

## ANESTHESIOLOGIST'S ATTITUDE AND BEHAVIOR TOWARDS POSTOPERATIVE PAIN MANAGEMENT IN TURKEY

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### Abstract

**Objective:** This study aims to evaluate the approach of Anesthesiologist in Turkey and their applications towards postoperative pain treatment, and in addition to raise awareness in this regard.

**Methods:** The target audience of this descriptive survey study was physician members of the Turkish Society of Anesthesiology and Reanimation, who were volunteering / accepting to participate in the study. The doctors were contacted via their e-mail addresses. Data were collected online, between October 10, 2016 and November 30, 2016, using a web-based

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(SurveyMonkey®, <https://tr.surveymonkey.com/>) questionnaire form, and the data were analyzed by the statistics software program (SPSS ©, v.20, Il, USA). Descriptive data were presented with frequency, percentage, mean, standard deviation, median, minimum, and maximum values.

**Results:** A total of 315 people included in the study. 34.9% anesthesiologists had 5-10 years of professional experience. 61.9% of the anesthesiologists stated that they routinely check the patients' pain level in the postoperative period. Multimodal analgesia is mostly preferred (25.3%) after major surgical intervention. 71.9% of the participants stated that they can not find the required time for postoperative analgesia in their institution, and they associated this matter with excessive workload and lack of staff time.

**Conclusion:** In this study we found that anesthesiologists in Turkey are doing the follow-up of patients during the postoperative period pain-wise and that they use specific pain scales. Anesthesiologists think that postoperative pain treatment is not done effectively and time required for pain treatment of the pain treatment is not enough. They also stated that a separate team should be formed for postoperative pain management in the hospital.. They also stated that a separate team should be formed for postoperative pain management in the hospital. We believe that this study will raise awareness on this issue and will contribute to the creation of algorithms for postoperative pain treatment, the establishment of pain teams, and the provision of more effective and safer health services.

**Keywords:** Postoperative pain, multimodal analgesia, pain assessment, pain team

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## Introduction

Postoperative pain is an acute pain that starts with a surgical incision and gradually decreases with the healing of the tissue (1). Acute pain encountered in the postoperative period affects the general well-being of the patients by causing conditions that disrupt the patient comfort such as nausea, vomiting and dizziness. Also, it increases postoperative morbidity and extends the duration of hospital stay. On the other hand minimizing postoperative pain is an ethical obligation. (2,3).

Despite the advances in non-invasive and invasive pain management techniques, postoperative pain management is far from optimal. (3). Studies have shown that 50-70% of patients experience postoperative pain in moderate or severe form and the pain treatment is insufficient (4,5). Difficulties in evaluating pain are caused by the fact that the same pain is experienced differently by different patients, and that it is affected by many factors such as gender, age and ethnic background. For that reason it is not possible to reach a standard in the assessment of pain level among individuals, in addition to that it is not likely for the patient to define their pain levels correctly during the postoperative period. Inadequate treatment of postoperative pain after all these difficulties may contribute to an increase in stress and depression (6).

The aim of this study is to further investigate the follow-ups and experiences of patients with acute pain, and the applied analgesia methods by anesthesiologist in Turkey.

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## Material Method

The population of this descriptive study is Anesthesiologists from Turkey who work in various health institutions. The data were obtained using a questionnaire through SurveyMonkey® (Copyright© 1999-2020 SurveyMonkey, <https://tr.surveymonkey.com>). The link for the survey was posted to all email addresses registered in the Turkish Society of Anaesthesiology and Reanimation member database (2800 members). A second notification was sent to the same email addresses on October 2016 with a notice of not to reply to the survey if it was replied after the first email. Participation in the survey was voluntary and anonymous, and there was no compensation for participation.

The questionnaire, which consists of 30 questions, includes questions about sociodemographic characteristics, workplace characteristics, the way physicians manage postoperative pain treatment and their approach towards patient follow-up.

Ethics committee approval was received for this study from the ethics committee of Çanakkale Onsekiz Mart University (Date: 07.06.2017; Approval number: 2017.11).

## Statistical analysis

SPSS (IBM SPSS Statistics for Windows, Version 20,0. Armonk, NY: IBM Corp. USA) package program was used in the statistical analysis of the data, the results were shown as mean  $\pm$  standard deviation, median (the smallest value - the largest value) and percentages of variables.

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## Results

Of the 2800 mail recipients, all anesthesiologists working in the hospitals, 315 completed the survey form, making the response rate to be 11.25%. A total of 315 people, 62.2% (n = 196) female and 37.8% (n = 119) male, participated in the study. 34.9% of the anesthesiologists participating in the study had 5-10 years of professional experience. 40% of the participants were physicians working in a state hospital. The demographic characteristics of the anesthesiologists participating in the study are shown in Table 1. Anesthesiologists from 46 cities (There are 7 regions and 81 cities in Turkey) have participated in the study. Among the answers received, respondents from big cities have a highlighted importance in the study. (Figure 1). 61.9% of the anesthesiologists participating in the questionnaire stated that they routinely perform the pain controls of the patients in the postoperative period and the visual analog scale (VAS) was the scale they used the most (41.3%). The approaches of the anesthesiologists participating in the questionnaire are shown in Table 2. Participants stated that their most important goal in reducing pain in the postoperative period was patient satisfaction (33.6%). In addition, 71.9% of the participants stated that postoperative analgesia treatment duration was not enough in their institution (Table 3). Anesthesiologists stated that they mostly preferred multimodal analgesia (25.3%) after major surgical intervention in the postoperative period, and their opinions and practical applications on this issue are shown in Table 4 and Table 5. Participants' opinions about preemptive analgesia applications and non-pharmacological methods are shown in Table 6.

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## Discussion

Our study showed us that anesthesiologist in Turkey are giving postoperative pain treatment support and they are using various pain level scales. It was observed that intermittent non-steroidal anti-inflammatory drug (NSAID) administration and opioids were preferred for postoperative pain treatment of the patients. On the other hand, anesthesiologists think that there should be a separate team for postoperative pain and stated that they use methods based off on their own experience instead of routine protocols.

Özer and Bölükbaşı reported that according to their study 93.7% of the patients who underwent surgery complained of severe pain in the postoperative period (7). Since pain is an important postoperative problem, many guidelines on postoperative pain management are published around the world. Anesthesiologists participating in our study also stated that they benefited from national and international protocols, but mostly they used various methods shaped by their personal experiences depending on situational needs.

Although the pain in the postoperative period is acute, it can become chronic when not managed. According to Macrae's study, it was reported that the post-surgical chronic pain of patients who underwent surgical procedures in the United Kingdom (UK) and the United States of America (USA) varies depending on the type of surgery and the ratio ranges between 5% to 85% (8). In our study, anesthesiologists stated that their most important aim in reducing patient satisfaction. Other goals were observed to be postoperative pain is to reduce the side effects of insufficient pain management and reducing postoperative morbidity.

In multimodal analgesia, there are local anesthetic, non-steroid anti-inflammatory, opioid, paracetamol drugs as well as anxiolytic and neuroleptic, anticonvulsant, antidepressant drugs called adjuvant analgesics. In addition to pharmacological treatment, non-pharmacological

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treatments are also applied (9, 10). In the study conducted by Lorentzen et al. with 424 patients, strong opioids, weak opioids, NSAIDs, paracetamol group drugs were administered to the patients alone or in combination. The interview with the patients shows that 4.2% of the patients did not use analgesics, and the pain control was not sufficient in 45.5% of the patients, even though 88.4% of the patients were satisfied or very satisfied with the pain treatment (11). A significant portion of the participants stated that they preferred multimodal analgesia, especially after major surgical interventions. In addition, only 6% of the anesthesiologists participating in the study stated that they used non-pharmacological methods for postoperative pain treatment. As a non-pharmacological method, psychological premedication is mostly preferred.

Opioids administered intravenous (IV) with patient controlled analgesia (PCA) are more effective than conventional intramuscular (IM) or IV opioid applications. In the literature, it has been shown that the risk of respiratory depression in PCA applications (0.25-0.50%) is lower than intermittent IM opioid administration (0.9%) and it also does not affect respiratory functions (12,13). In the "Postoperative Pain Management Guide" published by the Turkish Society of Anaesthesiology and Reanimation, it is reported that PCA is superior to IM injection applications, provides effective analgesia and causes less side effects (14).

In addition, the participants stated that they can not adequately manage the postoperative pain in the institution where they are working, and this situation is mostly associated with the excess workload and lack of personnel / time. They also stated that they think a separate team should be formed for postoperative pain management in the hospital.

It is quite clear that postoperative pain as a manifestation of acute pain has more complex pathophysiological effects than usually thought. It is important to understand that postoperative pain management is not only a humanitarian task to ease the suffering of patient and increase

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patient satisfaction, but also that acute postoperative pain management is associated with postoperative morbidity and mortality. As a result of our study, it was determined that anesthesiologists in our country were aware of the necessity of postoperative pain treatment and took an active role in the unit they work.

## **Conclusion**

Considering the current workload of the anesthesiologists, it was concluded that a separate pain team, which should be responsible for postoperative pain treatment, should be formed. That way, we think that it will be possible to use different analgesia methods, and that patient follow-up in the postoperative period will be performed more efficiently with a holistic and multidisciplinary approach.

## **Main Points**

- Anesthesiologist in Turkey are giving postoperative pain treatment support and they are using various pain level scales.
- Anesthesiologists were aware of the necessity of postoperative pain treatment and took an active role in the unit they work.
- Anesthesiologists participating in our study also stated that they benefited from national and international protocols, but mostly they used various methods shaped by their personal experiences depending on situational needs.
- Considering the current workload of the anesthesiologists, it was concluded that a separate pain team, which should be responsible for postoperative pain treatment, should be formed.

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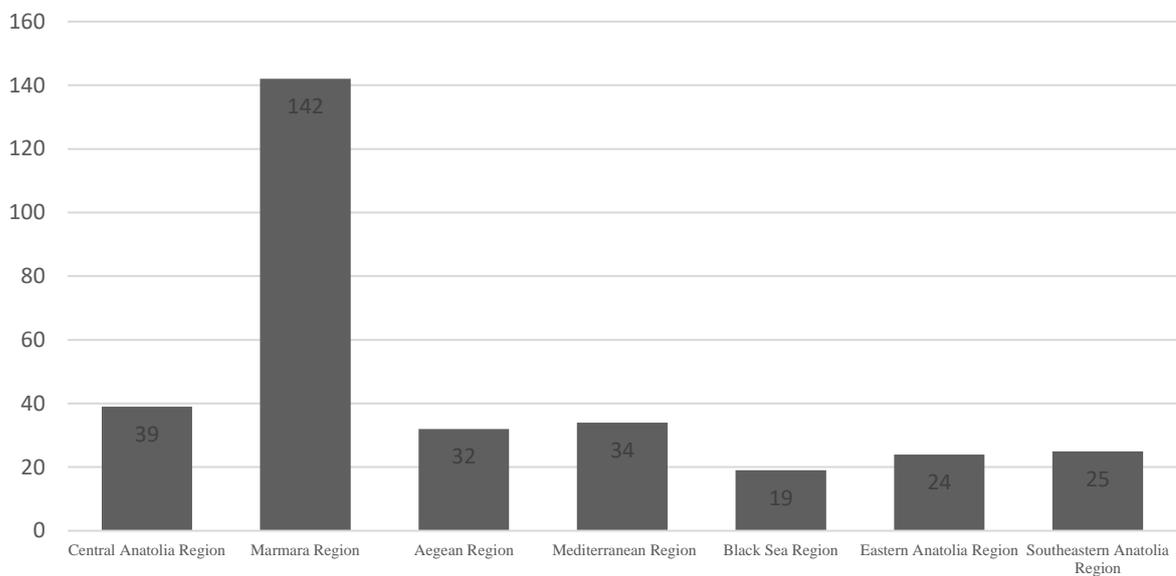
## References

1. Turhan KSC. Postoperatif ağrı tedavisi. *Turkiye Klinikleri J Anest Reanim-Special Topics*. 2008;13: 117-22.
2. Meissner W, Mescha S, Rothaug J et al. Quality improvement in postoperative pain management: results from the QUIPS project. *Dtsch Arztebl Int*. 2008;105: 865.
3. Corke P. Postoperative pain management. *Aust Prescr*. 2013;36: 202-5.
4. Apfelbaum J, Chen C, Mehta S, Gan T. Postoperative pain experience: results from a national survey suggest postoperative pain continues to be undermanaged. *Anesth Analg*. 2003;97: 534-40.
5. Samina I, Khurram S, Faraz S. Observational study to assess the effectiveness of postoperative pain management of patients undergoing elective cesarean section. *J Anaesthesiol Clin Pharmacol*. 2012;28: 36-40
6. Wu CL, Raja SN. Treatment of acute postoperative pain. *The Lancet*. 2011;377: 2215-25.
7. Nadiye Ö, Bölükbaş N. Postoperatif dönemdeki hastaların ağrıyı tanımlamaları ve hemşirelerin ağırlı hastalara yönelik girişimlerinin incelenmesi. *Anadolu Hemşirelik Ve Sağlık Bilimleri Dergisi* 2010;4: 7-17.
8. Macrae W. Chronic post-surgical pain: 10 years on. *Br J Anaesth*. 2008;101: 77-86.
9. Yeğın A, Erdoğan A, Hadımiođlu N. Toraks cerrahisinde ameliyat sonrası analjezi. *Türk Göğüs Kalp Damar Cer Derg*. 2005;13: 418-25.
10. Akkaya T, Özkan D. Cerrahi sonrası kronik ağrı. *Ağrı*. 2009;21: 1-9.
11. Lorentzen V, Hermansen IL, Botti M. A prospective analysis of pain experience, beliefs and attitudes, and pain management of a cohort of Danish surgical patients. *Eur J Pain*. 2012;16: 278-88.

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12. Erdine S. PCA (Patient Controlled Analgesia). Ağrı. 3. Baskı. İstanbul: Nobel Tıp Kitabevleri; 2007. s. 188-97.
13. Grass JA. Patient-controlled analgesia. Anesth Analg. 2005;101: 44-61.
14. TARD. “Postoperatif ağrı tedavisi kılavuzu” Şubat 2020.  
<http://www.tard.org.tr/assets/kilavuz/postoperatifagrikilavuzu.pdf#viewer.action=download>

**Figure 1. Distribution of anesthesiologists by geographical regions**



**Table 1: Anesthesiologist’s demographic statistics**

Variables	n (%)
<b>Gender</b>	
<i>Female</i>	196 (62,2)
<i>Male</i>	119 (37,8)
<b>Institutions of Work</b>	

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<i>Public Hospital</i>	126 (40,0)
<i>University Hospital</i>	86 (27,3)
<i>Education and Research Hospital</i>	68 (21,6)
<i>Private Hospital</i>	35 (11,1)
<b>Working times</b>	
<i>0-3 year</i>	59 (18,7)
<i>3-5 year</i>	52 (16,5)
<i>5-10 year</i>	110 (34,9)
<i>10-20 year</i>	66 (21,0)
<i>Over 20 years</i>	28 (8,9)

#: column percentage

**Table 2. Distribution of participants according to their approach towards postoperative pain treatment.**

<b>Variables</b>	<b>n (%)</b>
<b>Do you routinely evaluate your patients' postoperative pain level status?</b>	
<i>Yes</i>	195 (61,9)
<i>No</i>	43 (13,7)

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	<i>Sometimes</i>	77 (24,4)
<b>Do you use measurement methods and scales to detect pain levels in postoperative patients?</b>		
	<i>Yes</i>	178 (56,9)
	<i>No</i>	135 (43,1)
<b>If you are using measurement methods and pain scales for pain level detection; what scales do you use frequently?</b>		
	<i>VAS</i>	177 (41,3)
	<i>Numerical Rating Scales</i>	54 (12,6)
	<i>The Faces Pain Scale</i>	77 (17,9)
	<i>The McGill Pain Questionnaire</i>	3 (0,7)
	<i>The West Haven-Yale Multidimensional Pain Inventory</i>	-
	<i>The Dartmouth Pain Questionnaire</i>	-
	<i>I Evaluate According to the Patient's Reaction to Pain</i>	118 (27,5)
<b>How often do you use the postoperative pain monitoring measurement methods and scales?</b>		
	<i>1 time a day</i>	43 (14,0)
	<i>2 times a day</i>	42 (13,6)
	<i>More than 2 times a day</i>	48 (15,6)
	<i>When needed</i>	175 (56,8)
<b>Is there a 'pain team' serving postoperative patients in the hospital where you work?</b>		
	<i>Yes</i>	46 (14,7)
	<i>No</i>	267 (85,3)
<b>Who works in pain teams in institutions with pain teams?</b>		
	<i>Anesthesiologist</i>	29 (29,3)
	<i>Anesthesia Assistant</i>	25 (25,3)
	<i>Pain Technician</i>	24 (24,2)
	<i>Pain nurse</i>	19 (19,2)
	<i>Surgeon</i>	2 (2,0)
	<i>Physiotherapist</i>	-

%: Column percentage, %\*: Calculated over the total answer given, VAS: Visual Analogue Scale

**Table 3. Approach to pain management at the institution of employment.**

<b>Variables</b>	<b>n (%)</b>
<b>Do you use protocols during postoperative pain treatment?*</b>	
<i>Yes, international protocols</i>	52 (16,4)

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	<i>Yes, national protocols</i>	29 (9,1)
	<i>Yes, our own protocols taken from the literature and arranged according to our own needs</i>	120 (37,9)
	<i>No, I don't use a protocol</i>	116 (36,6)
<b>What clinical results do you expect in patients who are getting postoperative pain support?</b>		
	<i>To reduce side effects as a result of insufficient postoperative pain control</i>	204 (23,0)
	<i>Patient satisfaction</i>	298 (33,6)
	<i>Surgeon satisfaction</i>	30 (3,4)
	<i>Postoperative reduction in morbidity</i>	183 (20,7)
	<i>Decreased frequency of nausea and vomiting</i>	58 (6,5)
	<i>Shortening the discharge time</i>	91 (10,3)
	<i>Reduce cost</i>	22 (2,5)
<b>What do you think should be done to improve postoperative pain treatment and apply it under appropriate conditions?</b>		
	<i>Creating a separate team for postoperative pain management in the hospital</i>	209 (34,9)
	<i>To guide treatments by adhering to protocols</i>	129 (21,5)
	<i>To train health care professionals for pain management</i>	176 (29,4)
	<i>To inform patients in the preoperative period</i>	85 (14,2)
<b>Do you think that postoperative pain treatment is effective and the treatment duration is enough in the institution where you work?</b>		
	<i>Yes</i>	71 (22,7)
	<i>No</i>	242 (77,3)
<b>If you think that the duration of the treatment is not enough in the institution where you work, what are the obstacle factors for postoperative pain treatment?</b>		
	<i>Lack of staff and time</i>	212 (42,4)
	<i>Lack of equipment</i>	84 (16,8)
	<i>Lack of medication</i>	22 (4,4)
	<i>Workload excess</i>	157 (31,4)
	<i>Insufficient patient information</i>	25 (5,0)

%; Column percentage, %\*: Calculated over the total answer given.

**Table 4. Distribution of approaches towards postoperative pain treatment according to surgery.**

Variables	n (%)
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<b>What is your most preferred method for postoperative pain treatment for minor surgical interventions (herniography, gynecological laparoscopy, varicose veins, etc.)?</b>	
<i>Paracetamol</i>	141 (24,5)
<i>Opioid</i>	156 (27,1)
<i>NSAID</i>	178 (31,0)
<i>Local anesthetic infiltration of the wound site</i>	39 (6,8)
<i>Peripheral nerve blockade</i>	26 (4,5)
<i>Systemic opioid (PCA)</i>	35 (6,1)
<b>What is your most frequently preferred method for postoperative pain treatment for medium-sized surgical interventions (hip replacement, hysterectomy, maxillofacial surgery, etc.)?</b>	
<i>Paracetamol</i>	72 (11,7)
<i>Opioid</i>	143 (23,3)
<i>NSAID</i>	152 (24,8)
<i>Local anesthetic infiltration of the wound site</i>	18 (2,9)
<i>Peripheral nerve blockade</i>	62 (10,1)
<i>Systemic opioid (PCA)</i>	166 (27,2)
<b>What is your most preferred method for postoperative pain relief for major surgical interventions (thoracotomy, major abdominal surgery, knee surgery, etc.)?</b>	
<i>Paracetamol</i>	33 (5,5)
<i>Opioid</i>	109 (18,1)
<i>NSAID</i>	85 (14,1)
<i>Local anesthetic infiltration of the wound site</i>	32 (5,3)
<i>Peripheral nerve blockade</i>	59 (9,8)
<i>Systemic opioid (PCA)</i>	132 (21,9)
<i>Multimodal analgesia</i>	152 (25,3)

%, Column percentage, %\*: Calculated over the total answer given. PCA: patient controlled analgesia, NSAID: Non-steroidal anti-inflammatory drug

**Table 5. Distribution of preferred methods in postoperative pain treatment**

<b>Variables</b>	<b>n (%)</b>
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<b>Which method do you use most frequently during postoperative pain treatment?</b>	
<i>Intravenous patient controlled analgesia</i>	157 (21,9)
<i>Epidural patient controlled analgesia</i>	137 (19,1)
<i>Peripheral nerve blockade</i>	52 (7,3)
<i>Intermittent NSAID administration</i>	186 (25,9)
<i>Intramuscular/intravenous opioid as needed</i>	177 (24,7)
<i>Peripheral nerve blockade (PCA)</i>	8 (1,1)
<b>When determining your method of choice, what are you emphasizing the most?</b>	
<i>Physical state of the case</i>	122 (14,0)
<i>Severity of the pain</i>	247 (28,4)
<i>Severe pain expected time</i>	71 (8,2)
<i>Location and nature of the surgical intervention</i>	229 (26,4)
<i>Personnel and technical facilities</i>	75 (8,6)
<i>The risks of the method to the patient</i>	125 (14,4)
<b>Which one do you prefer most frequently as a non-opioid in the postoperative multimodal approach?</b>	
<i>Paracetamol</i>	127 (36,5)
<i>NSAID</i>	186 (53,4)
<i>Alpha2-Adrenergic Agonist (clonidine, dexmedetomidine)</i>	1 (0,3)
<i>Gabapentin and pregabalin</i>	1 (0,3)
<i>Ketamine</i>	1 (0,3)
<i>Lidocaine infusion</i>	3 (0,9)
<i>Peripheral nerve blockade</i>	13 (3,7)
<i>Lokal anesteziik infiltrasyonu</i>	16 (4,6)
<b>Which opioids, that you can find in Turkey, do you prefer more frequently?</b>	
<i>Hydromorphone (peroral)</i>	4 (1,2)
<i>Fentanyl (enteral)</i>	59 (18,2)
<i>Meperidine (enteral)</i>	96 (29,6)
<i>Morphine (enteral/peroral)</i>	67 (20,6)
<i>Codeine (peroral)</i>	5 (1,5)
<i>Tramadol (enteral/peroral)</i>	94 (28,9)
<b>Which application method of pharmacological agents do you frequently prefer during postoperative pain treatment?</b>	
<i>(Pro re nata) Application when necessary</i>	44 (13,5)
<i>Periodic application (intermittent)</i>	136 (41,7)
<i>Continuous infusion</i>	15 (4,6)
<i>PCA</i>	131 (40,2)

#: Column percentage, PCA: patient controlled analgesia, NSAID: Non-steroidal anti-inflammatory drug

**Table 6. Distribution of preferred methods in postoperative pain treatment**

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Variables	n (%)
<b>Do you prefer preemptive analgesia for postoperative analgesia?</b>	
<i>Yes</i>	180 (57,3)
<i>No</i>	134 (42,7)
<b>If the answer is no; what are the obstacles to preemptive analgesia preference?</b>	
<i>Lack of scientific evidence</i>	14 (7,0)
<i>Difficulty of putting into practice</i>	96 (48,1)
<i>Adjusting the timing and duration of treatment</i>	49 (24,8)
<i>Failure to adjust the optimal dose and timing of drugs</i>	20 (10,1)
<i>Patient selection</i>	16 (8,0)
<i>Cost effectiveness rate</i>	4 (2,0)
<b>Do you use non-pharmacological methods for the treatment of postoperative pain?</b>	
<i>Yes</i>	19 (6,0)
<i>No</i>	296 (94,0)
<b>If the answer is yes; which non-pharmacological methods do you prefer?</b>	
<i>TENS</i>	6 (25,0)
<i>Electrode Implantation</i>	1 (4,2)
<i>Acupuncture</i>	4 (16,7)
<i>Psychological premedication</i>	10 (41,6)
<i>Hypnosis</i>	2 (8,3)
<i>Biofeedback</i>	-
<i>Cryoanalgesia</i>	1 (4,2)

%; Column percentage, %\*: Calculated over the total answer given, TENS: Transcutaneous Electrical Nerve Stimulation

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