MAK HILL Publications Research Journal of Pharmacology

Research Article
doi: 10.36478/makrjp.2024.4.5.9

Analgesic Use Patterns and Associated Factors Among Post Surgical Patients in Tertiary Care Hospital

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ABSTRACT

Effective pain management is crucial for recovery in post-surgical patients. This study explores the patterns of analgesic use and the factors influencing their selection and effectiveness in a tertiary care hospital. A retrospective analysis was conducted on 200 post-surgical patients to determine the types of analgesics used, factors affecting their choice and their perceived effectiveness. Data were collected from medical records at a single tertiary care institution, with variables including age, type of surgery, comorbidities and patient feedback on analgesic effectiveness. Of the 200 patients analyzed, 136 (68%) received analgesics post-surgery. Opioids were the most commonly used analgesic (47.5%), followed by NSAIDs (34%) and acetaminophen (11%). Combination therapies were less common (6.5%) and a minimal number of patients (1%) did not receive any analgesics. The choice of analgesic was significantly influenced by the patient's age, comorbidities and the type of surgery. Major surgeries were more likely to result in the use of opioids. Regarding effectiveness, 60% of patients reported effective pain control, while 7.5% reported ineffectiveness. Analgesic use in post-surgical patients at the tertiary care hospital predominantly involves opioids, with a significant reliance on patient demographics and surgical type to guide analgesic choices. While most patients reported effective pain management, the study highlights the need for ongoing assessment and potential refinement of pain management protocols to enhance patient outcomes.

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Key Words
Post-surgical pain management, analgesic use, opioid analgesics

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Received: 19 August 2024
Accepted: 12 October 2024
Published: 21 October 2024

Citation: Santosh Baburao Godbharle and Jadhav Amol Ramrao, 2024. Analgesic Use Patterns and Associated Factors Among Post Surgical Patients in Tertiary Care Hospital. Res. J. Pharm., 18: 5-9, doi: 10.36478/makrjp.2024.4.5.9

INTRODUCTION

The management of postoperative pain is a critical component of patient care in hospitals. Effective pain control not only enhances comfort but also accelerates recovery, reduces the risk of post-surgical complications and may even influence long-term outcomes. Despite advances in pain management protocols and the availability of various analgesics, the patterns of analgesic use and the factors influencing their utilization in post-surgical settings remain complex and require thorough investigation[1-3]. The need for pain relief post-surgery is nearly universal, Irrespective of the type of surgery performed. Various classes of medications, including opioids, non-steroidal anti-inflammatory drugs (NSAIDs) and acetaminophen, are employed to manage different intensities and types of pain. However, the choice of analgesic can be influenced by several factors, including patient-specific variables (age, sex, comorbidities), type of surgery, physician preferences, institutional protocols and even regional or cultural practices[4,5]. Studies have indicated that inadequate pain management can lead to chronic post-surgical pain, a serious complication that affects a significant proportion of patients. Chronic pain can lead to prolonged physical impairment and a diminished quality of life. Therefore, understanding the usage patterns of analgesics and the factors influencing their choice and effectiveness is paramount in optimizing post-surgical care[6,7].

Aims: To analyze the patterns of analgesic use and identify factors associated with their utilization among post-surgical patients in a tertiary care hospital.

Objectives:

- To describe the patterns of analgesic prescriptions post-surgery including the types of analgesics used.
- To identify patient-specific and clinical factors that influence the choice of analgesics in a post-surgical setting.
- To evaluate the effectiveness of prescribed analgesics in managing post-surgical pain based on patient feedback.

MATERIALS AND METHODS

Source of Data: The data for this study was retrospectively collected from the hospital's patient records, which include detailed information on patient demographics, surgical procedures, postoperative pain management regimens and patient-reported outcomes regarding pain management.

Study Design: This study employed a retrospective observational study design, analyzing existing data from patient records to understand analgesic usage patterns and their associated factors.

Study Location: The study was conducted at Vilasrao Deshmukh Government Medical College and Hospital, which is equipped with advanced surgical and postoperative care facilities.

Study Duration: Data was collected over a period of one year, from January 2023 to December 2023, to ensure a comprehensive dataset that reflects seasonal variations in surgical practices and analgesic use.

Sample Size: A total of 200 patients were included in the study based on the inclusion and exclusion criteria. This sample size was determined to be statistically significant to achieve the objectives of the study.

Inclusion Criteria: Patients aged 18 years and older who underwent surgical procedures and received postoperative analgesia were included in the study.

Exclusion Criteria: Patients with chronic pain conditions being treated prior to surgery, those who did not receive any postoperative analgesics, and patients with incomplete medical records were excluded from the study.

Procedure and Methodology: Data was collected on the types of analgesics prescribed, the timing of administration, dosages, routes of administration and duration of analgesic therapy. Patient factors such as age, gender, type of surgery, duration of surgery and any comorbid conditions were also recorded.

Sample Processing: The data extracted from patient records were anonymized and coded. Each patient was assigned a unique identifier to ensure confidentiality and facilitate data analysis.

Statistical Methods: Descriptive statistics were used to summarize the data. Patterns of analgesic use were analyzed using frequency distributions. Bivariate and multi variate analyses were conducted to identify factors associated with different analgesic use patterns. Statistical significance was set at $p<0.05$.

Data Collection: Data was collected by a team of research assistants trained in data extraction and coding. Data quality checks were performed weekly to ensure accuracy and completeness of the data collected.

RESULTS AND DISCUSSIONS

Table 1: Analysis of Analgesic Use Patterns and Associated Factors

Variable	n (%)	95% CI
Analgesic Used	136 (68%)	60.2%-75.1%
No Analgesic Used	64 (32%)	24.9%-39.8%
Total	200 (100%)	-

This table provides an overview of the distribution of analgesic use among post-surgical patients. Out of 200

patients, 136 (68%) received analgesics, with a confidence interval (95% CI) of 60.2%-75.1%, indicating a significant use of pain management protocols. Conversely, 64 (32%) did not receive analgesics post-surgery, with a 95% CI of 24.9%-39.8%.

Table 2: Description of Analgesic Prescriptions Post-Surgery

Analgesic Type	n (%)	95% CI	P-value
Opioids	95 (47.5%)	40.3%-54.7%	<0.001
NSAIDs	68 (34%)	27.8%-40.6%	<0.001
Acetaminophen	22 (11%)	7.2%-15.6%	0.012
Combination	13 (6.5%)	3.5%-10.9%	0.035
None	2 (1%)	0.1%-3.7%	0.485

This table categorizes the types of analgesics prescribed, showcasing diverse approaches to pain management. Opioids were the most commonly used analgesics, prescribed to 95 patients (47.5%) with a significant p-value (<0.001), suggesting strong reliance on opioids for post-surgical pain relief. NSAIDs followed, used by 68 patients (34%) and Acetaminophen by 22 patients (11%), both also showing statistically significant usage patterns. Combination therapies were less common, used by 13 patients (6.5%) and a minimal number, 2 patients (1%), did not receive any analgesics, reflecting stringent selection criteria for pain management.

Table 3: Factors Influencing the Choice of Analgesics

Factor	n (%)	95% CI	P-value
Age >60	50 (25%)	19.2%-31.5%	0.033
Comorbidities	80 (40%)	33.2%-47.1%	0.005
Type of Surgery: Major	85 (42.5%)	35.8%-49.5%	<0.001
Type of Surgery: Minor	115 (57.5%)	50.5%-64.4%	<0.001

This table explores the factors that potentially influence the selection of analgesics. Age over 60 affected 50 patients (25%), comorbidities were present in 80 patients (40%) and the type of surgery-major or minor-also played a critical role. Major surgeries led to analgesic use in 85 patients (42.5%) and minor surgeries in 115 patients (57.5%). All these factors had statistically significant impacts on analgesic choice, highlighting the tailored approach to managing post -surgical pain based on individual patient characteristics and surgical details.

Table 4: Effectiveness of Prescribed Analgesics Based on Patient Feedback

Outcome	n (%)	95% CI	P-value
Effective	120 (60%)	53.1%-66.7%	<0.001
Moderately Effective	65 (32.5%)	26.3%-39.2%	0.002
Ineffective	15 (7.5%)	4.3%-11.8%	0.457

This table assesses the effectiveness of analgesics as reported by patients, providing insight into patient-centered outcomes. 120 patients (60%) found their analgesic regimen effective, strongly supported by a significant p-value (<0.001). 65 patients (32.5%) reported moderate effectiveness, and only 15 patients (7.5%) found the treatment ineffective. These feedbacks underline the varying degrees of pain management success and emphasize the necessity for continuous evaluation and adaptation of analgesic protocols.

(Table 1): Analysis of Analgesic Use Patterns and Associated Factors: The use of analgesics in 68% of post-surgical patients aligns with the expectations of modern pain management protocols, where effective pain control is considered essential for patient recovery. Studies such as those by Sun EC[8] have reported similar findings where 65-75% of patients undergoing major surgeries received some form of analgesia, underscoring its critical role in postoperative care. The 32% of patients not receiving analgesics may include those undergoing minor or non-invasive procedures where pain management can be achieved without pharmacological interventions, as explored by Saini[9].

(Table 2): Description of Analgesic Prescriptions Post-Surgery: The predominance of opioids (47.5%) in managing post-surgical pain reflects their effectiveness in controlling severe pain, consistent with findings by Rawal[10], who noted opioids as a mainstay in postoperative regimes. However, the significant use of NSAIDs and Acetaminophen suggests a shift towards multi-modal pain management strategies aimed at reducing opioid consumption, as discussed in the studies by Dolan[11]. The statistical significance in the usage patterns of these analgesics highlights a deliberate choice, optimizing pain relief while minimizing side effects. The minimal use of combination therapies and the near absence of non-analgesic management (1%) may indicate a conservative approach towards complex analgesic strategies, potentially to avoid polypharmacy, as suggested by Haraji[12].

(Table 3): Factors Influencing the Choice of Analgesics: Age, comorbidities and surgery type significantly influenced analgesic choices, echoing the personalized medicine approach advocated in recent literature. Older patients and those with significant comorbidities often require tailored analgesic regimes to balance efficacy with safety, particularly to avoid complications such as renal impairment or gastrointestinal issues, as highlighted by Militsakh[13]. The distinction between major and minor surgeries in analgesic choice is well-documented, with major surgeries often requiring more potent analgesia, as noted by Olds[14].

(Table 4): Effectiveness of Prescribed Analgesics Based on Patient Feedback: The effectiveness of analgesics in managing post-surgical pain, as reported by 60% of the

patients, is a testament to the efficacy of current pain management protocols. However, the presence of a 7.5% ineffectiveness rate highlights the challenge of achieving optimal pain control in all patients, supporting the findings by Mariano[15], who reported variability in patient responses to analgesics due to genetic factors, individual pain thresholds, and surgical variables. The need for ongoing evaluation and adjustment of pain management strategies is crucial, as indicated by the moderate effectiveness reported by over 32% of the patients. Izrailtyan[16].

CONCLUSION

The study of analgesic use patterns and associated factors among post-surgical patients in a tertiary care hospital has provided critical insights into the current practices of pain management in a clinical setting. Our findings reveal that a significant majority of patients (68%) received analgesics post-surgery, demonstrating a strong adherence to the principles of effective pain management that is integral to patient care and recovery. The prevalence of opioids as the most commonly used analgesic underscores their importance in managing severe postoperative pain, while the use of NSAIDs and acetaminophen highlights a strategic approach to multi modal pain management aimed at optimizing patient outcomes and minimizing opioid-related side effects. The factors influencing the choice of analgesics, such as patient age, comorbidities and the nature of the surgical procedure, indicate a tailored approach to pain management that considers individual patient needs and surgical specifics. This personalized strategy is crucial for optimizing analgesic effectiveness and safety, particularly in populations that are vulnerable due to age or existing health conditions. Our study also explored the effectiveness of these pain management strategies from the patient's perspective, with 60% of patients reporting effective pain control. However, the fact that 7.5% of patients found their pain management to be ineffective suggests there remains room for improvement. These findings highlight the need for ongoing assessment and refinement of pain management protocols to ensure they remain responsive to patient needs and clinical outcomes. In conclusion, this study affirms the critical role of comprehensive and considerate pain management in post-surgical care. It also points to the necessity for continuous improvement and adaptation of pain management protocols to enhance patient satisfaction and recovery outcomes. Future research should focus on expanding understanding of the efficacy of various analgesic regimes and exploring innovative approaches to manage and mitigate post-surgical pain effectively.

Limitations of Study:

- **Retrospective Design:** The study's retrospective nature limits our ability to establish causality between analgesic use and outcomes. While we can observe associations and trends, determining the exact cause-and-effect relationships requires prospective, randomized controlled trials.
- **Single-Center Data:** Data was collected from only one tertiary care hospital, which may limit the generalizability of the findings. Practices in pain management can vary significantly across different institutions and geographic locations due to local policies, available resources, and physician preferences.
- **Lack of Detailed Patient Reported Outcomes:** Although the study includes data on the effectiveness of analgesics based on patient feedback, it lacks detailed patient-reported outcome measures that could provide deeper insights into the quality of pain management from the patient's perspective.
- **Potential for Selection Bias:** Given the retrospective analysis of existing medical records, there is a potential for selection bias. The inclusion and exclusion criteria might have excluded certain patient demographics or conditions, which could influence the comprehensiveness of the data.
- **Variability in Surgical Procedures and Pain Assessment:** The study encompasses a wide range of surgical procedures, each associated with different levels of pain and thus potentially different analgesic needs. The assessment of pain and the subsequent analgesic prescription practices could vary, affecting the uniformity of data collection.
- **Lack of Longitudinal Follow-up:** The study does not include longitudinal follow-up data to assess long-term outcomes related to analgesic use, such as the development of chronic pain or long-term side effects of analgesic use.
- **Limited Examination of Multi Modal Pain Strategies:** While the study observes the use of various analgesics, it may not fully capture the integrated use of non-pharmacological pain management strategies alongside pharmacological treatments, which are becoming increasingly important in comprehensive pain management protocols.
- **Confounding Variables:** There may be unmeasured confounding variables that affect both the choice of analgesic and the reported effectiveness, such as specific patient preferences, previous experiences with pain management, or underlying psychological factors.

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