 4-12 days to 1-3 days, and there was no significant increase in hospitalizations due to problems and complications at home [1,2]. This may be associated with the adoption of effective and safe perioperative practices. Implementation of early ambulation and mobilization procedures in the postoperative period, good management of complications and nutrition, and providing social support improve patient outcomes and increase the likelihood of early discharge from the hospital [3,4]. Undoubtedly, one of the most important factors in the success of all these practices is very good surgical pain

management. Ineffective postoperative pain management may lead to the following problems: delayed wound healing, myocardial ischemia, deep vein thrombosis, pulmonary dysfunction, cognitive problems, increased anxiety, impaired glucose tolerance due to stress and sympathetic activity, chronic pain, increased morbidity and mortality, delayed discharge and decrease in quality of life [5-7].

In the literature review, studies show that there is a robust relationship between pain intensity felt and patient satisfaction after total knee replacement in patients undergoing orthopedic surgery [8,9]. Other predictors of patient satisfaction in orthopedic patients include opioid use for pain relief, sociodemographic variables, and postoperative functional status as well as psychopathological factors such as depression and anxiety [9-13]. Studies in the literature emphasize that the risk of developing anxiety after orthopedic surgery is approximately 90% [14,15].

Patient satisfaction is one of the parameters that reflect the quality

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of health care [16]. When we consider the health care provided to the patient as an input, satisfaction, the psychological and emotional response of the patient as a result of the health care experience, is an output [17]. Increasing patient satisfaction is possible by making the patient feel better. It is impossible to highly satisfy the patients with nursing care if patients still experience postoperative anxiety and pain. However, in a systematic review conducted in Turkey, it was found that non-drug interventions for postoperative pain are not performed at an optimal level, and the satisfaction level of surgical patients is high even when surgical pain is not completely relieved [7]. Therefore, the variables affecting the patients' perception of nursing care satisfaction are multifactorial and multidimensional, and this perception has changed over the years. Thus, there is always a need for descriptive studies measuring patient satisfaction. In our study, we aimed to examine the effects of nursing care satisfaction on the pain and anxiety levels of patients undergoing orthopedic surgery. We hypothesized that better pain relief is required to increase nursing care satisfaction.

Material and Methods

In this descriptive study, we examined the effects of satisfaction with nursing care on pain and anxiety after orthopedic surgery.

Research Design and Sampling

This study was carried out with the participation of patients who underwent surgery in the orthopedic clinic of a hospital in eastern Turkey between September 2021 and May 2022. According to the sampling method, 250 patients were involved in the study with a 5% margin of error and 95% confidence interval. The patients were interviewed on the first and second postoperative days after orthopedic surgery. The researchers collected data in the form of questions and answers through face-to-face interviews with patients who volunteered to participate in the study.

Inclusion Criteria in The Study

1. 18 years of age or older, undergoing orthopedic surgery (Hand and arm surgery, foot and ankle surgery, joint surgery, hip replacement surgery, anterior cruciate ligament reconstruction)

2. Patients who are on the first and second days of hospitalization after surgery

3. Patients without communication barriers

Exclusion Criteria from Research

1. Patients who have undergone surgical operations other than orthopedics

2. Patients not within the first three postoperative days

3. Patients under the age of 18

4. Patients with language barriers

Data Collection Tools

In this study, "Patient Information Form", "Newcastle Satisfaction with Nursing Scale" and "State-Trait Anxiety Inventory" were used as data collection tools, and scale usage information is shown below.

Patient Information Form

The researchers developed the patient information form after expert consultation. The form includes the socio-demographic characteristics of the patients (age, gender, marital status, education level, etc.) and information about the surgery.

Newcastle Satisfaction with Nursing Scale (NSNS)

Newcastle Satisfaction with Nursing Scale (NSNS) Thomas et al. developed in 1996 [18]. The Turkish validity and reliability study of the scale was performed by Uzun in 2003 [19] and also by Akın and Erdogan in 2007 [20]. The scale is a 5-point Likert scale (1. Not at all satisfied, 2. Barely satisfied, 3. Quite satisfied, 4. Very satisfied, 5. Completely satisfied) and consists of 19 items. After all scale total scores are converted to 100 points, the score evaluation is made between 0-100 points, and a total score of 100 points indicates satisfaction with all aspects of nursing care.

The Cronbach's alpha values of the scale were determined as 0.96, 0.94 and 0.96 in the study of Thomas et al, Uzun, Akın & Erdogan, respectively. The Cronbach's alpha value of our study was found to be 0.94.

State-Trait Anxiety Inventory (STAI)

The Trait Anxiety Inventory (STAI) scale consists of 40 questions and two parts: STAI-1, which measures the level of state anxiety with questions between 1 and 20, and STAI-2, which measures the level of trait anxiety with the following questions from 21 to 40 [21,22]. The Turkish validity and reliability study of this scale was performed by Oner [23]. In the tests, there are direct statements and control questions on both scales. State and trait anxiety scores are obtained by subtracting the score calculated for the control questions from the score obtained for the direct statements and adding the predetermined fixed values for both sections (+50 points are added to STAI-1 and +35 points are added to STAI-2). A high score indicates a high level of anxiety.

Data Analysis

The collected data of the study were analyzed by using IBM SPSS (Statistical Package for the Social Sciences) Statistics 25 (Armonk, NY). To determine the normality of the distributions in the analysis of the data, the Kolmogorov Smirnov test was used, and it was found that the data showed normal distributions. One-way analysis of variance (ANOVA) and chi-square test was applied to determine the relationships between the scales. Post-hoc comparisons were used to identify differences between relationships. Results were evaluated at $p < 0.05$ significance and 95% confidence interval.

Ethical Considerations

This research has been approved by the IRB of the institutions where the authors work. The patients were informed within the scope of the Declaration of Helsinki and their voluntary consent was obtained. Ethics committee approval of this study was obtained from İnönü University Health Sciences Non-Interventional Clinical Research Ethics Committee with the number 2021/2491.

Results

In Table 1, the personal characteristics of orthopedic patients and the mean scores obtained from the NSNS and STAI were presented.

Table 1. Distribution of Orthopedic Patients by Characteristics and Mean Scores of NSNS, STAI and VAS (n=250)

Characteristics	n	%	NSNS	STAI	VAS
Age			Mean±SD	Mean±SD	Mean±SD
18-35 years (1)	96	38.4	84.30±12.64	75.60±9.75	3.51±1.22
36-50 years (2)	103	41.2	83.58±13.09	77.28±9.65	4.03±1.24
51-65 years (3)	31	12.4	79.96±12.81	82.22±12.38	4.27±1.59
66 years and above (4)	20	8.0	82.33±12.74	83.50±13.21	4.33±1.30
F			0.637	1.083	0.626
p			0.015*	0.043*	0.915
Post hoc			1>2>4>3	4>3>2>1	
Gender					
Female	151	60.4	83.21±12.03	82.23±12.30	4.27±1.41
Male	99	39.6	76.50±10.90	81.49±13.75	3.91±1.41
χ2			52.234	68.981	14.261
p			0.001**	0.039*	0.016*
Marital Status					
Single	64	25.6	81.54±11.75	82.75±12	4.03±1.36
Married	186	74.4	80.22±12.85	81.65±13.18	4.17±1.44
χ2			30.966	45.367	4.970
p			0.23	0.660	0.761
Educational Level					
Literate (1)	96	38.4	83.22±11.67	82.69±10.97	4.28±1.28
Elementary School (2)	103	41.2	80.92±12.76	80.35±13.82	4,22±1.56
High School (3)	31	12.4	74.54±9.97	86.00±13.85	3.70±0.82
University and above (4)	20	8.0	75.2±7.66	80.15±14.01	3.65±1.84
F			0.990	0.947	0.990
p			0.02*	0.007**	0.482
Post hoc			1>2>3,4	3>1,2,4	
Income Status					
Income less than expenses	62	24.8	80.87±11.46	80.45±12.85	4.12±1.32
Income equal to expenses	172	68.8	80.11±12.30	82.15±12.96	4.14±1.46
Income more than expenses	16	6.4	84.12±11.27	85.43±11.98	4.06±1.48
F			0.643	1.247	0.643
p			0.910	0.146	0.910
Current Employment Status					
Unemployed for health reasons	51	20.4	77.96±10.85	81.84±14.09	4.31±1.28
Unemployed for non-health reasons	195	78	81.23±12.18	81.80±12.62	4.09±1.44
Employed	4	1.6	78.66±21.07	88±8.18	4.33±2.51
F			1.273	1.082	1.273
p			0.178	0.344	0.178
Type of Surgery					
Upper extremity surgery (1)	74	29.6	78.95±11.74	76.21±12.21	3.34±1.21
Lower extremity surgery (2)	64	25.6	79.8±12.11	79.31±11.31	4.12±1.36
Total knee/hip replacement (3)	95	38	81.85±12.17	80.41±9.87	4.31±1.34
Others (Cruciate ligament tears, meniscus etc.)(4)	17	6.8	80.12±8.96	78.45±10.21	3.94±0.98
F			0.134	1.076	0.781
p			0.014*	0.546	0.168
Post hoc			3>1,2,4		
Perception of progress in health care based on previous experience					
There is progress	106	42.4	82.29±12.04	83.38±12.94	4.18±1.45
There is no progress	144	57.6	79.28±11.90	80.87±12.76	4.06±1.38
χ²			22.267	44.758	3.766
p			0.674	0.683	0.878
Averages					
Length of hospital stay (Days) (Mean±SD)	4.75±2.89			(Min 1, max 21)	
Age	55.25±15.89			(Min 18, max 87)	

χ², Chi-Square Tests; F, One-way analysis of variance (ANOVA), *p<0.05; **p<0.01, SD, Standard Deviation

Table 2. NSNS, STAI and VAS score averages (n=250)

Total and Sub-dimensions	Item Number	Items	Score Range	Min.-Max.	Mean±SD
NSNS	19	1-19	19-95	38-116	81.94±12.87
STAI Total	40	1-40	40-160	55-142	80.56±12.03
STAI-1 (State)	20	Reverse coded items: 1, 2, 5, 8, 10, 11, 15, 16, 19 and 20. Straight-coded items: 3, 4, 6, 7, 9, 12-14, 17, 18.	20-80	23-74	37.95±7.90
STAI-2 (Trait)	20	Reverse coded items: 21, 26, 27, 30, 33, 36, and 39. Straight-coded items: 22-25, 28, 29, 31, 32, 34, 35, 37, 38, 40.	20-80	25-80	42.60±7.21
VAS	1	1	1-10	1-10	4.12±1.42

Table 3. Correlation Analysis between STAI, NSNS and VAS (n=250)

		STAI Total	STAI 1	STAI 2	NSNS	VAS
STAI Total	Pearson Correlation	1	.816[a]	.774[a]	.010	.220[a]
	Sig. (2-tailed)		.000	.000	.870	.000**
	N	250	250	250	250	250
STAI 1	Pearson Correlation	.816[a]	1	.266[a]	-.052	.231[a]
	Sig. (2-tailed)	.000		.000	.411	.000**
	N	250	250	250	250	250
STAI 2	Pearson Correlation	.774[a]	.266[a]	1	.075	.115
	Sig. (2-tailed)	.000	.000		.239	.070
	N	250	250	250	250	250
NSNS	Pearson Correlation	.010	-.052	.075	1	-.053
	Sig. (2-tailed)	.870	.411	.239		.404
	N	250	250	250	250	250
VAS	Pearson Correlation	.220[a]	.231[a]	.115	-.053	1
	Sig. (2-tailed)	.000**	.000**	.070	.404	
	N	250	250	250	250	250

[a]Correlation is significant at the 0.01 level (2-tailed) *p<0.05; **p<0.0

It was determined that 41.2% of the orthopedic patients were between the ages of 36-50, 38.4% of them were between the ages of 18-35, 60.4% of them were women and 74.4% of them were married. 41.2% of the patients were found to be primary school graduates, 68.8% of them had their income equal to their expenses, and 29.6% of them had upper extremity surgery. 78% of the patients stated that they did not work for non-health-related reasons. When the relationship between sociodemographic characteristics and nursing care satisfaction and anxiety levels was examined, it was found that nursing care satisfaction (p=0.001) and anxiety levels in women were higher than in men (p=0.039). The highest satisfaction was observed in patients aged 18-35 (p=0.015), and the highest level of anxiety was observed in patients over the age of 66 (p=0.043). The satisfaction of the patients whose education level was high school and the university was lower than the others (p=0.02). The anxiety level of high school graduates and literate patients was found to be higher than the others (p=0.007). The other sociodemographic variables were found not to have a statistically significant effect on anxiety and nursing care satisfaction. It was determined that sociodemographic characteristics other than gender did not have a statistically significant effect on postoperative pain. Female patients had a higher VAS (Visual Analogue Scale) score than males (p<0.05). The satisfaction of those who underwent total knee/hip replacement was found to be higher (p=0.014).

Table 2 shows the NSNS, STAI, and VAS score averages. The scores of orthopedic patients were determined as follows: NSNS score 81.94±12.87 (min38, max116), STAI total score 80.56±12.03 (min55, max142), and VAS score 4.12±1.42 (min1, max10). The

state anxiety score, which is one of the STAI sub-dimensions, was determined as 37.95±7.90 (min23, max74), and the trait anxiety score, which is another sub-dimension, was determined as 42.60±7.21 (min25, max80).

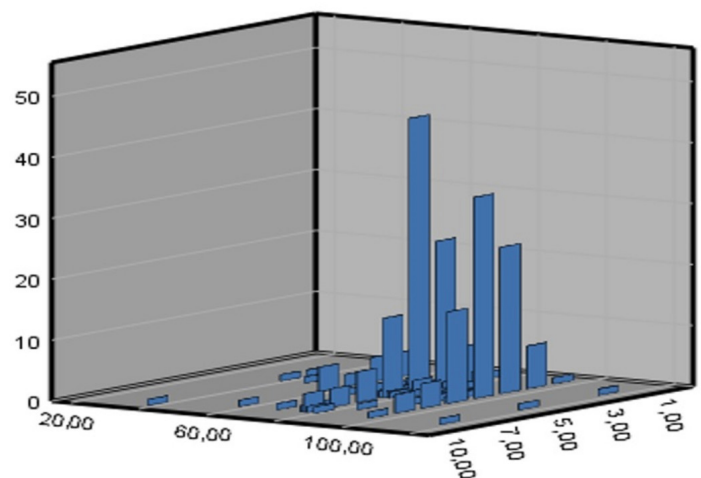The relationship between total STAI, NSNS, and VAS is shown in Figure 1 and Table 3.

Figure 1. STAI represents anxiety and is associated with high pain (VAS). The NSNS representing care satisfaction was scored differently in various VAS and STAI scores

Figure 1 shows that there are high pain scores where high anxiety is concentrated, and a high level of nursing care satisfaction can be

seen in various pain and anxiety scores.

Table 3 presents the correlation analysis between STAI, NSNS, and VAS. Accordingly, there is a strong positive correlation between pain and anxiety (r=0.220, p=0.000). A positive and strong correlation was found between STAI 1, one of the sub-dimensions of STAI, and VAS (r=0.231, p=0.000). There was no statistically significant relationship between other parameters.

Discussion

In our study, we found that in the early postoperative period, the pain and anxiety of patients who had undergone orthopedic surgery were associated with each other. In addition, we found that there were varying degrees of nursing care satisfaction in all pain and anxiety scores. Patient satisfaction with nursing care includes several factors. The difficulties and workload of physicians and nurses in clinics lead patients to show empathy, and the self-sacrificing attitudes of healthcare professionals can increase patients' satisfaction [7]. The data of this study were collected during the COVID-19 pandemic. All over the world, most internal medicine and surgical clinics have been converted to COVID-19 intensive care, and most of these clinics suspended surgeries during the pandemic. Therefore, even having orthopedic surgery is seen as an opportunity by patients. For this reason, patient satisfaction can be achieved just by being able to find a surgeon, operating team, hospital bed, and health care in the hospital. Ultimately, patient satisfaction is a subjective parameter. The pandemic condition is not a period in which patients expect maximal care considerations. Indeed, today, COVID-19 patients are seen as primary patients and other patients are as secondary patients.

In our study, nursing care satisfaction and anxiety levels were found to be slightly higher than the median value. The mean pain level was found to be lower than the median value. In our study, a strong positive correlation was determined between pain and anxiety (r=0.220, p=0.000). There was no statistically significant correlation between nursing care satisfaction and pain and anxiety levels (p<0.05). Some studies report that relieving pain increases patient satisfaction [8,9,14]. On the other hand, there were also studies in the literature finding no significant correlation between pain intensity and nursing care satisfaction [24]. In previous studies, nursing care satisfaction was found to be lower in individuals with higher levels of anxiety [14,15]. Previous studies in the literature measured the level of anxiety in the preoperative period. In our study, however, the level of anxiety was measured in the postoperative period.

Postoperative anxiety is affected by factors such as being informed and knowing the procedures to be performed, previous anesthesia and surgical experience, the type of surgical intervention to be performed, and the degree of difficulty and risk [25]. The primary reason for the anxiety in our study is surgical pain (p<0.05). The studies in the literature listed the causes of postoperative anxiety as follows: surgical pain, incapacity of work, loss of independence, and fear of death [26,27]. Therefore, surgical patients experience anxiety both before and after surgery. Although the reasons for anxiety of both groups are different, the negative emotion felt is the same. Anxiety can have various adverse effects on the patient. Thus, it is an important issue that needs to be managed throughout the perioperative process.

The anxiety level obtained in our study is higher than the moderate level, and this can be seen as a major problem. In previous studies, high postoperative anxiety was associated with increased surgical pain, a higher need for analgesic medication, and longer hospital stay [28]. In addition to nursing care satisfaction, anxiety level has been used as a quality indicator for institutions for more than 20 years [29]. It is inevitable to experience postoperative pain and anxiety. While its importance is commonly known, the relief of pain and anxiety has not been completely provided and its management cannot be performed very well. The generalization of our findings is limited by the single-center nature of our study.

Conclusion

In our study, nursing care satisfaction was associated with pain and anxiety levels in patients who underwent orthopedic surgery. Although lower patient satisfaction was due to higher pain according to the studies in the literature, nursing care satisfaction was found at varying rates in our study, and a significant correlation was observed between pain and anxiety levels. Our study suggests that nursing care satisfaction is multidimensional and multifactorial, and patients can realize not only what is not done but also what is done. Relieving anxiety and pain is an important parameter in increasing the quality of postoperative care. For this reason, strategies should be developed to reduce anxiety and relieve pain after surgery. We believe that the findings of our study will shed light on all physicians and nurses involved in the perioperative process.

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