



# A regional registry study of 216 patients investigating if patient satisfaction after total knee arthroplasty changes over a time period of five to 20 years



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## ABSTRACT

**Aims:** To determine the temporal changes in patient dissatisfaction following primary knee arthroplasty surgery (TKA).

**Patients and methods:** Three hundred and ninety patients that had previously indicated they were either dissatisfied or unsure with their TKA at one-year post-surgery in our region were mailed a simple questionnaire in addition to the Oxford Knee Score and EQ-5D.

**Results:** A 55% response rate was achieved. The mean follow-up time period was 9.1 years. Of the 120 patients who were initially dissatisfied, 46.7% remained so. Of the 96 patients who were initially unsure, 20.8% remained so, 21.9% and 57.3% became dissatisfied and satisfied, respectively. The primary reason for continued dissatisfaction was persistent pain. Of the 19.4% of patients who had revision surgery, 47.6% remained dissatisfied. 54.2% of patients stated that they would be happy to have a primary TKA again and 55.6% indicated that they would recommend one to a friend. Patients who had concurrent hip pain were six times more likely to remain unsure or dissatisfied over time (OR 6.7, p-value 0.0000). Patients who had back pain or contralateral knee pain were two or three times as likely to remain unsure or dissatisfied.

**Conclusion:** In time half of the patients who stated that they were not satisfied with their arthroplasty, at one year, go on to be satisfied with their knee.

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## 1. Introduction

It has become apparent that surgeons' perception of the outcome of their primary knee arthroplasty surgery is at variance with a significant number of their patients. Robertsson et al. [1] reported that eight percent of primary knee arthroplasties registered on the Swedish Knee Register from 1981 to 1995 were dissatisfied with their outcome.

Furthermore, studies from national and regional arthroplasty registers have shown that up to 20% of patients remain dissatisfied at one year following TKA [2–6]. The reasons for patient dissatisfaction are multifactorial [2,5–7] and the rates of dissatisfaction have remained the same over time [3–6] and despite advances in TKA implant designs and surgical techniques [8]. Significant factors affecting satisfaction rates include unrealistic patient expectations [3,7], psychological factors [9–11] and the presence of postoperative complications [3]. Patients with post-traumatic osteoarthritis (OA), avascular necrosis (AVN) or primary OA have been found to have higher dissatisfaction rates compared to patients with rheumatoid arthritis of the knee [2,12]. Younger patients (under 55 years of age) and patients with early OA who have a TKR are more likely to have unrealistic expectations

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which is strongly predictive of 'dissatisfaction [12]. What is unclear is whether dissatisfaction rates improve over the mid to longer-term period.

The aim of this study was to determine the mid to long-term outcome (five years to 20 years) for those patients who were dissatisfied and unsure at one year post-TKA in our region. To date, this study is the first to evaluate if patient satisfaction changes over the long term following TKA, using data from a regional arthroplasty register.

## 2. Patients and methods

The Trent (& Wales) Arthroplasty Register was established to assess the outcome of hip and knee arthroplasty surgery in these regions of the United Kingdom. It was established in 1990, with agreement of all consultant orthopaedic surgeons in the region, all primary hip and knee arthroplasties have been registered prospectively, and the details registered on the database, hosted by the University of Leicester. The information recorded by the surgeon at the time of surgery included demographic, medical and operative details for each patient and implant. Data was fed back to contributing units for validation. All patients were mailed a validated self-administered postal questionnaire one year after their surgery. Non-responders to the questionnaire were sent a further questionnaire. In the period 1990–2007 questionnaires were sent relating to 43,708 knee arthroplasties, 91% for osteoarthritis, 8.7% for rheumatoid arthritis and 0.4% for trauma. The patients were asked 'are you pleased with the result of your knee surgery?' They could respond Yes, No or Unsure.

For this study we accessed the data from patients who had had their knee arthroplasty surgery between the years 2000 and 2007. Three thousand four hundred eighty three patients were sent questionnaires in this period. Three hundred forty nine (10%) were displeased and 185 (5.3%) were unsure about their outcome. We verified that patients were still alive and had up to date addresses using the National Health Service (NHS) Strategic Tracing Service. This left 390 patients that had previously indicated they were either displeased or unsure with their TKA at one-year post-surgery. This included patients who had subsequently undergone revision surgery also. These patients were mailed a simple questionnaire in addition to the Oxford Knee Score and EQ-5D. Patients were asked whether they were satisfied with their TKA (Dissatisfied/Satisfied/Unsure) and if not satisfied whether this was due to (pain/stiffness/lack of bend/inability to straighten/numbness/instability). They were also asked if they would have the surgery again, would they recommend it to a friend, whether they felt better, worse or the same and if they had concurrent hip or back or contralateral knee pain. Finally, they were asked if they had had revision surgery. Non-responders to the initial mailed questionnaires were sent a reminder questionnaire after six weeks, in order to improve the response rate. Following this, the remaining non-responders were contacted by phone. Incidentally, some of the 390 questionnaires were sent in error to patients whom had had their surgery prior to the year 2000. Given that these questionnaires were sent to people who were also displeased or unsure at one-year post-surgery, we included the 30 responses received in our analysis.

Whereas the original questionnaire sent out at one year post-surgery asked patients whether they were pleased or not, the follow-up questionnaire asked about satisfaction. We have assumed that the two terms are comparable and present our findings accordingly.

All statistical analyses were performed with StataCorp. 2013 (*Stata Statistical Software: Release 13*. College Station, TX: StataCorp LP). Descriptive statistics were performed on all study data. ANOVA was used to compare the difference between group means. A p-value <0.05 was considered significant. Univariate logistic regression analysis was performed looking at independent variables for predicting final satisfaction results. The unsure and dissatisfied patients in the final satisfaction variable were grouped together for this analysis and compared to the satisfied group of patients.

## 3. Results

Two hundred and sixteen (55% response rate) patients completed the questionnaire. There were 93 (43%) males and 123 (57%) females with a mean age of 67.1 (SD 8.6). Table 1 shows the change in satisfaction at a mean follow-up time period of 9.1 years (SD 3.3; five to 20 years). The primary reason for dissatisfaction was persistent pain. One hundred and seventeen (54.2%) patients stated that they would be happy to have a primary TKA again and 120 (55.6%) patients would recommend a primary TKA to a friend. One hundred and fourteen patients (52.8%) felt better, 34 (15.7%) felt the same and 68 (31.5%) felt worse. Forty-two (19.4%) patients had revision surgery of which 20 (47.6%) were dissatisfied. Table 2 demonstrates the responses in relation to satisfaction.

Table 3 shows the predictive factors for being unsure or dissatisfied over time. Patients who initially were unsure were much less likely to remain unsure or dissatisfied over time (odds ratio (OR) 0.2, p-value 0.0000). Patients who had concurrent hip pain were six times more likely to remain unsure or dissatisfied over time (OR 6.7, p-value 0.0000). Patients who had back pain or contralateral knee pain were two or three times as likely to remain unsure or dissatisfied.

**Table 1**  
Change in satisfaction at a mean follow-up of 9.1 years (SD 3.3; five to 20 years).

	Dissatisfied	Satisfied	Unsure
Dissatisfied 1 year post-TKA n = 120	56 (46.7%)	27 (22.5%)	37 (30.9%)
Unsure 1 year post-TKA n = 96	21 (21.9%)	55 (57.3%)	20 (20.8%)

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