Patient Expectations and Total Knee Arthroplasty

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ABSTRACT

• **Objective:** To discuss patient expectations of total knee arthroplasty (TKA), instruments used to measure expectations, and the association between expectations, health outcomes, and satisfaction.

• **Methods:** Review of the literature.

• **Results:** TKA is an elective surgery for patients with persistent pain and disability caused by knee arthritis. Expectations regarding the surgical procedure and recovery can vary by diagnosis, personal characteristics, functional status, employment status, and trust in physicians. Patients have high overall expectations for recovery, particularly for pain relief and walking. Surgeons’ expectations tend to be more optimistic than patients’, although a subset of patients may have unrealistically high expectations. Although total joint replacement is an effective treatment for advanced arthritis, approximately 30% of potential candidates are unwilling to proceed with surgery. Potential surgical candidates unwilling to proceed with surgery tend to be older, female, and from ethnic minority groups. Several patient-related factors are associated with satisfaction with TKA, including primary diagnosis, preoperative pain and function, and mental health, including depression, but the relationships of satisfaction with gender, age, and comorbid conditions are less certain.

• **Conclusion:** A better understanding of patient expectations of TKA and recovery can identify knowledge gaps, misconceptions, and communication barriers, and ultimately improve shared decision making. A core set of reliable and valid instruments to measure expectations may encourage their routine use in both clinical and research settings.

**Key words:** total knee arthroplasty; osteoarthritis; patient expectations; shared decision making; joint replacement.
Understanding patient expectations and factors that influence expectations provides a fuller appreciation of the outcomes that are meaningful to patients and can guide preoperative education and open dialogue with patients within a shared decision making model of care. In this paper, we discuss patient expectations of TKA, including expectations regarding outcomes and recovery, fulfillment of expectations, and the association of fulfilled expectations with satisfaction.

Measurement of Expectations

The construct of expectation is complex and situational. The ambiguity within the literature occurs most likely because expectations are multifaceted. Expectation involves the notion of expectancy, with respect to health care, that given events are likely to occur as a result of a medical procedure or treatment. This concept is in contrast to wants, which reflects a patient’s desire or wishes that an event will occur [13]. The term patient expectation, however, is commonly confused with patient preference or value. Preference implies a relative valuation or comparison by the patient and, unlike expectation, may not be explicitly expressed by the patient [13]. Different types of health care expectations exist that broadly relate to what patients expect regarding health care structure, process, and outcome [14].

Studies of patient expectations are diverse within the orthopedic research field and reflect differing theoretical underpinnings and lack of standardization. The lack of standardization makes measuring the complex concept of expectations challenging. While a number of conceptual models exist, Bowling and colleagues aptly recognize the multidimensionality of expectations and that no one conceptual model captures patient expectations [14]. The lack of standardization was noted in a systematic review by Haanstra and colleagues who found great variety in the definitions and measurements of expectations in studies examining their relationship with outcomes of total joint arthroplasty [15].

No gold standard measure exists for measuring patient expectations of orthopedic surgery. Zywiel’s systematic review [16] of 66 studies identified 7 validated instruments for measuring patient expectations for orthopedic surgery: of these, 2 were specific to TKA (Hospital for Special Surgery (HSS) Expectation Survey [17] and Expectation Domain of the New Knee Scoring System [18,19]), and 2 were generic to musculoskeletal conditions (Expectation domain of the Musculoskeletal Outcomes Data Evaluation and Management System (MODEMS) Instruments [20] and the Sunnybrook Surgery Expectation Survey [21]). A number of other measures used within the literature were identified; however, the psychometric properties for many of these measures were not reported and any evidence of testing and validation were lacking [16]. Some studies used a single question to measure expectations. As patient expectation is multidimensional, using a single item to evaluate expectations is problematic. Zywiel and others have called for a core set of reliable and valid instruments to measure expectations [14,22], which may encourage their routine use in both clinical and research settings.

Patients Expectations for TKA Recovery

Although patient concerns vary in terms of importance and severity [23], pain and physical limitations are primary concerns for patients seeking TKA. Patients have high overall expectations for recovery, particularly for pain relief and walking [24–32]. TKA is an elective surgical procedure that provides substantial pain relief and improvements in function and quality of life, with the largest gains seen within the first 6 months [33,34]. Both short-term and long-term effect sizes for pain relief and functional recovery are large, in excess of 1.0 [34]. Over 70% of patients undergoing TKA expect to be pain-free, and 35% expect to have no limitations with routine activities [24,28,31].

Expectations regarding the surgical procedure and recovery can vary by diagnosis, personal characteristics, functional status [17], employment status, and trust in physicians [32,35]. There is, however, inconsistent evidence on associative preoperative factors of recovery expectations. While some evidence supports an association between higher expectations and younger age and greater preoperative functional limitation [26–28,32,36–38], others have reported no significant association with several preoperative factors including age, gender, and preoperative functional status [24,26,37]. Lower overall expectations [28] and lower expectations for pain relief [21] were also seen for patients with a greater number of comorbid conditions.

It may be that patients with high preoperative expectations are more optimistic, interpret their health-reported quality of life gains more liberally, and are more likely to adhere to rehabilitation treatment [24,25]. Optimism is a generalized expectancy of a positive outcome that is related to indicators of well-being [39]. Presurgical optimism was shown to be associated with less postsurgical
pain and anxiety in patients undergoing total hip and knee arthroplasty [40].

In addition to general future-oriented constructs, such as optimism, treatment-specific psychological constructs, such as treatment credibility and treatment expectancy, are seen in patients with total joint arthroplasty. A strong but not redundant association is seen between treatment expectancy and treatment credibility, that is, expectations of a treatment may be related as to how credible the treatment outcomes appear [41,42]. Haanstra and colleagues advocate further clinical work to explore which factor predicts total joint arthroplasty outcomes so that patients who are at a higher risk of poor outcomes can be identified [42].

Others have recognized that perspectives and expectations of surgical outcomes differ between patient and surgeon [43–45]. Overall, surgeons’ expectations tend to be more optimistic than patients expectations of outcomes, although a subset of patients may have unrealistically high expectations [46]. Patients do not always realize that some of their expectations cannot be met by current orthopedic procedures, and this gap in understanding is an important source of discrepancies in expectations and patient dissatisfaction [46]. Ghomrawi and colleagues reported that approximately one-third of 205 patients undergoing primary TKA had higher expectations than their surgeons did. Being male and having lower preoperative pain was associated with having discordantly higher preoperative expectations [44]. For realistic expectations to be set, patients need accurate and understandable information about expected positive outcomes of surgery such as level of function and symptom relief as well as the risk of joint failure, adverse events, complications, and activity limitations. Although little work has explored the alignment of patient and surgeon’s expectations, setting realistic expectations may be aided by using a shared decision making approach that incorporates patient preferences and values, the best available evidence, and the surgeon’s expertise.

**Expectations and Willingness to Undergo Surgery**

Although total joint replacement is an effective treatment for advanced arthritis, approximately 30% of potential candidates are “unwilling” to proceed with surgery [47,48]. Willingness is a component of the medical decision making process and is influenced by preferences. Potential surgical candidates unwilling to proceed with surgery tend to be older, female, and from ethnic minority groups [12,47–49]. Preference-sensitive medical decisions, such as whether or not to proceed with TKA, are related to patients’ attitudes and perceptions, which can be affected by sociocultural influences. In a cohort of 627 male patients with moderate to severe OA who were viewed as “good” candidates for total joint arthroplasty, more African Americans (24%) than Caucasian Americans (15%) had lower expectations for outcomes of surgery [35]. In particular, African Americans expressed concerns about postoperative pain and walking. Similar findings were also reported in another study in which minority patients were less likely to consider TKA [12]. Determinants of preferences were patients’ beliefs about the efficacy of the procedure and knowing others who had already undergone TKA [12]. Ibrahim and colleagues postulated that outcome expectations mediated or influenced the willingness to undergo total joint arthroplasty surgery [49]. Interventional work that built upon this premise suggested that willingness to proceed with TKA could be modified by educational interventions. In a randomized controlled trial of 639 African American patients attending Veteran’s Affairs primary clinics who received a decision aid with or without brief counseling, willingness to proceed with TKA increased and patient-provider communication improved among the patients who received any intervention [50]. Yet in another randomized trial involving African American patients who received care from an academic center, a combination decision aid and motivational interviewing strategy was no better than an educational pamphlet in improving patients’ preferences toward joint replacement surgery for knee OA [51]. This led the authors to recommend further exploration of patients’ knowledge, beliefs, and attitudes regarding surgical treatments for OA.

**Effect of Expectations on Health Outcomes and Satisfaction**

Some evidence suggests that better outcomes are seen in patients with higher expectations of recovery and, in turn, expectations that are met influence patient satisfaction. A systematic review of several chronic conditions showed with consistency across studies that positive recovery expectations were associated with better health outcomes [22]. The effect size varied with the condition and measure; however, none of the 16 studies examined arthritis or joint arthroplasty. Conversely, a systematic review of 18 prospective longitudinal cohort studies
examining the association between expectation and outcomes (ie, pain, function, stiffness, satisfaction, overall improvement) reported less than convincing evidence of an association between patient preoperative expectations and treatment outcomes for THA and TKA in terms of short- and long-term postoperative pain and functional outcomes [15]. No consistent associations were seen with adjusted analysis of patient expectations and pain or functional outcomes at greater than 6 weeks [15]. Inconsistencies seen among the reviewed articles may be related to a number of issues centred on terminology, construct, expectation measures, and confounding effects.

Although TKA is an effective surgical procedure with large gains reported, 14% to 25% participants report little or no symptom improvement and/or dissatisfaction up to 1 year after surgery [1,52–59]. In a study with 5 years of follow-up, a decline in the satisfaction rate was seen after 1 year, although this decline was seen more so with physical function than with pain [38]. Although dissatisfaction can be attributed to surgical complications, in many cases, no technical or medical reasons can be identified. In a subset of patients who received TKA, surgical intervention does not adequately address patients’ concerns of pain and activity limitation. To compound matters, fair agreement was reported between patient and surgeon regarding satisfaction at 6 and 12 months postoperative. Disagreement between the patient and surgeon was explained by unmet expectations and postoperative complications [60]. When there was discordance, more often than not patients were less satisfied with TKA outcomes than surgeons [60,61].

While several theories explain patient satisfaction [62–65], evidence from total joint arthroplasty studies support the concept that satisfaction is derived from fulfillment of expectations [17,52]. Preoperative expectations are not to be confused with postoperative fulfillment of expectations, which are reflective of whether expectations of treatment have been met. Satisfaction is a value judgment and can be viewed as an affective domain, whereas expectation is a cognitive domain [66]. Patient satisfaction is regarded as the extent of a person’s experience compared to their expectation. As with expectations, a number of theoretical constructs exist concerning patient satisfaction [14,67]. Many dimensions of satisfaction exist, with patient expectations being central to these constructs. Deviation from expectations, however, does not necessarily correspond to dissatisfaction [67].

Several patient-related factors are associated with satisfaction with TKA, including primary diagnosis, preoperative pain and function, and mental health, including depression, but the relationships of satisfaction with gender, age, and comorbid conditions are less certain [33,38,52,55,56,68]. Greater preoperative pain, postoperative complications, lower 1-year WOMAC scores and functional limitations were associated with dissatisfied patients [38,52,53,59]. While no consistent associations were seen with preoperative expectations, consistent evidence has shown that fulfillment of expectations has an impact on satisfaction [31,36,52,58,69].

It should be acknowledged that the concept of fulfillment of expectations is not the same as satisfaction. A patient can be satisfied with TKA even though their expectations have not been met. The fulfillment of expectations is dependent upon the type of expectation and the postoperative time period. Fulfillment of expectations were seen with pain relief, function, walking and health status [25,31,70] while patients expectations were not always met with leisure activities [38].

Shared Decision Making

The shared decision making process, in which the patient and physician share responsibility and actively participate in the clinical decision making process [71], may help in ensuring that patients’ expectations are met. Shared decision making requires eliciting patients’ preferences and values, providing clear information on the processes that will occur during surgery, recovery, rehabilitation, and in the longer phase of recovery, and what realistic outcomes can be expected. While a more “paternalistic” approach predominated in earlier years, the current trends indicate greater patient involvement in decision making with the surgeon, with open discussion of patient goals and expectations [71]. This approach also aids patients in their preparation for the recovery and rehabilitation stages, which can be challenging, especially if they are unaware as to what to expect. Patient expectations are more likely to be met when there is shared decision making and patients have been given relevant information and understand what is a reasonable outcome. While a shared decision making approach is advocated within orthopedics [72], patient expectations are largely not measured in the clinical setting.

Patient education is an integral component of assisting patients to make informed decisions; however, it is unknown whether education alone can modify expectations. Educational approaches can include group classes, videos, and written materials [73]. Limited evidence from
a randomized controlled trial suggests that preoperative expectations can be modified by preoperative education classes by decreasing the number of expectations and having more expectations in agreement with the surgeons’ expectations [29]. Mancuso and colleagues, who looked at whether a preoperative education session could modify expectations found that larger changes in expectations were seen with those patients who had greater baseline expectation scores, worse pain and function, and were older [29]. Others have also reported that preoperative education reduces anxiety by providing patients with an understanding of what to expect [74,75]. An assumption is that expectations can be changed by improving knowledge, which underscores the need for relevant meaningful education to increase knowledge and instill realistic expectations. Others have surmised there is a proportion of patients who will continue to have unexpectedly high unrealistic expectations regardless of educational session [31,37]. This would suggest that education is not the only approach to modify expectations but rather different strategies may need to be implemented for a certain subsets of patients with unrealistic expectations.

**Conclusion**

Patient expectation is an important element to be considered in shared clinical decision making, as it can influence preferences and subsequent satisfaction. Patients considering TKA have specific needs and expectations that they presume will be addressed with the surgery. If these are realistic, they can be met, and will result in greater patient satisfaction and better ongoing adherence to health care recommendations [76]. While much work has been conducted in identifying which patient characteristics may influence health expectations, additional research is needed to further determine how to shape expectations within a realistic, achievable framework. While traditional patient education is an important element to enhance knowledge, the limited available evidence suggests it is not sufficiently effective on its own. Other strategies such as use of individualized decision aids, provision of peer support, and enhanced provider-patient communication have been effective in many areas of health care and warrant evaluation in this field.

**Author contributions:** conception and design, CAJ, MES; analysis and interpretation of data, MES; drafting of article, CAJ, MES; critical revision of the article, CAJ, MES; collection and assembly of data, CAJ.

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