



# Investigation Of Surgical Nurses Knowledge and Practice Levels for Multimodal Analgesia

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## Abstract

**Objective:** This was a descriptive study with the aim of determining knowledge and practice levels of nurses working in surgical clinics for multimodal analgesia and its administration.

**Materials and Methods:** The study was conducted with 132 nurses working in the surgical clinics of three training and research hospitals. The data were collected between April and June of 2018 using the "Knowledge and Application Questionnaire on Multimodal Analgesia" developed by the researchers. The data were analyzed using number, percentage, and the Chi-square test.

**Results:** The mean age of the nurses who participated in the study was 37.5 years. Further, 47.7% had been working for 11–20 years, and 60.6% had a bachelor's degree. It was determined that 59.1% of the nurses did not receive any pain training, and 93.2% did not receive any education about multimodal analgesia. In the Knowledge and Application Questionnaire on Multimodal Analgesia, they obtained a score of  $9.83 \pm 2.38$  points, which showed that the nurses' knowledge and practice score for multimodal analgesia was moderate.

**Conclusion:** In this study, it was observed that the nurses were in need of knowledge about multimodal analgesia management and non-pharmacological interventions. It seems important that hospital administrators should initiate in-service training programs, including effective pain management and nursing interventions.

**Keywords:** Nurse; multimodal analgesia; surgery

## Introduction

Pain is a symptom that is felt in different parts of the body for various reasons, leading to physiological and psychological reactions and causing the individual to seek help. The perception of pain is affected by many emotional and behavioral factors, such as environment, gender, culture, education, and experiences of the individual [1]. One of the most important causes of pain that can be caused by many factors, such as accidents, traumas, and acute and chronic diseases, throughout the life is surgical interventions. Pain after surgical interventions is an acute experience that begins with tissue destruction following surgical trauma and progressively decreases and ends with tissue healing. Postoperative pain is the most important factor in the development of complications, such as pneumonia, thrombosis and ileus; conversely, long and severe pain

with ineffective pain management leads to prolonged hospital stay and increased opioid use [2-4]. In the management of postoperative pain, adequate analgesia may not be achieved with a single agent [5].

Recently, multimodal analgesia method has been used for postoperative pain management [5-6]. In multimodal analgesia, a lower dose of analgesic is used due to the additive and synergistic effects of drugs; therefore, fewer side effects occur and more effective analgesia is provided. For this purpose, non-steroidal anti-inflammatory drugs, which are combined with opioids for postoperative analgesia in major surgeries, are widely used [7,8]. Although nurses have an important role in the evaluation and management of pain, Senyuz and Kosasli reported that pain is

evaluated incorrectly and treated insufficiently because nurses lack knowledge in the assessment and pharmacological and non-pharmacological treatment of pain [9]. In the pain management process, because pain is a person-specific symptom, nurses should have sufficient knowledge for taking patients' history, making continuous observation, and determining an appropriate pain assessment method. In order to evaluate effectiveness of pain management, it is necessary to use a scale and check whether the intervention is effective on the patient's pain [10].

For effective assessment and control of pain and prevention of pain-related complications, nurses' knowledge on multimodal analgesia management and application in multidisciplinary teams was considered to be important, and the study was planned to determine the knowledge and practice levels for multimodal analgesia and its administration of nurses working in surgical clinics.

## Objective

The study was conducted as a descriptive study in order to determine the knowledge and practice levels of nurses working in surgical clinics for multimodal analgesia and its administration.

## Materials and Methods

### Population Sample

The initial study population comprised 190 nurses working in general surgery, neurosurgery, urology, otolaryngology, orthopedics and traumatology, and cardiovascular surgery clinics of three training and research hospitals. The study was completed with 132 nurses who agreed to participate in the research. The data were collected between April and June 2018.

### Data Collection Tools

In this study, a literature review was conducted and the "Knowledge and Application Questionnaire on Multimodal Analgesia" developed by the researchers [11-15]. was utilized. This form consists of two parts. In the first part, there are socio-demographic questions, including descriptive characteristics of nurses, and in the second part, there are questions that determine the level of knowledge about multimodal analgesia and its administration. A total score of knowledge and practice was calculated by giving a score of 1 for every correct answer for the questions in the questionnaire, and a score of 0 point was awarded for every wrong answer. Accordingly, a score of  $\leq 7.45$  points was determined as a low knowledge and practice score, a score between 7.46 and 12.21 points as medium, and a score of  $\geq 12.22$  as high. The low and high score ranges were determined by subtracting the standard deviation number of 2.38 from 9.83, which is the average knowledge and practice number, and adding the standard deviation number to this number. The values between the low and high score ranges were considered to be the medium knowledge and practice scores.

## Data Collection

After the approval of the ethics committee and permissions of the institution were obtained, the nurses were informed about the study, and their written consent was obtained. The data were collected by conducting face-to-face interviews at a convenient time during the working hours of the nurses. The interviews lasted for approximately 15–20 minutes.

## Data Evaluation

In the analysis of the obtained data, frequency distributions and Chi-square statistical methods were used with the program of IBM SPSS Statistics 15.0 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 15.0. Armonk, NY: IBM Corp.). A P value  $< 0.05$  was considered statistically significant.

## Limitations of the Study

The study aimed to reach the entire population, but it was completed with 132 nurses who agreed to participate in the research. This was a limitation of the study.

## Ethical Dimension of the Study

The study was conducted in compliance with the approval of Yıldırım Beyazıt University, Social Sciences and Humanities Ethics Committee, Ankara (23/02/2018-10) and the application permissions obtained from Atatürk Training and Research Hospital (13/04/2018-E.4834), Gulhane Training and Research Hospital (12/04/2018-E.952), and Yenimahalle Training and Research Hospital (09/04/2018-E.3902).

## Results

**Table 1:** Socio-demographic data of the nurses.

| Socio-demographic data  | n   | %    |
|-------------------------|-----|------|
| <b>Mean age</b>         |     | 37.5 |
| <b>Gender</b>           |     |      |
| Female                  | 125 | 94.7 |
| Male                    | 7   | 5.3  |
| <b>Marital status</b>   |     |      |
| Married                 | 91  | 68.9 |
| Single                  | 41  | 31.1 |
| <b>Working years</b>    |     |      |
| 1-5                     | 22  | 16.7 |
| 6-10                    | 19  | 14.4 |
| 11-20                   | 63  | 47.7 |
| 21-30                   | 27  | 20.5 |
| $\geq 31$               | 1   | 0.8  |
| <b>Education status</b> |     |      |
| High school             | 6   | 4.5  |
| Associate degree        | 29  | 22   |
| Graduate                | 80  | 60.6 |

|                              |     |      |
|------------------------------|-----|------|
| Postgraduate                 | 17  | 12.9 |
| <b>Clinics</b>               |     |      |
| General Surgery              | 33  | 25   |
| Brain surgeon                | 32  | 24.2 |
| Orthopedics and Traumatology | 22  | 16.7 |
| Cardiovascular Surgery       | 19  | 14.4 |
| Urology                      | 16  | 12.1 |
| Ear-Nose-Throat              | 10  | 7.6  |
| <b>TOTAL</b>                 | 132 | 100  |

The mean age of the nurses participating in the study was 37.5 years. Further, 94.7% were female, 68.9% were married, 47.7% had worked for 11-20 years, and 60.6% had a bachelor's degree. Additionally, 25% of the nurses were working in general surgery, 24.2% in brain surgery, 16.7% in orthopedics, and 12.1% in urology clinics. The socio-demographic characteristics of nurses are given in (Table 1). It was determined that 59.1% of the nurses

who participated in the study did not receive pain education, and 93.2% did not receive any training on multimodal analgesia (Chart 1). In the examination of the answers given by nurses on the knowledge and application about multimodal analgesia, it was determined that 94.7% gave the correct answer for the statement "Multimodal analgesia method is the use of multiple drugs instead of a single drug"; 83.3% for the statement "In multimodal analgesia, it is recommended to use drugs that affect different parts of pain pathways together in selection of drugs"; and 82.6% for the statement "Multimodal analgesia provides sufficient analgesia with drugs with additive or synergistic effects." It was determined that 69.7% of the nurses gave the wrong answer for the statement "Multimodal analgesia was initiated to be administrated to increase the effect of opioid drugs"; 59.1% for the statement "A different scale is used in the assessment of pain of patients in multimodal analgesia"; 58.3% for the statement "Non-pharmacological treatments are also performed in multimodal analgesia" (Table 2).

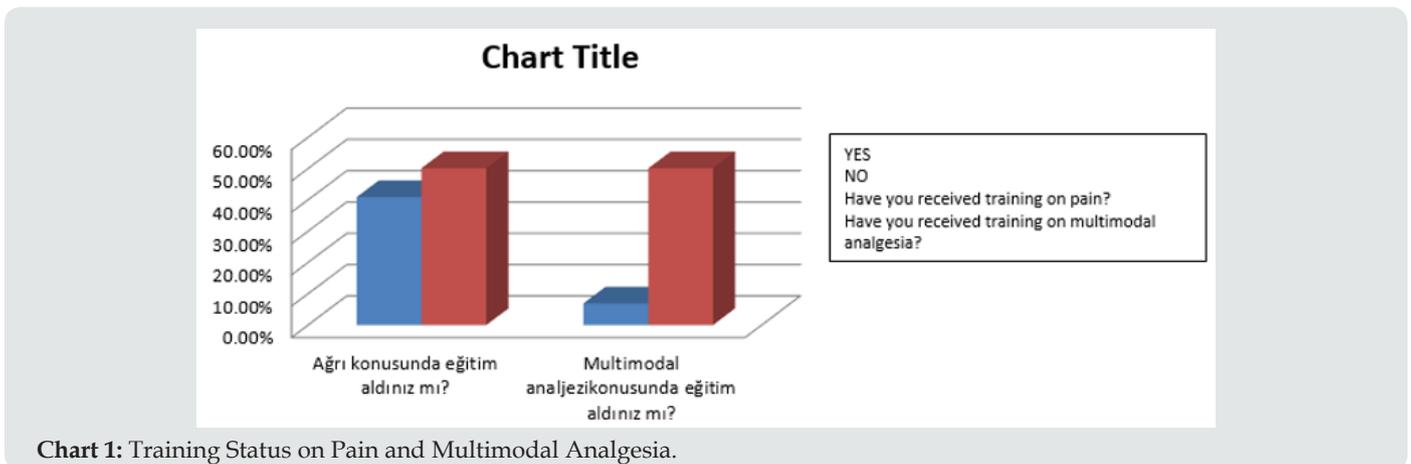


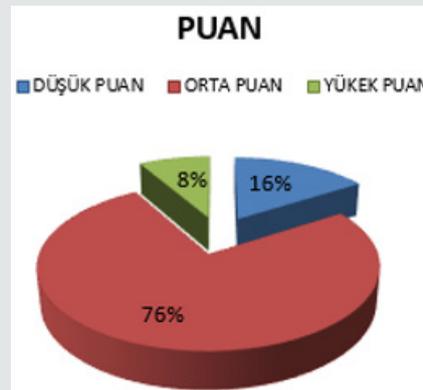
Chart 1: Training Status on Pain and Multimodal Analgesia.

Table 2:

| Questions and Answers Related to Multimodal Analgesia  | Correct % | n   | Wrong % | n  |
|--|-----------|-----|---------|----|
| Multimodal analgesia method is the use of multiple drugs instead of a single drug.   | 94.7      | 125 | 5.3     | 7  |
| Multimodal analgesia was started to be administrated to increase the effect of opioid drugs.   | 69.7      | 92  | 30.3    | 40 |
| Multimodal analgesia method is used to increase the effect of a single drug.   | 52.3      | 69  | 47.7    | 63 |
| Multimodal analgesia is used to reduce the side effects of opioid drugs.   | 65.2      | 86  | 34.8    | 46 |
| In multimodal analgesia, it is recommended to use drugs that affect different parts of pain pathways together in selection of drugs. | 83.3      | 110 | 16.7    | 22 |
| Multimodal analgesia provides sufficient analgesia with drugs with additive or synergistic effects.                                  | 82.6      | 109 | 17.4    | 23 |
| Multimodal analgesia does not have an effect on hospital stay.   | 35.6      | 47  | 64.4    | 85 |
| Multimodal analgesia only covers the postoperative process.  | 37.1      | 49  | 62.9    | 83 |
| Multimodal analgesia reduces side effects of the drugs by allowing a reduction in their doses.                                       | 64.4      | 85  | 35.6    | 47 |
| Only epidural and spinal pathways are used in multimodal analgesia.  | 43.2      | 57  | 56.8    | 75 |
| Multimodal analgesia is the least effective method compared to other analgesia methods.  | 31.1      | 41  | 68.9    | 91 |
| Non-pharmacological treatments are also performed in multimodal analgesia.   | 41.7      | 55  | 58.3    | 77 |
| A different scale is used in the assessment of pain of patients in multimodal analgesia.   | 59.1      | 78  | 40.9    | 54 |
| Opioid drugs should be used before using multimodal analgesia method.  | 50.8      | 67  | 49.2    | 65 |
| Informing patients in multimodal analgesia is among the duties of the nurse.   | 70.5      | 93  | 29.5    | 39 |
| It is necessary to obtain patient's approval in multimodal analgesia.  | 77.3      | 102 | 22.7    | 30 |

When the answers given to the “Knowledge and Application Questionnaire on Multimodal Analgesia” were evaluated out of 16 points, nurses obtained  $9.83 \pm 2.38$  points. Therefore, nurses’ knowledge and practice score on multimodal analgesia was moderate. In terms of knowledge and practice levels on multimodal analgesia, it was found that 15.9% (n=21) of the nurses had low score, 75.8% (n=100) had moderate score, and 8.3% (n=11) had high scores (Chart 2). In our study, some individual and

occupational characteristics (level of education, clinics they worked, and working year), which were considered to have an effect on the total score averages of knowledge and practice levels of the nurses on multimodal analgesia, were examined. In the statistical analysis results, when mean scores of the nurses’ knowledge and practice levels about multimodal analgesia were compared to their professional years and the clinics they worked, no significant relationship was found ( $p > 0.05$ ).



**Chart 2:** Distribution of nurses’ scores in terms of their knowledge and practice levels on multimodal. (SCORE: LOW SCORE–MEDIUM SCORE–HIGH SCORE)

## Discussion

In pains requiring severe and moderate opioid use, multimodal analgesia have advantages, such as preventing prolonged abuse of opioids, providing effective analgesia with drug use at low doses, providing early organ function recovery, early recovery, and an early discharge from the hospital [16-17]. Nurses have an important place in multimodal analgesia because they play an effective role in the assessment of pain, the implementation of treatment, follow-up of patients, monitoring the effectiveness of the practice, and providing training [18]. In a study conducted by Erden et al., it was reported that 70.2% of the nurses did not receive pain training and that hospitals ignored training on pain. In our study, it was determined that 59.1% of the nurses did not receive any training on the subject of pain in activities, such as hospital orientation training or seminars, congresses, symposiums, 93.2% did not receive any education about multimodal analgesia, and the ratio of nurses who received training was low.

It is recommended that executive nurses should plan in-service trainings and provide in-clinic training for nurses regarding pain and multimodal analgesia. Multimodal analgesia is an analgesia that aims to affect different pain pathways by using two or more analgesia and analgesia techniques and aims to use less analgesia with the synergic effect of analgesia [19-20]. In our study, it was found that most of the nurses gave the correct answers for the statements that were asked to determine the nurses’ knowledge status about the definition of multimodal analgesia and mechanism of action, such as “Multimodal analgesia method is the use of multiple drugs instead of a single drug” (94.7%), “In multimodal

analgesia, it is recommended to use drugs that affect different parts of pain pathways together in selection of drugs” (83.3%), and “Multimodal analgesia provides sufficient analgesia with drugs with additive or synergistic effects” (82.6%). It is considered that nurses working in surgery have sufficient information about the definition of multimodal analgesia.

In the study by Ozveren et al., it was reported that nurses’ knowledge level about non-pharmacological methods is not at a desired level. In a study by Bicek, it was found that nurses lack of knowledge about pharmacological methods. Similarly, De Rond et al. reported that nurses had no awareness of non-pharmacological treatment of pain. In our study, it was found that most of the nurses gave wrong answers for the statements that were asked to determine the nurses’ knowledge status about the practice of multimodal analgesia, such as “A different scale is used in the assessment of pain of patients in multimodal analgesia” and “Non-pharmacological treatments are also performed in multimodal analgesia.” The results of our study are in parallel with the literature. It was determined that the nurses’ knowledge of the administration of multimodal analgesia was not sufficient. Erden et al. reported that the knowledge and behavior score of the nurses about pain was moderate ( $10.76 \pm 1.98$ ), and they did not have sufficient knowledge about pain physiology and the pharmacological management of pain.

In the study by Lebovits et al., the nurses’ level of knowledge about pain was found to be low. In our study, the answers given to the “Knowledge and Application Questionnaire on Multimodal Analgesia” were evaluated out of 16 points, and the nurses

obtained 9.83±2.38 points. Based on this result, the nurses were found to have a medium level of knowledge and application about multimodal analgesia. Nurses have a significant role in pain control because they spend longer time with their patients during the postoperative care and treatment process [18,21]. Therefore, it is indispensable for the success of pain treatment for the nurses to be knowledgeable and experienced about pain [21-22]. The lack of sufficient knowledge and practice on this subject may result in not providing effective analgesia, and it may prevent patients from having a comfortable postoperative period. There are many complications in which pain may not be relieved.

Due to pain, anxiety, inability to move, and deep breathing, especially after abdominal and thoracic surgery, and inability to effectively cough leads to hypoxia, atelectasis, pneumonia, and lung infection [23-25]. For this reason, it is recommended that nurse executives should provide regular training programs, periodically including effective pain management and nursing interventions.

## Conclusion

In this study, it was revealed that nurses are in need of knowledge about multimodal analgesia management and non-pharmacological interventions [26-29]. It seems important for hospital managers to initiate in-service training programs, including effective pain management and nursing interventions.

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