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ANXIETY LEVELS RELATED TO SURGERY AND PAIN INTENSITY IN PATIENTS SCHEDULED FOR LUMBAR SURGERY

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Abstract

This study aimed to determine the relationship between pain intensity and anxiety levels related to surgery in patients scheduled for lumbar surgery due to low back pain. Fifty-seven patients (30 females, 27 males) scheduled for lumbar surgery for various reasons were included in the study. Demographic and clinical information of the patients were recorded. The state of being informed about the surgery and the reasons for anxiety about the surgery were questioned. Pain intensity at rest, in activity, and at night were evaluated using the Visual Analogue Scale and surgery-related anxiety levels with the Spielberg State-Trait Anxiety Inventory preoperatively, postoperatively, and at discharge. Independent sample *t*-test in comparison of independent group differences and *Repeated measures analysis of variance* (*ANOVA*) in dependent group comparisons were used since parametric test assumptions are provided. Correlation between continuous variables was analyzed by Pearson correlation analysis. Mean age of the patients was 55.00±9.37 years. A statistically significant positive correlation was found between the intensity of rest, activity, night pain, and the anxiety level in the preoperative period ($p<0.05$). Patients who were informed about surgery had lower anxiety levels ($p<0.05$). In the postoperative and pre-discharge evaluations, it was observed that there was a significant decrease in pain intensity and anxiety levels compared to the preoperative term ($p<0.05$). When evaluating the patient in the preoperative period, assessment of the level of anxiety related to surgery and informing about the surgical intervention will decrease the anxiety level and positively affect the postoperative clinical situation.

Anahtar Kelimeler: Lumbar Surgery, Anxiety, Pain Intensity.

LUMBAL CERRAHİ PLANLANAN HASTALARDA AĞRI ŞİDDETİ VE CERRAHİYLE İLİŞKİLİ KAYGI DÜZEYİ

Özet

Bel ağrısı nedeniyle lumbal cerrahi planlanan hastalarda ağrı şiddeti ve cerrahiye bağlı kaygı düzeyleri arasındaki ilişkiyi belirlemekti. Çalışmaya çeşitli nedenlerle lumbal cerrahi planlanan 57 hasta (30 kadın, 27 erkek) dahil edildi. Hastaların demografik ve klinik bilgileri kaydedildi. Cerrahiyle ilgili bilgilendirme yapılma durumları, cerrahiye ilişkin kaygı nedenleri sorgulandı. İstirahat, aktivite ve gece ağrısı şiddeti Görsel Analog Skala ve cerrahiyle ilişkili kaygı düzeyleri Spielberg Durumluk Kaygı Ölçeği ile preoperatif, postoperatif ve taburculuk döneminde değerlendirildi. Parametrik test varsayımları sağlandığı için bağımsız Gruplar arası farklılıkların karşılaştırılmasında parametrik test varsayımları sağlandığı için bağımsız grup farklılıkların karşılaştırılmasında İki Ortalama Arasındaki Farkın Önemlilik Testi; Bağımlı grup karşılaştırmalarında Tekrarlı Ölçümlerde Varyans Analizi kullanıldı. Sürekli değişkenlerin arasındaki ilişkiler Pearson korelasyon analizi ile incelendi. Hastaların ortalama yaşı 55,00±9,37 yıldı. Cerrahi öncesi dönemde istirahat, aktivite ve gece ağrısı şiddetiyle kaygı düzeyi arasında istatistiksel olarak anlamlı düzeyde pozitif yönlü korelasyon tespit edildi ($p<0,05$). Cerrahiye yönelik bilgilendirme yapılan hastaların kaygı düzeyleri daha düşüktü ($p<0,05$). Postoperatif ve taburculuk öncesi değerlendirmelerde ağrı şiddeti ve kaygı düzeylerinde cerrahi öncesine göre anlamlı düzeyde azalma olduğu görüldü ($p<0,05$). Preoperatif dönemde hasta değerlendirilirken cerrahiyle ilişkili kaygı düzeyinin değerlendirilmesinin ve cerrahi uygulama ile ilgili bilgilendirme yapılmasının kaygı düzeyini düşürerek postoperatif klinik durumu olumlu yönde etkilediği gözlemlenmiştir

Keywords: Lumbal Cerrahi, Kaygı, Ağrı Şiddeti.

1. INTRODUCTION

Low back pain is a very common health problem experienced by 70-80% of the world's population at some point in their lives (1-4). It is an important cause of morbidity in the world and is among the most common musculoskeletal diseases with a prevalence of 84% in the adult population (5-7). Low back pain starts at a young age and its frequency increases with age (8).

Low back pain is classified according to its duration as acute, subacute, and chronic pain. Pain is defined as acute if it lasts less than a month, subacute if it lasts between 1 and 3 months, and chronic if it lasts longer than 3 months. In studies, 70% of patients with acute low back pain stated that their pain disappeared, while approximately 25% of patients stated that they experienced low back pain again (9). As low back pain becomes chronic, patients complain of physical disability and psychological distress as well as pain. Patients may find it difficult to work and become depressed, so their quality of life may deteriorate. This is an important problem that causes high treatment costs and loss of workforce (10).

When the causes of low back pain are investigated, pain complaints are observed in 85% of cases without an underlying pathology (10,11). Low back pain is mostly caused by reasons such as lack of physical condition, carrying heavy loads, and making reverse and sudden movements. Apart from mechanical reasons, pain complaints are frequently encountered in lumbar region pathologies such as lumbar disc herniation, spondylosis, spondylolisthesis. In addition, low back pain complaints can be seen as a result of inflammatory diseases, tumors, and some visceral diseases (8,11).

In studies examining pharmacological and non-pharmacological treatment approaches for pain in patients with low back pain, it has been stated that there are a wide range of evidence-based treatment options for low back pain, ranging from educational approaches to exercise, various physical agents, injection treatments, complementary and supportive medicine interventions, and multidisciplinary biopsychosocial treatments (12-15). While the majority of patients can be treated with non-surgical methods, surgical treatment methods are required in patients who do not benefit from other treatment methods and who show significant acute or progressive neurological deficits (11).

Surgical methods can be grouped as discectomy and trans-canal approaches. Today, the microdiscectomy method is accepted as the gold standard because of the small incision area, the low risk of complications after surgery, and the rapid return to daily life. However, decompressive surgical methods such as laminectomy, laminotomy, and laminoplasty are frequently used in cases where the spinal canal needs to be enlarged or in case of instability (11, 16). Advances in surgical treatment methods and clearer determination of surgical treatment indications also increase the level of benefit and satisfaction of patients from surgical treatments (11).

It has been reported that 60-80% of patients in the preoperative period in surgical wards experience anxiety for many reasons (17). In addition to the hope and expectation of getting rid of the disease, the patient's body will be damaged and the fear of death increases the level of anxiety (17,18).

Postoperative recovery and adaptation to daily life activities of patients undergoing lumbar surgery are affected by the clinical and emotional state of the patient in the preoperative period (15,17,18). Few studies were found that examined the pain intensity and anxiety level in the preoperative period in patients who underwent lumbar surgery. According to the results of these studies, it was reported that the anxiety levels of patients with high pain intensity are also high (19-21).

This study, which is planned to contribute to the literature, has two main objectives. The first aim was to determine the pain intensity and anxiety levels related to surgery in the preoperative period in patients who were planned for lumbar surgery due to low back pain and to investigate how much

this situation changed during the postoperative and discharge periods. The second aim was to examine the effect of patient education about surgery on the pain intensity and anxiety level of the patients in the preoperative period.

2. METHODS

This study was carried out with the voluntary participation of 57 patients who were indicated for surgery due to low back pain by the Neurosurgery outpatient clinic of a university hospital between December 2020 and March 2021.

All participants were informed about the purpose and scope of the study, and written consent was obtained from each participant before starting the study. The research protocol was approved by the local ethics committee (Approval date: 22/12/2020; No:24).

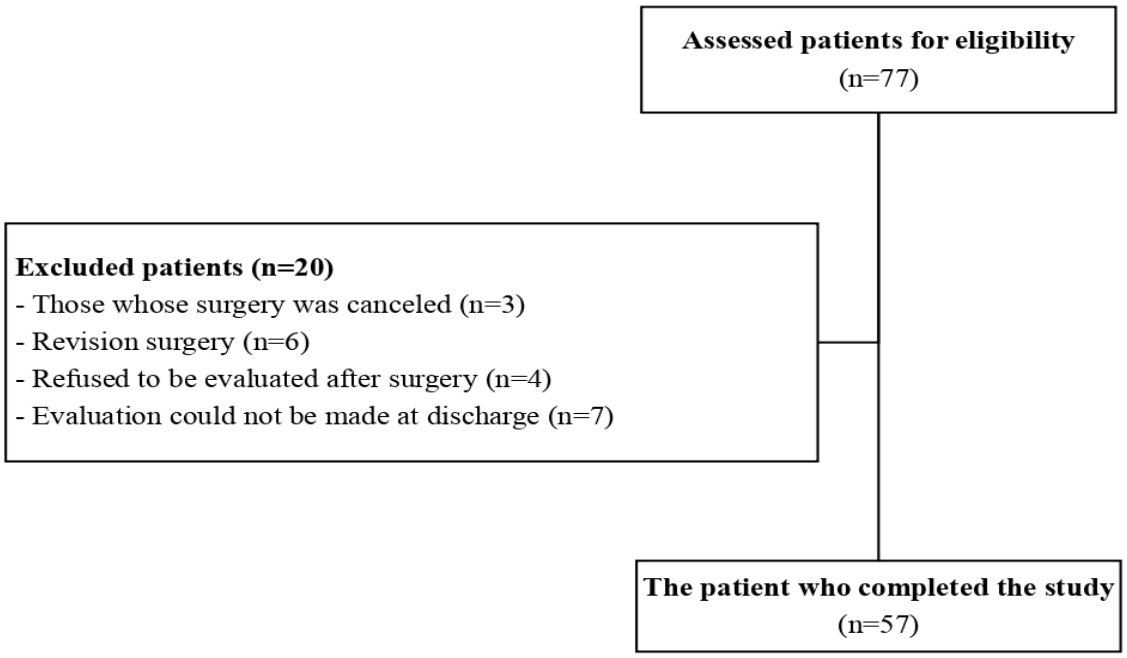

Figure 1. Flow diagram of the study

Individuals aged 20-65 years who were indicated for surgery due to low back pain, no current or past history of psychiatric illness, no history or use of any psychotropic medication, and no communication problems were included.

Individuals with any diagnosed systemic, neurological, and/or orthopedic disease other than low back pain and who did not agree to participate in the study were excluded from the study. At the same time, patients who did not want to continue the study at any stage of the study and did not complete the evaluations were excluded from the study.

Of the 77 patients who met the inclusion criteria, 57 completed the study. The flow chart of the study is given in Figure 1.

2.1. Evaluation Methods

The descriptive information of the participants, such as age and gender, as well as clinical information such as surgical history, the surgical method to be performed, conditions that may be encountered in the postoperative period, whether the physician was informed about the postoperative

care (incision care, healing process, possible postoperative complications and return to normal living etc.), presence of anxiety about the surgery, the reason for the anxiety, if any, and length of stay in the hospital, were recorded in the data form. All assessments were performed in preoperative period, postoperative the 2nd days and discharge period.

Pain intensity: Pain intensity at sleep, rest, and during activity was evaluated with the Visual Analog Scale (VAS) preoperatively, postoperatively, and at discharge. According to the VAS, "0" means no pain and "10" means unbearable pain on a 10-centimeter line. The patient is asked to mark the pain he/she feels on the line. VAS is one of the limited number of outcome measurement methods recommended by the World Health Organization to assess the pain intensity (22,23).

Anxiety-related to surgery: Spielberg State-Anxiety Inventory was used to determine the anxiety levels related to surgery, preoperatively, postoperatively, and at discharge. For the 20-item Likert-type scale developed by Spielberg et al. and the Turkish validity and reliability of which was done by Öner and Le Compte, it is required to describe how the individual feels at a certain moment and under certain conditions. It is reported that the Alpha reliability of the scale varies between 0.83 and 0.87, and the test-retest reliability ranges between 0.71 and 0.86 (24). It requires the individual to mark one of the four options as "1 (Not at all), 2 (Somewhat), 3 (A lot), 4 (Totally)" according to the severity of their current feelings. The score obtained from the scale varies between 20-80. An increase in the score indicates an increase in the level of anxiety (24,25).

2.2. Statistical Analysis

The effect size obtained from the reference study was found to be moderate (d=0.60) (19). As a result of the power analysis, which was made considering that an effect size at this level could be obtained, it was calculated that 95% power could be obtained at the 95% confidence level when at least 38 people were included in the study. Data were analyzed with SPSS 21.0 (IBM SPSS Statistics 25 software (Armonk, NY: IBM Corp.)) package program. Continuous variables were given as mean±standard deviation and categorical variables as numbers and percentages. The conformity of the data to the normal distribution was determined by the Kolmogorov-Smirnow test. Independent sample *t*-test in comparison of independent group differences and *Repeated measures analysis of variance* (*ANOVA*) in dependent group comparisons were used since parametric test assumptions are provided. Correlation between continuous variables was analyzed by Pearson correlation analysis. The significance level was accepted as $p<0.05$ (26).

3. RESULTS

A total of 57 patients, 30 females and 27 males, with a mean age of 55.00±9.37 years, were included in the study. Thirty-five patients (61.4%) were operated for lumbar disc herniation, 13 (22.8%) for spinal stenosis, 6 (10.5%) for listhesis, and 3 (5.3%) for spondylitis. At the time of the evaluation, it was seen that 29 (50.9%) of the patients had knowledge about the surgery they would undergo. It was determined that 28 patients (49.1%) were not informed yet by the physician. All patients were informed about the surgery by the relevant physician just before the surgery. In addition, it was observed that 29 (50.9%) patients were worried about the reasons such as postoperative pain, not waking up after the surgery, staying in the intensive care unit, and sleeping for a long time after the surgery. Demographic and clinical information of the patients is given in Table 1.

Table 1. Demographic and clinical characteristics of the patients

Variables	Mean±SD
Age (year)	55.00±9.37
Length of stay in hospital (day)	6.61±3.41
	n (%)
Gender	
Female	30 (52.6)
Male	27 (47.4)

Diagnosis	
Disc herniation	35 (61.4)
Spinal stenosis	13 (22.8)
Listhesis	6 (10.5)
Spondylitis	3 (5.3)
Reasons for anxiety about surgery *	
Postoperative pain	17 (29.8)
Failure to wake up	7 (12.3)
Stay in intensive care	7 (12.3)
Sleeping for a long time after surgery	6 (10.5)
Nausea-vomiting after surgery	3 (5.3)
Inability to communicate with the surgeon	2(3.5)
Staff causing problems	2 (3.5)
Awakening up during surgery	2 (3.5)
Lack of knowledge of the anesthesiologist	1(1.8)
Anesthesiologist's lack of experience	1 (1.8)

SD: standart deviation; * More than one option were ticked.

In the preoperative period, the mean pain intensity of the patients at rest, during activity, and at night were 5.55±3.48 cm, 7.38±3.11 cm, and 5.57±3.74 cm, respectively. The mean anxiety level was 49.57±18.82 points. A statistically significant positive correlation was found between rest, activity, and night pain intensity and anxiety level ($p<0.05$) (Table 2).

Table 2. The relationship between preoperative pain severity and anxiety levels of the patients

Pain intensity	**Anxiety level**	
	r	***p*[a]**
At rest	0.308	**0.020**
In activity	0.346	**0.008**
Night	0.316	**0.017**

VAS: visual analog scale; [a]: Pearson correlation analysis.

It was determined that the anxiety level of the patients who were informed about the surgery to be performed in the preoperative period was statistically significantly lower than those who were not informed yet (p=0.001) (Table 3).

Table 3. Comparison of preoperative pain intensity and anxiety levels of patients who were informed and not

Variables	**Informed (n=29) Mean ± SD**	**Not informed (n=28) Mean ± SD**	***p*[b]**
Pain intensity (0-10 cm)			
At rest	5.53±3.19	5.26±3.81	0.974
In activity	6.62±3.35	8.16±2.67	0.062
Night	5.26±3.38	5.89±4.12	0.530
Anxiety level (20-80 points)	40.82±14.26	58.64±18.87	**0.001**

SD: Standard deviation; cm: centimeter; [b]: Independent sample *t* test.

The pain intensity and anxiety levels of the patients in the preoperative, postoperative, and discharge periods were shown in Table 4. It was observed that there was a significant decrease in pain intensity and anxiety levels compared to the preoperative period (p=0.001).

Table 4. Pain intensity and anxiety levels of patients in preoperative, postoperative and discharge periods

Variables	**Preop term Mean ± SD**	**Postop term Mean ± SD**	**Discharge Mean ± SD**	***p*[c]**
Pain intensity (0-10 cm)				
At rest	5.55±3.48	3.81±2.91	1.21±188	**0.001**
In activity	7.38±3.11	4.88±3.00	1.96±211	**0.001**

Night	5.57±3.74	3.33±3.24	1.01±1.83	**0.001**
Anxiety level (20-80 points)	49.57±18.82	40.78±12.93	28.29±9.57	**0.001**

SD: Standard deviation; preop: preoperative; postop: postoperative; [c]: *Repeated measures analysis of variance* (*ANOVA*).

4. DISCUSSION

In our study, in which we examined the changes in pain intensity and surgery-related anxiety levels in preoperative, postoperative, and discharge periods in patients who were planned for lumbar surgery due to low back pain, it was found that the pain intensity and anxiety levels of the patients were high in the preoperative period, and the pain intensity and anxiety level were related. In addition, the anxiety level of the patients who were given preoperative information was lower than those who did not.

Pain is one of the most important findings of lumbar region pathologies. The presence of pain is considered among the factors that cause anxiety in the preoperative period. In addition, studies examining the level of preoperative anxiety have reported that patients with high anxiety have more pain complaints in the postoperative period and therefore use more analgesics (19-21). Similar to the literature, our results showed that patients with high preoperative pain intensity also had high anxiety levels.

In the literature, the factors that may cause surgery-related anxiety include the lack of education and experience of the health personnel, the fear of staying in the hospital for a long time after surgery, and the worsening of the disease (19,27,28). In our study, it was determined that postoperative pain, not waking up after surgery, and fear of staying in the intensive care unit were the most common causes of anxiety.

Lee et al. (27) reported that the psychological status of patients should also be considered when evaluating the clinical status of patients in the preoperative period. In their study, they stated that patients who are psychologically ready for surgery have better surgical outcomes and a higher level of satisfaction. Park et al. (29) reported that the change in anxiety status in the three months after lumbar surgery and the extent to which this change was reflected in the clinical status of the patients, reported that the level of pain and disability in the patients decreased, and the functional status of the patients improved with the decrease in the anxiety level. Although we did not follow the clinical status of the patients for a long time in our study, it was found that the pain and anxiety levels in the preoperative period were lower at discharge. We think teaching the appropriate care after the surgery, raising the awareness of the patient, and the patient's pre-preparation for the situations that may be encountered after the surgery provided a reduction in the pain and anxiety levels of the patients.

In the literature, it is stated that informing the patient in the preoperative period is one of the practices that can positively affect the surgical results in the long term (30-33). In a review, it was stated that patients who were informed in the preoperative period had low preoperative anxiety levels and did not develop fear-avoidance behaviors after surgery. It has been emphasized that there is low-level evidence that preoperative education of patients is clinically, psychologically, and economically important (31). In a study stating the opposite of this situation, Rapp et al. (34) reported that preoperative patient education did not affect the level of pain in the postoperative period. Our results also showed that although the pain intensity of the patients who were informed about the surgery, postoperative complications, and postoperative care in the preoperative period was similar, their anxiety levels were lower than the patients who were not informed.

4.1. Limitations

In our study, the changes in the pain intensity and anxiety levels of the patients who were planned for lumbar surgery were evaluated only in the preoperative, postoperative, and discharge periods, and the patients were not followed up in the long term. Further studies are needed to investigate the effects of changes in pain intensity and anxiety level of patients on their functional status during long follow-up periods. In addition, studies can be planned to examine the effects of different surgical techniques on the pain intensity and anxiety levels of patients.

5. CONCLUSION

Our study is important not only to determine the pain intensity and anxiety level in the preoperative trial but also to show how this situation changes until the patient is discharged. In addition, we think that our results will contribute to the literature in showing the effect of patient education on patients' pain and anxiety in the preoperative period.

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