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## **Nonpharmacological pain management methods used by post-operative patients: A cross-sectional study**

### **Cover Page Footnote**

The author would like to thank all participants who participated in this study.

## Author

Associate Professor Senay Karadag Arli  
PhD  
Department of Health Sciences,  
Ondokuz Mayıs University, Turkey

# Nonpharmacological pain management methods used by post-operative patients: A cross-sectional study

## Abstract

**Objectives:** Surgical patients use many nonpharmacological methods to manage pain after surgery. Knowing these methods and relieving the patient's surgical pain will increase the quality of care. This study aims to examine the nonpharmacological pain management methods used by surgical patients and identify significant relationships between gender and participants' clinical characteristics.

**Method:** The study was conducted using a cross-sectional and descriptive design with the participation of 225 patients in a public hospital in eastern Turkey. Data collection was done using the patient identification and clinical characteristics form. Descriptive statistics and chi-square test were used in the analysis of the data.

**Results:** A significant correlation was determined between the patients' post-operative pain level and gender ( $p < 0.01$ ). A significant correlation was also found between feeling pain relief after the nonpharmacological method and gender ( $p < 0.05$ ). It was determined that there was a significant relationship between the nurse's suggestion of a nonpharmacological method and gender ( $p < 0.01$ ).

**Conclusion:** It was determined that the majority of the patients used more than one nonpharmacological method (massage, music, prayer, deep breathing etc.) and stated that their pain decreased after the nonpharmacological method. Therefore, more interventional nursing studies should be made to show the effectiveness of nonpharmacological methods in pain management.

**Keywords:** nonpharmacological method, pain management, post-operative

## Introduction

Due to its nature, pain management requires care that considers psychological, social and cultural factors as well as biological. Modern western medicine has been focused on the aetiology of pain, while ignoring comorbidities and other factors that may affect pain. Integrative health practices offer more comprehensive treatment options by considering the individual's condition as a whole and by considering modern

western medicine treatment and complementary practices together. Pain affects the body, soul and mental processes of the individual, and the use of complementary methods in pain management enables the patient to participate more effectively in pain management. Integrative approaches with individual participation increase treatment choices and improve self-management with patient-centred treatment of complex symptoms.<sup>1-3</sup>

Surgical interventions are an important cause of pain; and pain is one of the most common problems experienced by patients in the post-operative period. Post-operative pain management is a major concern for surgical patients. Ineffective pain relief leads to various pathophysiological and psychological problems that may hinder post-operative recovery.<sup>4,5</sup> If in pain, patients may avoid movement, mobilisation and exercise, and this may cause complications related to inactivity.<sup>3</sup> Furthermore, inadequate pain control increases the risk of major cardiac events and is associated with patient complications such as increased sympathetic activity, poor mobilisation, venous thrombosis, atelectasis, wound infection and development of chronic pain syndrome as well as longer hospital stays and poor patient experience.<sup>6</sup> Post-operative pain can also increase overall health care costs due to prolonged hospital stays and increased hospital readmission rates.<sup>7,8</sup>

Nurses are required to take an active role in pain control as nurses are with the patient longer than other health care team members, and use empathy skills to guide the patient in coping with pain as well as monitoring the results of interventions.<sup>9</sup> Adams et al.<sup>10</sup> found that the knowledge levels and attitudes of nurses on post-operative pain management were generally insufficient. For this reason, there is a need for frequent in-service training on pain management for nurses working in surgical units.<sup>10</sup>

In addition to using analgesics for the reduction or elimination of post-operative pain, determining the patient's pain and anxiety levels, and making decisions about and implementing nonpharmacological

interventions, it is also important to evaluate the patient's reactions and the effectiveness of interventions, and nurses play an active role in these evaluations.<sup>2,11,12</sup> This study examined the nonpharmacological methods used by post-operative surgical patients for pain and assessed the relationships between gender and participants' clinical characteristics.

## Method

### Design and participants

This study used a cross-sectional and descriptive design. The population of the study consisted of patients who were aged 18 and over, were able to communicate, voluntarily accepted to participate in the study and were hospitalised between November 2018 and February 2019 in the surgical clinics of a public hospital located in eastern Turkey.

### Data collection

Before the study, the researcher informed participants about the research and its purpose, and their verbal and written consents were obtained. The data were collected in face-to-face interviews, that lasted 20–30 minutes using a questionnaire form.

### Instrument

The patient identification and clinical characteristics form was created, based on the literature,<sup>3,13–15</sup> to collect data. The form was a questionnaire consisting of 12 items and including personal information, statements about pain and nonpharmacological methods.

### Analysis

The data were analysed using the SPSS 21.0 package program. The normality of the data was evaluated

using the Shapiro-Wilk test. The data were not normally distributed. Number, percentage distribution and mean were used in the analysis of the data. Chi-square test was used to analyse the relationships between categorical variables;  $p < 0.05$  was considered statistically significant.

## Ethics approval

Ethics approval was received from the ethical board of the Agri Ibrahim Cecen University's Scientific Research Ethics Committee (approval date: 12 November, 2018; approval number: 95531838-050.99) before initiation of the study. The patients participating in the study were informed about the aim and design of the study, and their written consent was obtained.

## Results

Socio-demographic and clinical characteristics of the 225 surgical patients who participated in the study are given in Table 1. Participants were aged from 18 to 85 years with a mean age of  $51.59 \pm 19.53$ , 123 participants (54.7%) were female and 201 (89.3%) had not completed high school. Post-operative pain was reported by 206 (91.6%) of participants and rated as light ( $n=68$ , 30.2%), medium ( $n=114$ , 50.7%) or severe ( $n=31$ , 27.25%). Nonpharmacological pain relief methods were used by 209 (92.9%) participants, the majority ( $n=204$ , 90.7%) used a combination of methods (massage, music, prayer, deep breathing etc.), and 178 (79.1%) participants stated that their pain decreased after using the nonpharmacological method. It was determined that 173 (76.9%) of the patients reported that nurses recommended nonpharmacological methods; 151 (67.1%) participants reported that the nurses recommended more than one nonpharmacological method.

**Table 1: Socio-demographic and clinical characteristics of surgical patients (N=225)**

Variables		n	%
Age in years	18–85	51.59 (Mean)	±19.53 (SD*)
Gender	Female	123	54.7
	Male	102	45.3
Educational status	Illiterate	91	40.4
	Primary school	110	48.9
	High school	24	10.7
Post-operative pain reported	Post-op day 1	91	40.4
	Post-op day 2	45	20.0
	Post-op day 3	24	10.7
	Post-op day 4	65	28.9
Post-op pain reported	Yes	206	91.6
	No	19	8.4
Pain level	None (0)	12	5.3
	Light (1–3)	68	30.2
	Medium (4–6)	114	50.7
	Severe (7–10)	31	13.8
Nonpharmacological pain relief used post-operatively	Yes	209	92.9
	No	16	7.1
Method of nonpharmacological pain relief used	Praying	6	2.7
	Positive thinking	12	5.3
	Chat	1	0.4
	Cold application	2	0.9
	Multiple methods**	204	90.7
Reduction in pain using nonpharmacological pain relief method	Yes	178	79.1
	No	47	20.9
Nurse recommended a nonpharmacological pain relief method	Yes	173	76.9
	No	52	23.1
Method of nonpharmacological pain relief recommended by a nurse	Praying	20	8.9
	Deep breathing	28	12.4
	Positive thinking	9	4
	Dreaming	9	4
	Physical exercise	8	3.6
	Multiple methods**	151	67.1

\*standard deviation

\*\*massage, music, prayer, deep breathing etc.

Table 2 compares clinical characteristics of female and male participants. There was no significant relationship between gender and the pain reported on post-operative days 1 to 4 ( $p>0.05$ ). A significant relationship was found between gender and the level of post-operative pain reported, the use of nonpharmacological methods and the most commonly used nonpharmacological methods ( $p<0.01$ ). A significant relationship was also found between gender and feeling pain relief after using nonpharmacological pain relief methods ( $p<0.05$ ). It was determined that there was a significant relationship between gender and nurse's suggestion of a nonpharmacological method and the nonpharmacological methods suggested ( $p<0.01$ ).

## Discussion

It is shown in the literature that distraction is an effective nonpharmacological nursing intervention to control short-term and temporary pain.<sup>5,16–20</sup> Distraction can be achieved through a variety of techniques including progressive muscle relaxation, meditation and rhythmic breathing. Rhythmic breathing is an effective technique to reduce patients' pain and therefore it has been suggested as a pain control technique after coronary artery bypass graft.<sup>20</sup> Massage, in particular hand or foot massage, has also been recommended as a nonpharmacological method to reduce post-operative pain in adult patients.<sup>21</sup>

The current study found that the majority of nurses recommended nonpharmacological methods to patients after surgery. Nurses have an important role in patient preparation and the management of patients' pain and anxiety. They are

**Table 2: Comparison of clinical characteristics of male and female participants**

Variables		Female (n=123)	Male (n=102)	Test value and p
Post-operative pain reported	Post-op day 1	48	43	$\chi^2=6.949$ 0.074
	Post-op day 2	32	13	
	Post-op day 3	13	11	
	Post-op day 4	30	35	
Post-op pain reported	Yes	113	93	$\chi^2=0.035$ 0.852
	No	10	9	
Pain level	None (0)	3	9	$\chi^2=13.788$ 0.003*
	Light (1–3)	44	24	
	Medium (4–6)	66	48	
	Severe (7–10)	10	21	
Nonpharmacological pain relief used post-operatively	Yes	120	89	$\chi^2=8.966$ 0.003*
	No	3	13	
Most commonly used nonpharmacological pain relief methods used	Praying	0	6	$\chi^2=16.537$ 0.002*
	Positive thinking	3	9	
	Chat	0	1	
	Cold application	0	2	
	Multiple methods**	120	102	
Reduction in pain using nonpharmacological pain relief method	Yes	105	73	$\chi^2=6.423$ 0.011**
	No	18	29	
Nurse recommended a nonpharmacological pain relief method	Yes	105	68	$\chi^2=10.972$ 0.001*
	No	18	34	
Method of nonpharmacological pain relief recommended by a nurse	Praying	10	10	$\chi^2=24.412$ 0.000*
	Deep breathing	4	24	
	Positive thinking	4	5	
	Dreaming	3	6	
	Physical exercise	5	3	
	Multiple methods**	97	54	

\*p<0.01, \*\*p<0.05

not only responsible for prescribed medication administration but can also support pain management with a variety of complementary therapies.<sup>19,22–24</sup>

In a systematic review by Fan and Chen,<sup>7</sup> all studies reported significant beneficial effect of nonpharmacological interventions for pain relief. The authors concluded that the available evidence, from a limited number of studies, suggests a potential role for nonpharmacological interventions such as relaxation therapy, daydreaming, music and audiovisual distraction in the pain management of patients after orthopedic surgery.<sup>7</sup> The current study found that nurses recommended more than one nonpharmacological pain relief method to patients after surgery.

Bayoumi et al.'s study into nonpharmacological pain management techniques used by nurses<sup>25</sup> found that 93.6 per cent of respondents used emotional support and 68.1 per cent used distraction as pain management techniques. This is consistent with a study by Kidanemariam et al.,<sup>26</sup> where the top three techniques nearly always or always used by respondents were comfort and reassurance (92.2% of respondents), positioning (84.4%) and breathing techniques (81.7%).

Nonpharmacological pain management has been found to be effective, particularly in managing moderate to mild pain intensity.<sup>25–27</sup> The majority of patients participating in the current study experienced moderate post-operative pain and stated that their pain decreased after using one or more nonpharmacological pain relief methods.

Nurses play a key role in implementing effective nonpharmacological pain relief in surgical services<sup>28,29</sup>; however,

nurses reported barriers to this implementation – lack of time, patient reluctance and patients' health beliefs. Nurses reported that nonpharmacological pain treatment was cheaper and had fewer side effects than drug treatment.<sup>25,30,31</sup> In addition, available evidence has shown that nurse-led educational interventions are effective in reducing acute pain for post-operative patients and are more effective when administered with nonpharmacological interventions.<sup>29,32,33</sup>

An individual's perception of pain is influenced by a variety of personal and environmental factors such as age, gender, educational background, culture, personality and previous pain experience.<sup>34,35</sup> The current study found a significant relationship between gender and the level of post-operative pain, the use of nonpharmacological methods and the most commonly used nonpharmacological methods. A study by Shoqirat et al.<sup>36</sup> reported that nurses perceived male patients as more tolerant of pain than female patients. In contrast to this, the current study found that the proportion of patients who reported severe pain was higher in male patients (21 of 102, 20.6%) than female (10 of 123, 8.1%).

### Study limitations

The study was based on the statements of patients in only one centre. Results may have been affected by the type of surgery the patients experienced and the dose of pharmacological treatment given alongside the nonpharmacological pain relief. These factors might influence recovery time, pain intensity and, thus, perception of pain reduction. Another potential bias might stem from the illiterate participants (40.4%) since the instrument of

the study was a questionnaire. The self-reported data may also introduce recall and confirmation bias from all participants. A sufficient transparency of these biases might provide a valuable lesson for future studies. Therefore, the results can be generalised to only the research group.

### Conclusion

Effective post-operative pain control is very important for patients, but also very important for health care professionals. Nurses can create a curative environment and provide comfort after surgery by using nonpharmacologic methods for relieving post-operative pain. Continuous up-to-date training on various pain relief methods and which patients are likely to respond well to nonpharmacological methods should be provided and it is recommended to form a team on this subject. These measures will lead to increased patient satisfaction, improved patient outcomes after surgery, and better use of health resources.

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### Conflict of interest

The author declares no conflicts of interest.

### Author contribution

The author is involved in the design of the work, data collection, data analysis, interpretation, drafting the article, critical revision of the article and final approval of the version to be published.

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