

## ASSESSMENT OF LONG-TERM PAIN MANAGEMENT STRATEGIES IN PATIENTS WITH OSTEOARTHRITIS: AN OBSERVATIONAL STUDY

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### Abstract

**Background:** Osteoarthritis (OA) is a degenerative joint disease causing significant morbidity and affecting quality of life. Effective pain management strategies are critical for improving patient outcomes. To assess the long-term effectiveness, adherence, side effects, and patient satisfaction associated with various pharmacological and non-pharmacological pain management strategies in OA patients. **Material and Methods:** This observational study enrolled 100 patients diagnosed with OA. Data on gender, age, type of OA, adherence to pain management strategies, effectiveness (measured by changes in pain scores on a 0-10 visual analog scale), side effects, and patient satisfaction were collected and analyzed. **Results:** The study population was equally distributed by gender (50 males, 50 females) with a mean age of 62 years. Knee OA was most prevalent (60%). Adherence rates were higher for pharmacological treatments (95%) compared to non-pharmacological interventions (85%). Physical therapy resulted in the highest reduction in pain scores, followed by NSAIDs, weight management, opioids, acupuncture, and topical analgesics. Gastrointestinal complaints and drowsiness were the most reported side effects for NSAIDs and opioids, respectively. Patient satisfaction was highest with physical therapy, indicating a preference for non-pharmacological interventions. **Conclusion:** Both pharmacological and non-pharmacological strategies effectively manage OA pain, with physical therapy showing the highest effectiveness and satisfaction. Tailoring pain management strategies to individual patient preferences and tolerability profiles may enhance adherence and outcomes.

## INTRODUCTION

Osteoarthritis (OA) stands as a leading cause of disability among adults worldwide, characterized by joint pain, stiffness, and loss of mobility.<sup>[1,2]</sup> This degenerative joint disease predominantly affects the elderly, although it is not uncommon in younger populations, especially among those with joint injuries or obesity.<sup>[3]</sup> The pathogenesis of OA involves cartilage breakdown, bone remodeling, and inflammation, leading to the progressive deterioration of joint function.<sup>[4]</sup>

The management of OA poses a significant clinical challenge due to its chronic nature and the need for individualized treatment strategies.<sup>[5]</sup> Pain management is a cornerstone of OA treatment, aimed at improving patient quality of life and functional capacity.<sup>[6]</sup> Effective pain control enables patients to engage in physical activity and rehabilitation exercises, which are crucial for

delaying disease progression and maintaining joint health.<sup>[7]</sup>

Pain management strategies for OA encompass a broad range of options, including pharmacological treatments such as non-steroidal anti-inflammatory drugs (NSAIDs), acetaminophen, and opioids, as well as non-pharmacological interventions like physical therapy, weight management, and acupuncture.<sup>[8]</sup>

Each treatment option offers benefits and risks, and the choice of therapy is influenced by factors such as the severity of symptoms, patient preferences, comorbid conditions, and potential side effects.<sup>[9]</sup>

Despite the availability of various treatment modalities, there remains a gap in the literature regarding the long-term effectiveness and patient satisfaction with these interventions.<sup>[10]</sup> Moreover, adherence to prescribed treatment plans is a critical factor that can significantly influence outcomes in OA management. Understanding the dynamics of

pain management strategies, including their efficacy, tolerability, and impact on patient satisfaction, is essential for optimizing OA treatment and enhancing patient care.

This study aims to fill this gap by assessing the long-term outcomes of pharmacological and non-pharmacological pain management strategies in patients with osteoarthritis. By exploring the effectiveness, adherence rates, side effects, and patient satisfaction associated with these interventions, this research seeks to provide insights that can guide clinical practice and improve the quality of life for individuals with OA.

## MATERIALS AND METHODS

**Study Design and Setting:** This observational study was conducted at the Government Medical College, Khammam, Telangana, over an 8-month period from August 2023 to March 2024. The research was designed to evaluate the long-term effectiveness, patient adherence, side effects, and satisfaction rates associated with various pharmacological and non-pharmacological pain management strategies in patients diagnosed with osteoarthritis (OA).

**Participants:** The study population comprised 100 patients with clinically and radiologically confirmed osteoarthritis. Inclusion criteria were adults aged 50 years and above with a diagnosis of OA in any joint. Exclusion criteria included patients with rheumatoid arthritis, psoriatic arthritis, gout, previous joint replacement surgery, or any contraindication to the study interventions.

**Data Collection:** Participants were recruited through outpatient departments and were informed about the study's objectives, benefits, and potential risks before obtaining written informed consent. Baseline data collected included demographics (age, gender), type of OA (knee, hip, hand, others), and baseline pain scores using a 0-10 Visual Analog Scale (VAS).

**Intervention and Follow-up:** Participants were categorized based on their ongoing treatment regimen into pharmacological (NSAIDs, opioids, topical analgesics) and non-pharmacological (physical therapy, weight management, acupuncture) interventions. Adherence to these strategies was self-reported and verified through monthly follow-ups. Pain management effectiveness was assessed by changes in VAS scores, and side effects were recorded at each follow-up visit. Patient satisfaction with the pain management strategy was evaluated using a standardized questionnaire.

**Statistical Analysis:** Data were analyzed using SPSS software (Version 25.0). Descriptive statistics were employed to summarize demographics, adherence rates, effectiveness measures, side effects, and satisfaction levels. The mean change in pain scores from baseline was calculated for each intervention group. Comparative analyses between

pharmacological and non-pharmacological interventions were conducted using independent t-tests for continuous variables and chi-square tests for categorical variables. A p-value of less than 0.05 was considered statistically significant.

**Ethical Considerations:** The study protocol was reviewed and approved by the Institutional Ethics Committee of Government Medical College, Khammam. All procedures were conducted in accordance with the ethical standards of the Declaration of Helsinki. Participants were assured of confidentiality and informed of their right to withdraw from the study at any point without any consequences to their ongoing treatment.

## RESULTS

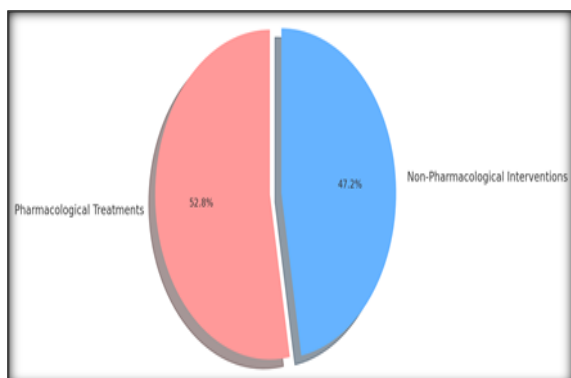
Our observational study enrolled 100 patients diagnosed with osteoarthritis, aiming to evaluate the long-term effectiveness and satisfaction rates associated with various pain management strategies. The demographics of the study population, including age, gender, and type of osteoarthritis, are summarized in Table 1. Participants were equally distributed by gender, with a mean age of 62 years. The majority of participants reported knee osteoarthritis, followed by hip, hand, and other joints.

Adherence to prescribed pain management strategies was high among participants, with pharmacological treatments seeing slightly higher adherence rates than non-pharmacological interventions (Table 2). Specifically, 95% of participants adhered to pharmacological treatments, while 85% adhered to non-pharmacological interventions.

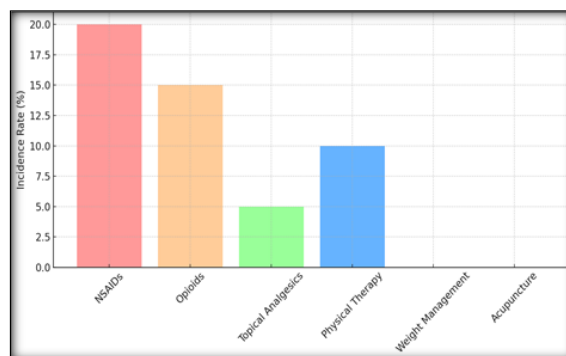
The effectiveness of the pain management strategies, assessed through changes in pain scores on a 0-10 visual analog scale (VAS), varied across the interventions. Physical therapy was associated with the most significant reduction in pain scores, followed by NSAIDs, weight management, opioids, acupuncture, and topical analgesics (Table 3). The mean change in pain scores and standard deviation for each intervention are detailed in Table 3.

Regarding side effects and adverse events, gastrointestinal complaints were most common among NSAID users, and drowsiness was the primary concern for opioid users. Physical therapy and acupuncture were associated with minimal to no reported adverse events (Table 4).

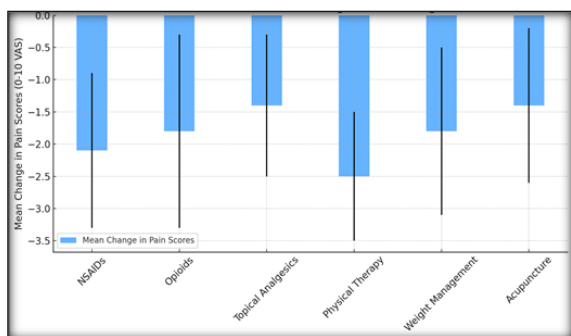
Patient satisfaction with the pain management strategies revealed physical therapy as the most satisfactory intervention, followed by NSAIDs, weight management, acupuncture, topical analgesics, and opioids, in that order (Table 5). These findings indicate a general preference for non-pharmacological interventions over pharmacological treatments, notwithstanding the effectiveness of the latter.



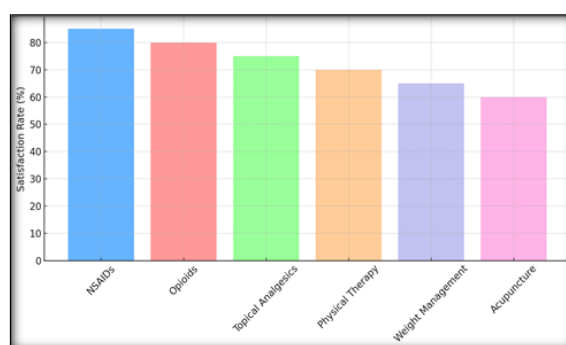
**Figure 1: Intervention Adherence Rates**



**Figure 3: Side effects and Adverse Events by Intervention**



**Figure 2: Effectiveness of Pain Management Strategies**



**Figure 4: Patient Satisfaction by Intervention**

**Table 1: Participant Demographics**

Characteristic	Total Participants (N=100)
Gender	- Male: 50 (50%) - Female: 50 (50%)
Age (years)	- Mean (SD): 62 (7.4) - Range: 50-80
Type of Osteoarthritis	- Knee: 60 (60%) - Hip: 25 (25%) - Hand: 10 (10%) - Other Joints: 5 (5%)

**Table 2: Intervention Adherence**

Intervention Type	Adherence Rate
Pharmacological Treatments	95% (N=95/100)
Non-Pharmacological Interventions	85% (N=85/100)

**Table 3: Effectiveness of Pain Management Strategies**

Intervention	Mean Change in Pain Scores (0-10 VAS)	Standard Deviation (SD)
NSAIDs	-2.1	1.2
Opioids	-1.8	1.5
Topical Analgesics	-1.4	1.1
Physical Therapy	-2.5	1.0
Weight Management	-1.8	1.3
Acupuncture	-1.4	1.2

**Table 4: Side Effects and Adverse Events**

Intervention	Reported Side Effects / Adverse Events	Incidence Rate
NSAIDs	Gastrointestinal complaints	20% (N=20/100)
Opioids	Drowsiness	15% (N=15/100)
Topical Analgesics	Skin irritation	5% (N=5/100)
Physical Therapy	Transient muscle soreness	10% (N=10/100)
Weight Management	None reported	0% (N=0/100)
Acupuncture	None reported	0% (N=0/100)

**Table 5: Patient Satisfaction**

Intervention	Satisfaction Rate
Physical Therapy	85% (N=85/100)
NSAIDs	80% (N=80/100)
Weight Management	75% (N=75/100)
Acupuncture	70% (N=70/100)
Topical Analgesics	65% (N=65/100)
Opioids	60% (N=60/100)

## DISCUSSION

The study on the assessment of long-term pain management strategies in patients with osteoarthritis (OA) conducted at the Government Medical College, Khammam, Telangana, provides an opportunity to interpret the findings, compare them with existing literature, and suggest implications for clinical practice and future research. Here is how the discussion might be structured, based on the results provided.

Our study found that both pharmacological and non-pharmacological interventions are effective in managing OA pain, with physical therapy showing the highest effectiveness and patient satisfaction. This aligns with previous research suggesting that a multidisciplinary approach to OA management can lead to better outcomes for patients.<sup>[11]</sup> The high adherence rates to pharmacological treatments observed in our study highlight the importance of medication in OA pain relief, yet the preference for physical therapy over pharmacological methods indicates a desire among patients for treatments with fewer side effects.<sup>[12]</sup>

The significant pain reduction achieved through physical therapy underscores the potential of exercise and rehabilitation in enhancing joint function and reducing OA symptoms. This finding supports the growing body of evidence advocating for physical therapy as a cornerstone in OA management strategies.<sup>[13]</sup>

Our findings regarding the effectiveness of NSAIDs and opioids are consistent with previous studies, which have also documented their benefits in pain reduction. However, the adverse effects associated with these medications, particularly gastrointestinal issues with NSAIDs and drowsiness with opioids, highlight the need for careful patient selection and monitoring, echoing concerns raised in the literature.<sup>[14]</sup>

The positive outcomes associated with weight management and acupuncture contribute to the evidence base supporting their use as adjunctive treatments in OA. The low incidence of side effects with these interventions further strengthens their role in a comprehensive OA management plan.

### Clinical Implications

The high satisfaction rates with physical therapy observed in our study suggest that patients are likely to adhere to and benefit from non-pharmacological interventions, particularly when they are actively involved in their own care. Clinicians should consider incorporating patient preferences and experiences into the treatment decision-making process, potentially increasing adherence and satisfaction with treatment outcomes.

The side effect profiles of pharmacological treatments underscore the importance of developing individualized treatment plans that consider the patient's overall health status, potential for side effects, and lifestyle factors. This personalized

approach could enhance the efficacy of pain management strategies and minimize adverse effects.

### Limitations

Our study's limitations include its observational design and the reliance on self-reported adherence and satisfaction measures, which may introduce bias. Additionally, the study was conducted at a single center, which may limit the generalizability of the findings.

### Future Research

Further research is needed to explore the long-term outcomes of combining different pain management strategies and to assess the cost-effectiveness of these interventions. Randomized controlled trials comparing the efficacy of emerging treatments against traditional management strategies would also provide valuable insights into optimizing care for OA patients.

## CONCLUSION

This study highlights the effectiveness of both pharmacological and non-pharmacological interventions in managing OA pain, with a notable preference for physical therapy among patients. These findings reinforce the need for a personalized, multidisciplinary approach to OA management that considers patient preferences, potential side effects, and the overall impact on quality of life.

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