INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: https://www.ijpsjournal.com

Research Article

Assessment of Postoperative Pain and its Management in Orthopedic Department in a Tertiary Care Hospital

Christeena Jaison, Merin Joseph, Temi Biju*, Krishnaprabha C

St. James College of Pharmaceutical Sciences.

ARTICLE INFO

Published: 26 Aug 2026
Keywords:
American Pain Society Patient Outcome Questionnaire-Revised (APS-POQ-R), Postoperative pain (POP), Short Form McGill Pain Questionnaire (SF-MPQ)
DOI:
10.5281/zenodo.22120117

ABSTRACT

Postoperative pain (POP) remains a significant concern in orthopaedic surgery and may adversely affect functional recovery and emotional well-being. This study aimed to assess postoperative pain intensity and characteristics, evaluate the effectiveness of pain management, identify commonly prescribed analgesics, and determine the impact of pain on physical and emotional functioning. A six-month prospective observational study was conducted among 123 patients in the orthopaedic department of a 450-bed tertiary care hospital. Pain was assessed using the Short Form McGill Pain Questionnaire (SF-MPQ) and the American Pain Society Patient Outcome Questionnaire-Revised (APS-POQ-R), along with patient interviews and medical record reviews. Among the 123 participants, 53.6% were female and 46.4% were male, with 32.5% belonging to the 51–70-year age group. Most patients (77.2%) reported chronic pain, while 22.8% reported acute pain. The mean total SF-MPQ score was (16.43 ± 3.59), with a mean visual analogue scale score of 6.55, indicating moderate pain. Within the first 24 hours postoperatively, the mean worst pain score was 7.0, and after analgesic administration, 71.5% reported moderate pain and 18.7% severe pain. Pain significantly interfered with out-of-bed activities (mean 8.3), in-bed activities (mean 7.1), and sleep (mean 6.3). Paracetamol was the most frequently used non-opioid analgesic (99.2%), while tramadol was the most commonly used opioid (64.2%); 76.4% received opioids in combination with non-opioids. Despite this, 86.1% of patients reported 70–100% pain relief. The findings highlight the value of multimodal and individualized pain management with regular assessment to improve postoperative recovery and patient outcomes.

INTRODUCTION

Pain is defined by the International Association for the Study of Pain (IASP) as “an unpleasant sensory and emotional experience related to actual or potential tissue damage or described in terms of such damage”. Acute postoperative pain is highly

***Corresponding Author:** Temi Biju
Address: *St. James College of Pharmaceutical Sciences.*
Email : temibiju246@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

prevalent, with more than 80% of patients undergoing surgery experiencing pain and approximately 75% reporting moderate to severe intensity. Inadequately controlled postoperative pain can impair physical activity, sleep, psychological well-being, functional recovery, and overall quality of life. Therefore, systematic assessment and individualized pain management are essential components of postoperative care. Postoperative pain management generally involves a multimodal approach combining pharmacological interventions, including paracetamol, nonsteroidal anti-inflammatory drugs (NSAIDs), opioids, and adjuvant therapies, with appropriate non-pharmacological measures. However, individual variation in pain perception and response to treatment may result in persistent pain despite analgesic therapy. The present study was therefore undertaken to comprehensively assess postoperative pain using SF-MPQ and APS-POQ-R, evaluate the effectiveness of pharmacological and non-pharmacological pain-management strategies, identify commonly prescribed analgesics, and determine the impact of postoperative pain on physical activity, sleep, and emotional well-being among orthopaedic surgery patients.

OBJECTIVES

- To assess the intensity of postoperative pain in orthopaedic surgery patients using SF – MPQ study tool.
- To evaluate the effectiveness of pain management in reducing postoperative pain.
- To assess mostly prescribed analgesics given for post-operative pain.
- To evaluate the pain severity and impact of pain on physical activity and emotional well-being using APS-POQ-R study tool.

MATERIALS AND METHODS

STUDY DESIGN

A prospective observational study was conducted.

STUDY SITE

The study was conducted in the Orthopaedic department of a 450 bedded tertiary care hospital.

STUDY DURATION

The study was carried out for a period of 6 months.

STUDY POPULATION

A total of 123 patients.

STUDY CRITERIA

Inclusion Criteria

1. Patients of age group above 18.
2. Patients who underwent the orthopaedic surgery.
3. Patients who are able to understand the instructions.

Exclusion Criteria

1. The patients who were discharged before the 1st 24 hour postoperatively.
2. Patients with cognitive disability, uncooperative patients and any difficulty with communication.
3. Patients undergoing surgeries other than in orthopaedic department.

STUDY APPROVAL

The study was started only after getting the approval from the Human ethical committee no

DATA COLLECTION AND ANALYSIS

Patient demographics, current complaints, analgesics prescribed, pain scores etc. is documented in a predesigned data entry form. SF-MPQ was used for the assessment of quality and intensity of pain. APS-POQ tool was used for assessing pain management quality improvement activities. The data were analyzed by various statistical methods such as mean, standard deviation using the software IBM SPSS 22.0 and presented graphically. We collected patient consent forms from the patients before the interview and questionnaire.

RESULTS AND DISCUSSIONS

A prospectively conducted observational study was performed in the Orthopaedic department of a 450-bedded tertiary care hospital for a duration of 6 months. The study was aimed to assess the intensity and severity of postoperative pain among orthopaedic surgery patients using the SF-MPQ and APS-POQ-R tools. The study was conducted in 123 post operative orthopaedic patients with the inclusion and exclusion criterion. Patient demographic characteristics, current complaints, analgesics prescribed, pain scores, and other relevant clinical information were recorded using a predesigned data collection form. The SF-MPQ was used to assess the quality and intensity of pain. The APS-POQ was used to assess the quality of pain management and identify areas for improvement in pain management practices. The collected data were analyzed using descriptive statistical methods, including mean and standard deviation, with IBM SPSS Statistics version 22.0. The results were presented graphically for better interpretation and comparison. Written informed consent was obtained from all patients prior to the interview and administration of the questionnaires.

Patient age was categorized into 4 groups. Among the 123 patients, the analysis of patient age revealed that the largest group of participants 32.5% (n=40) were between the ages of 51 and 70, followed by those between the ages of 31 and 50 of 31.7% (n = 39). This implies that the majority of musculoskeletal conditions requiring surgery affect middle-aged and older persons. Both the lower incidence of degenerative joint illnesses in younger populations and the reluctance or unsuitability of extremely senior patients for surgical operations may be reflected in the reduced percentage of patients aged ≤30 years (19.5%) and >70 years (16.3%).

TABLE 1: DISTRIBUTION BASED ON AGE OF PATIENTS (n=123)

AGE IN YEARS	n	%
≤ 30	24	19.5
31-50	39	31.7
51-70	40	32.5
>70	20	16.3

The gender distribution of the 123 patients in the current study shows a small female predominance, with 53.6% (n=66) female participants and 46.4% (n=57) male participants, according to the patient data gathered. The risk of degenerative joint illnesses like osteoarthritis and the need for joint replacement surgery like complete knee or hip replacements rises in postmenopausal women as a result of the decline in estrogen levels. However, the nearly equal number of men and women suggests that musculoskeletal conditions are not highly gender-biased in terms of surgical need.

TABLE 2: DISTRIBUTION BASED ON GENDER OF PATIENTS(n=123)

GENDER	n	%
Female	66	53.6
Male	57	46.4

In this study conducted among 123 patients, Only 22.8% (n=28) of patients reported acute pain, whereas 77.2% (n=95) of patients reported chronic pain. This suggests that the majority of patients requiring orthopedic surgery have chronic pain, most likely brought on by degenerative joint illnesses, recurrent trauma, or postponed medical treatment. Quality of life, psychological health, and sleep patterns are all known to be impacted by chronic pain, which highlights the importance of thorough pain assessment and treatment for these patients.

TABLE 3: DISTRIBUTION BASED ON TYPE OF PAIN (n=123)

TYPE OF PAIN	n	%
Acute pain	28	22.8
Chronic pain	95	77.2

According to pain score analysis, 57.8% of patients (n=71) in this study reported mild pain intensity (0–3), 34.1% (n=42) reported moderate pain (4–7), and only 8.1% (n=10) reported severe pain (7–9). This reveals that most the patients before the surgery were experiencing mild to moderate pain.

TABLE 4: DISTRIBUTION BASED ON PAIN SCORE BEFORE THE ORTHOPEDIC SURGERY (n=123)

PAIN SCORE	n	%
0-3	71	57.8
4-7	42	34.1
8-10	10	8.1

The lower limb was the most frequently reported site of pain among the 123 patients about 56.9% (n=70), followed by the upper limb 24.4% (n=30) and hip 18.7% (n=23). Given that the lower extremities support the weight of the body and are more vulnerable to degenerative changes, trauma, and wear and tear. The emphasis on surgical procedures like total knee replacement and other lower extremity reconstructive surgery is justified by the prevalence of lower limb symptoms.

TABLE 5: DISTRIBUTION BASED ON LOCATION OF PAIN (n=123)

LOCATION OF PAIN	n	%
Hip	23	18.7
Lower limb	70	56.9
Upper limb	30	24.4

Only 4.1% (n=5) of the surgeries in this study were emergency procedures, whereas 95.9% (n=118) of the surgeries were elective. This demonstrates that most treatments are planned and regulated, enabling improved multidisciplinary planning, patient education, and preoperative optimization. The significance of early identification and scheduling for orthopedic disorders is reinforced by the fact that elective procedures are typically linked to better results and reduced rates of complications.

TABLE 6: DISTRIBUTION BASED ON TYPE OF SURGERY (n=123)

TYPE OF SURGERY	n	%
Elective	118	95.9
Emergency	5	4.1

Among the 123 patients, only 10.6% (n=13) of patients received general anesthesia, compared to 89.4% (n=110) of patients who had regional anesthesia. Given its correlation with improved pain management, a decreased risk of respiratory problems, a quicker recovery period, and a decreased requirement for systemic analgesics after surgery, regional anesthesia is widely used in orthopedic surgery.

TABLE 7: DISTRIBUTION BASED ON TYPE OF ANAESTHESIA GIVEN(n=123)

TYPE OF ANAESTHESIA	n	%
General Anaesthesia	13	10.6
Regional Anaesthesia	110	89.4

In this study, given the high prevalence of degenerative joint disease and fractures, total knee replacement (TKR) was the most prevalent

procedure 26.0% (n =32), closely followed by open reduction and internal fixation (ORIF) at 25.2% (n = 31). Hemiarthroplasty (9.8%), ACL repair (6.7%), K-wire fixation (4.9%), PFN fixation (4.1%), Fixator removal (4%), CRIF (3%), and THR (3%), were among the other common treatments. The wide range of orthopedic needs is shown by the existence of less usual procedures including Amputation, Arthrodesis, and Arthrolysis.

TABLE 8: DISTRIBUTION BASED ON SURGICAL PROCEDURE(n=123)

SURGICAL PROCEDURE	n	%
TKR	32	26.0
ORIF	31	25.2
HEMIARTHROPLASTY	12	9.8
ACL RECONSTRUCTION	8	6.7
KWIRE FIXATION	6	4.9
PFN FIXATION	5	4.1
FIXATOR REMOVAL	4	3.3
CRIF	3	2.4
THR	3	2.4
ARTHRODESIS	2	1.6
ARTHROLYSIS	2	1.6
ARTHROPLASTY	3	2.4
CRIF + ORIF	2	1.6
DEBRIDGEMENT	2	1.6
SCREW FIXATION	2	1.6
AMPUTATION +KWIRE	1	0.8
CMR+ KWIRE FIXATION	1	0.8
CRIF+PFN FIXATION	1	0.8
MENISCAL REDUCTION	1	0.8
OSTEOCHONDROMA EXISION	1	0.8
UCL REPAIR	1	0.8

In this study the mechanism of injury classified into Slip and falls, Road traffic accident and age-related degeneration. The most commonly reported cause of injury among the 123 patients was46.4% (n = 57), followed by Slip and falls 31.7% (n=39) and Traffic accidents 21.9% (n=27). While road traffic accidents continue to be a major source of orthopedic trauma in younger groups, the large number of falls highlights the susceptibility of older persons.

TABLE 9: DISTRIBUTION BASED ON MECHANISM OF INJURY (n=123)

MECHANISM OF INJURY	n	%
Road traffic accident	27	21.9
Slip and fall	39	31.7
Age related degeneration	57	46.4

Fractures 69.1% (n=85) and osteoarthritis 27.7%(n=34) were the most common diagnosis, suggesting that degenerative illnesses and trauma are the two main causes of orthopedic surgery. Rheumatoid arthritis have low representation (0.8%) indicates that it is either less common or requires less frequent surgical treatment. The orthopedic departments' emphasis of joint replacement treatments and trauma care is supported by this diagnostic allocation.

TABLE 10: DISTRIBUTION BASED ON DIAGNOSIS (n=123)

DIAGNOSIS	n	%
Fracture	85	69.1
Osteoarthritis	34	27.7
Rheumatoid arthritis	1	0.8
Others	3	2.4

With sensory and affective components average 11.57 and 4.86, respectively, patients' mean total pain score was 16.43 ± 3.59, suggesting a moderate level of discomfort with a noticeable emotional impact. A mean score of 6.55 on the visual analogue scale (VAS) indicated moderate pain. Effective pain management techniques are indicated by the mean pain intensity score of 1.07 (±0.80), which also emphasizes the need to address emotional reactions and lingering discomfort.

TABLE 11: MEAN AND STANDARD DEVIATION OF SHORT FORM McGILL PAIN QUESTIONNAIRE (SF-MPQ) (N=123)

SCALE	MEAN	STANDARD DEVIATION
Sensory	11.57	3.05
Affective	4.86	1.44
Total	16.43	3.59
Visual analogue scale	6.55	1.21

Present Pain intensity	1.07	0.80

Multiple qualitative descriptors were used by patients to describe their pain. They were most frequently Stabbing 96.7%(n=119), Tiring 95.1%(n=117), Aching 94.3%(n=116), and Sickening 93.5%(n=115), Throbbing 90.2%(n=111) followed by Heavy 88.6% (n=109), Shooting 87.8(n=108), Punishing 74.2%(n=92), Fearful 72%(n=89), and Sharp 63.4%(n=78) sensations. Descriptors typically associated with visceral or chronic pain, such as Hot-burning (30.1%), Cramping (15.4%), and Gnawing (15.4%), were reported less frequently. The least reported were Splitting 11.4% and Tender 8.1%. The broad spectrum of descriptions implies that pain is felt as an emotional and psychological burden in addition to a physical one.

TABLE 12: DISTRIBUTION BASED ON DESCRIPTORS OF PAIN (n=123)

TYPE OF PAIN	n	%
Throbbing	111	90.2
Shooting	108	87.8
Stabbing	119	96.7
sharp	78	63.4
Cramping	19	15.4
Gnawing	19	15.4
Hot-burning	37	30.1
Aching	116	94.3
Heavy	109	88.6
Tender	10	8.1
Splitting	14	11.4
Tiring	117	95.1
Sickening	115	93.5
Fearful	89	72.4
Punishing	92	74.8

Nausea, Drowsiness, Itching, Dizziness are the side effects of analgesics assessed; each is scored on a numeric rating scale from 1-3 mild,4-6 moderate, 7-10 severe. Nausea was a prominent side effect, affecting nearly half of the patients. While 40.7%(n=50) reported no nausea, a significant proportion 59.3%(n=73) experienced it to varying degrees. Notably, 22.8%(n=28) and 30.9% reported mild to moderate levels and 5.7%(n=7) experienced severe nausea. Drowsiness is one of the least reported side effect, with 26.8% of patients experiencing mild to moderate symptoms. However, the majority (73.2%) did not report any drowsiness. Itching was experienced by 44.7% of patients, with 34.1% reporting mild symptoms. While no patients reported severe itching. Dizziness was present in 43.1% of patients, with 15.4% experiencing moderate symptoms and one patient reporting severe dizziness. The findings highlight the importance of routine monitoring and individualized supportive care to mitigate adverse effects while ensuring adequate postoperative analgesia.

TABLE 13: DISTRIBUTION BASED ON SIDE EFFECTS(n=123)

SR. NO	SIDE EFFECTS	n	%
1	**Nausea**		
	0	50	40.7
	1-3	28	22.8
	4-6	38	30.9
	7-10	7	5.7
2	**Drowsiness**	**n**	**%**
	0	90	73.2
	1-3	25	20.3
	4-6	8	6.5
	7-10	0	0
3	**Itching**	**n**	**%**
	0	68	55.3
	1-3	42	34.1
	4-6	13	10.6
	7-10	0	0
4	**Dizziness**	**n**	**%**
	0	70	56.9
	1-3	33	26.8
	4-6	19	15.4
	7-10	1	0.8

Anxiety, fear (frightened), depression, and helplessness are among the emotional status assessed; each is scored on a numeric rating scale from 1-3 mild,4-6 moderate, 7-10 severe. About 54.5%(n=67) of patients were anxious, 38.2%

(n=47) expressed mild anxiety but only 13.0%(n=16) and 3.3%(n=4) of respondents reported moderate and severe anxiety, respectively. Fright was also frequently reported, with 74.8% (n=92) of participants indicating some degree of fear. A substantial portion (26.8%) experienced moderate symptoms, while 4.1% reported severe fear. Depression, while less frequently reported than anxiety or fear, still affected 30.1% (n=37) of patients to some extent. Most cases were mild (26%), but a small number experienced moderate to severe depression. Helplessness was reported by 80.5% (n=99) of patients, with 47.2% experiencing moderate symptoms a notably high proportion. These results underscore the critical importance of incorporating psychological evaluation and support into postoperative care.

TABLE 14: DISTRIBUTION BASED ON EFFECT OF PAIN ON EMOTIONAL STATUS (n=123)

Sr. No	EMOTIONAL STATUS	n	%
1	**Anxious**	**n**	**%**
	0	56	45.5
	1-3	47	38.2
	4-6	16	13.0
	7-10	4	3.3
2	**Frightened**	**n**	**%**
	0	31	25.2
	1-3	54	43.9
	4-6	33	26.8
	7-10	5	4.1
3	**Depression**	**n**	**%**
	0	86	69.9
	1-3	32	26.0
	4-6	4	3.3
	7-10	1	0.8
4	**Helplessness**	**n**	**%**
	0	24	19.5
	1-3	38	30.9
	4-6	58	47.2
	7-10	3	2.4

Pain significantly interfered with both out-off bed activities mean = 8.3, and in-bed activities, mean =7.1 as well as sleep mean =6.3. These findings highlight the multidimensional impact of pain on daily functioning and support the incorporation of functional outcome assessments in pain management protocols and also effective analgesia must target not only pain relief but also functional restoration and sleep quality.

TABLE 15: DISTRIBUTION BASED ON EFFECT OF PAIN ON ACTIVITY (n=123)

EFFECT OF PAIN ON ACTIVITY	MEAN	STANDARD DEVIATION
In-bed activities	7.1	1.65
Out-off bed activities	8.3	2.21
Lack of sleep	6.3	2.66

This table explains that the degree of pain being experienced by the patients in the first 24 hours postoperatively, individual differences in pain thresholds and experiences are suggested by the mean scores for least pain 3.5, worst pain 7, and severe pain 7.2. The low severe pain standard deviation 0.14 suggests that afflicted individuals consistently report high pain levels, in the first 24 hours postoperatively, highlighting the necessity of swift and forceful pain management during times of peak discomfort.

TABLE 16: MEAN AND DEVIATION BASED ON PAIN DEGREE (n=123)

PAIN DEGREE	MEAN	STANDARD DEVIATION
Least pain	3.5	2.05
Worst pain	7	1.63
Severe pain	7.2	0.14

This table explains the intensity of pain experienced by patients, the majority of patients,71.5% (n=88) reported moderate pain, followed by severe pain 18.7%(n=23) and mild pain 8.1%(n=10) Merely 1.6% (n=2) did not feel any pain at all. This emphasizes the necessity of careful postoperative pain management and customized therapies, particularly for patients who report excruciating pain, since they are more likely to experience problems and experience a delayed recovery.

TABLE 17: DISTRIBUTION BASED ON INTENSITY OF PAIN (n=123)

INTENSITY OF PAIN	n	%
No pain	2	1.6
Mild pain	10	8.1
Moderate pain	88	71.5
Severe pain	23	18.7

Among 123 patients, all patients received 100% non-opioid analgesics, while 76.4%(n=94) of patients took opioids in combination with non-opioids. The relevance of multimodal analgesia in orthopedic settings to achieve efficient pain control while avoiding opioid-related side effects is highlighted by the extensive use of combination therapy.

TABLE 18: DISTRIBUTION BASED ON TYPE OF ANALGESICS USED (n=123)

ANALGESICS	n	%
Non-opioids	123	100
Opioids	94	76.4
Both	94	76.4

99.2% (n = 122) of people utilized Paracetamol, confirming its use as a first-line painkiller. The next most popular medications. were Diclofenac 21.9%(n-27), Lornoxicam 17.9% (n-22), and Aceclofenac 15.4% (n-19), The comparatively reduced usage of mefenamic acid, pregabalin, and Flupirtine may be due to certain pain profiles or patient demands. These findings support the use of adjuvants and NSAIDs in the treatment of postoperative pain

TABLE 19: DISTRIBUTION BASED ON USAGE OF NON-OPIODS (n=123)

NON-OPIODS	n	%
Lornoxicam	22	17.9
Paracetamol	122	99.2
Flupirtine	11	8.9
Aceclofenac	19	15.4
Diclofenac	27	21.9
Pregabalin	11	8.9
Mefenamic acid	3	2.4

The most often used opioid was Tramadol 64.2% (n=79), which was followed by Fentanyl 36.6% (n=45) Pethidine 18.7% (n=23). In 16.2% of patients, Morphine was utilized, but Pentazocin was not. An attempt to offer long-lasting analgesia with fewer systemic adverse effects is indicated by the use of transdermal alternatives such as Zupinor patches (9.7%). Tramadol's domination is a result of its moderate potency and superior safety profile, which make it appropriate for a wide range of patients.

TABLE 20: DISTRIBUTION BASED ON USAGE OF OPIOIDS (n=123)

OPIOIDS	n	%
Morphine	20	16.2
Fentanyl	45	36.6
Pethidine	23	18.7
Tramadol	79	64.2
Zuprinor patch	12	9.7

The table describes the patient's pain relief received from both medicine and non-medicine treatments, the vast majority of participants experienced significant pain relief, with 86.1% (n = 106) , reporting complete relief 70-100%, indicating high effectiveness of the interventions utilized. A smaller proportion, 13.1% (n = 16), experienced moderate relief (40-60%), while only 0.8% (n = 1) reported mild pain relief and 0% participants reported no pain relief. This pattern emphasizes the potential efficacy of the strategies or interventions applied, likely including both pharmacological and non-pharmacological modalities.

TABLE 21: DISTRIBUTION BASED ON PAIN RELIEF (n=123)

PAIN RELIEF	CATEGORY	n	%
No relief	0%	0	0
Mild relief	10-30%	1	0.8
Moderate relief	40-60%	16	13.1
Complete relief	70-100%	106	86.1

In the distribution of pain-relieving non-medicinal techniques, Notably, 44.7% (n=55) of respondents

did not use any non-medicinal method, which may imply either a strong reliance on medicinal methods or a lack of awareness/access to non-medicinal alternatives. Among those who did use non-medicinal options, cold packs were the most frequently employed 23.6%(n=29), followed by rest 13%(n=16), prayer 10.6%(n=13), and massage 8.1%(n=10).

TABLE 22: DISTRIBUTION BASED ON USAGE OF NON-MEDICINES (n=123)

NON-MEDICINES	n	%
Cold pack	29	23.6
Massage	10	8.1
Prayer	13	10.6
Rest	16	13
Nil	55	44.7

CONCLUSION

This study reveals that postoperative pain is a prevalent concern among patients undergoing orthopedic surgery, with a significant number experiencing moderate to severe pain postoperatively.

The study concludes that majority of the patients experienced moderate to severe pain postoperatively.

While assessing the pain relief, it is found that a significant proportion was relieved from the pain management techniques.

Pain assessment tools such as the Short-Form McGill Pain Questionnaire (SF-MPQ) and APS-POQ-R were effectively utilized to evaluate both the quality and severity of pain and the impact on emotional and physical well-being.

The majority of patients (77.2%) reported chronic pain, with pain predominantly localized in the lower limb (56.9%) and described using pain descriptors such as stabbing (96.7%) and aching (94.3%).

Both opioid and non-opioid analgesics were widely used, with paracetamol (99.2%) and tramadol (64.2%) being the most frequently administered drugs, indicating a preference for multimodal pain management strategies.

The findings suggest that comprehensive pain management protocols, incorporating appropriate analgesic use and individualized pain assessment, are essential for improving postoperative outcomes and enhancing the overall quality of care in orthopedic patients.

CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

ETHICAL CLEARANCE

The study protocol was reviewed and approved by the Institutional Ethics Committee (IEC). Written informed consent was obtained from all participants before data collection, and patient confidentiality was strictly maintained throughout the study.

REFERENCES

1. Raja S, Carr D, Cohen M, et al. The revised International Association for the Study of Pain definition of pain: concepts, challenges, and compromises. Pain. 2020;161(9):1976–1982.
2. Buvanendran A, Fiala J, Patel KA, Golden AD, Moric M, Kroin JS. The incidence and severity of postoperative pain following inpatient surgery. Pain Med. 2015;16(12):2277–83.
3. Gan TJ, Habib AS, Miller TE, White W, Apfelbaum JL. Incidence, patient satisfaction, and perceptions of post-surgical pain: results from a US national survey. Curr Med Res Opin. 2014;30(1):149–60.

4. Kral LA, Ghafoor VL. Pain and its management. In: Zeind CS, Carvalho MG, editors. Koda-Kimble and Young's Applied Therapeutics: The Clinical Use of Drugs. 11th ed. Philadelphia: Wolters Kluwer; 2017. p. 112–146.
5. Sparrow C, Portenoy R. Neurophysiology of pain and analgesia and the pathophysiology of neuropathic pain. In: McCaffery M, Sparrow C, editors. Pain Assessment and Pharmacologic Management. St. Louis (MO): Mosby; 2011. p. 1–12.
6. Randich A, Ness T. Modulation of spinal nociceptive processing. In: Fishman SM, Ballantyne JC, Rathmell JP, editors. Bonica's Pain Management. Baltimore (MD): Wolters Kluwer Health; 2010.
7. Woolf CJ. Central sensitization: Implications for the diagnosis and treatment of pain. Pain. 2011;152(Suppl):S2–15. doi:10.1016/j.pain.2010.09.030.
8. Human LS, Birnie KA, Noel M, et al. Psychological interventions for needle-related procedural pain and distress in children and adolescents. Cochrane Database Syst Rev. 2013;(10):CD005179.
9. Wetherell JL, Dinner N, Rutledge T, et al. A randomized, controlled trial of acceptance and commitment therapy and cognitive-behavioral therapy for chronic pain. Pain. 2011;152(9):2098–2107.
10. Tsatali M, Papaliagkas V, Damigos D, Mavreas V, Gouva M, Tsolaki M. Depression and anxiety levels increase chronic musculoskeletal pain in patients with Alzheimer's disease. Curr Alzheimer Res. 2014;11(6):574–579.
11. International Association for the Study of Pain (IASP). IASP terminology. Washington, DC: IASP; 2017.
12. Orr PM, Galuska MA, Douglas D. Pain management in critically ill patients. Crit Care Nurs Clin North Am. 2017;29(4):407–418.
13. Clauw DJ, Häuser W, Fitzcharles MA, Cohen SP. Considering the potential for an increase in chronic pain after the COVID-19 pandemic. Postgrad Med. 2019;131(3):185–198.
14. Stanos S, Brodsky M, Argoff C, Clauw DJ, D'Arcy Y, Donevan S, et al. Rethinking chronic pain in a primary care setting. Postgrad Med. 2016;128(5):502–515.
15. Ersek M, Polomano RA. Nursing management of pain. In: Lewis SL, Dirksen SR, Heitkemper MM, Bucher L, Camera IM, editors. Medical-surgical nursing: assessment and management of clinical problems. 8th ed. Philadelphia: Elsevier; 2011. p. 127–52.
16. Haanpaa M, Attal N, Treede R, et al. NeuPSIG guidelines on neuropathic pain assessment. Pain. January 2011. 152(1):14-27.
17. Donohoe, Charles D. History and Physical Examination of the Pain Patient. Steven D. Waldman, MD. Pain Management. 2nd. USA: Elsevier Saunders; 2011. 36-49.
18. LeBel, Alyssa A. Assessment of Pain. Jane Ballantyne, Scott M. Fishman, Salahadin Abdi. The Massachusetts General Hospital Handbook of Pain Management. second. USA: Lippincott Williams & Wilkins; 2002.
19. Nunes E, Herkrath F, Suzuki E, Júnior E, Marques A, Sponchiado Júnior EC. Comparison of the effect of photobiomodulation therapy and ibuprofen on postoperative pain after endodontic treatment: randomized, controlled, clinical study. Lasers Med Sci. 2020;35:165–71.
20. E.D. Bruera, R.K. Portenoy (Eds.), Cancer pain. Assessment and management, Cambridge University Press, Cambridge (2003), pp. 51-66
21. C.S. Cleeland Pain assessment in cancer D. Osoba (Ed.), Effect of cancer on quality of life, CRC Press, Inc., Boca Raton, FL (1991), pp. 293-305
22. Ventafridda V, Saita L, Ripamonti C, De Conno F. WHO guidelines for the use of analgesics in cancer pain. Int J Tissue React. 1985;7(1):93-6.
23. Araujo AM, Gómez M, Pascual J, Castañeda M, Pezonaga L, Borque JL. Treatment of pain in the oncology patient]. An Sist Sanit Navar. 2004;27 Suppl 3:63-75.
24. Schug SA, Robert Garrett W, Gillespie G. Opioid and non-opioid analgesics. Best Pract

Res Clin Anaesthesiol. 2003;17:91–110. doi:10.1053/BEAN.2003.0267.
25. Alorfi NM. Prescribing patterns and pharmacological knowledge of analgesics among community pharmacists in Jeddah, Saudi Arabia. Bull Pharm Sci Assiut. 2023;46:647–657. doi:10.21608/BFSA.2023.301293.
26. Green GA. Understanding NSAIDs: from aspirin to COX-2. Clin Cornerstone. 2001;3:50–59. doi:10.1016/S1098-3597(01)90069-9
27. Botting RM. Mechanism of action of acetaminophen: is there a cyclooxygenase Clin Infect Dis. 2000;31:S202–S210. doi:10.1086/317520
28. Sawynok J. Topical analgesics in neuropathic pain. Curr Pharm Des. 2005;11:2995–3004. doi:10.2174/1381612054865019
29. Stanos SP, Galluzzi KE. Topical therapies in the management of chronic pain. PostgradMed2013;125(sup1):25doi:10.1080/00325481.2013.1110567111
30. Risser A, Donovan D, Heintzman J, Page T. NSAID prescribing precautions. Am Fam Physician. 2009;80:1371–1378.

HOW TO CITE: Christeena Jaison, Merin Joseph, Temi Biju, Krishnaprabha C, Assessment of Postoperative Pain and its Management in Orthopedic Department in a Tertiary Care Hospital, Int. J. of Pharm. Sci., 2026, Vol 4, Issue 8, 4403-4413. https://doi.org/10.5281/zenodo.22120117