

## Original Article

## Pain Level, Influencing Factors and Applied Nursing Interventions in Patients Undergoing GI Surgery

**Selda Rizalar, MSc, PhD, RN**

Assistant Professor, Department Nursing, Faculty of Health Sciences, Istanbul Medipol University, Istanbul, Turkey

**Ayfer Ozbas, PhD, RN**

Associated Professor Surgical Nursing Department, Florence Nightingale Nursing Faculty, Istanbul University Istanbul, Turkey

**Correspondence:** Assist Prof Dr. Selda Rizalar, Istanbul Medipol University, Faculty of Health Sciences, Nursing Department, Atatürk Bulvarı No:27 Unkapanı 34083 Fatih, Istanbul, Turkey  
E-mail: srizalar@medipol.edu.tr

### Abstract

**Background:** Pain has been reported as one of the primary sources of concern for surgery patients, and post-operative pain is still an important clinical problem although major advances in pain management and treatment have been made.

**Objective:** The aim of this study was determined to pain level and influencing factors in patients undergoing GI (Gastro Intestinal) surgery and nursing interventions related to pain management.

**Methods:** This descriptive study was performed between January 13 and April 25, 2011.

The study was conducted in the general surgery clinic of University hospital in Samsun, Turkey. One hundred twenty six patients (59 males, 67 females; mean age  $51 \pm 11.6$  years; range 21 to 65 years) who had undergone general surgery were included in the study. The patient data was collected using Personal Information Form and Visual Analogue Scale (VAS) postoperatively.

**Results:** It was determined that all of the patients were experienced moderate level of pain according to VAS ( $6.19 \pm 2.18$ ) felt. It was determined that the patients were felt 15.1% mild, 31.7% medium, 53.2% the severe pain. It was found significant differences between scale scores and diagnose types, education level of the patients ( $p < 0.05$ ). However it was not found significant differences between pain level and gender, marital status, live with family or alone, have an operation in the past, chronic illness, get training about pain ( $p > 0.05$ ). It was found that nurses were the most common applied painkillers treatment (46%), monitoring of vital signs (42.1%), observing of drug side effects (31.7%) in patients with pain.

**Conclusion:** This study was showed that the patients were experienced severe pain the early period after abdominal surgery and that frequency of non-pharmacological nursing interventions were very few.

**Key Words:** Pain, postoperative pain, Nursing, Care

### Introduction

The pain after the surgery is a pain which starts due to reasons such as the patient's position during surgery, the interventions and tissue damage and which gradually decreases with tissue healing (Çelik, 2013; Düzel, 2008; Topcu and Findik, 2012). Effective pain treatment in surgical patients is important, if not eliminated it negatively affects the patient both physically and psychologically. Pain causes emotions such as irritability, helplessness, anger, anxiety and fear, it can affect negatively the person's physical activity and social relationships, can make the person inadequate and can reduce the quality of

life of the person. Besides, ineffective pain management may increase the rates of readmission to hospital and the treatment costs by extending the duration of hospital stay (Düzel, 2008; Topcu and Findik, 2012; Ramsay, 2000; Faydalı, 2010; Mei et al., 2015). It is reported in the recent studies that the pain management is inadequate in the postoperative period and, therefore, approximately 50-80% of the patients have experienced pain from medium-level to severe (Yılmaz and Gürler, 2011; Pöpping et al., 2008; Apfelbaum, 2003). The pain must be identified and closely monitored in the postoperative period, as well as the patient's vital signs, hematological parameters, liquids received

and excreted. Pain management must be provided with the painkillers pharmacologically and with other ways. The application of non-drug methods such as non-pharmacological methods as providing information, distraction, making them listen to music, massage, changing the position are extremely important in the surgical patient care (Çetinkaya and Karabulut, 2010; Bacaksız et al., 2008; Carr et al., 2005; Özer and Bölükbaş, 2001; Ramsay, 2000; Karayurt, 1998).

Nurses are the members of patient care team who are with the patients the longest time to perform maintenance and interventions in the postoperative period. Therefore, they have an important role in the control of pain (Carr et al., 2005; Ay and Alpar, 2010). Knowledgeable and experienced nurses in pain affects the success of the treatment (Topcu and Findik, 2012; Bacaksız et al., 2008; Özer and Bölükbaş, 2001; Eti Aslan and Badır, 2005; Rundshagen, 1999). However, it is reported in the result of the studies that nurses do not have sufficient knowledge and experience in pain (Celik, 2013; Özer and Bölükbaş, 2001; Eti Aslan and Badır, 2005; Özer et al., 2006). This study was done to determine that the patients in general surgery services with GIS operation history experienced pain at what level, the factors affected the pain and the nursing interventions applied for pain management in the first 48 hours after surgery.

## Methods

This descriptive study was held in Samsun Ondokuz Mayıs University, Health Application and Research Center between January 13 and April 25, 2014. The target population for the research was those patients who had undergone g1 surgery in the general surgery clinic of the hospital in Samsun, in the north of Turkey. Approximately 400 patients undergo g1 surgery each year in the general surgery clinic of the hospital. A convenience sample (n=126) was taken from patients who met the study criteria and underwent g1 surgery. The sample of the study was 126 people who were in general surgery services, age >18 years, underwent g1 surgery for the first time, American Society of Anesthesiology (ASA) Physical Status I, II, were in the first 48 hours postoperatively, were able to do verbal communication, were conscious and willing to participate in the research and had no mental problems. The sample consisted of 67 females (53.2 %) and 59 males (46.8 %) who were all of Turkish nationality, were aged 21 to

65 years (mean, 51; SD=11.6). Patients who were not able to hear or see, had chronic pain, or prolonged hospitalisation were excluded from the study. Eleven patients did not meet the eligibility criteria because they were cognitively impaired and four patients refused to participate in the study. Permission was obtained from hospital management in order to conduct the study. Writing and verbal consent was obtained from the patients participating in the research. All participants were informed of the purpose and design of the study. Participation in the study was voluntary.

The data was collected through face to face interviews by the questionnaire on the socio-demographic and pain status of the individuals, which was prepared by the researchers using the literature and visual analog scale (VAS) in first 48 hours postoperatively. Vertical type of VAS was used between VAS 0-10 cm. The patients were asked to mark the pain level they had on the form while filling in the survey. The Personal Information Form included questions about the type of surgery, age, gender, education, marital status, previous surgery, chronic diseases, and smoking.

Data were analyzed using SPSS 16.0 software (Statistical Package for the Social Sciences - SPSS Inc., Chicago, Illinois, USA) and expressed as percentage, mean and standard deviation. Mann-Whitney U and Kruskal-Wallis tests were used for the analysis of the data. Results were evaluated at 95% confidence interval and p values less than 0.05 were considered significant.

## Results

It was determined that 53.2% of the patients taken in the study was women, 66.7% was literate level of education, 77.8% was married, 91.3%, lived with family, 31.7% had smoking habit. It was identified that all of the patients taken in the study had surgery with general anesthesia, 31% had colectomy, 22.2% had gastrectomy, 20.6% had appendectomy, 14.3% had cholecystectomy, 7.1% had liver operation, 4.8% had intestinal obstruction surgeries, only cholecystectomy interventions were laparoscopic, the other operations were carried out by open surgical technique. When the durations of the operations were analyzed, it was determined that 7.1% was less than 1 hour, 33.3% was between 1-2 hours, 23% was between 2-3 hours and 36.5% was 3-4 hours (Table 1,2).

**Table 1. Patient's Sociodemographic Charecteristics (N=126)**

<b>Variable</b>	<b>Mean±Sd(min-max)</b>	
<b>Age groups</b>	51.0 ± 11.6 (21- 65)	
	<b>No.</b>	<b>(%)</b>
<40 years yaş altı	54	42.8
40 and above	72	57.2
<b>Gender</b>		
Male	59	46.8
Female	67	53.2
<b>Level of education</b>		
Illiterate	9	7.1
Literate	84	66.7
Primary school	12	9.5
High school	21	16.7
<b>Marital status</b>		
Single	28	22.2
Married	98	77.8
<b>Lives</b>		
Alone	11	8.7
With family	115	91.3
<b>Smoking habit</b>		
Yes	40	31.7
No	86	68.3
<b>Chronic Disease</b>		
Yes	44	34.9
No	82	65.1
<b>Total</b>	126	100.0

**Table 2. Charecteristics of Patients' Operation (N=126)**

<b>Variable</b>	<b>Mean ±Sd ( min - max)</b>	
<b>The period after the operation</b>	<b>28.7±13.7 (7- 48 saat)</b>	
<b>Level of the pain</b>	<b>Mean±SD=6.19 ±2.18 (1-10)</b>	
	<b>No.</b>	<b>(%)</b>
Mild	19	15.1
Moderate	40	31.7
Severe	67	53.2
<b>Operation experience in the past</b>		
Yes	50	39.7
No	76	60.3
<b>Obtain information about pain</b>		
Yes	39	31.0
No	87	69.0
<b>Anesthesia type</b>		
General Anesthesia	126	100.0
<b>Duration of the operation</b>		
0-1 hour	9	7.1
1-2 hour	42	33.3
2-3 hour	29	23.0
3-4 hour	46	36.5
<b>Operation Type</b>		
Cholecystectomy	18	14.3
Gastrectomy	28	22.2
Colectomy	39	31.0
Liver operation	9	7.1
Intestinal obstruction	6	4.8
Appendectomy	26	20.6
<b>Analgetics</b>		
NSAI	92	73.0
Dolantin	11	8.7
Both of them	23	18.3
<b>Total</b>	<b>126</b>	<b>100.0</b>

**Table 3. Conditions which patients' experienced pain in postoperative period**

<b>Conditions which experienced pain</b>	<b>No.</b>	<b>(%)</b>
<b>Pain during breathing</b>		
Yes	58	46.0
No	68	54.0
<b>Pain during sleeping</b>		
Yes	70	55.6
No	56	44.4
<b>Pain during coughing</b>		
Yes	89	70.6
No	37	29.4
<b>Pain during the movement</b>		
Yes	88	69.8
No	38	30.2
<b>Pain during dressing</b>		
Yes	70	55.6
No	56	44.4

**Table 4. Sociodemographic Characteristics of the Patients and Comparisons with VAS Scores (N=126)**

Characteristics	n	VAS score (Mean rank)	Test and p value
<b>Age groups</b>			
<40 years yaş altı	54	61.46	U= 1315.000 P=0.735*
40 and above	72	64.08	
<b>Gender</b>			
Male	59	61.56	U= 1862.000 z=-0.566 P= 0.571*
Female	67	65.21	
<b>Level of education</b>			
Illiterate	9	25.50	$\chi^2=13.906$ p= <b>0.003**</b> p< <b>0.05</b>
Literate	84	67.20	
Primary school	12	50.00	
High school	21	72.69	
<b>Marital status</b>			
Married	98	56.89	U=1187.000* z=-1.099 p= 0.272
Single	28	65.39	
<b>Lives</b>			
Alone	11	74.41	U=512.500*z=-1.050 P= 0.294
With family	115	62.46	
<b>Smoking habit</b>			
Yes	40	70.23	U= 1451.000 z=-1.490 P=0.154*
No	86	60.37	
<b>Chronic Disease</b>			
Yes	44	59.41	U =1624.000 z= -0.932 P=0.351*
No	82	65.70	

\*Man witney U test \*\* Kruskal Wallis test

**Table 5. Charecteristics of Patients' Operation and Comparisons withVAS Scores (N=126)**

Charecteristics of Patients'	n	VAS Score (Mean ran)	Test and p value
<b>Operation</b>			
<b>Operation experience in the past</b>			
Yes	76	62.61	U: 1832.000 z=-0.343 p: 0.731*
No	50	64.86	
<b>Obtain information about pain</b>			
Yes	39	61.54	U: 1620.000z=-0.409 p: 0.683*
No	87	64.38	
<b>Duration of the operation</b>			
0-1 hour	9	58.80	$\chi^2=1.045$ p=0.593**
1-2 hour	42	60.00	
2 + hour	75	66.38	
<b>Operation Type</b>			
Cholecystectomy	18	38.03	$\chi^2=30.263$ p= <b>0.000**</b> p< <b>0.005</b>
Gastrectomy	28	79.38	
Colectomy	39	72.68	
Liver operation	9	72.33	
Intestinal obstruction	6	89.00	
Appendectomy	26	41.33	
<b>The period after the operation</b>			
0-24 hour	66	64.10	U= 1940.500 z=-1.490 P= 0.845*
24-48 hour	80	62.84	

The duration assessed for pain after surgery was determined approximately  $28.7 \pm 13.7$  hours (min: 7-max: 48). It was stated that 39.7% of the patients had surgeries before, 31% had information about pain and 34.9% had a chronic illness. The average pain score of all the patients is moderate according to the visual analog scale ( $6.19 \pm 2.18$ ) whereas it was stated that 15.1% of the patients felt mild, 31.7% felt moderate and 53.2% felt severe pain when the pain level was analyzed.

When the patients were asked during which activities they experienced pain, it was stated that 70.6% of the patients had pain while coughing, 69.8% while moving, 55.6% while sleeping and 46% while breathing (Table 3).

It was determined in our study that 73% of patients took NSAID, 8.7% took pethidine, and 18.3% took both of the drugs together as pharmacological interventions for pain management. A relationship was found between the education levels and types of diagnosis of the patients and their pain score averages and it was determined that the difference was statistically significant (Table 5). It was determined that there was not a relationship between the level of the pain of the patients and their gender, marital status, with whom they lived, operation history, the state of chronic disease and receiving information about pain (Table 4, 5).

Additionally, according to the statements of the patients it was stated that the nurses applied interventions to eliminate the pain respectively and the most common; analgesic therapy (46%), following vital signs (42.1%), monitoring side effects of drugs (31.7%). The interventions which the patients stated that the nurses applied often were determined as evaluating the frequency (31.7%) and location (19%) of pain, preparing a comfortable and quiet environment for the patients (25.4%), changing positions, (25.4%), giving information about disease and drugs (24.6%) and helping mobilization (% 19.8). 50% of patients in this study stated that a pain assessment scale was not used to evaluate pain.

When the patients were asked whether they were applied non-pharmacological pain control methods to stop their pain, 11.1% of patients stated that the position change, 17.5% the help for mobilization, 27.8% supporting the location of the surgery during the cough, 69.0% massage, 32.5% distracting attention, 82.5% making them listen to music, 85.7% dreaming were never used.

## Discussion

Moderate to severe pain following abdominal surgery is reported to be last for 1-4 days (mean 2.5 days) and reaches its maximum level within the postoperative 24-48 hours and then decreases gradually (Celik, 2013; Ozer and Bölükbas, 2001). In our study, all of the patient underwent abdominal surgery under general anesthesia, were within the first 48 hours after surgery and the mean VAS score was  $6.19 \pm 2.18$ . The average pain score of all the patients is moderate according to the visual analog scale whereas it was stated that 15.1% of the patients felt mild, 31.7% felt moderate and 53.2% felt severe pain when the pain level was analyzed.

In Çelik's study investigating post-operative pain level, the mean VAS scores in male and female abdominal surgery patients were found as  $5.93 \pm 1.77$  and  $5.66 \pm 1.87$ , respectively (Çelik, 2013). In our study it was not significant differences pain level of male and female patients. There also studies indicating that postoperative pain levels were higher in females than those in males. It was reported in a study in which females constitute 65% of the total population that 86% of the volunteers had moderate to severe pain (Apfelbaum, 2003).

In this study 50% of patients stated that a pain assessment scale was not used to evaluate pain. As is known, it is important in the pain management process to know the patient at all points because the pain is an idiosyncratic symptom. Therefore, the nurse should have sufficient knowledge about the methods to get the right story, make continuous observation and appropriate pain assessment (Eti Aslan, 2002). It was found in the study conducted by Eti-Aslan and Badir (2005) that nurses had insufficient knowledge about evaluating and easing the pain (Eti Aslan and Badir, 2005). Dihle et al. (2006) also emphasized that the most important obstacle in effective pain management was that a systematic data collection and evaluation were not made (Dihle et al., 2006).

When the patients were asked during which activities they experienced pain, it was stated that 70.6% of the patients had pain while coughing, 69.8% while moving, 55.6% while sleeping and 46% while breathing. It was stated in Yılmaz & Gürler's (2011) study that the patients with upper abdominal surgery had intense pain in the operated area while coughing and getting out of the bed and they had difficulty in doing activities

such as breathing, sleeping, coughing and moving due to pain (Yılmaz and Gürler, 2011). The type of the surgery and the surgical area affect the incisional pain experienced after the surgery. For example, abdominal surgeries are the surgeries in which the most severe pain is experienced because the incision is close to the diaphragm and due to heavy nerve network in the abdominal area (Roykulcharoen & Good, 2004)

When the patient experience severe pain, she cannot do activities such as deep breathing, coughing, mobilization and sleeping which will promote healing and complications can develop (Haljamäe and Stomberg, 2003). In a study which was conducted to reduce the pain and anxiety of the patients in abdominal surgery it was emphasized that it was important to use non-pharmacological methods due to their having no side effects in addition to the analgesics (Roykulcharoen & Good, 2004).

It was determined in our study that 73% of patients took NSAID, 8.7% took pethidine, and 18.3% took both of the drugs together as pharmacological interventions for pain management. Most of the patient take NSAID and they pain level usually middle or severe. In clinics, narcotics give as needed. Therefore patients can't express their pain and request more analgesic. Consequently they had to take severe pain.

According to the statements of the patients in our study it was stated that the nurses applied interventions to eliminate the pain respectively and the most common; analgesic therapy, following vital signs, monitoring side effects of drugs. The interventions which the patients stated that the nurses applied often were determined as evaluating the frequency and location of pain, preparing a comfortable and quiet environment for the patients, changing positions, giving information about disease and drugs and helping mobilization. It was also determined that about half of the nurses apply medication according to physician's instructions. In related studies, it was shown that nurses mostly administer analgesics for pain relief and do not apply non-pharmacological methods (Carr et al., 2005).

When the patients were asked whether they were applied non-pharmacological pain control methods to stop their pain, 11.1% of patients stated that the position change, 17.5% the help for mobilization, 27.8% supporting the location of the surgery during the cough, 69.0% massage,

32.5% distracting attention, 82.5% making them listen to music, 85.7% dreaming were never used. It was found in this study that the nurses used only analgesic drugs for postoperative pain of the patients but they did not use non-pharmacological pain relief methods. It is pointed out in the results of the previous studies that non-pharmacological interventions are not applied as required by nurses (Celik, 2013; Yılmaz & Gürler, 2011). As well as administration of analgesics for the relief and elimination of postoperative pain, the determination of pain and anxiety levels of the patient and deciding and applying non-pharmacologic methods and evaluating the effectiveness of applications are important interventions in which nurses take an active role.

### Conclusion

It was determined in this study that more than half of patients (53.2%) experienced severe pain in the early stage after GIS surgery and the pain was mostly felt during coughing and movement. It was shown in our study that although the nurses did their duty effectively. ( $\approx 90\%$ ) in the pharmacological treatment in pain management, the frequency of using non-pharmacological methods was low. It was found that the pain killers given for pain management were unable to provide optimal effect in relieving pain and the pain level of the patients who were applied combined modality therapy was lower than the others.

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