

**PRESCRIBING PATTERN OF PERIOPERATIVE PAIN MANAGEMENT IN  
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**ABSTRACT**

Pain, categorized as acute and chronic, which is an unpleasant sensory sensation related to tissue damage. Surgical pain, a common occurrence in surgical procedures, includes pre-operative, intraoperative, and post-operative phases. Effective pain management include pharmacologic, physical, and psychological approaches. The aim is to assess orthopedic perioperative pain management prescribing patterns. A prospective, observational study on 20 patients was conducted from June to July 2023, with ethical clearance and informed consent. Inclusion criteria: patients aged >18 with comorbidities undergoing surgery; Exclusion criteria: <18 years, pregnant women, and non-participants. Data on patient demographics, surgery type and pain management prescriptions were collected from inpatient case sheets. In this study of 20 patients, 60% were male, and 40% were female. Most patients were 41-60 years old and were treated for fixation (40%), arthroplasty (30%), arthrodesis (15%), arthroscopy (10%), or amputation (10%). Average hospital stay was 6-8 days. Prescriptions included antibiotics (100%) highly prescribed are cefuroxime-sulbactam (80%), PPIs (100%), and calcium supplements (100%). NSAIDs were given to 95%, antiemetics to 90%, multivitamins to 70%, and neuropathic pain medication to 65%. Anti-arrhythmic and Inj. T. T. were prescribed for 60%, proteolytic enzymes and opioids for 50%, non-opioids for 30%, laxatives for 15%, and muscle relaxants, hypnotics, and anti-platelets for 10%. Orthopedic pain management is vital for recovery. To provide better care, healthcare professionals must refine practices, stay updated, and prioritize evidence-based, patient-centered pain management. If left untreated, pain can lead to severe consequences such as depression, difficulty sleeping, and a significant change in the patient's quality of life.

**KEYWORDS:** Pain, NSAIDs, Analgesic, Inflammation, Antibiotics, prescribed.**INTRODUCTION**

Pain encompasses unpleasant sensory sensations like pricks, tingles, stings, burns, or aches, coupled with emotional distress linked to tissue damage.<sup>[1,2]</sup> Pain is categorized into acute and chronic based on symptom duration.<sup>[3]</sup> Acute pain arises suddenly from diseases, injuries, or inflammation, making it easily diagnosable and treatable. Typically, acute pain resolves, but in some cases, it can transition into chronic pain. Chronic pain persists for an extended period and can lead to severe complications.

Surgical pain, a type of nociceptive pain, is common in medical procedures. The most prevalent form of acute pain is perioperative pain, which encompasses pre-operative, intraoperative, and post-operative pain. Pre-operative pain occurs before surgery, followed by intraoperative pain experienced during the surgical procedure. Postoperative pain results from the complex

response to tissue trauma, stimulating the central nervous system's sensitivity.<sup>[4,5]</sup>

Chronic pain represents a significant symptom that disrupts a person's quality of life and often leads to experiences of depression and anxiety.<sup>[6]</sup>

Pain is often not curable, but its treatment varies depending on the cause and type. There are three primary approaches to managing pain: pharmacologic, physical, and psychological.

Pharmacologic treatment involves the use of pain medications, while physical therapies encompass methods such as heat or cold packs, massage, hydrotherapy, and exercise. Psychological therapies include techniques like cognitive behavioral therapy, relaxation methods, and meditation.<sup>[7]</sup>

To achieve pain relief, a comprehensive approach is often preferred, combining various medications and, when necessary, nonpharmacologic strategies. This approach, known as multimodal analgesia or "balanced analgesia," typically involves administering two or more analgesic agents or measures. Each agent acts differently and targets distinct sites within the nervous system, optimizing pain relief while minimizing the adverse effects of any single agent. The choice of analgesic agents depends on the patient's specific pain cause, type, and their individual response to treatment.

Pain medications fall into three categories: nonopioid analgesics (such as acetaminophen, aspirin, and nonsteroidal anti-inflammatory drugs or NSAIDs), opioid analgesics (including morphine, fentanyl, oxycodone, and hydromorphone), and adjuvant analgesics.

Nonopioid analgesics are effective for mild to moderate pain when used individually and can reduce the need for opioids when combined with them, thus lowering the potential for opioid-related adverse effects. Opioid analgesics function by binding to and activating specific receptor sites in both the central and peripheral nervous systems, commonly used for treating moderate to severe acute pain.

Adjuvant analgesics encompass muscle relaxants, anti-convulsant, and local anesthetics, offering additional options in pain management.<sup>[8]</sup>

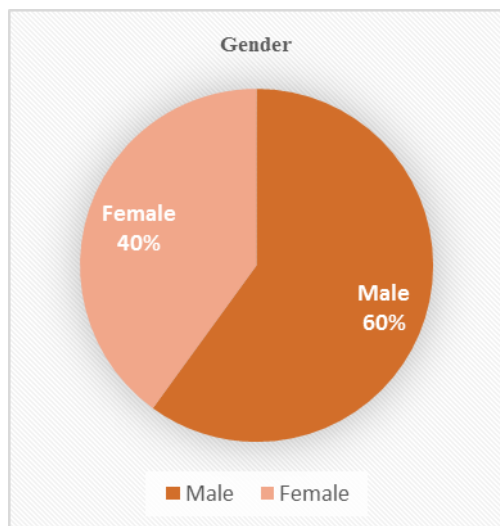


Fig. no. 1: Distribution of Gender.

The majority of patients fell into the age groups as follows: 41-60 (40%), 20-40 (35%), 61-80 (15%), and 81-100 (10%). Various complaints like pain (100%), swelling (60%), difficulty in walking (45%), upper limb pain (15%) and lower limb pain (80%) led patients to approach the department, with the most common reasons for admission being fixation (40%), followed by

## AIMS AND OBJECTIVES

The aim of this study is to evaluate the prescribing pattern of perioperative pain management in orthopedic in-patient department of tertiary care teaching hospital.

## METHODOLOGY

A prospective, observational study was conducted from June 2023 to July 2023 on 20 patients in the department of orthopedics. The plan of work included the review of literature to understand the type and severity of pain, its management, and outcomes. Before commencing the study, ethical clearance was obtained from the Institutional Ethics Committee. Informed consent was obtained from both patients and attenders.

The study included patients of both genders aged >18 years with comorbid conditions who had undergone operative procedures. Excluded from the study were patients aged <18 years, pediatric patients, pregnant women, and those unwilling to participate. Data regarding patient demographics, type of surgery, and the prescribing pattern of pain management during perioperative days, including drug, dose, route of administration, and mono/combined therapy, as well as comorbidity therapy, were collected from the case sheets of inpatients admitted in the department of orthopedics.

## RESULTS

In this study, the prescription patterns of 20 patients were assessed over a one-month period. Among these patients, 12 (60%) were male, and 8 (40%) were female. The inclusion criteria were patients aged >18 years with comorbid conditions who had undergone surgery.

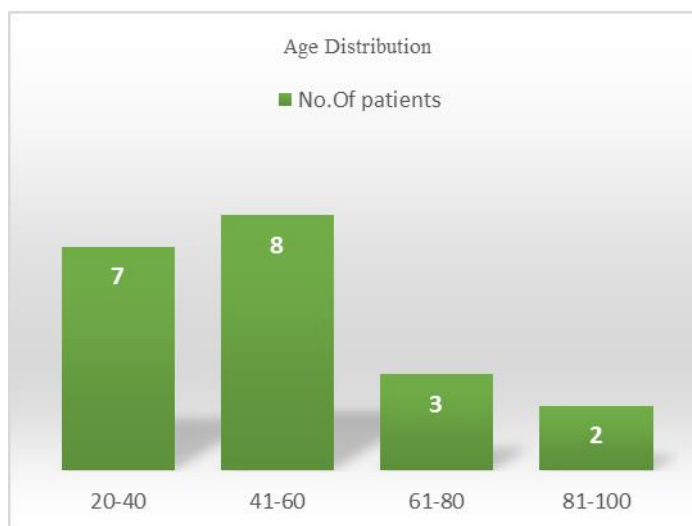


Fig. No. 2: Distribution of Age.

arthroplasty (30%), arthrodesis (15%), arthroscopy (10%), and amputation (10%).

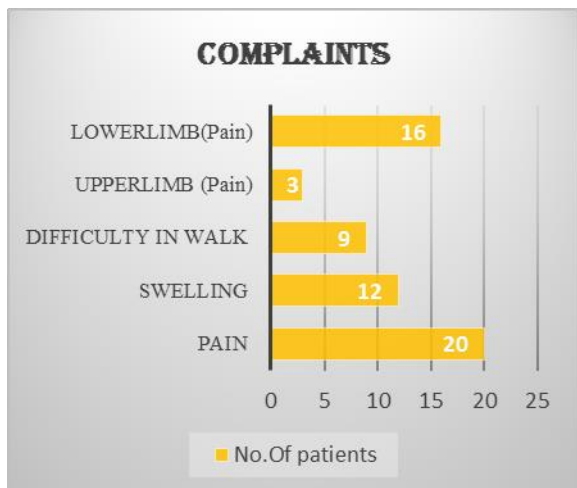


Fig. no. 3: Complaints.

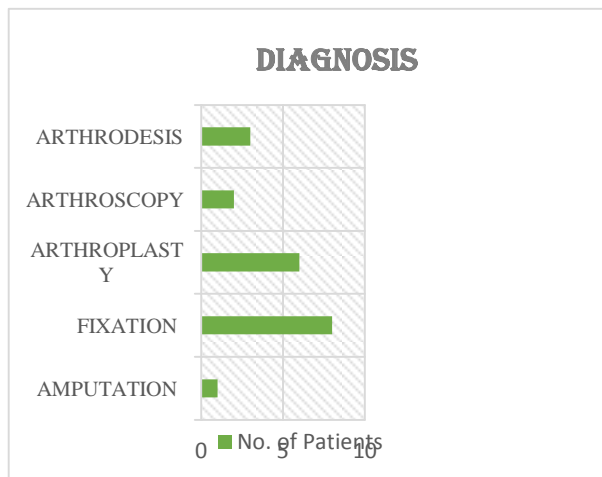


Fig. No. 4: Diganosis.

Co-morbid conditions included are hypertension (25%), diabetes+hypertension (15%), Diabetes, Rheumatoid

arthritis and percutaneous lithotripsy (5%). Patients with no comorbid conditions constituted 45% of the cases.



Fig.no. 5: Co-Morbidity.

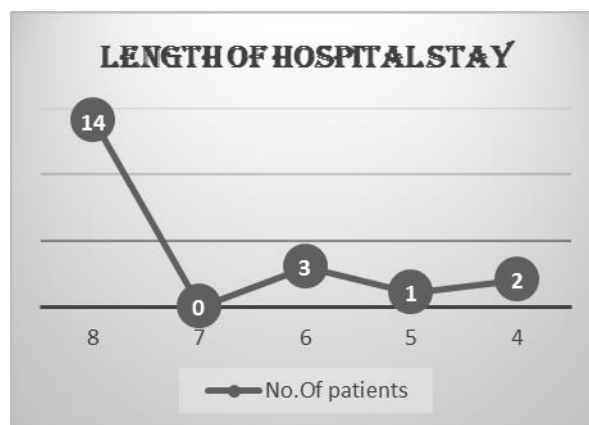


Fig. No. 6: Length of hospital stay.

Co-morbid conditions included are hypertension (25%), diabetes + hypertension (15%), Diabetes, Rheumatoid arthritis and percutaneous lithotripsy (5%). Patients with no comorbid conditions constituted 45% of the cases. The average duration of hospital stay was 6-8 days.

Regarding prescribing pattern, antibiotics were prescribed for all patients (100%), with cefuroxime-sulbactam being the most common (80%). PPIs (100%) and calcium supplements (100%) were also frequently prescribed. NSAIDs were prescribed for 95% of patients, antiemetics for 90%, multivitamins for 70%, and medications for neuropathic pain for 65%.

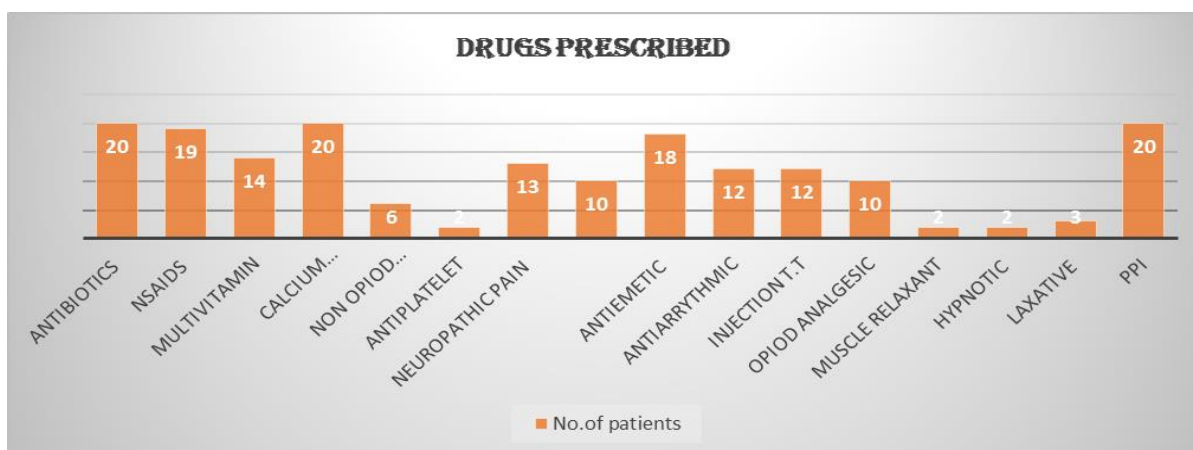


Fig. no. 7: Drugs Prescribed.

Anti-arrhythmic and Inj. T. T. were prescribed for 60% of patients, followed by proteolytic enzymes and opioid analgesics for 50%. Non-opioid analgesics were

prescribed for 30% of patients, laxatives for 15%, and muscle relaxants, hypnotics, and anti-platelet medications for 10%.

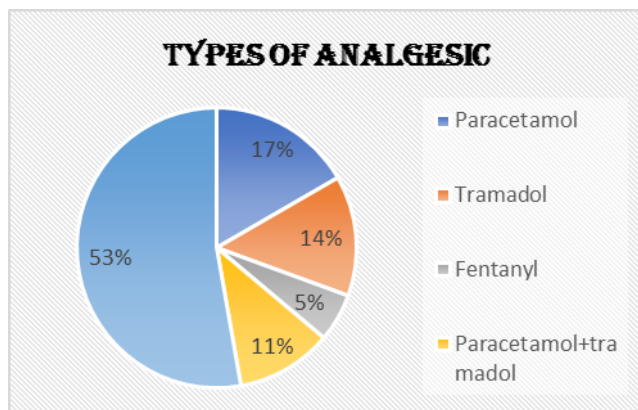


Fig. no. 8: Types of Analgesics prescribed.

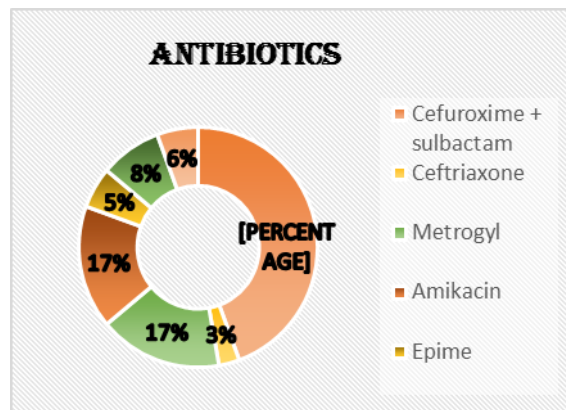


Fig. No. 9: Types of antibiotics prescribed.

## DISCUSSION

In this study, we assessed the prescribing pattern of pain management in orthopedics and its application in clinical practice. The majority of patients admitted to the Princess Esra Hospital orthopedics department were males (60%) compared to females (40%), with the most common age group being between 20 to 60 years (75%). Nonsteroidal anti-inflammatory drugs (NSAIDs) (95%) were the preferred analgesics for peri-operative pain management. Fractures and bone surgeries often require consistent pain medication, primarily NSAIDs. However, there is a need for supplementation with opioids or other medications.<sup>[9]</sup>

NSAIDs were commonly prescribed alongside proton pump inhibitors (PPI) (100%) to counter gastrointestinal toxicity associated with NSAID use.<sup>[10]</sup> Rahman et al. also described the use of proton pump inhibitors as the preferred anti-ulcer agents.

Tramadol (25%) was the commonly used opioid. This aligns with findings from Farhat et al.<sup>[11]</sup> and Dashputra and Badwaik<sup>[12]</sup>, which suggest that NSAIDs were preferred for post-operative pain management, contrasting with the findings of Dasta et al.<sup>[13]</sup>, who commonly used opioids like morphine. Vallano et al. also reported tramadol as commonly used among opioids, which is consistent with our findings.<sup>[14]</sup>

Regarding drug combinations, the combination of tramadol and paracetamol was the preferred choice. This study indicates that nonopioid analgesics are the preferred drugs for post-operative pain relief, consistent with findings from Dashputra and Badwaik, Chaudhari et al., and Vallano et al.<sup>[14,15,16]</sup> Soler-Company et al. emphasized that it's the "customary habits" of care providers that determine analgesic interventions rather than the patients' pain levels.<sup>[17]</sup>

Effective utilization of analgesics in the postoperative period is a crucial aspect of medical auditing, aiding in

monitoring, evaluation, and necessary modifications in prescribing practices to achieve rational and cost-effective medical care.<sup>[18]</sup>

Antibiotics were prescribed for all patients (100%), with cefuroxime-sulbactam being the most common (80%). According to Bratzler DW et.al and WHO guidelines first- or second-generation cephalosporin is recommended as the antibiotic of first choice, with vancomycin or fluoroquinolone being recommended in cases of beta-lactam allergy; metronidazole is added when prophylaxis against anaerobic bacteria is needed.<sup>[19,20]</sup>

Multivitamins with calcium (70% & 100%) prescribed which may be because most of the patients suffered from bone-related disorder. Abhilash et al. soft tissue infections following surgery are highly prevalent and serious problems encountered in orthopedics.<sup>[21]</sup> The most frequently prescribed antimicrobial agents belong to the group cephalosporin which is in alignment to study conducted by Ghosh et al. describing antibiotic usage in orthopedic department.<sup>[22]</sup>

The study shows the effective use of prescribed drugs same study reveals the effective use of analgesic in postoperative period which is a significant constituent of medical audit which helps in monitoring, evaluating and building required modifications in the prescribing practices to attain a rational and cost-effective medical care.<sup>[23]</sup>

## CONCLUSION

Pain management is an integral part of orthopedic care and treatment. The prescription pattern for perioperative pain management in the orthopedic department plays a pivotal role in ensuring optimal patient outcomes. Generally, it shows the image of current clinical judgment of physicians, which in turn provides health benefits to patients by managing pain and enabling rapid recovery.



If left untreated, pain can lead to severe consequences such as depression, difficulty sleeping, and a significant change in the patient's quality of life. To provide the highest standard of care for individuals undergoing orthopedic surgery, healthcare professionals should continue to refine their prescription practices. This involves staying updated with evolving guidelines and research, prioritizing patient-centered care, and implementing evidence-based pain management protocols.

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