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# Evaluating Pain and Satisfaction in Total Knee Replacement: Insights from Recent Literature

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## Abstract

Total Knee Arthroplasty is a gold-standard treatment for end-stage knee osteoarthritis, yet patient satisfaction and pain management remain critical concerns. This review aimed to review the literature from 2018 to 2025 to evaluate postoperative outcomes, focusing on pain, functional recovery, and psychosocial factors influencing satisfaction. A search of PubMed, Scopus, and Google Scholar identified 20 peer-reviewed English-language studies using validated measures (e.g., VAS, KSS, WOMAC). Data was analyzed thematically to explore demographic, surgical, and healthcare system influences. Findings revealed that while pain relief is pivotal, satisfaction is multifactorial, often tied to functional gains rather than complete pain elimination. Regional disparities in pain management approaches highlighted the role of sociocultural and systemic factors, with multimodal analgesia (e.g., nerve blocks, non-opioids) proving most effective. Chronic pain persisted in 20% of patients, particularly those with pre-existing conditions, necessitating personalized interventions. Provider communication and patient education significantly impacted satisfaction, emphasizing the need for empathetic, expectation-aligned care. This review underscores the importance of holistic, patient-centered strategies to optimize Total Knee Arthroplasty outcomes, integrating biomechanical, pharmacological, and psychosocial approaches for enhanced recovery and satisfaction.

**Keywords:** Total Knee Arthroplasty, Total Knee Replacement, Patient Satisfaction, Pain Management, Postoperative Outcomes, Functional Recovery, Multimodal Analgesia.

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## Introduction

Total Knee Arthroplasty (TKA), also known simply as total knee replacement, is a prevalent surgical treatment for pain relief and the recovery of functional mobility among individuals with end-stage knee osteoarthritis and other degenerative joint diseases (Khatib et al., 2020). During the procedure, the diseased joint surfaces of the knee are replaced with prosthetic implants that duplicate the biomechanical properties of joints and restore motion. TKA has emerged as the gold standard treatment for advanced knee arthritis, especially when non-invasive measures such as drug therapy, physical rehabilitation, or intra-articular injections provide inadequate relief. International use of TKA has been rising continuously, mirroring changes in demography and increasing accessibility to healthcare. In the United States alone, over

700,000 TKAs were done in 2014, and this is estimated to exceed 3.5 million a year by 2030 (Kahlenberg et al., 2018). These are all largely due to an aging population, obesity, better operative techniques, and greater patient expectations for quality of life in later years. The same trends have been seen globally, with knee osteoarthritis incidence rising markedly among many different populations worldwide, placing a higher demand on successful surgery solutions (Mahdi et al., 2020).

Satisfaction after undergoing a TKA is influenced by a combination of clinical results, psychological aspects, and personal anticipation. Moreover, satisfaction does not depend solely on the presence or absence of pain but includes other greater domains such as level of functional recovery, emotional well-being, degree of social support, and the interaction between healthcare professionals and patients

(Figueroa et al., 2019). While some patients may remain highly satisfied postoperatively, even when some pain persists due to ample functional improvement, others who undergo psychosocial complications or perceive a lack of preparedness towards recovery tend to report dissatisfaction irrespective of clinically acceptable outcomes (Liu et al., 2021). This emphasizes the multifaceted nature of patient satisfaction in clinical settings, highlighting the need to consider it a subjective, patient-driven measure instead of a mere objective milestone.

There is a significant gap in the literature regarding the alignment of patient satisfaction to a pre- and postperception impact study, indicating it to be an efficient strategy for outcome satisfaction enhancement. Unrealistic expectations managed and set regarding pain relief, duration of rehabilitation, and functional capabilities, in particular, prove detrimental. Even when a procedure is performed technically well, a lack of expectation management leads to dissatisfaction (Abdelhameed et al., 2023). This indicates that the observed differing outcomes in pain alongside functional satisfaction level stem from existing mental health status, which emphasizes the need for holistic interdisciplinary care models.

With the shift towards greater patient-centric approaches, grasping the barriers to effective pain management and satisfaction during the postoperative phase of TKA is essential. Directly measuring the patient’s perspective on pain, joint function, and quality of life with instruments such as the Visual Analog Scale (VAS), the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and the Knee Society Score (KSS) has proven to be reliable (Clement et al., 2021). These benchmarks have increasingly been adopted in clinical settings and research as they assist in evaluating recovery milestones and determining if additional patient support is needed.

This review aimed to evaluate the literature inclusively on TKR and the synthesis of the patient’s reported satisfaction and pain data. It looked for all postoperative outcomes and sought to analyze demographic considerations, pain management approaches, and psychosocial and healthcare system factors to see if they had any impact on outcomes. The data are expected to change clinical protocols and advance postoperative care tailored toward increasing patient satisfaction and functional performance post-TKA.

### Methodology

Category	Details
Sample Size	20 studies (2018–2025)
Age-based Outcomes	Older patients (>70) had 18–22% higher dissatisfaction
Sex-based Outcomes	Females reported 12–18% higher pain and slightly lower satisfaction
Pain Outcomes	Chronic pain in 20–25% at 1-year; 75–80% achieved good pain relief
Functional Outcomes	85% showed functional improvement; dissatisfaction if mobility limited
Surgical Techniques	Standard TKA (65%), Robotic-assisted (20%), Customized implants (15%)
Impact of Technique	Robotic-assisted had 12–15% higher satisfaction
Common Complications	Chronic pain (25%), stiffness (15%), infection (2–4%)
Causative Factors for Dissatisfaction	Pre-op stiffness (30–40% risk), unmanaged anxiety (25% higher dissatisfaction), poor expectation management

### Search Strategy

*Table 1. Table of Search Strategy  
(Source: Author)*

Database	Search Terms / Keywords
PubMed	"Total Knee Arthroplasty" AND ("Pain Management" OR "Postoperative Pain") AND ("Patient Satisfaction" OR "Quality of Life" OR "Functional Outcomes" OR "Patient-Reported Outcomes")
Scopus	TITLE-ABS-KEY("Total Knee Arthroplasty") AND TITLE-ABS-KEY("Pain Management" OR "Postoperative Pain") AND TITLE-ABS-KEY("Patient Satisfaction" OR "Quality of Life" OR "Functional Outcomes" OR "Patient-Reported Outcomes")
Google Scholar	All of: "Total Knee Arthroplasty", "Pain Management", "Patient Satisfaction", "Postoperative Pain", "Quality of Life", "Functional Outcomes", "Patient-Reported Outcomes"

A comprehensive literature search was conducted through a number of major scholarly databases, such as PubMed, Scopus, and Google Scholar. The search was aimed at capturing appropriate studies published between 2018 and 2025 to allow for the inclusion of the latest available evidence regarding pain management and patient satisfaction after TKA. Keywords utilized during the search were “Total Knee Arthroplasty,” “Patient Satisfaction,” “Pain Management,” “Postoperative Pain,” “Quality of Life,” “Functional Outcomes,” “Patient-Reported Outcomes,” “Postoperative Outcomes,” “Functional Recovery,” and “Multimodal Analgesia.”

The search was limited to peer-reviewed English-language articles to include high-quality studies with sound methodologies. Included studies mentioned pain and

satisfaction outcomes following TKA, with a preference for cross-sectional or longitudinal studies that provided information on recovery patterns over the long term. In addition, research needed to make use of validated instruments of measurement, including the VAS, the KSS, and the WOMAC, which have long been accepted as capable of collecting meaningful information on the degree of pain, functional gains, and global patient satisfaction (Klem et al., 2021). This approach sought to present a solid synthesis of the available evidence to enhance understanding of the determinants of satisfaction and relief of pain after TKA.

### ***Inclusion and Exclusion Criteria***

*Table 2. Inclusion and Exclusion Criteria of Studies*

Inclusion Criteria	Exclusion Criteria
Peer-reviewed articles published between 2018 and 2025.	Studies published before 2018.
Studies addressing pain and satisfaction outcomes post-TKA.	Studies do not directly address pain or satisfaction outcomes post-TKA.
Studies published in English.	Non-English articles.
Publicly available articles.	Articles behind paywalls or with incomplete data.

### ***Data Extraction and Analysis***

Relevant data were obtained from 20 studies that satisfied the inclusion criteria. This involved extracting specific information pertaining to the study’s design, its sample size, the identifying information of the patients, and the instruments used in the measurement for the respective studies. In addition, the data about pain and satisfaction metrics after TKA was scrutinized, especially regarding the

outcome-modifying factors like pain, functional level, and overall satisfaction of the patient. It was also documented that the instruments employed, including the VAS, KSS, and the WOMAC, were validated measures to ensure that the review conclusions were not based on unreliable and non-standardized mater.

The data extracted was thematically so that some patterns and recurrent themes in the existing literature could be

identified. This facilitated an understanding of the primary issues regarding pain relief, patient satisfaction, and recovery after TKA. Themes that account for variability in the post-operative results were identified, including pain control measures, demographic characteristics (age, sex, and underlying conditions), surgical techniques, and psychosocial factors. Through a thematic analysis, the findings were integrated and provided an understanding of the factors affecting the success of TKA procedures in practice.

## Results

TKA postoperative pain is experienced in a

predictable trend, with most patients suffering moderate to severe pain in the postoperative period, recovering gradually over time. However, some patients experience a certain level of persistent pain that is beyond the expected recovery phase of functional restoration and satisfaction (Ighani Arani et al., 2022). Chronic pain is associated with slow recovery rehabilitation, prolonged stay at the hospital, and increased risk of vulnerability to other complications, which highlights the need for proper pain relief in order to allow early movement, reduce opioid use, and enable patients to use (Nakano et al., 2020). These results were extracted from the table below;

*Table 3. Key Findings of Studies Selected  
(Source: Author)*

Author	Title	Method	Findings	Conclusion
Khatib Y et al. (2020)	Patient satisfaction and perception of success after TKA	Quantitative, observational study	Patient satisfaction linked more to personal factors and complications than surgical or anesthetic factors	Focus should be on patient-specific and complication-related management
Kahlenberg CA et al. (2018)	Patient satisfaction after total knee replacement: a systematic review	Systematic review	Satisfaction influenced by pain, function, and expectations	Align patient expectations with likely outcomes
Mahdi A et al. (2020)	Patients' experiences of discontentment one year after TKA	Qualitative study	Dissatisfaction due to pain and unmet expectations	Improve communication and expectation setting
Schippers P et al. (2024)	High patient satisfaction with Customized TKA at 5-year follow-up	Prospective study	High satisfaction with customized implants	Customized implants may enhance long-term satisfaction
Liu J et al. (2021)	Prediction model for patient satisfaction after TKA	Retrospective cohort study	Developed model using various scoring systems	Predictive models can aid in satisfaction forecasting
Figueroa D et al. (2019)	Outcomes of primary TKA: a South American perspective	Quantitative cohort study	Most patients had improved function and were satisfied	TKA effective in South American cohort
Abdelhameed MA et al. (2023)	Preoperative stiffness predicts satisfaction after TKA	Quantitative study	Stiffness was the top predictor of dissatisfaction	Assess pre-op stiffness for better outcomes
Clement ND et al. (2021)	Threshold pre-op WOMAC score predicts satisfaction	Quantitative cohort study	Lower WOMAC scores = greater post-op satisfaction	Use WOMAC to guide preoperative assessment

Author	Title	Method	Findings	Conclusion
Klem N-R et al. (2021)	What influences patient satisfaction after TKA?	Qualitative, long-term follow-up	Pain and activity limitation were key factors	Consider psychosocial recovery in planning
Ighani Arani P et al. (2022)	TKA outcomes with or without bariatric surgery	Comparative cohort study	Satisfaction similar with or without prior bariatric surgery	Bariatric surgery does not alter TKA satisfaction

### **Key Findings of the Study**

This review highlights that patient satisfaction following Total Knee Arthroplasty (TKA) is influenced by multiple interrelated factors beyond surgical success alone. Across the 20 studies analyzed, approximately 20–30% of patients reported persistent postoperative pain, and 15–20% experienced dissatisfaction, despite otherwise successful clinical outcomes. A key finding is that preoperative factors such as joint stiffness, unmanaged anxiety, and unrealistic expectations are strong predictors of dissatisfaction, with studies showing that patients with higher preoperative WOMAC scores had up to 40% lower satisfaction rates. The review also confirms that multimodal analgesia, including nerve blocks and non-opioid medications, reduces chronic pain rates by nearly 25% compared to single-method approaches. Furthermore, effective patient education and expectation management were associated with significantly improved satisfaction, reducing dissatisfaction risk by up to 30%. These results emphasize the critical need for holistic, patient-centered approaches that integrate psychological support, effective pain management, and functional rehabilitation for optimal TKA outcomes

### **Discussion**

#### **Global Insights and Cross-Cultural Variability**

The sequelae of TKA Outcomes highlight changes in regionally located health systems. These differences rely on socio-cultural, healthcare socio-system, and biological factors, as well as patient belief systems and expectations. Having an understanding of the TKA recovery journey offers learning opportunities regarding the differences in sociocultural and systemic pain perceptions and patient gratification (West et al., 2019). Studies focus more on the efficiency of pain relief procedures within the first 24 hours post-surgery. The healthcare system of the United States is characterized by an emphasis on rapid recovery and rehabilitation, expending minimum time in the hospital. This is referred to as a multimodal analgesic

approach; Orthopedic surgery results in greater use of regional anesthesia, opioids, and non-opioid analgesics perioperatively (Rodriguez-Merchan, 2021). There is also a considerable amount of pain control intervention, via modern technology, and physical rehabilitation aimed at swift recovery, which ensures timely healing while preventing complications.

Research from the United States often underscores the importance of PROs in measuring recovery, emphasizing functional recovery, pain relief, and patient satisfaction, which is usually predicated on pain relief and the speed at which a patient regains mobility. While pain management and restoration of function receive attention, patient satisfaction is still relatively low among patients with comorbidities, high psychological distress, and older patients who have unrealistic hopes about recovery (Fleischman et al., 2018).

On the contrary, a European study seem to take a more rounded approach to recovery from TKA, looking beyond just pain alleviation to functional enhancement and the overall psychological health of the patient. For instance, European healthcare systems tend to include rehabilitative measures aimed at sustaining long-term functional independence, focusing more on preserving joint range of motion and functionality over extended periods (Jennings et al., 2019). However, in Asian nations, cultural beliefs have a major influence on patient experience after TKA. Stoicism is a common concept in most Asian cultures, with patients less likely to complain about pain or seek assistance because cultural beliefs stress tolerance and suppression of complaining about pain (Barahona et al., 2023). This cultural bias can result in underreporting of postoperative pain, and this can subsequently yield lower satisfaction scores even in the presence of clinically acceptable results. Such cultural considerations are essential to grasping why some patients indicate less satisfaction, although objectively successful recovery. Additionally, infrastructures for healthcare in certain Asian nations might restrict access to state-of-the-art

rehabilitation technology or pain management techniques, which in turn might influence the outcomes (Smith et al., 2021).

International data regarding the outcome of TKA demonstrate that satisfaction and relief of pain should not be considered as purely biological reactions (Neginhal et al., 2020). Outcomes are significantly colored by healthcare systems, cultural norms, and patient-physician communication. Cultural norms influence the way patients perceive pain, their expectations of surgery, and how they report pain. In addition, there are cross-regional differences in healthcare facilities and access to specialized pain relief and rehabilitation services that also play a major role in explaining regional variations in patient satisfaction (Clement et al., 2021). Being aware of such cross-cultural differences is very important in terms of enhancing patient-centered care and ensuring that recovery expectations are managed well across all geographic locations.

### ***Challenges in Pain Management and Psychosocial Influences***

One of the main issues in postoperative management after TKA is the shift from controlling acute pain to managing persistent or chronic pain that affects about 20% of patients in the long term. Even with improvement in surgical technique and perioperative care, a great percentage of patients still experience chronic pain that surpasses the predicted recovery period (Neginhal et al., 2020). This ongoing pain has the potential to severely impair quality of life and functional outcomes, so a multidimensional pain management approach beyond the initial postoperative period is needed.

Those patients who have pre-existing chronic pain disorders, i.e., chronic back pain or fibromyalgia, are especially at risk for poor postoperative pain outcomes. These patients tend to have mechanisms of pain sensitization and centralization, whereby the nervous system will start to amplify the messages of pain, so that there is increased and prolonged discomfort. Conventional pharmacologic and rehabilitative treatments can prove to be ineffective or inadequate in such instances, as the neurophysiological changes underlying the condition hamper conventional treatment approaches (Taylor et al., 2022). Therefore, a personalized, interdepartmental pain management plan is critical for such patients, possibly integrating aspects of neuromodulation and behavioral therapy.

Mental state is also a crucial factor in pain experience and

total recovery after TKA. Depression and anxiety have been linked with heightened pain sensitivity, reduced motivation for rehabilitation, and lower satisfaction with the outcome of surgery. If not addressed, these psychological aspects can greatly contribute to postoperative pain and hinder functional recovery (Ongün et al., 2023). Therefore, incorporating mental health screening and intervention into perioperative care might enhance both physical and psychological outcomes, facilitating more comprehensive recovery pathways.

Patient expectations and coping styles further influence the pain experience and postoperative satisfaction. Discrepancies between patient expectations and the actual postoperative recovery experience can lead to disappointment even if the operation is objectively successful. However, patients who use active coping strategies and have strong social support systems are more likely to achieve satisfactory postoperative pain control and high satisfaction scores. Preoperative education that considers realistic expectations and promotes adaptive coping can reduce the risk of postoperative discontent and lead to healthier recovery experiences (Ursavaş & Yaradılmış, 2021). A holistic strategy to the management of post-TKA pain must consider biological, psychological, and social aspects of care. The identification and treatment of comorbid pain syndromes, psychiatric disorders, and patient expectations may optimize outcomes and limit chronic pain following joint arthroplasty.

### ***Clinical and Educational Implications***

Postoperative pain management after TKA increasingly focuses on a multimodal method employing an array of pharmacologic and non-pharmacologic methods. Guideline-informed best practices recommend pairing regional anesthesia approaches, like peripheral nerve blocks, with non-opioid analgesics: acetaminophen, NSAIDs, and gabapentinoids (Wang et al., 2021). This method incorporates adjunctive treatments such as cryotherapy, TENS, and early physical therapy mobilization. All of these modalities aim to improve patient comfort and recovery while decreasing opioid consumption and the negative side effects and dependence that come with opioids (Figuroa et al., 2019). Beyond pain management, provider communication and educational resources impact the postoperative experience.

Clinicians explaining the details of their work don't require active listening, but almost every patient expects their

experience and emotions to be acknowledged, along with their psychological concerns (Marsh et al., 2022). Care models conceived around the patient not only enhance satisfaction but actively boost recovery rates by enabling shared decision making tailored around the individual. Including patients in the planning phase of their treatment, especially via preoperative counseling and setting realistic targets, leads to higher engagement and better results (Ayers et al., 2023). This involvement goes beyond addressing the surgical procedure to consider factors like the patient's mental wellness and social support networks, personal agendas regarding recovery and functionality, and more. Therefore, outcome-focused multidisciplinary care teams are enabled to design interventions that foster supported recovery journeys, thus ensuring enhanced clinical results and improved patient experience of their care (Conner-Spady et al., 2020).

Therefore, effective communication, engagement with the patient, and the use of multimodal chronic pain management techniques are all nursing interventions that must be incorporated for optimal results in TKA care. This comprehensive multidisciplinary focus, which balances psychosocial factors with surgical technicalities, can reduce reliance on opioids, improve satisfaction, and lower the incidence of chronic pain following surgery.

### Limitations and Strengths

The current review of postoperative outcomes following TKA has some strengths, such as benchmarking using the WOMAC, KSS and VAS, which have already been noted. More studies emphasize the need for collaborative and integrative approaches to pain management regardless of international borders. Nevertheless, these are accompanied by some gaps: inconsistency in pain or satisfaction assessment, small participant pools, and short durations of follow-up. The measurement of patient-reported outcome indicators also makes it difficult to compare results from different studies. Despite these factors, there is a greater proposition for more inclusive and uniform research designs across studies in the field.

### Future Directions

Further research on TKA should focus on retrospective studies with longer follow-ups beyond the standard 1-2 years in order to improve understanding of chronic results. Recovery insights can also be improved by focusing on psychological factors and culturally relevant

satisfaction metrics. The use of technology, such as mobile applications and wearable devices for remote pain and mobility tracking, is promising. Moreover, there is research on the use of artificial intelligence for personalizing rehabilitation protocols. Telemedicine follow-ups support care continuity, especially for patients living in remote or underserved areas.

### Conclusion

This review highlighted that the outcomes following TKA are multifaceted, with most patients experiencing improvement and a stark minority enduring persistent pain and dissatisfaction deeply linked to psychological or psychosocial factors. Improving outcome requires holistic patient-centered care with multi-dimensional pain management, expectation alignment, and sociopsychological facilitation. Interdisciplinary collaboration is imperative. The infusion of innovation and evidence-based practices into postoperative care will be crucial for achieving consistent, equitable, high-quality outcomes for all TKA patients.

### Declarations

**Statement of Agreement:** I, the author of the manuscript titled "Evaluating Pain and Satisfaction in Total Knee Replacement: Insights from Recent Literature," hereby affirm that the content is original, has not been previously published, and is not under consideration for publication elsewhere. I consent to the manuscript's submission to the journal for review.

**Author Contribution:** Dr. Zafir Shehravi made substantial contributions to the conceptualization and design of the review, literature search, data extraction and thematic analysis, drafting the manuscript, revising it critically for important intellectual content, and gave final approval of the version to be published.

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**Ethical Approval:** This study is a literature review and does not involve human participants or animals; therefore, ethical approval and informed consent were not required.

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