Patient satisfaction after knee arthroplasty

A report on 27,372 knees operated on between 1981 and 1995 in Sweden

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ABSTRACT – During a validation process of the Swedish Knee Arthroplasty Register (SKAR), living registered patients were sent a questionnaire to ask if they had been re-operated on. This gave an opportunity to pose a simple four-point question with respect to patient satisfaction which 95% of patients answered. We analyzed the answers of patients operated on between 1981 and 1995 and found that only 8% of the patients were dissatisfied regarding their knee arthroplasty 2–17 years postoperatively. The satisfaction rate was constant, regardless of when the operation had been performed during the 15-year period. The proportion of satisfied patients was affected by the preoperative diagnosis, patients operated on for a long-standing disease more often being satisfied than those with a short disease-duration. There was no difference in proportions of satisfied patients, whether they had primarily been operated on with a total knee arthroplasty (TKA) or a medial unicompartmental arthroplasty (UKA). For TKAs performed with primary patellar resurfacing, there was a higher ratio of satisfied patients than for TKAs not resurfaced, but this increased ratio diminished with time passed since the primary operation. Unrevised knees had a higher proportion of satisfied patients than knees that had been subject to revision, and among patients revised for medial UKA, the proportion of satisfied patients was higher than among patients revised for TKA.

We conclude that satisfaction after knee arthroplasty is stable and long-lasting in unrevised cases and that even after revision most patients are satisfied.

Ideally, a knee arthroplasty should reduce pain and deformity as well as improve mobility and walking ability. Depending on the preoperative status of the patient, various changes in these factors can be expected. However, the ultimate goal of a treatment must be to have long-term satisfied patients.

The postal survey used in this report was primarily utilized to validate the Swedish Knee Arthroplasty Register (SKAR) by asking the patients directly if their revision status was in accordance with reports to the knee register by participating clinics (Robertsson et al. 1999a). However, while mailing a questionnaire to a large number of patients, we also aimed to get information about the status of their knee arthroplasties, without compromising the answer rate. We therefore decided to use a simple four-point question regarding satisfaction. Although patient satisfaction gives no detailed information on general health or knee status of patients, it has been shown to be related to pain scores, and to some extent functional scores, in more detailed questionnaires (Anderson et al. 1996). Furthermore, as satisfying the expectations and aims of patients is one of the main reasons for the surgery, we felt that a question on satisfaction was appropriate.

Methods

During the validation of the SKAR in August 1997, to investigate whether patients had been re-

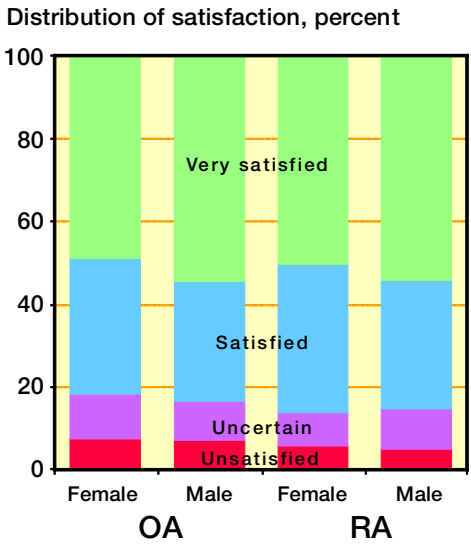


Figure 1. In OA, 18% of the female patients (n 14,609) and 16% of male patients (n 6,556) were unsatisfied or uncertain while in RA the corresponding fractions were 14% (n 2,568) and 15% (n 635), respectively.

vised without this being reported to the register, all living patients registered as having been operated on with knee arthroplasty were sent a letter (Robertsson et al. 1999a). Three questions were asked, including one on satisfaction regarding the operated knee with four possible answers: 1) very satisfied, 2) satisfied, 3) uncertain or 4) dissatisfied.

Of the 28,962 knees operated on during 1981–1995, 122 could not be located by the post office and 133 letters were returned because the patient was said to be too ill or infirm to answer. The question on satisfaction was answered for 27,372 knees (95%), and these answers are the basis for the analyses.

22,866 (83%) knees had been operated on for osteoarthrosis (OA), 3,490 (13%) for rheumatoid arthritis (RA), 515 (2%) for posttraumatic disorders and 206 (1%) for osteonecrosis. Various conditions accounted for the remaining 295 knees (1%).

Answers on satisfaction were classified on an ordinal scale and compared and evaluated for different selections of patients.

When comparing age differences between sexes, the Student's t-test was used. Non-parametric analyses (Mann-Whitney U-test [M-W] and Kruskal-Wallis H-test [K-W]) were used when comparing satisfaction between groups. For correlations, the bivariate Spearman analysis was used.

Results

Patient satisfaction in unrevised cases

25275 patients who had not been revised when the satisfaction question was asked were analyzed separately. The time between the primary operation and when the question was asked was 6 (range 2–17) years. The mean age at operation in patients with OA was 71 years and was one year higher in women than men. In RA, the mean age was 63 years, with no difference between the sexes. In OA, women were slightly less satisfied than men ($p < 0.001$; M-W), but this could not be found for RA ($p = 0.2$; M-W) (Figure 1).

When overall satisfaction was compared in patients operated on for various primary diseases, it was found that the more chronic the disease, the smaller the fraction of dissatisfied or uncertain patients (Figure 2a) ($p < 0.001$; K-W).

When the various groups of satisfaction were correlated to age at the time of the primary operation as well as to the age when the study was performed, we found in patients with OA that there was no significant correlation between age and group of satisfaction (Spearman $p = 0.8$ and $p = 0.6$, respectively), while in RA, there was a correlation with a higher mean age and dissatisfied patients (Spearman $p < 0.001$ and < 0.001, respectively).

The year of primary operation indicates the length of follow-up when the satisfaction question was asked in 1997. Overall, satisfaction was remarkably constant in patients not subjected to revision over the time period studied (Figure 3).

In OA, the type of primary operation affected satisfaction (Figure 4). The procedures with the highest fraction of satisfied patients were TKA and medial UKA. Patients with lateral and bilateral UKA were more dissatisfied, although only the latter reached statistical significance ($p < 0.04$; M-W).

In both OA and RA, patients with TKA who had not had the patella resurfaced with a button were generally not as satisfied as those who were resur-

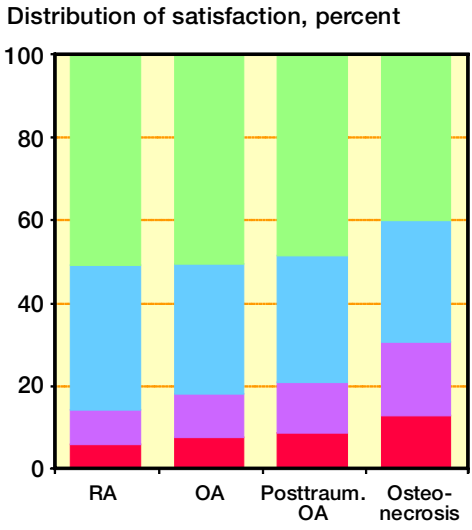


Figure 2a. In unrevised cases, 14% of 3,203 RA patients, 18% of 21,165 OA patients, 2% of 449 postraumatic OA patients and 30% of 191 patients with osteonecrosis were unsatisfied or uncertain.

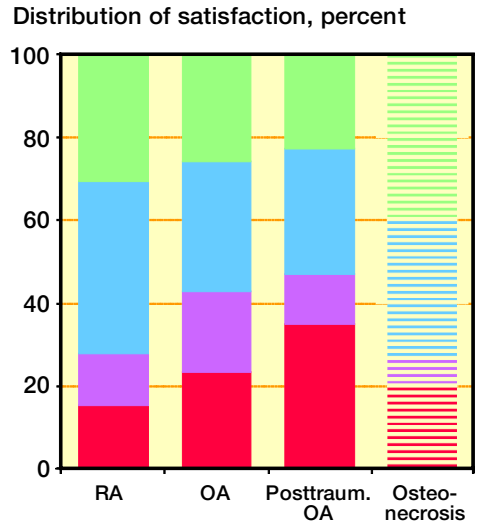


Figure 2b. In revised cases, 28% of 287 RA patients, 43% of 1,701 OA patients, 31 of 66 postraumatic OA patients and 4 of 15 patients with osteonecrosis were unsatisfied or uncertain.

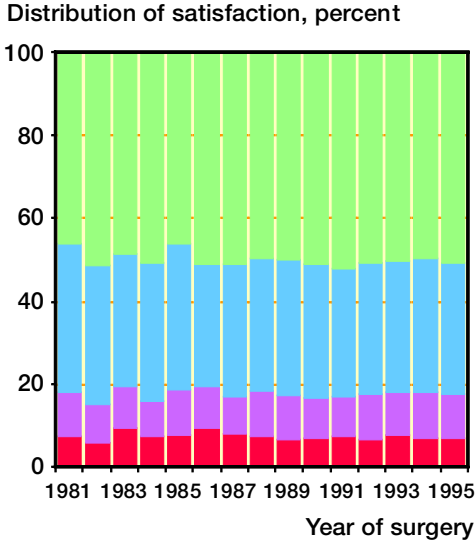


Figure 3. Patient satisfaction and length of follow-up (i.e., year of index operation) in unrevised patients (n 25,275; all diagnoses and all types of prostheses).

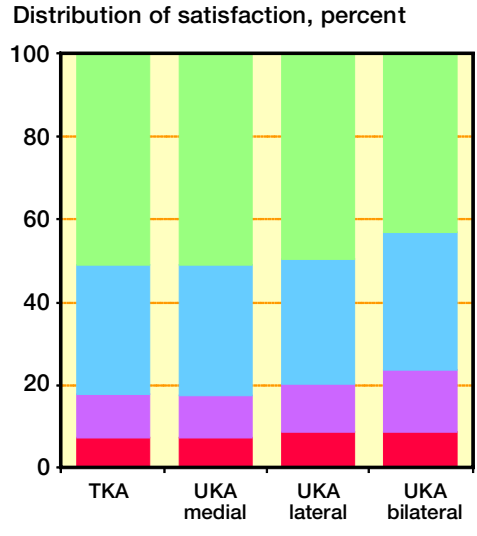


Figure 4. In unrevised OA cases, 18% of 12,298 TKAs, 17% of 7,860 medial UKAs, 20% of 686 lateral UKAs and 23% of 150 medial + lateral UKAs were unsatisfied or uncertain.

faced (Figure 5). However, while satisfaction of the latter patients did not lessen with time (Spearman p = 0.8), it did so in patients with a resurfaced patella (Spearman p < 0.001) (Figure 6).

Patient satisfaction in revised cases

2,097 patients had been revised when the question was asked. The mean time between the primary operation and revision was 3.9 (range 0–16) years and the mean time between the revision and when the

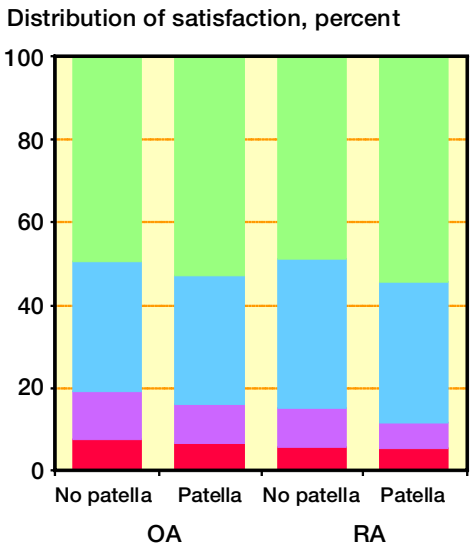


Figure 5. In TKA for OA,19% of 7,567 without, 15% of 4,731 with patella component were unsatisfied or uncertain. In TKA for RA, the corresponding fractions were 15% of 1,813 without and 12% of 1,208 with patella component.

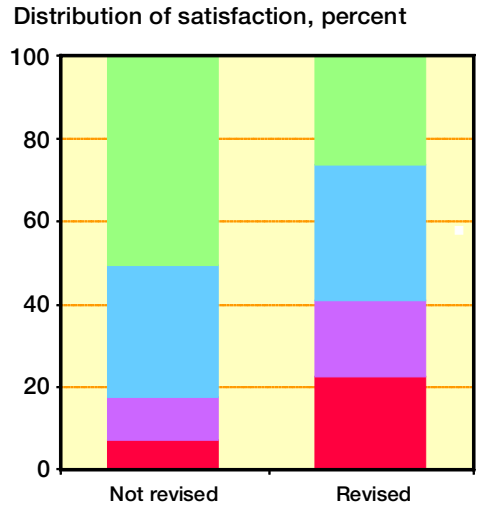
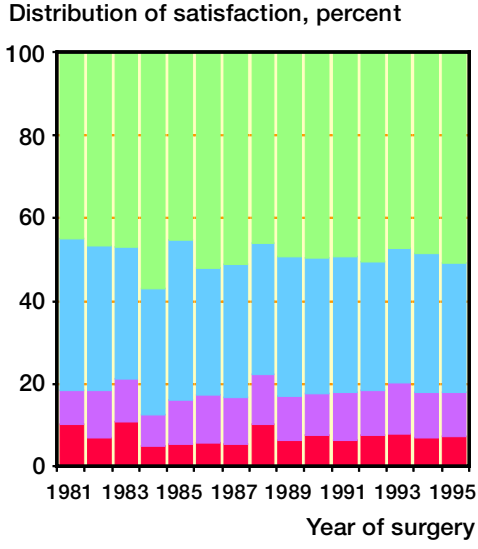


Figure 7. 17% of 25,275 unrevised cases (all types and diagnoses) and 41% of 2,097 revised cases were unsatisfied or uncertain.



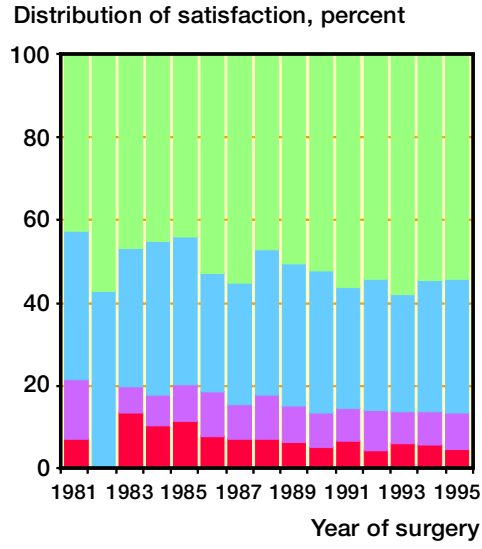


Figure 6. While satisfaction of TKA patients (all diagnoses) without patellar component did not lessen with time since index operation (left; p = 0.8; Spearman), it did so in patients with a resurfaced patella (right; p < 0.001; Spearman).

question was asked was 5.0 (range 0–16) years.

Revised patients were usually less satisfied with their knee than the unrevised ones (p < 0.001; M-W) (Figure 7).

As for unrevised patients, the primary diagnosis affected satisfaction—i.e., RA patients being the most satisfied (Figure 2b).

In OA, the type of primary operation affected the satisfaction after revision, with a higher proportion of patients being dissatisfied after revision of primary TKAs than after revision of primary UKAs (p < 0.001; M-W) (Figure 8). However, as the revision rate after primary UKA was higher than after primary TKA, this advantage of the

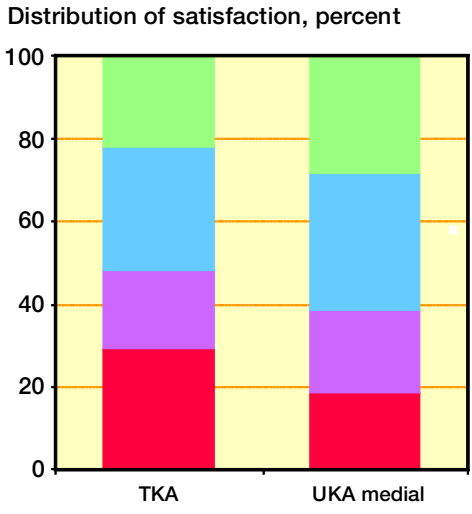


Figure 8. In OA, 48% of 668 revised TKAs and 39% of 887 revised medial UKAs were unsatisfied or uncertain.

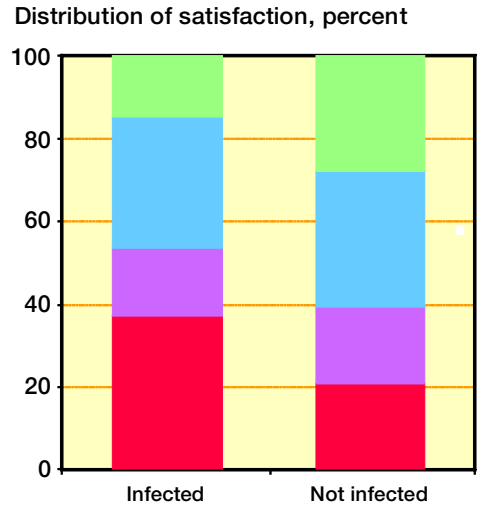


Figure 10. In revised cases, 53% of 232 who were revised for infection and 39% of 1,865 who were revised for other reasons were unsatisfied or uncertain.

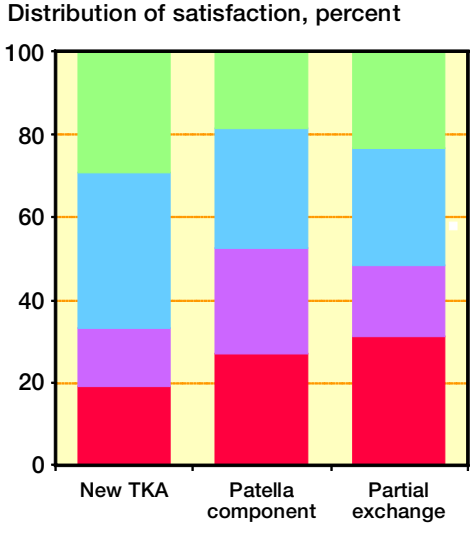


Figure 9. In revised TKA (all diagnoses), 33% of 366 who had a total exchange, 53% of 198 with a patellar component addition, and 48% of 174 with a partial exchange were unsatisfied or uncertain.

UKA was counteracted so that, after revision, the overall proportions of satisfied patients were equal regardless of whether the primary operation had been UKA or TKA ($p = 0.3$; M-W).

Patients with TKA, in whom the first revision was a complete exchange, were more often satisfied than those who had only a secondary patellar replacement ($p < 0.001$; M-W) or another partial revision performed ($p = 0.002$) (Figure 9).

In first UKA revisions, there was no significant difference between those revised to a TKA and those with addition or exchange of UKA components.

Patients revised for infection were more often dissatisfied than those revised for other reasons ($p < 0.001$; M-W) (Figure 10).

Discussion

A describtion of an outcome in the form of a score automatically raises the question whether it is a valid measure of the condition. Even if patient satisfaction is a commonly used concept, it can not be directly measured, or validated against a specific criterion. Instead, the construct validity of satisfaction score must be tested by correlating the satisfaction to the results of other defined measures such as better health or disease-specific questionnaires. This has been done by our selves in an ongoing parallel study as well as by other authors (Anderson et al. 1996, Heck et al. 1998), and it has been found that patient satisfaction has a significant correlation to pain and to physical function in a lower degree.

Although satisfaction may be affected by factors that seem unrelated to the surgical intervention (e.g., patient-surgeon relationship, attitude of staff, availability of parking places, etc.), we believe that the answers of patients regarding their satisfaction with a treatment is of general interest to surgeons and that the question thus is warranted.

In some previous studies where patient satisfaction after knee arthroplasty has been assessed, the percentage of satisfied patients has been 85–89% (Anderson et al. 1996, Hawker et al. 1998, Heck et al. 1998). In our study, the overall percentage of satisfied patients was 81%, but only 8% were dissatisfied while 11% remained uncertain. However, our study included a wider range of diagnoses and implants.

The disease process leading to arthroplasty affected the level of satisfaction, patients suffering long-standing disease being more satisfied. A patient with chronic RA, usually affecting several joints, has a different preoperative function from one with osteonecrosis, who probably experienced a sudden onset of pain and dysfunction. The former may be satisfied with pain reduction while the latter may want to return to the premorbid state. Previously, it has also been shown that absence of problems in the contralateral knee is a predictor of better physical function (Hawker et al. 1998). These findings illustrate the importance of taking account of the preoperative condition of patients when evaluating clinical results.

The consistency regarding satisfaction in the unrevised cases over 15 years shows that a successful knee arthroplasty can be expected to give a lasting good clinical result.

The lack of correlation between age and satisfaction in OA was somewhat unexpected, as one could expect that older patients would have lower demands, and perhaps smaller expectations, than younger ones. However, our findings are in line with those of Hawker et al. (1998).

We found that patient satisfaction after TKA and UKA were similar. Those with revised UKAs were more often satisfied than those with revised TKAs. This can partly be explained by the fact that TKA is more prone to infections and related complications (Robertsson et al. 1999b). However, the advantage of the higher satisfaction rate with UKA is offset by the higher risk of revision.

The use of patellar components in TKA has long been a matter of debate (Barrack et al. 1997, Schroeder-Boersch et al. 1998). The cause might be our finding that the benefit of the patellar component diminishes with time.

Not surprisingly, we found that revised patients were less satisfied than those unrevised. One would expect that being subjected to two or more operations affected the level of satisfaction. That only 22% of the revised cases were dissatisfied with their knee after revision must be considered an indicator of the benefit of revision surgery.

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