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Original Research Article

# Study of Analgesic Practices in Post-Operative Patients

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**Abstract:**

**Background:** Postoperative pain is a common complication that affects recovery, patient comfort, and overall outcomes. Effective pain management using a combination of opioid and non-opioid analgesics can improve recovery and reduce side effects. This study aimed to assess analgesic practices and trends in pain scores in surgical patients.

**Methods:** An observational study was conducted at a tertiary care hospital over one year, including 212 patients undergoing elective or emergency surgeries. Demographic details, type of surgery, analgesics administered, and pain scores at 6, 12, 24, and 48 hours were recorded using the Numeric Rating Scale. Analgesics were classified as opioid or non-opioid, including combination therapies. Data were analyzed using descriptive statistics.

**Results:** Of the 212 patients, 130 (61.3%) were female and 82 (38.7%) males, with a mean age of 39.2 ± 12.8 years. Elective surgeries accounted for 60.8% and emergency surgeries for 39.2%. All patients received opioids, 190 (89.6%) received non-opioids, and tramadol and paracetamol were administered to all patients. Mean NRS scores decreased from 7.88 at 6 hours to 5.12 at 48 hours, showing effective pain control.

**Conclusion:** Multimodal analgesia effectively reduces postoperative pain over 48 hours in elective and emergency surgical patients.

**Keywords:** Postoperative Pain, Analgesics, Opioids, Non-Opioids, Multimodal Pain Management.



## Introduction

Ostoperative pain is a significant challenge in surgical care, as inadequate management can result in complications and delayed recovery [1]. The perception of pain is subjective and influenced by multiple factors, including the type of surgery, patient age, gender, and psychological condition [2–4]. Recognizing these complexities, both the World Health Organization and national guidelines advocate a multimodal analgesic approach that optimizes pain relief while minimizing opioid-related adverse effects [5–7]. Such strategies aim to address the multifactorial nature of postoperative pain and improve overall patient outcomes.

Opioids, including tramadol and morphine, are frequently employed for moderate to severe pain [8]; however, their prolonged use carries risks such as tolerance, dependence, and other side effects [9,10]. To mitigate these issues, opioids are often combined with non-opioid medications like paracetamol and NSAIDs, enhancing analgesic efficacy while reducing opioid requirements [11–13]. Paracetamol is widely used as a first-line agent due to its favorable safety profile [14], whereas NSAIDs, such as diclofenac and etoricoxib, provide additional anti-inflammatory benefits but may pose gastrointestinal and renal risks [15–17]. This combination approach reflects the principle of multimodal analgesia recommended in current clinical guidelines.

Effective pain management also depends on accurate assessment, for which tools like the Numeric Rating Scale (NRS) are commonly used [18]. Regular monitoring of NRS scores allows clinicians to tailor analgesic regimens, improving patient satisfaction and outcomes [19,20]. Despite established guidelines, analgesic practices vary considerably between institutions and practitioners [21,22], emphasizing the need for continuous evaluation and audit of postoperative pain management [23]. In this context, the present study aims to examine the types of analgesics used in postoperative care and their effects on pain scores over 48 hours, with particular attention to differences between elective and emergency surgical cases.

## Methods

**Study Design and Setting:** This observational study was carried out at a tertiary care hospital over a period of one year. The aim was to examine patterns of pain management and the trend of postoperative

pain scores in patients undergoing elective and emergency surgeries. A total of 212 patients who received postoperative pain relief as part of their care were included.

**Participants**

**Inclusion criteria** consisted of adult patients aged 18 years and above, undergoing either elective or emergency surgical procedures, able to provide informed consent, and capable of reporting pain using the Numeric Rating Scale (NRS).

**Exclusion criteria** included patients with cognitive or communication difficulties, those with chronic pain already receiving analgesics, and patients who required reoperation within the first 48 hours after surgery.

**Data Collection:** Information was gathered using a structured form, which recorded demographic details (age, gender), type of surgery (elective or emergency), types and combinations of pain-relieving medications administered, and pain scores at 6, 12, 24, and 48 hours after surgery using the NRS (0 = no pain, 10 = worst pain). Medications were grouped into opioids (e.g., tramadol, pethidine) and non-opioids (e.g., paracetamol, diclofenac, etoricoxib), including combination therapies such as tramadol with paracetamol.

**Data Analysis:** Data were summarized using descriptive statistics. Continuous variables, such as age and pain scores, were expressed as mean ± standard deviation, while categorical variables, including gender, surgery type, and medication type, were presented as frequencies and percentages.

**Ethical Considerations:** The study received approval from the Institutional Ethics Committee, and written informed consent was obtained from all participants before their inclusion in the study.

**Results**

The study included 212 patients, of whom 82 (38.7%) were male and 130 (61.3%) were female. The mean age of the participants was 39.2 ± 12.8 years, indicating a relatively young adult population undergoing surgical procedures (Table 1).

**Table 1: Demographic Details**

| **Gender** | **Number of Patients (%)** |
|---|---|
| Male | 82 (38.7%) |
| Female | 130 (61.3%) |
| **Total** | 212 (100%) |

**Mean Age of Patients:** 39.2 ± 12.8 years

Regarding the type of surgery, 129 patients (60.8%) underwent elective procedures, while 83 patients (39.2%) had emergency surgeries. This shows that the majority of surgeries in this cohort were planned rather than urgent (Table 2).

**Table 2: Type of Surgery**

| **Type of Surgery** | **Number of Patients (%)** |
|---|---|
| Elective | 129 (60.8%) |
| Emergency | 83 (39.2%) |
| **Total** | 212 (100%) |

All patients (100%) received opioid analgesics, while 190 patients (89.6%) were administered non-opioid medications as part of their postoperative pain management. Specifically, all patients received tramadol and paracetamol, 55 patients (26%) received a combination of tramadol and paracetamol, 80 patients (37.7%) were given diclofenac, 76 patients (35.8%) received pethidine, and 9 patients (4.2%) were given etoricoxib. Mean pain scores assessed by the Numeric Rating Scale (NRS) were highest at 6 hours postoperatively (7.88 ± 1.15) and gradually decreased over time, reaching 5.12 ± 1.14 at 48 hours. This trend reflects a gradual reduction in pain intensity with ongoing analgesic therapy (Table 3).

**Table 3: Analgesic Use and Pain Scores**

| **Analgesic / Follow-up** | **Number of Patients (%) / Mean NRS ± SD** |
|---|---|
| **Opioid** | 212 (100%) |
| **Non-Opioid** | 190 (89.6%) |
| Tramadol | 212 (100%) |
| Paracetamol | 212 (100%) |
| Tramadol + Paracetamol | 55 (26%) |
| Diclofenac | 80 (37.7%) |
| Pethidine | 76 (35.8%) |
| Etoricoxib | 9 (4.2%) |
| **Mean NRS Scores** | |

| | |
|---|---|
| 6 hours | 7.88 ± 1.15 |
| 12 hours | 7.61 ± 1.10 |
| 24 hours | 7.08 ± 1.40 |
| 48 hours | 5.12 ± 1.14 |

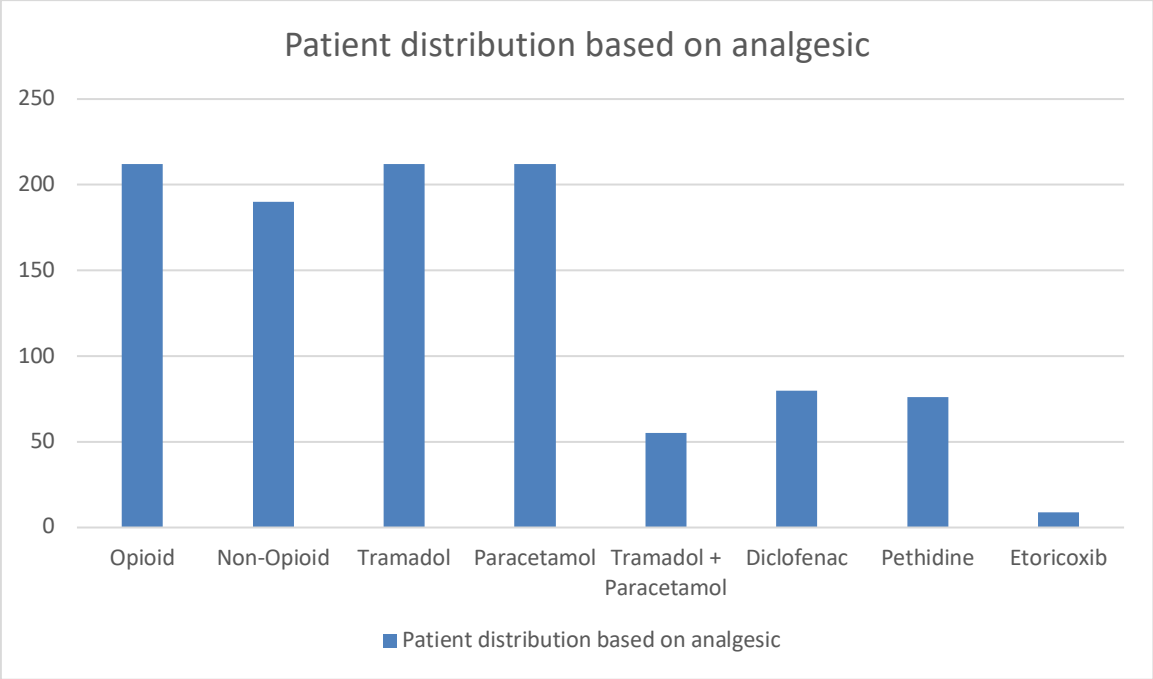


**Figure 1: Distribution of patients based on analegesic use.**

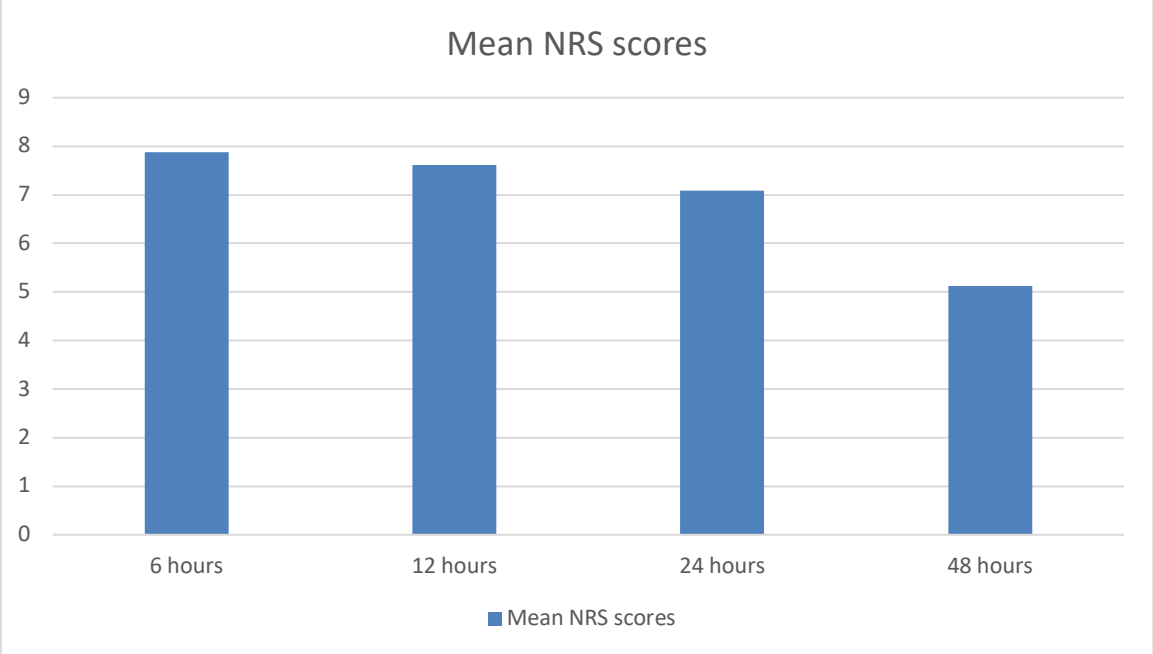


**Figure 2: Patient distribution based on mean NRS scores.**

## Discussion

Postoperative pain is a frequent complication following surgery and can significantly influence patient comfort, recovery speed, and overall health outcomes. Effective pain management promotes early mobilization, reduces hospital stay, and lowers the risk of persistent pain. Modern postoperative care often involves multimodal analgesia, combining opioid and non-opioid medications to achieve adequate pain relief while minimizing side effects. The present study aimed to evaluate the patterns of analgesic use and the trend of pain scores

over a 48-hour postoperative period in patients undergoing both elective and emergency surgeries.

In this study of 212 patients, 130 (61.3%) were female and 82 (38.7%) were male, reflecting a higher representation of women in surgical care, similar to trends reported in previous studies where elective procedures were more frequently undertaken by females [24,24]. Females are also reported to experience higher postoperative pain scores than males, potentially due to differences in pain perception and response to analgesics [26]. The mean age of patients was 39.2 ± 12.8 years, aligning with other studies that report a wide age range among surgical populations, often spanning the third to fifth decades of life [27]. Age is an important factor influencing both pain perception and analgesic response, emphasizing the need for age-adjusted pain management strategies [28].

Elective surgeries constituted 129 cases (60.8%) while emergency surgeries accounted for 83 cases (39.2%), a pattern consistent with prior observations in similar cohorts [28]. All patients received opioid analgesics, and 190 patients (89.6%) were also given non-opioid medications, demonstrating widespread use of multimodal analgesia as recommended in current guidelines [29,30]. Tramadol and paracetamol were administered to all patients, while diclofenac (38%) and pethidine (35.8%) were also commonly used. Etoricoxib was given to a small subset (4.2%), likely due to its COX-2 selectivity and favorable gastrointestinal profile [31-33]. Postoperative pain assessment using the Numeric Rating Scale (NRS) revealed a gradual decrease over 48 hours, from 7.88 at 6 hours to 5.12 at 48 hours, indicating effective pain control with multimodal therapy. However, early high pain scores suggest the potential benefit of preemptive analgesia or patient-controlled analgesia (PCA) for improved immediate postoperative comfort [34].

## Conclusion

The present study highlights that multimodal analgesia, combining opioid and non-opioid medications, is widely practiced and effective in controlling postoperative pain in both elective and emergency surgical patients. Pain scores showed a gradual decline over 48 hours, indicating adequate pain management, although early postoperative periods may benefit from additional strategies such as preemptive or patient-controlled analgesia. The findings underscore the importance of individualized, guideline-based pain management protocols that consider patient demographics, type of surgery, and analgesic combinations to optimize recovery, enhance patient comfort, and minimize opioid-related side effects.

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