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Evaluation of Postoperative Pain Perceptions and Anxiety Levels in Patients Undergoing Ureterorenoscopy: A Descriptive and Correlational Study

Üreterorenoskopi Uygulanan Hastalarda Ameliyat Sonrası Ağrı Algısı ve Anksiyete Düzeylerinin Değerlendirilmesi: Tanımlayıcı ve Korelasyonel Bir Çalışma

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Öz

Giriş ve Amaç: Bu çalışma üreterorenoskopi yapılan hastalarda postoperatif ağrı algısı ve anksiyete düzeylerini değerlendirmek ve aralarındaki ilişkiyi incelemek amacıyla yapıldı.

Gereç ve Yöntemler: Çalışma, bir devlet hastanesinin üroloji kliniğinde yürütülen tanımlayıcı ve korelasyonel bir araştırmadır. Örneklem, taş tedavisi için üreterorenoskopi yapılan ve dahil edilme kriterlerini karşılayan 165 gönüllü hastadan oluşmuştur. Veriler Hasta Bilgi Formu, Visual Analog Skala (VAS), Postoperatif Ağrı Değerlendirme Formu ve Durumluk Anksiyete Envanteri (STAI-S) kullanılarak toplanmıştır. Ağrı, ameliyattan sonraki beş farklı zaman noktasında 24 saatlik bir süre boyunca değerlendirilirken, anksiyete ameliyattan sonraki ikinci ve altıncı saatler arasında değerlendirilmiştir. Normal dağılım göstermeyen değişkenler için Mann-Whitney U ve Spearman korelasyon testleri kullanılmıştır. P-değerinin <0.05 olması istatistiksel olarak anlamlı kabul edilmiştir.

Bulgular: Yaş ortalaması $41,13 \pm 13,09$ olan hastaların %71,5'i erkekti. Ameliyat sonrası ağrı algısı (0-4 saat arası) yüksek bulunmuştur ($p < 0.05$). Ortalama toplam ağrı skoru 4.54 ± 3.87 idi. Katılımcıların ortalama STAI-S anksiyete puanı 41.62 ± 7.80 idi. Ağrı ve anksiyete düzeyleri arasında anlamlı pozitif korelasyon bulundu ($r = 0.40$, $p < 0.01$) ve her iki skor da kadın hastalarda erkeklere kıyasla anlamlı derecede yüksekti ($p < 0.05$).

Sonuç: Bu çalışma üreterorenoskopi yapılan hastalarda ağrı ve anksiyete düzeylerinin özellikle ameliyat sonrası erken dönemde yüksek olduğunu ve kadın hastalarda daha belirgin olduğunu ortaya koymuştur. Ağrı ve anksiyete arasında pozitif bir korelasyon bulunmuştur.

Anahtar kelimeler: Üreterorenoskopi, ağrı, anksiyete

Abstract

Aim; This study was conducted to investigate postoperative pain and anxiety levels in patients undergoing ureterorenoscopy.

Method; The study is a descriptive and correlational research conducted in the urology clinic of a public hospital. The sample consisted of 165 volunteer patients who underwent ureterorenoscopy for stone treatment and met the inclusion criteria. Data were collected using the Patient Information Form, Visual Analog Scale (VAS), Postoperative Pain Assessment Form, and State Anxiety Inventory (STAI-S). Pain was assessed over a 24-hour

period at five different time points after surgery, while anxiety was assessed between the second and sixth hours after surgery. For variables that did not show normal distribution, Mann-Whitney U and Spearman correlation tests were used. A p-value of <0.05 was considered statistically significant.

Results; Patients with a mean age of 41.13 ± 13.09 years, of whom 71.5% were male. Postoperative pain perception (between 0-4 hours) was found to be high ($p < 0.05$). The mean total pain score was 4.54 ± 3.87 . The average STAI-S anxiety score of the participants was 41.62 ± 7.80 . A significant positive correlation was found between pain and anxiety levels ($r = 0.40$, $p < 0.01$), and both scores were significantly higher among female patients compared to males ($p < 0.05$).

Conclusion; This study revealed that pain and anxiety levels were particularly high in the early postoperative period in patients undergoing ureterorenoscopy and were more pronounced in female patients. A positive correlation was found between pain and anxiety.

Keywords: Ureterorenoscopy, pain, anxiety

1. Introduction

Urolithiasis is a common global health issue with a high tendency for recurrence. Its prevalence varies between 1% and 20%, depending on geography, climate, ethnicity, diet, and genetic factors. In developed countries such as Sweden, Canada, and the United States, prevalence rates exceed 10% [1,2]. Due to its geographical and environmental characteristics, Türkiye is considered an endemic region where urolithiasis is frequently observed. Studies conducted in Turkey have reported prevalence rates ranging from 11.1% to 14.8% [3,4]. The condition is three times more common in men than in women [1,2].

Among the commonly used methods for the treatment of urinary system stones are shock wave lithotripsy (SWL), percutaneous nephrolithotomy (PNL), and ureterorenoscopy (URS) [2]. URS is a procedure performed under general or spinal anesthesia, in which an endoscope equipped with a lighted camera is inserted through the urethra into the bladder and then advanced into the ureter to fragment and remove the stones using laser technology. Due to its high success rate and low risk of complications, URS has become increasingly widespread in clinical practice [2,5,6].

URS is an easily applicable method for the treatment of ureteral stones that do not pass spontaneously and contributes to improving patients' quality of life. However, literature reports indicate that approximately 14.6% of patients experience moderate postoperative pain after URS, 17% present to the emergency department, and 12% return to the clinic due to pain [5-7]. Postoperative pain may be perceived by patients as a sign that the condition has not resolved, which can increase anxiety levels [8, 9]. Elevated anxiety may lead to negative outcomes such as sleep disturbances, reduced comfort, prolonged recovery, and rehospitalization [6,8,9].

Pain management and emotional support in the postoperative period are critically important for the recovery process. During this period, nurses can assess patients' levels of pain and anxiety, provide holistic care, and plan individualized nursing interventions [9-

12]. In this way, the quality of nursing care can be enhanced, thereby supporting patients' overall well-being [9].

A review of the literature shows that postoperative pain and anxiety following ureterorenoscopy are typically addressed as independent variables, and studies that evaluate these two conditions together are quite limited. However, the interaction between pain and anxiety directly affects the patient experience and recovery process [9,11,12]. This study aims to fill this gap in the literature by simultaneously measuring pain and anxiety levels in patients undergoing URS during the postoperative period and examining the relationship between them. The findings are expected to contribute to the development of more holistic and evidence-based nursing care plans. Considering that URS is a frequently performed minimally invasive procedure, the simultaneous evaluation of physical and psychological symptoms will provide valuable insights for enhancing patient-centered care in clinical practice. In this regard, the study is expected to make a unique contribution to both the nursing literature and practical patient care processes.

The following hypotheses were tested within the scope of this study.

H0: There is no significant relationship between postoperative pain levels and anxiety levels in patients undergoing ureterorenoscopy.

H1: There is a significant relationship between postoperative pain levels and anxiety levels in patients undergoing ureterorenoscopy.

2. Methods

2.1. Type of Research

It was descriptive and correlational.

2.2. Population and Sample

The study population consisted of 204 patients who underwent ureterorenoscopy (URS) in the urology clinic of a public hospital between July 12 and August 31, 2019. The sample size was calculated using the

G*Power 3.1.9.7 program (Düsseldorf, Germany), based on Cohen's standard effect size table [13]. According to a two-tailed hypothesis test with a correlation coefficient of 0.3, an alpha error of 0.05, and a beta error of 0.005 (power: 95%), the required sample size was determined to be 138. To account for potential data loss, the sample size was increased by 15–20%, and the study was conducted with 165 volunteer patients who met the inclusion criteria.

Out of the initial 204 patients, a total of 39 were excluded from the study. These included 9 who declined participation, 6 who were illiterate, 4 under the age of 18, 3 with a psychiatric diagnosis, 5 who provided insufficient information, and 12 who could not read or write in Turkish. Statistical analyses for the study were performed using data from 165 patients.

2.3. Inclusion Criteria

Patients who underwent URS for the treatment of urinary stones, were aged 18 years or older, could speak and write in Turkish, and voluntarily agreed to participate in the study were included.

2.4. Exclusion Criteria

Patients receiving treatment for chronic pain, those with a psychiatric diagnosis, those who had undergone surgery within the last month, and individuals with communication impairments such as speech, hearing, or language disorders were excluded.

2.5. Research Questions

1. Do patients experience postoperative pain?
2. Do patients experience postoperative anxiety?
3. Is there relationship between postoperative pain and anxiety?
4. What sociodemographic characteristics affect pain and anxiety?

2.6. Data Collection Tools

2.6.1. Patient Demographic Form: This form was developed based on the literature to collect descriptive information related to patients' sociodemographic and health characteristics. It includes questions on gender, age, educational level, body mass index, chronic diseases, and history of previous surgeries.

2.6.2. Visual Analog Scale (VAS): The VAS was used to objectively assess patients' perception of pain. A vertical line labeled "0 = no pain" at the bottom and "10 = the worst pain imaginable" at the top was presented, and patients were asked to mark the point on the line that best represented their perceived pain level.

2.6.3. Postoperative Pain Assessment Form: The first hour following the surgical intervention, during which the patient arrived at the clinic and was conscious, was considered as hour zero (0). A chart was developed to monitor the patient's pain perception every four hours over a total period of 24 hours. This chart included the name and dosage of the analgesic prescribed by the physician, the patient's reported pain intensity, the location of the pain, and a subjective description of the pain based on the patient's experience. Pain assessments were conducted and recorded five times at four-hour intervals over the 24-hour postoperative period.

2.6.4. State Anxiety Inventory (STAI-S): The State Anxiety Inventory (STAI-S) was used to assess patients' anxiety levels in the postoperative period. It was originally developed by Spielberger et al. in 1970. The Turkish validity and reliability study was conducted by Le Compte and Öner in 1983. The internal consistency and reliability of the Turkish version, assessed by the Kuder-Richardson reliability coefficient, ranged from 0.94 to 0.96 for the STAI-S [14]. In this study, the Cronbach's alpha coefficient for the STAI-S was calculated as 0.820. The STAI-S subscale consists of 20 items that measure subjective feelings such as anxiety, tension, worry, irritability, and activation of the autonomic nervous system by asking participants how they feel "right now." Each item is scored on a scale of 1 to 4 (or -1 to -4 depending on the item's polarity), and a constant of 50 is added to the total score. The total score for each subtest ranges between 20 and 80, with higher scores indicating higher levels of anxiety. A clinical cut-off score of 39–40 is generally recommended to identify significant symptoms of anxiety, while a higher threshold of 54–55 has been suggested for older adults. Normative data are available for adults, university students, and psychiatric populations. However, no validated cut-off score has been established for populations with rheumatic diseases [15].

2.7. Variables of the Research

2.7.1. Dependent Variables; Visual Analog Scale (VAS) and State-Trait Anxiety Inventory Scale (STAI-S).

2.7.2. Independent Variables; patients' age, gender, body mass index (BMI), education status, disease history and similar variables.

2.8. Ethical Considerations

Prior to data collection, ethical approval was obtained from the Non-Interventional Research Ethics Committee of the Faculty of Health Sciences at Hasan Kalyoncu University (Date: 14.06.2019, Approval No: 2019/38). Patients were informed about the study both verbally and in writing, and written informed consent was obtained from each participant. All stages of the research were conducted in accordance with the ethical principles outlined in the Declaration of Helsinki by the World Medical Association.

2.9. Data Collection

Written informed consent forms were provided to patients who voluntarily agreed to participate in the study. Those who read and signed the form had their demographic information recorded by the researcher on the "patient identification data form." The time when patients were admitted to the urology clinic after surgery was accepted as hour zero (0). Pain levels perceived by patients were assessed using the VAS at fixed intervals every four hours (0–4, 5–9, 10–14, 15–19, and 20–24 hours) and documented in the pain assessment form. For anxiety assessment, the time of admission to the urology clinic postoperatively was also considered as hour zero (0). Between the second and sixth postoperative hours, patients who were able to express

themselves verbally were approached in their rooms starting from the second hour and were asked to complete the STAI-S form. For patients who had difficulty reading or completing the form, the researcher read the questions aloud and marked their responses. Completing the STAI-S form took approximately 15–20 minutes per patient.

2.10. Statistical Analysis of the Data

All data were analyzed using IBM SPSS Statistics for Windows, version 26 (IBM Corp., Armonk, NY, USA). Frequencies, means $\pm$ standard deviations, percentages, and minimum–maximum values were calculated to describe the data. For the normality analysis of pain and anxiety scores, it was found that the skewness and kurtosis values of the 0–4 hour pain score, 5–9 hour pain score, total pain score (VAS Total), and total anxiety score were within or very close to the ± 1 range.

However, the 10–14 hour pain score deviated significantly from this range, and when assessed using the Kolmogorov-Smirnov test, it was determined that these variables did not follow a normal distribution. Therefore, non-parametric tests were used for analyzing relationships and differences. The Mann-Whitney U test was applied for comparisons between non-normally distributed two-group variables, and Spearman's correlation test was used to evaluate the correlation criteria. Statistical analyses and interpretations were conducted at a significance level of $p < 0.05$.

3. Results

A total of 165 patients who met the inclusion criteria and voluntarily agreed to participate in the study were evaluated in the urology clinic of a public hospital.

Table 1. Patients' Descriptive Characteristics Distribution (N = 165)

Characteristic	Groups	n	%
Sex	Female	47	28.5
	Male	118	71.5
Age (years) (Mean $\pm$ SD* = 41.13 $\pm$ 13.09)	18-40	86	52.1
	41-60	63	38.2
	≥ 61	16	9.7
Education Status	Literate	20	12.1
	Primary School	56	33.9
	Middle School	40	24.2
	High School	49	29.7
Body Mass Index**	<18.5	2	1.2
	18.5-24.9	118	71.5
	25.0-29.9	17	10.3
	≥ 30.0	28	17.0
Chronic Illness***	Yes	24	14.5
	No	141	85.5
Previously undergone the same surgery	Yes	39	23.6
	No	126	76.4
Marital status	Married	136	82.4
	Single	29	17.6

Smoking cigarettes	Yes	72	43.7
	No	93	56.3

Note: *SD: Standard Deviation, **Body mass index: height in meters squared divided by weight (kg/m²), ***Patients with at least one of the following chronic diseases: Diabetes Mellitus (DM), Chronic Obstructive Pulmonary Disease (COPD), Hypertension (HT), Heart Failure (HF), Asthma

The demographic characteristics of the patients are presented in Table 1. The mean age of the patients was 41.13 $\pm$ 13.09 years, and more than half of them (52.1%) were between the ages of 18 and 40. The majority of the participants were male (71.5%), while females accounted for 28.5%. Most patients were primary school graduates (33.9%), and 82.4% were married. A total of 71.5% of the patients had a normal body weight. The proportion of those without a chronic disease was 85.5%, 23.6% had a history of undergoing the same surgery, and 56.3% were smokers (Table 1).

Table 2. Pain and Anxiety Score Means of Patients at Measurement Time Points (N = 165)

Scale	Mean	SD*	Min	Max
VAS**0-4	2.30	2.54	0.00	8.00
VAS5-9	2.11	2.59	0.00	8.00
VAS 10-14	0.13	0.87	0.00	8.00
VAS TOTAL	4.54	3.87	0.00	18.00
STAI-S***	41.62	7.80	29.00	79.00

Note: *SD: Standard Deviation, ** VAS: Visual Analog Scale, ***STAI-S: State-Trait Anxiety Inventory-State

Table 2 shows the comparison of patients' pain and anxiety levels based on measurement time points. In the evaluation of postoperative pain perception, it was determined that all patients reported a score of zero (0) on the VAS—indicating no pain—during the 15–19 hour and 20–24 hour intervals. Therefore, only the mean pain scores at 0–4, 5–9, and 10–14 hours were included in the analysis. According to the VAS assessments, the mean pain score was 2.30 at 0–4 hours, 2.11 at 5–9 hours, and 0.13 at 10–14 hours. Additionally, the mean total postoperative pain score (VAS Total), calculated as the average of all scores up to the 10–14 hour interval, was found to be 4.54 $\pm$ 3.87. The mean STAI-S anxiety score of the patients was 41.62 $\pm$ 7.80 (Table 2).

Table 3. Correlation Between Postoperative Pain Scores (VAS) and State Anxiety Levels in Patients (N = 165)

Variable	VAS 0–4 hour	VAS 5–9 hour	VAS 10–14 hour	VAS Total
STAI-S Total	r*=0.245 p=0.002	r=0.203 p=0.009	r=0.174 p=0.028	r=0.293 p=0.001

*Pearson correlation analysis

Table 3 presents the results of the correlation analysis, demonstrating a significant and positive relationship between the total STAI-S score and postoperative pain levels measured by the VAS. A significant positive

correlation was found between the VAS 0–4 hour pain score and the total STAI-S score ($r = 0.245$, $p = 0.002$). Similarly, a significant correlation was observed in the VAS 5–9 hour measurement ($r = 0.203$, $p = 0.009$). Although the correlation in the 10–14 hour interval was weaker, it remained statistically significant ($r = 0.174$, $p = 0.028$). The strongest correlation was found between the total VAS score and the total STAI-S score ($r = 0.293$, $p = 0.001$), which was both significant and positive. (Table 3).

Table 4. Comparison of Pain and Anxiety Median Scores by Sex Based on Mann-Whitney U Test (N = 165)

Scale	Sex	N	Median	U***	z	p**
VAS*** 0-4 hours	Female	47	3	1997.50	-3.06	0.02
	Male	118	2			
VAS 5-9 hours	Female	47	2	2322.50	-1.72	0.84
	Male	118	2			
VAS 10-14 hours	Female	47	0	2747.00	-.28	.772
	Male	118	0			
VAS Total	Female	47	6	1770.00	-3.67	.000
	Male	118	3			
STAI- S***** Total	Female	47	42	2029.50	-2.68	.007
	Male	118	39			

Note: *SD: Standard Deviation, ** $p < 0.05$, ***U: Mann-Whitney U Test, ****VAS: Visual Analog Scale, *****STAI-S: State-Trait Anxiety Inventory-State

Comparison of pain and anxiety median scores by sex based on Mann-Whitney U test are shown in Table 4. According to the results of the Mann-Whitney U test, a significant difference was found between female and male patients in terms of pain scores at 0–4 hours postoperatively ($U = 1997.50$, $z = -3.06$, $p = 0.02$). The median pain score for women during this period was 3, while it was 2 for men. Similarly, the total VAS pain score showed a statistically significant difference, with women reporting a median score of 6 compared to 3 in men ($U = 1770.00$, $z = -3.67$, $p < 0.001$). However, no significant differences were observed between the groups in the pain scores at 5–9 hours ($p = 0.84$) and 10–14 hours ($p = 0.772$). In terms of anxiety levels, female patients had a median total STAI-S score of 42, while male patients had a score of 39. This difference was statistically significant ($U = 2029.50$, $z = -2.68$, $p = 0.007$) (Table 4).

4. Discussion

This study investigated postoperative pain and anxiety levels in patients who underwent ureterorenoscopy (URS) for the treatment of urinary system stones. The findings revealed that both pain and anxiety were most prominent during the initial hours following the procedure, and that female patients experienced

significantly higher levels of pain and anxiety compared to male patients.

Additionally, a positive correlation was identified between pain and anxiety, indicating that higher pain levels were associated with increased anxiety. These results highlight the importance of proactive pain management and emotional support in the postoperative period. Nurses play a critical role in assessing patients' pain and anxiety levels, and implementing effective interventions to alleviate these symptoms can contribute to improved nursing care and better recovery outcomes in patients undergoing URS for stone treatment.

The study found that patients experienced high levels of pain in the early postoperative hours, which gradually decreased over time, with only mild pain reported by the end of the 24-hour assessment period. The initial high pain levels followed by a decline are considered expected outcomes due to the short recovery period associated with URS stone treatment and the typical plan for patients to be discharged within 24 hours.

In the study, pain perception was found to be high during the initial postoperative hours (between 0 and 4 hours). Pain management is a crucial component of patient-centered care following URS [6,7]. Previous research has reported that patients experience moderate postoperative pain after URS, with a pain incidence of 14.6% on the first day [5]. In another study evaluating postoperative pain perception, 33% of patients reported mild pain during the early postoperative period (3rd and 4th hours) [16]. A retrospective study showed that 17% of patients returned to the emergency department after ureteroscopy, and 12% revisited the clinic due to discomfort or pain [6]. Another study found that pain complaints were the most frequent reason for unplanned encounters within 30 days after URS [17]. These findings emphasize that effective postoperative pain management plays a key role in improving patients' quality of life.

In this study, the mean STAI-S score of the patients was calculated as 41. A clinical cut-off point of 39–40 has been recommended for identifying significant anxiety symptoms on the STAI-S scale [15]. The average score obtained in our study exceeds this threshold. Based on this finding, it can be concluded that the patients experienced a mildly elevated level of anxiety.

The literature emphasizes a direct relationship between postoperative pain and anxiety [18,19]. Similar findings were observed in this study, where a moderate, positive, and statistically significant correlation was found between postoperative pain and anxiety levels. A multicenter study focusing on urinary stone treatment

also reported a moderate positive correlation between pain and anxiety [18]. It has been noted that in major urological surgeries, increased pain severity is associated with decreased sleep quality [10]. A review of the literature suggests a bidirectional relationship between pain and anxiety, which affects patients' sleep, physical health, and overall quality of life [10,11].

Prolonged high levels of anxiety can affect neuroendocrine function, increase the need for analgesics, intensify postoperative pain, and extend the recovery period [19]. To avoid unnecessary interventions, anxiety-reducing strategies can be incorporated into nursing care plans. In a randomized study, preoperative patient education through video communication with physicians prior to kidney stone surgery significantly reduced anxiety levels in the postoperative period [20]. Another randomized study reported that high-quality nursing care focusing primarily on comfort led to significant reductions in patients' levels of pain, anxiety, and depression following kidney stone surgery [11].

The findings of this study revealed that one in four patients in the sample was female, and female patients reported higher levels of both pain and anxiety. A prospective multicenter study similarly found that women experienced greater severity of pain and anxiety than men during the treatment of proximal ureteral and renal pelvic stones [18]. Another study evaluating anxiety and depression among patients admitted to surgical units found that female patients had higher anxiety levels compared to male patients [21]. In a study examining the relationship between pain and gender, it was suggested that women perceive pain more intensely than men and that postoperative pain may be more severe in female patients [22]. Possible reasons for higher levels of pain and anxiety in women include a more frequent inflammatory response, greater societal expectations placed on women, increased emotional expressiveness, and a more sensitive physical and emotional constitution [21, 22]. While these explanations may account for the elevated pain and anxiety levels observed in women, further research is needed to reach more definitive conclusions.

It is recommended that future researchers conduct studies with larger, multicenter samples that include diverse age and gender groups to enhance the generalizability of the findings. Furthermore, going beyond self-reported measures and incorporating physiological indicators for anxiety and pain may contribute to a more objective evaluation of these outcomes. From a clinical nursing perspective, it is important to regularly assess postoperative pain and anxiety levels in patients undergoing URS, especially in the early period. Given the higher likelihood of elevated symptoms in female patients, individualized nursing interventions that provide both physical and psychological support should be planned and

implemented to improve patient comfort and the overall recovery process.

5. Conclusion

The findings of this study indicate that patients undergoing URS for the treatment of urinary system stones experience pain and anxiety, particularly during the early postoperative period. In addition to the positive relationship between postoperative pain and anxiety, the higher levels observed in female patients are notable factors. It is believed that the assessment of both pain and anxiety in postoperative nursing care is essential for providing patient-centered care during the early recovery phase following surgical interventions.

Limitations, this study has certain limitations. First, due to its single-center design and limited sample size, the findings may not be generalizable to the entire population. Second, pain and anxiety levels were assessed using self-report scales, and as these perceptions may vary from person to person, the results could have been influenced by individual differences.

6. References

1. Gürlür H, Gündüz ES, Risk factors in urinary stones: A case-control study. *Int J Urol Nurs.* 2021;1–6.
2. Boarin M, Villa G, Capuzzi C, et al. Dietary and lifestyle recommendations for urolithiasis prevention: A systematic literature review. *Int J Urol Nurs.* 2018;12:53–70.
3. Akıncı M, Esen T, Tellaloğlu S. Urinary Stone Disease in Turkey: An Updated Epidemiological Study. *European Urology*, 1991; 20(3):200–203.
4. Muslumanoglu AY, Binbay M, Yuruk E, Akman T, Tepeler A, Esen T, Tefekli AH. Updated epidemiologic study of urolithiasis in Turkey. I: Changing characteristics of urolithiasis. *Urol Res.* 2011 Aug;39(4):309-14.
5. Ahn ST, Kim JH, Park JY, et al. Acute postoperative pain after ureteroscopic removal of stone: Incidence and risk factors. *Korean Journal of Urology*, 2012;53(1):34–39.
6. Preston A, Milburn, Kim H. Thai, Amr El Mekresh, Patrick S. Lowry & Marawan M. El Tayeb. Relation of postoperative pain medication to return for unplanned care after ureteroscopy, *Baylor University Medical Center Proceedings*, 2019;32(2):199-201.
7. Rosen GH, Hargis PA, Kahveci A, Lough C, Moss A, Golzy M, Murray K. Randomized Controlled Trial of Single-dose Perioperative Pregabalin in Ureteroscopy. *J Urol.* 2023 Eylül;210(3):517-528.
8. Mulugeta H, Ayana M, Sintayehu M, et al. Preoperative anxiety and associated factors among adult surgical patients in debre markos and felege hiwot referral hospitals, Northwest Ethiopia. *BMC Anesthesiology* 2018;18(1):155.
9. Sturgeon J. A, Langford D, Tauben D, Sullivan M. Pain intensity as a lagging indicator of patient improvement: Longitudinal relationships with sleep, psychiatric distress, and function in multidisciplinary care. *The Journal of Pain*, (2021);22(3):313–321.
10. Ak S, Ongün P, Şenel Ç, et al. The effect of postoperative pain level on sleep quality in patients who undergo major urological surgery. *Journal of Inonu University Vocational School of Health Services* 2022;10(3):992–1003.

11. Mei G, Jiang W, Xu W, et al. Effect of comfort care on pain degree and nursing satisfaction in patients undergoing kidney stone surgery. *American Journal of Translational Research* 2021;13(10):11993–11998.
12. Arlı Ş, K. Cerrahi Bakımda Ağrı Yönetimine İlişkin Hemşirelik Girişimleri. *Manisa CBU Sağlık Bilimleri Enstitüsü Dergisi / Manisa CBU Journal of Institute of Health Science* 2017;4(3):1013-1021
13. Cohen J. Statistical Power Analysis for the Behavioral Sciences . 1988: (2nd ed.). Routledge.
14. Öner N, Le Compte A. State and trait anxiety inventory handbook. *Istanbul Boğaziçi University Press* 1983: pp(1-26).
15. Julian L, J. Measures of anxiety: State–Trait Anxiety Inventory (STAI), Beck Anxiety Inventory (BAI), and Hospital Anxiety and Depression Scale-Anxiety (HADS-A). *Arthritis Care and Research* 2011;63(Suppl. 11):S467–S472.
16. Aydingülü N, Arslan S. Comfort Levels of Patients at Early Postoperative Period. *KSU Medical Journal* 2021;16(3) : 401-406.
17. Du K, Wang R, S. Vetter J, et al. Unplanned 30-day encounters after uretero-rensoscopy for urolithiasis. *Journal of Endourology*, 2018;32(12):1100-1107.
18. Ucer O, Ceylan Y, Ekren F, et al. Effect of anxiety and pain on success of shockwave lithotripsy (SWL) for treatment of proximal ureteral and renal pelvic stones. *Urolithiasis*, 2016;44(6):559–564.
19. Sun j, Xu W, Ye H, Tang D, Jiang Y, Kang Y, Pan J, Zhu J, Zhou M, Che L. Stress Induces Prolonged Pain Recovery After Surgery: Involvement of Glucocorticoid-Related Pathway. *Int J Neuropsychopharmacol*. 2023 Mar 11;26(4):268–279.
20. Yang B, Liu S, Wang J, et al. The impact of watching real-time videos of flexible ureteroscopic lithotripsy on anxiety and depression in patients. *Int Urol Nephrol*, 2022;54(5):1009-1015.
21. Akıncı N. Determining postoperative anxiety and depression levels of the patients hospitalized in surgical clinics. *Health Care Acad J*. 2022; 9(2):113-119.
22. Belfer I. Pain in women. *Pain* 2017;29(2):51–54.

<http://edergi.cbu.edu.tr/ojs/index.php/cbusbedisiml>
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