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Factors Affecting the Satisfaction Levels of Patients who Underwent Orthopedic Knee Surgery in the Early Postoperative Period

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Abstract

The aim of this study was to investigate the effects of biopsychosocial parameters in the early postoperative period on the satisfaction of patients. Seventy-seven patients (female/male: 61/16, age: 40.28 ± 17.67 years) who underwent arthroscopic meniscectomy (n = 43), anterior cruciate ligament reconstruction (n = 25) and total knee arthroplasty (n = 9) were included in this study. The satisfaction levelwas evaluated using the Orthopedics Service Inpatient Satisfaction Survey (OTISS). In addition, the pain intensity, anxiety, depression, and independence level in daily living activities of the patients were evaluated. There was a very weak negative correlation between the anxiety and the satisfaction level with the physiotherapist and secretary (*r*: −0.274, *p*: 0.016; r:−0.265, *p*: 0.020). A very weak negative correlation was found between the pain intensity at activity and satisfaction with the nurse (*r*: −0.227, *p*: 0.048). There were very weak correlations between feeding and satisfaction with the physiotherapist (*r*: 0.292, *p*: 0.010), secretary (*r*: 0.285, *p*: 0.012), doctor (*r*: −0.269, *p*: 0.018), nurse (*r*: 0.300, *p*: 0.008) general satisfaction (*r*: 0.251, *p*: 0.028) and OTISS total score (*r*: −0.305, *p*: 0.007). In conclusion, the pain intensity, anxiety, and independence level in the early postoperative period were related to the satisfaction levels of patients who have undergone orthopedic knee surgery.

Keywords

patient satisfaction, orthopedics, knee, pain, anxiety

Introduction

Patient satisfaction is an indicator of the quality of health systems and health care providers (1). It is associated with the cognitive and emotional responses of the patients to the health care experience (2). As a result of the reliability of data obtained from patients, transparency in health system reporting has become more important to improve the quality of care and treatment (3). Patient satisfaction has been used as a common outcome data in the relevant studies evaluating the treatment process. To improve the quality of health service, determining and reviewing the effects of treatment approaches on patient satisfaction is vital. Studies have reported that ∼20% of patients were not satisfied after primary total knee arthroplasty (4,5). Therefore it is essential to identify the factors that increase and decrease patient satisfaction in order to take precautions. Patient satisfaction is also directly related to the satisfaction levels of health institutions and health professionals, which are other stakeholders other than the patient. In this respect, improving the conditions of institutions and employees are also important for improving satisfaction (6). A similar situation is a striking situation.

In the related literature, there are some studies examining patient satisfaction with total knee, hip replacement, and lumbar spine surgeries (7–9). Also, there are some studies measuring satisfaction with upper extremity surgeries (10,11). In these studies, the relationship of patient satisfaction with parameters such as opioid use, personal and demographic characteristics, outpatient or inpatient treatment, expectations, pain and function were investigated (12,13). Also, it has been explained in many studies that the satisfaction levels of patients undergoing knee surgery depend on many factors such as psychopathological factors (anxiety

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and depression), surgical procedure, perioperative factors, physiotherapy, health care professionals, general medical care, gender, obesity, the part rupture location of ruptured meniscus (14–22). However, the available results still seem insufficient. Studies reporting patient satisfaction after anterior cruciate ligament reconstruction which is one of the most important surgical approaches for the knee, have a reported low level of evidence although their methodology is variable surgical approaches for the knee, have a low level of evidence and their methodology is variable (23). In general, the evidence in patient satisfaction studies is contradictory. It is clear that there is not enough evidence about patient satisfaction among those who underwent orthopedic surgery (24). Although there is a consensus that patient satisfaction, which is an important factor in patient treatment and care processes, should be examined in detail, the number of studies evaluating patient satisfaction multidimensionally is insufficient (25) This study was designed to consider patient satisfaction multidimensionally in the early postoperative period. Therefore, it was aimed to investigate the effects of pain, anxiety, depression, and participation in daily life activities on the satisfaction levels of patients who underwent orthopedic knee surgery.

Methodology

Patients aged older than 18 years who were hospitalized in the Orthopedics and Traumatology Service of the Karadeniz Technical University, Farabi Hospital Health Practice and Research Center for anterior cruciate ligament reconstruction, arthroscopic meniscus, and total knee arthroplasty surgery were included in the study. Those with severe neurological or cardiopulmonary problems and those who were illiterate were excluded from the study. Before the study, participants informed consent was sought and obtained after the research protocols were explained to them. The study was approved by the XXX University Scientific Research Ethics Committee with the protocol number 2018/124 dated June 18, 2018.

Data Collection Tools

Orthopedics Service Inpatient Satisfaction Survey. The survey was developed by Erden and Emirzeoğlu (26), which consists of 16 items. It consists of 6 subdimensions: physiotherapist, be consistent with either secretary or what you have on the questionnaire which is inpatient administrator, technical equipment and hygiene, doctor, nurse, and general satisfaction. The items were scored on a 5-point Likert (0: never, 1: very poor, 2: poor, 3: often, 4: always) the total point of the questionnaire is between 0 and 64. High points indicate high satisfaction level.

Hospital Anxiety and Depression Scale. The scale was developed to identify and measure the risk of anxiety and depression. There were 14 items: double numbered items evaluate depression and single numbered items evaluate anxiety. It was a 3-point Likert scale. The cut-off point of the Turkish version of the Hospital Anxiety and Depression Scale were 10 for the anxiety subscale and 7 for the depression subscale. The Turkish validity and reliability analysis of the scale was performed by Aydemir et al. (27,28).

Visual Analog Scale. It was used to evaluate pain intensity. This scale allows evaluation of pain over a 10 cm line, where 0 = no pain and 10 = intolerable pain (29). In this study, the pain intensity was evaluated at rest and during activity.

Barthel Index. The index was developed by Mahoney and Barthel (30). Turkish validity and reliability of this index were made by Küçükdeveci et al. (31). It measures the level of participation in daily life activities. It consists of 10 subheadings: nutrition, washing, self-care, dressing, intestine care, bladder care, toilet use, and transfer from wheelchair to bed and vice versa, mobility and use of stairs. While the minimum point in each title is 0, the maximum point varies between 5 and 15. The total point ranges from 0 to 100. The points intervals were 0 to 20: fully dependent, 21 to 61: highly dependent, 62 to 90: moderately dependent, 91 to 99: mildly dependent, and 100: fully independent.

Statistical Analysis

Statistical Package for Social Science (SPSS 22.0, SPSS Inc.) software was used for data analysis. Histogram, coefficient of variation, Kurtosis value, Skewness value, Detrended plot graph and Shapiro–Wilks test were used to determine the distribution. Spearman test was used for correlation evaluation of data, which were not a normal distribution. The Kruskal–Wallis test was used in the satisfaction assessment made according to the Barthel index groups. The difference between groups was calculated using the Mann–Whitney U test. For the significance level, $P < .05$ was taken. Correlation coefficients were interpreted as follows: excellent, >0.91; good, 0.90 to 0.71; medium, 0.70 to 0.51; weak, 0.50 to 0.31; little or no relationship <0.3 (32).

The G*Power 3.1.9.2 program (Heinrich-Heine-Universität Düsseldorf) was used to calculate the sample size. In the comparison of variables, the sample was determined as at least 67 according to the Spearman Correlation test applied for correlation analysis between variables with 80% power and 0.50 effect size.

Results

Seventy-seven patients with knee osteoatrhiritis were included in the study. The mean age of the patients was 40.28 ± 17.67 years (Female: 16, 20%; Male: 61, 80%). Five of the patients had anxiety risk and 28 had depression risk. Pain intensity at rest and activity was below average. According to the Barthel index, 20 (26%) of the patients

Table 1. Frequency of OTISS, HADS and Barthel Scores.

Variables	*n*	%
Patients satisfaction		
Poor/low level of satisfaction (0-32)	2	3
High level of satisfaction (33-64)	75	97
Anxiety level		
Low risk	5	6.5
High risk	72	93.5
Depression		
Low risk	28	36.4
High risk	49	63.6
Barthel		
Very dependent	20	26
Partially dependent	39	51
Minimally dependent	4	5
Fully independent	14	18

Abbreviations: OTISS: Orthopedics Service Inpatient Satisfaction Survey; HADS: Hospital Anxiety and Depression Scale.

were very dependent, 39 (51%) were partially dependent, 4 (5%) were minimally dependent, 14 (18%) were fully independent. Results regarding the measurement data are presented in Tables 1 and 2.

The mean Orthopedics Service Inpatient Satisfaction Survey (OTISS) score of the patients was 56.81 ± 7.81.

Table 2. Outcome Measurements Data.

Parameters	Mean ± Standart deviation
HADS	
Anxiety point	4.83 ± 3.48
Depression point	5.76 ± 3.75
Total HADS point	10.59 ± 6.66
VAS-pain intensity	
Rest	2.48 ± 2.03
Activity	4.45 ± 2.45
Barthel index	
Feeding	8.96 ± 2.04
Bathing	2.46 ± 2.51
Grooming	4.15 ± 1.88
Dressing	6.49 ± 2.81
Bowels	7.20 ± 2.74
Bladder	8.70 ± 2.73
Toilet use	8.50 ± 2.57
Transfers (bed to chair and back)	10.12 ± 3.97
Mobility (on level surfaces)	12.20 ± 3.67
Stairs	7.20 ± 3.19
Total Barthel point	76.03 ± 16.78
OTISS	
Physiotherapist	11.71 ± 0.87
Inpatient administration	6.48 ± 1.98
Technical equipment and hygiene	10.68 ± 2.04
Doctor	10.32 ± 2.18
Nurse	11.14 ± 1.54
General satisfaction	6.46 ± 2.11
Total OTISS point	56.81 ± 7.81

Abbreviations: HADS, Hospital Anxiety and Depression Scale; VAS, Visual Analogue Scale; OTISS, Orthopedics and Traumatology Inpatient Satisfaction Survey.

The highest satisfaction was in the physiotherapist subdimension with an 11.71 ± 0.87 average point and the lowest satisfaction was in the general satisfaction subdimesinsion with a 6.46 ± 2.11 average point.

Very weak negative correlations were found between the anxiety level and the physiotherapist and secretary satisfaction subdimesinsion of OTISS (r: −0.274 p: 0.016; r: −0.265 p: 0.020). Also, a very weak correlation was found between the pain intensity at activity and nurse satisfaction subdimesinsion of OTISS (r: −0.227 p: 0.048).

There were very weak correlations between feeding parameter of Barthel index and physiotherapist (r: 0.292 p: 0.010), secretary (r: 0.285 p: 0.012), doctor (r: −0.269 p: 0.018), nurse (r: 0.300 p: 0.008), general satisfaction subscales (r: 0.251 p: 0.028), and total score of OTISS (r: −0.305 p: 0.007).

There was a very weak positive correlation between the mobility subdimension of the Barthel index and the doctor satisfaction subdimension of OTISS (r: 0.250 p: 0.028). It was similar between grooming and bladder subdimesinsion of Barthel index and inpatient administration satisfaction subdimension (r: 0.258 p: 0.023; r: 0.252 p: 0.027).

There was a very weak correlation between bowel subdimensions of the Barthel index and technical equipment and hygiene subdimensions of the OTISS (r: 0.225 p: 0.049). There was a very weak positive correlation between OTISS total point and feeding subdimension of the Barthel index. There was a negative correlation between bladder parameters of the Barthel index and OTISS total point (r: −0.305 p: 0.007; r: 0.250 p: 0.028). A very weak positive correlation was found between Barthel index total score and the nurse satisfaction subscale (r: 0.274 p: 0.016) (Table 3).

According to the level of independence of participation in daily life there was a significant difference between the groups in terms of technical equipment and hygiene satisfaction subdimensions ($p = 0.018$). Satisfaction was higher in favor of the partially dependent group compared to the very dependent and fully independent groups (p: 0.018; p: 0.019). The relationships between the satisfaction level and the anxiety, depression, pain intensity, independence level in daily living activities are shown in Table 3.

Discussion

In this study, it was shown that the pain intensity, anxiety, and participation level in daily living activities were effective in assessing the level of satisfaction of patients who underwent orthopedic knee surgery in the early postoperative period.

Participation in daily living activities was very limited in the postoperative period. In our study, activity participation (feeding, grooming, bowel, and bladder) was associated with some paitents' satisfaction subdimensions. Patients' participation in feding activity in the early postoperative period, which is evaluated within the scope of daily living activities, has been reported as one of the most complex

Table 3. Relationships Between Satisfaction Level and Anxiety, Depression, Pain Intensity, and Participation Levels in Daily Life Activities.

Parameters		Satisfaction level						
		Physiotherapist	Inpatient administration	Technical equipment and hygiene	Doctor	Nurse	General satisfaction	Orthopedics and Traumatology Inpatient Satisfaction Survey (OTISS) total point
Anxiety		***r*: −0.274**	***r*: −0.265**	*r*: −0.037	*r*: −0.100	*r*: −0.224	*r*: −0.099	*r*: −0.170
		p*: 0.016	***p*:0.020***	*p*: 0.752	*p*: 0.385	*p*:0.050	*p*:0.394	*p*:0.140
Depression		*r*: −0.187	*r*: −0.144	*r*: −0.081	*r*: −0.198	*r*: −0.130	*r*: −0.059	*r*: −0.170
		p: 0.104	*p*: 0.213	*p*: 0.485	*p*:0.084	*p*:0.258	*p*:0.611	*p*:0.140
Pain	Rest	*r*: −0.050	*r*: −0.125	*r*: −0.082	*r*: −0.053	*r*: −0.216	*r*: −0.182	*r*: −0.170
		p:0.664	*p*:0.277	*p*:0.480	*p*:0.649	*p*:0.059	*p*:0.113	*p*: 0.141
	Activity	*r*: −0.063	*r*: 0.042	*r*: −0.133	*r*: −0.067	***r*: −0.227**	*r*: −0.222	*r*: −0.106
		p: 0.587	*p*: 0.715	*p*: 0.248	*p*:0.560	***p*:0.048***	*p*:0.053	*p*: 0.359
Barthel index	Feeding	***r*: 0.292**	***r*: 0.285**	*r*: 0.169	***r*: −0.269**	***r*: 0.300**	***r*: 0.251**	***r*: −0.305**
		p*: 0.010	***p*: 0.012***	*p*: 0.142	***p*: 0.018***	***p*: 0.008***	***p*: 0.028***	***p*: 0.007***
	Bathing	*r*: −0.133	*r*: 0.021	*r*: −0.065	*r*: −0.105	*r*: 0.074	*r*: −0.042	*r*: −0.071
		p: 0.247	*p*: 0.855	*p*: 0.572	*p*: 0.364	*p*: 0.525	*p*: 0.720	*p*: 0.540
	Grooming	*r*: 0.017	***r*: 0.258**	*r*: 0.066	*r*: 0.120	*r*: 0.088	*r*: 0.102	*r*: 0.144
		p: 0.881	***p*: 0.023***	*p*: 0.569	*p*: 0.298	*p*:0.446	*p*: 0.380	*p*: 0.211
	Dressing	*r*: 0.142	*r*: 0.091	*r*: 0.032	*r*: 0.015	*r*: 0.188	*r*: −0.054	*r*: −0.011
		p: 0.219	*p*: 0.431	*p*: 0.779	*p*: 0.900	*p*: 0.101	*p*: 0.644	*p*: 0.927
	Bowels	*r*: 0.204	*r*: 0.155	***r*: 0.225**	*r*: 0.182	***r*: 0.227**	*r*: 0.120	*r*: 0.206
		p: 0.076	*p*: 0.177	***p*: 0.049***	*p*: 0.113	***p*: 0.047***	*p*: 0.300	*p*: 0.072
	Bladder	*r*: 0.133	***r*: 0.252**	*r*: 0.178	*r*: 0.117	*r*: 0.094	*r*: 0.079	***r*: 0.250**
		p: 0.249	***p*: 0.027***	*p*: 0.121	*p*: 0.310	*p*: 0.416	*p*: 0.497	***p*: 0.028***
	Toilet use	*r*: −0.106	*r*: −0.015	*r*: 0.015	*r*: −0.029	*r*: 0.127	*r*: −0.054	*r*: −0.033
		p: 0.361	*p*: 0.895	*p*: 0.897	*p*: 0.799	*p*:0.273	*p*: 0.640	*p*: 0.776
	Transfers (bed to chair and back)	*r*: 0.054	*r*: −0.001	*r*: −0.079	*r*:−0.030	*r*: 0.167	*r*: −0.091	*r*: −0.040
		p: 0.641	*p*: 0.996	*p*: 0.494	*p*: 0.794	*p*: 0.147	*p*: 0.432	*p*: 0.729
	Mobility (on level surfaces)	*r*: 0.142	*r*: 0.185	*r*: 0.050	*r*: 0.250	*r*: 0.208	*r*: 0.065	*r*: 0.180
		p: 0.219	*p*: 0.108	*p*: 0.668	*p*: 0.028*	*p*: 0.069	*p*: 0.576	*p*: 0.116
	Stairs	*r*: 0.012	*r*: 0.020	*r*: −0.025	*r*: 0.053	*r*: 0.134	*r*: −0.015	*r*: −0.035
		p: 0.920	*p*: 0.805	*p*: 0.829	*p*: 0.646	*p*: 0..244	*p*: 0.894	*p*: 0.765
	Total point	*r*: 0.129	*r*: 0.188	*r*: 0.086	*r*: 0.141	***r*: 0.274**	*r*: 0.056	*r*: 0.139
		p: 0.263	*p*: 0.101	*p*: 0.458	*p*: 0.222	***p*: 0.016***	*p*: 0.628	*p*: 0.226

*Statistically significant differences ($p < 0.05$).

parameters of the study (33). This subscale was associated with the patient satisfaction of the physiotherapist, inpatient administration, nurse, doctor, and general satisfaction subdimensions. It might be patient-related or influenced by many non-patient factors such as workload, obstacles, environment, hospital characteristics. Although a patient-centered health service such as room service tends to improve patients' feeding status and increase their satisfaction (34). This complex parameter can cause differences among patients. In our study, the fact that the feeding participation of the patients showed a positive relationship with the physiotherapist, inpatient administration, nurse, and general satisfaction subdimensions, and a negative relationship with the doctor satisfaction subdimension, and no relationship with the technical equipment and hygiene subdimension may be the result of this complex situation. More studies are needed to explain this condition deeply more.

Patient satisfaction is directly related to the patient's cognitive and emotional response. In this respect, the relationship between psychological factors such as anxiety and depression and patient satisfaction has been investigated (35,36). In our study, it was found that anxiety-affected patient satisfaction in physiotherapist and secretary subdimension. But the level of depression was not associated with patient satisfaction. In the early period after orthopedic surgery, the satisfaction level of the patients who received physiotherapy was high. However, those with high anxiety levels were less satisfied with the physiotherapist. This result was similar to the current literature (37). Because physiotherapy sessions were longer than the other health professionals applications at once. The therapy time was ∼45 min, and the contact with the patient was closer than other interventions, this could be the reason. Another reason was the satisfaction level was evaluated in postoperative term in our study. So the

patients evaluated the secretary when the moment they entered the service in the preoperative period. The fact that the patients were less satisfied with the secretary might be attributed to the fact that they were the first contact in the preoperative periods when anxiety and worry were high. Only fewer patients in our sample had a higher risk of anxiety. Therefore, studies with larger numbers of patients with high risk of anxiety are needed.

There are studies showing a strong relationship between patient satisfaction and pain intensity. The level of satisfaction of patients who underwent total knee replacement largely depends on their unmet expectations, preoperative pain intensity, postoperative functional status, and whether or not their pain subsides (5,35). In our study, it was observed that patients with higher pain intensity were significantly less satisfied in the nurse satisfaction subdimension. In the review of Aslan et al. (38), it was stated that patients reported high satisfaction with nurses' postoperative pain practices. However, in the current review of Wooldridge and Branney (39), it was stated that there was no congruence between the nurse and the patients' postoperative pain intensity. It was supported by the negative relationship between the pain intensity of the patients and the satisfaction with the nurse in our study.

In our results, it was found that the patients' participation level in walking was related to the satisfaction with the doctor. The expectations of the patients about physical and social well-being from the doctor and his recommendations for walking during the hospitalization were probably the reason.

The use of measurement tools that evaluate the patient's opinion has an important role in determining patient satisfaction after surgery (2). In the current literature, there are various questionnaires and scales (40–44) for the satisfaction scale (40–44), but studies with special measurement tools for surgical patients are needed. In our study, OTISS, a reliable measurement tool that offers the opportunity to evaluate patient satisfaction in detail with many subdimensions, was used. It was one of the strongest aspects of our study. In addition, examining patient satisfaction from a biopsychosocial perspective, including body function, activity, and participation components of International Classifications of Functioning, Disability and Health, was the other strength aspect of the study. Another strength of our study was that the study was conducted with a specific population such as inpatients undergoing orthopedic knee surgery.

Limitations

This study had 2 limitations. First, surgeries were performed by different doctors and patients sometimes received services from different nurses. Although it did not cause a serious change in the service provided to patients, it may have caused differences in personal approaches. Another limitation was the patient rooms were mostly used jointly by 2 patients and this was not evaluated in our study.

Conclusion

In this study, satisfaction level was associated with the pain intensity, emotional status, and participation level in daily living activities in patients who underwent total knee arthroplasty. Lower satisfaction might be caused by higher pain. Feeding, grooming, bowels, and bladder participation directly affected patient satisfaction. These relationships were very important in order to understand orthopedic patients in the early postoperative period. This biopsychosocial approach would be shed light the caregivers, doctors, physiotherapists, nurses, ergo therapists, and other health professionals and institutions as well.

Declaration of Conflicting Interests

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

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Ethical Approval

The study was approved by the XXX University Scientific Research Ethics Committee with the protocol number 2018/124 dated June 18, 2018.

Informed Consent

Participants informed consent was sought and obtained after the research protocols were explained to them.

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