

## Analysis of Nurses' Pain Assessment Records in Colorectal Surgery: A Retrospective Study

### Kolorektal Cerrahide Hemşirelerin Ağrı Değerlendirme Kayıtlarının İncelenmesi: Retrospektif Çalışma

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#### ABSTRACT

**Objective:** The study aims to evaluate the effectiveness of pain management, establish a pain profile, and reveal the current state of pain assessment after colorectal surgery.

**Materials and Methods:** A retrospective and descriptive design was used. The research population included the records of patients hospitalized in the general surgery ICU of a hospital between November 2020 and November 2021 after colorectal surgery. The measures were a Descriptive Information Form and a Pain Evaluation Follow-up Form.

**Results:** Patients' mean age was 61.32±14.21 years. Males were 64.2%. Colon (65.9%) and rectal (34.1%) surgeries had been performed. Postoperative mean pain values were 2.84±1.79 at the 0th-2nd hours and 1.68±1.44 (0-4) at the 37th-48th hours. The values were significantly higher in patients without chronic diseases. Of the nurses, 94.7% used scales with proven validity and reliability, but there were no records about the pain's location, character, duration, and factors that increased or decreased.

**Conclusions:** Nurses' records about pain management after colorectal surgery were missing. The records analyzed were not enough to determine the pain profile after colorectal surgery. The role of pain and analgesia records in effective pain management should be considered, and the management of the electronic record system should be supported.

**Keywords:** Colorectal surgery, pain assessment, pain recording, nurse

#### ÖZ

**Amaç:** Çalışmanın amacı kolorektal cerrahi sonrası ağrı yönetiminin etkinliğini değerlendirmek, ağrı profili oluşturmak ve ağrı değerlendirmesinin mevcut durumunu ortaya koymaktır.

**Materyal ve Metod:** Araştırma, retrospektif ve tanımlayıcı olarak yürütülmüştür. Araştırma evrenini Kasım 2020-Kasım 2021 tarihleri arasında bir araştırma hastanesinin genel cerrahi yoğun bakım ünitesinde kolorektal cerrahi sonrası yatan hastaların kayıtları oluşturmuştur. Veriler, Hasta Tanıtıcı Bilgi Formu ve Ağrı Değerlendirme İzlem Formu uygulanarak elde edilmiştir.

**Bulgular:** Çalışmaya dahil edilen kayıtlardaki hastaların yaş ortalaması 61,32±14,21'dir. Hastaların %64,2'si erkekti. Yapılan ameliyatların %65,9'u kolon, %34,1'i rektum cerrahisidir. Hastaların ağrı düzeylerinin dağılımına göre postoperatif 0-2. saatte ağrı ortalamaları 2.84±1,79 iken 37.-48. saatte ağrının 1,68±1,44(0-4) olduğu görüldü. Postoperatif ilk 2 saatteki ağrı düzeyi kronik hastalığı olmayan hastalarda anlamlıydı. Ağrı kayıtları değerlendirildiğinde, hemşirelerin %94,7'sinin hastaya uygun geçerlilik güvenirliği kanıtlanmış ölçekler kullandığı, ancak ağrı yeri, niteliği, süresi, ağrıyı arttıran ve azaltan faktörleri içeren kayıtların olmadığı tespit edildi.

**Sonuç:** Kolorektal cerrahi sonrası ağrı yönetim süreci açısından hemşire kayıtlarının eksik olduğu tespit edilmiştir. Bunun yanında, analiz edilen kayıtların kolorektal cerrahi sonrası ağrı profilini belirleyecek düzeyde olmadığı saptanmıştır. Bu bağlamda bütüncül ağrı değerlendirmesini içeren ağrı ve analjezi kayıtlarının etkin ağrı yönetimi rolü önemsenmeli ve elektronik kayıt sisteminin yönetimi desteklenmelidir.

**Anahtar Kelimeler:** Ağrı değerlendirmesi, ağrı kayıt, hemşire, kolorektal cerrahi

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## INTRODUCTION

One of the most common symptoms following colorectal cancer surgery is pain. In the literature, there is limited research into colorectal surgery pain, and in a study, it was found that approximately 70% of patients experienced moderate to severe pain in the first 72 hours postoperatively, the severity of pain increased up to 8 out of 10 in the first 24 hours, and that it was relieved after the 72<sup>nd</sup> hour.<sup>1,2</sup> Inability to control the pain triggers the surgical stress response, especially in the first 72 hours when hemodynamic parameters are variable, thereby reducing post-surgical recovery. If pain is not managed well, it may cause prolonged hospital stay, increased repeat admissions, decreased patient satisfaction, and post-operative complications, such as ileus, anastomotic leak, nausea, and vomiting.<sup>2</sup>

For effective pain control, pain needs to be evaluated ideally. For an accurate pain assessment, it is essential to determine the location, spread, characteristics, severity, duration, factors that aggravate or alleviate the pain, and accompanying symptoms.<sup>3</sup> There is some research into the assessment of the severity of pain in the literature; however, studies on a comprehensive pain evaluation are limited.<sup>4</sup>

In a study in which the majority of patients underwent colorectal surgery, it was determined that no scale had been used in pain assessment and that pain characteristics had not been evaluated.<sup>4</sup> In another study, it was found that patients' pain was not evaluated comprehensively and accurately.<sup>5</sup> A comprehensive assessment of pain will help to create a pain-specific profile and, thus, an analgesia algorithm. It is thought that increasing nurses' awareness of pain assessment and recording pain data will also improve pain management practices.

The study aimed to examine the post-operative pain assessment records kept by nurses, establish a pain profile in colorectal surgery and evaluate the effectiveness of pain management.

## MATERIALS AND METHODS

**Ethics Committee Approval:** The study was carried out by the Helsinki Declaration. To conduct the study, necessary approvals were obtained from the Nursing Department Academic Committee of A University (Date: 30/09/2021, decision no:200959), The Ethics Committee of A University (Date: 01/10/2021, decision no:40), Adana City Training and Research Hospital (Date: 18/10/2021, decision no:96172664- 604), Adana Provincial Health Directorate (Date: 15/10/2021, decision no:27350520).

The study was conducted between October 18, 2021 and May 18, 2022 by using the pain records of patients who had undergone colorectal surgery in the general surgery intensive care unit of Adana City

Hospital between October 1, 2020 and October 1, 2021.

**Setting and Sample:** The research was conducted retrospectively and descriptively. The study was conducted in the general surgery intensive care unit of a university hospital. The hospital where the research was conducted has a capacity of 1550 beds, and the intensive care unit has 15 beds. No pain assessment protocol was used for patients in the intensive care unit. The numerical rating scale (0-10) is used for conscious patients, and the Wong-Baker Faces Pain Rating Scale was used for unconscious patients. The hospital has a "Hospital Information Management System" that monitors pain assessment and gives warnings. This system guides health personnel to evaluate and record pain. No sample calculation was made in the study. The study population consisted of 5335 pain records of patients who had stayed in the general surgery intensive care unit due to colorectal surgery between October 1, 2020, and October 1, 2021. Total of 5057 pain records did not meet the pain criteria in our study (5051 pain records did not belong to patients who underwent colorectal surgery and 6 pain records belonged to the patient with repeated hospitalizations). The sample of the study involved records of 278 patients who were aged over 18 years, had undergone colorectal surgery, had received general anesthesia during the operation, and had been hospitalized for at least 48 hours after the operation.

**Data Collection:** The study data were obtained from the hospital's digital information system using a "Patient Descriptive Information Form" and the "Pain Evaluation Follow-up Form," created by the researcher.<sup>4,6</sup>

The Patient Descriptive Information Form included items about patients' demographic and medical characteristics (age, gender, concomitant diseases, type of surgery, status of consciousness, and mechanical ventilation support), and the Pain Evaluation Follow-up Form involved items about pain assessment, pain scale, pain characteristics, the status of pharmacological and non-pharmacological analgesia application, and re-evaluation of pain after analgesia. However, patients' analgesia data could not be reached. In the study, a numeric pain scale (1-10) was used for conscious patients, and the Wong-Baker Faces Pain Rating Scale was used for unconscious patients.

**Statistical Analysis:** SPSS (IBM SPSS Statistics 26) statistical software package was used in the analysis of the study data. Descriptive statistics were presented as counts, percentages, mean scores, minimum-maximum values, and standard deviations. In the statistical analysis, it was determined whether the data were normally distributed or not. As the data

showed a normal distribution, the t-test, which is a parametric test, was used in paired subgroups (such as female and male). On the other hand, the Mann-Whitney U test was used for paired subgroups in cases where parametric assumptions were not met.  $P < 0.05$  was accepted as the significance level. According to the results, since the number of patients was over 50, normality was determined by the Kolmogorov-Smirnov test. Accordingly,  $p > 0.05$  as a result of this test and the Skewness and Kurtosis values are close to 0 within the limits of  $\pm 1$ , indicating that the data is normally distributed. Therefore, parametric tests were used. Among normally distributed parametric tests, the T-test was used in binary subgroups (such as men and women).

**RESULTS**

Patients’ descriptive data are given in Table 1. The mean age of patients included in the study was  $61.32 \pm 14.21$  years.

Table 2 was shown the pain levels of patients according to postoperative hours, and while the mean postoperative pain level of patients at 0-2<sup>nd</sup> hours

was  $2.84 \pm 1.79$ , it was determined to be  $1.68 \pm 1.44$  (0-4) at 37-48<sup>th</sup> hours.

In Table 3, the pain levels of patients in the first 48 hours postoperatively were compared with their descriptive data. Accordingly, it was determined that the pain level of patients without chronic diseases was significantly higher only in the first 2 hours postoperatively ( $p = 0.035$ ).

When the records of the pain evaluation follow-up form were examined, it was seen that 94.7% of nurses had used scales with proven validity and reliability in pain assessment. It was observed that the Wong-Baker pain scale was used instead of the numerical pain assessment scale in 9 patients who were conscious and able to express themselves (Table 4). Findings accompanying pain, including location, character, and duration of pain, evaluation status during rest and movement, and factors that increased and reduced pain, had not been recorded. Pain after analgesia had been re-evaluated and recorded in 60.6% of patients.

**Table 1.** Distribution of patients’ descriptive characteristics (n=173).

Descriptive characteristics		Data
Age, Mean±SD, Minimum-Maximum)		61.32±14.21, (25-91)
Gender, n (%)	Male	111 (64.2)
	Female	62 (35.8)
Presence of chronic diseases, n (%)	Yes <sup>a</sup>	88 (50.9)
	No	85 (49.1)
The surgery, n (%)	Colon surgery	114 (65.9)
	Rectal surgery	59 (34.1)
Status of consciousness, n (%)	Conscious	166 (96)
	Unconscious	7 (4)
Mechanical Ventilation support, n (%)	No	164 (94.8)
	Yes	9 (5.2)
Sedation support, n (%)	No	166 (96)
	Yes	7 (4)
Scales used, n (%)	Numerical Rating Scale	157 (90.8)
	Wong-Baker Faces Pain Rating Scale	16 (9.2)

<sup>a</sup> Heart diseases, respiratory system diseases and diabetes mellitus.

**Table 2.** Distribution of patients' pain levels according to postoperative hours.

Duration	Pain severity	
	Mean±SD	Minimum-Maximum
0-2 <sup>nd</sup> hours	2.84±1.79	0-8
3-4 <sup>th</sup> hours	2.25±1.55	0-5
5-8 <sup>th</sup> hours	1.83±1.20	0-4
9-12 <sup>th</sup> hours	1.76±1.64	0-6
13-24 <sup>th</sup> hours	1.57±1.44	0-6
25-36 <sup>th</sup> hours	1.06±0.99	0-3
37-48 <sup>th</sup> hours	1.68±1.44	0-4

**Table 3.** Comparison of the pain levels of patients in the first 48 hours postoperatively with their descriptive characteristics.

Patients' descriptive characteristics		Pain severity			
		0-2 <sup>nd</sup> hours Mean±SD	3-12 <sup>th</sup> hours Mean±SD	13-24 <sup>th</sup> hours Mean±SD	25-48 <sup>th</sup> hours Mean±SD
<b>Gender</b>	Male	2.87±1.64	1.87±1.81	1.42±1.53	1.47±1.27
	Female	2.83±1.87	2.63±1.16	1.79±1.35	1.83±1.50
<b>Statistical analysis</b>	t	-0.124	1.188	1.177	0.875
	p	0.902	0.64	0.243	0.386
<b>Presence of chronic diseases</b>	Yes	2.57±1.70	2.22±1.33	1.40±1.28	1.82±1.37
	No	3.15±1.84	2.12±1.70	1.76±1.58	1.50±1.41
<b>Statistical analysis</b>	t	-2.129	0.246	-1.180	0.802
	p	0.035	0.806	0.241	0.427
<b>The surgery</b>	Colon surgery	2.91±1.83	2.17±1.46	1.54±1.46	1.53±1.34
	Rectal surgery	2.76±1.70	2.20±1.57	1.62±1.39	1.93±1.48
<b>Statistical analysis</b>	t	-0.520	0.068	0.227	0.925
	p	0.604	0.946	0.947	0.360
<b>Status of consciousness</b>	Conscious	2.88±1.80	2.18±1.50	1.62±1.46	1.70±1.36
	Unconscious	2.28±1.49	2.00± -	0.83±0.75	1.42±1.61
<b>Statistical analysis</b>	t	0.868	0.122	1.315	0.473
	p	0.387	0.903	0.192	0.638
<b>Mechanical Ventilation support</b>	No	2.33±1.50	2.00±0.00	1.12±1.35	1.66±1.50
	Yes	2.89±1.80	2.18±1.51	1.61±1.44	1.65±1.38
<b>Statistical analysis</b>	t	-0.909	-0.174	-0.904	0.017
	p	p=0.311	p=0.863	0.358	0.988
<b>Scales used</b>	Numerical Rating Scale	2.92±1.82	2.19±1.53	1.61±1.46	1.67±1.39
	Wong-Baker Faces Pain Rating Scale	2.25±1.29	2.00±0.00	1.27±1.19	1.60±1.42
	<b>Statistical analysis</b>	t	-1.439	-0.215	-0.739
	p	0.152	0.830	0.462	0.880

**Table 4.** Pain evaluation follow-up form (n=173).

	n (%)
1-Standard pain scale, which was suitable for the patient and had validity and reliability, was used.	<b>Yes</b> 164 (94.7) <b>No</b> 9 (5.3)
2- Findings accompanying the pain were questioned (Nausea, vomiting, etc.)	<b>Yes</b> 0 (0) <b>No</b> 173 (100)
3-The severity of the pain was evaluated.	<b>Yes</b> 173 (100) <b>No</b> 0 (0)
4-The area of the pain was evaluated.	<b>Yes</b> 0 (0) <b>No</b> 173 (100)
5-The character of the pain was evaluated.	<b>Yes</b> 0 (0) <b>No</b> 173 (100)
6-The duration of the pain was evaluated.	<b>Yes</b> 0 (0) <b>No</b> 173 (100)
7-Pain during movement/mobilization and at rest was evaluated separately.	<b>Yes</b> 0 (0) <b>No</b> 173 (100)
8-The factors that increased and decreased the pain were specified.	<b>Yes</b> 0 (0) <b>No</b> 173 (100)
9-Pain was re-evaluated after analgesic.	<b>Yes</b> 105 (60.6) <b>No</b> 68 (39.4)
10- Pain assessment was recorded regularly	<b>Yes</b> 105 (60.6) <b>No</b> 68 (39.4)

## DISCUSSION AND CONCLUSION

One of the most common symptoms after colorectal surgery is pain. When this pain is not controlled, it causes a hospital stay longer than 10 days and complications such as post-operative ileus and stress up to 50%.<sup>7</sup>

Holistic pain assessment is necessary for effective pain management. The pain management process should be recorded to provide information to the

nurses. Due to a lack of literature on pain after colorectal surgery, nurses' pain assessment records were examined to guide them in this study.

When the findings in our study were examined, it was observed that the pain, which was moderate to mild in the first 4 hours, decreased to a mild level in the following hours (Table 2). Similarly, in a study conducted by Lindberg et al. with patients undergoing colorectal surgery, more than half of the patients

had moderate to severe pain from the day of surgery to the 3<sup>rd</sup> day after surgery, the severity of pain increased up to a level of 8 out of 10 in the first 24 hours, and it fell under 4 after the 72<sup>nd</sup> hour.<sup>2</sup> This explains that due to the nature of incision pain, the pain decreases with the regression of the wound healing and inflammation process. Additionally, the pain intensity found in the study by Lindberg et al. was high, but it was observed to be low in our study. This may have been due to the difference in the intensity of pain expressed by the patients and recorded by the nurses.

In our study, it was determined that the pain level was significantly higher in patients without chronic diseases only at the first 0-2<sup>nd</sup> hour postoperatively ( $p=0.035$ ) (Table 3). It is stated that individuals with chronic diseases encounter pain more frequently, enabling them to cope harmoniously by displaying an accepting attitude towards pain.<sup>8</sup> No significant correlation was found between pain and chronic diseases in other studies.<sup>9,10</sup> Moreover, it has been reported that chronic diseases can cause negative consequences on individuals with chronic diseases experience more pain.<sup>11,12</sup> This finding may be because chronic diseases increase compliance with the pain experience. Considering that there may be pain caused by chronic diseases in addition to acute pain after surgery, pain management should be carefully planned in elderly groups.<sup>13</sup> Pain should be evaluated holistically, especially in elderly individuals, and analgesics should be determined not only according to the level of pain but also the age and medical condition of the patient.

When the pain evaluation follow-up form was examined in our study, it was seen that the severity of pain had been evaluated and recorded in all patients. Similarly, in the study conducted by Baş et al., it was stated that 84% of nurses had evaluated pain.<sup>14</sup> It is important to use the appropriate pain scale for each patient, even if the pain evaluation rate is high. Although almost all of the nurses had used scales with proven validity and reliability in our study, they were found to use the Wong-Baker Faces Pain Rating Scale in 9 conscious patients, which contradicts the literature.<sup>15</sup> The use of a face scale for a patient who can express himself/herself may lead to misdiagnosis of pain and administration of the wrong dose of analgesia. Indeed, the Wong-Baker Faces Pain Rating Scale was developed to measure pain severity or amount of pain in patients with cognitive or language disabilities, generally in pediatric practice.<sup>13,16</sup> As a matter of fact, it was stated in the literature that laughing and crying expressions on this scale were at two ends and caused conceptual confusion and that 'tear in facial expression' was not appropriate for adults with severe pain.<sup>15</sup>

In clinics with special patient groups, such as inten-

sive care, more comprehensive scales, such as the Behavioral Pain Scale (BPS), the Critical Care Pain Observation Tool (CPOT), in which painful behaviors and compliance are questioned, and the Nonverbal Pain Scale (NVPS), in which the physiological parameters of the patient are evaluated, should be preferred to the Wong-Baker Faces Pain Rating Scale. In another study, it was found that 48.7% of nurses had observed the patient's behavior to measure the severity of pain, while 66.7% had not used any pain scale to determine the severity of the patient's pain.<sup>17</sup> Similar studies conducted in our country showed that although the vast majority of patients experienced pain, approximately one-third or half of nurses did not use a pain scale.<sup>18,19</sup> Some studies indicated that there was no standard pain assessment protocol for acute pain and that nurses' pain assessment records were inadequate.<sup>20</sup>

In our study, factors that reduced the pain were not questioned, and the duration, area, and character of the pain were not evaluated during movement and rest. Similar to the results reported, no pain assessment record, including pain level, was found in the study conducted with colorectal surgery patients.<sup>21</sup> In the study conducted by Özveren et al. with surgical nurses, it was observed that approximately half of the nurses had not recorded the pain assessment data.<sup>22</sup> These results indicate that pain is not evaluated holistically and effectively. In another similar study by Rafati et al., pain assessment was not comprehensive.<sup>5</sup> Indeed, it is known that systematic pain assessment facilitates pain management. In a study by Erden et al. with surgical patients, it was found that standard and holistic pain assessment controlled the pain level, thus regulating the level of blood analgesia and reducing the pain level of the patient and analgesic consumption.<sup>23</sup> It was also stated in the study that regular questioning and recording of all aspects of pain according to the patient's level of pain and analgesia directed the pain management process of nurses. Since the hospital where the data were collected had a digital hospital information system, analgesia records could not be accessed in the nurse observation forms. In addition, it was observed that nurses had not recorded non-pharmacological methods of pain treatment in the system.

Treating pain not only with analgesics but also with non-pharmacological methods is important for multimodal analgesia.<sup>24</sup> In another study conducted with patients who underwent low anterior resection, colon resection, and anterior resection in the literature, it was reported that massage therapy applied on the 2<sup>nd</sup> and 3<sup>rd</sup> postoperative days reduced negative moods, such as pain, anxiety, and tension and provided general relief in the patient, but in another study, although the majority of patients experienced

pain, it was determined that 65-88% of the nurses did not use any non-pharmacological techniques.<sup>19,25</sup> Similarly, in the study, it was observed that nurses did not use pharmacological methods in the treatment of pain.<sup>26</sup> Our observations and other studies show that nurses are reluctant to add non-pharmacological methods to analgesics in postoperative pain management.

As a result of our study, it was determined that nurse records of holistic pain assessment and pain management process after colorectal surgery were missing. In this context, it was found that the records were not enough to determine the pain profile after colorectal surgery. For this reason, as in other painful situations, it is recommended that nurses use pain assessment scales with proven validity and reliability, appropriate for the patient's state of consciousness, in addition to questioning the location, character, and duration of pain and factors that increase and decrease pain and evaluate pain in all aspects. In addition, it should not be forgotten that pain records will guide health personnel as the pain management process can be achieved with a multidisciplinary approach.

In conclusion, one limitation of the study was that surgeries were performed by different surgeons. In addition, since the data were collected from hospital records, pain levels or other pain data were accepted as they were in the records. Due to the retrospective nature of the study, no observation or instant evaluation was made. Although it was aimed to examine the analgesia records at the beginning of the study, another limitation was that analgesia use could not be evaluated because the hospital management did not allow access to relevant records. In addition, maintaining pain management records in the hospital management system for proper monitoring is recommended. Provision of the necessary feedback for nurses and recording data electronically into the computer system will increase the quality of patient care.

**Ethics Committee Approval:** The study was carried out by the Helsinki Declaration. To conduct the study, necessary approvals were obtained from the Nursing Department Academic Committee of A University (Date: 30/09/2021, decision no:200959), The Non-Invasive Ethics Committee of A University (Date: 01/10/2021, decision no:40), Adana City Training and Research Hospital (Date: 18/10/2021, decision no: 96172664- 604), Adana Provincial Health Directorate (Date: 15/10/2021, decision no: 27350520).

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