



## CORR Insights

**CORR Insights®: The Knee Society Short Form Reduces Respondent Burden in the Assessment of Patient-reported Outcomes**

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**Where Are We Now?**

Patient-reported outcome measures (PROMs) are particularly relevant in evaluating orthopaedic procedures like total joint arthroplasty because pain relief and functional improvement are key out-

comes of this surgery [5]. The original Knee Society Score, which was published in 1989 and adopted widely in the orthopaedic community, clearly demonstrates the early recognition of the importance of PROMs in assessing the effectiveness of TKA [4]. The new Knee Society Knee Scoring System, which was developed in 2012, aimed at making the system more patient-centered by increasing the number of patient questions as well as enhancing its psychometric properties [6, 7].

The need for validated PROMs has grown substantially in recent years as a result of the increasing emphasis on patient-reported outcomes as measures of quality of care. Despite the strides made in this field, challenges in developing PROMs continue to revolve mainly around two issues: (1) Collecting all the necessary information without

overburdening the patient, and (2) establishing the clinical meaningfulness of PROMs score. Considerable work has been done to address the former issue. Shorter forms of many PROMs have been created. Additionally, computer-adaptive approaches, which can get more information from patients using fewer questions, have also been developed for some PROMs. Less work, however, has been done on the issue of clinical meaningfulness, which limits the translation of PROMs findings to clinical practice as hard endpoints and quality measures.

The current paper by Scuderi et al. aimed to create a short form of the new Knee Society Knee Scoring System in order to reduce respondent burden. The authors applied sophisticated statistical methods that are informed by clinical guidance to carefully select items into the shorter form. As a result, they successfully reduced the new Knee Society Knee Scoring System from 17 items to six items. The authors established strong correlations between the original form and the shorter form domains and reasonable correlations with the SF-12 and KOOS scores. Finally, the authors

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established responsiveness to treatment effect by comparing the scores of preoperative and postoperative TKA cohorts.

## Where Do We Need To Go?

The shorter form would still benefit from additional psychometric testing to further establish its validity. I agree with the authors that evaluation of ceiling and floor effects are still needed as well as deriving rules for imputing missing values. Further testing is also needed to confirm the observed responsiveness to treatment effect of the short form scores. Responsiveness to treatment should ideally be assessed in one cohort of patients, as opposed to two independent cohorts in the present study. Administering the short form before and after surgery to the same patients assures that the observed improvement in scores is attributed mainly to the treatment itself (TKA, for example), and is not biased by differences between the characteristics of the preoperative and postoperative patient populations. Patients' functional status after total knee arthroplasty, for example, is highly dependent on their preoperative functional status [3]. In the current study, the improvement in scores observed in the postoperative cohort could be attributed, in part, to preoperative functional status that is

better than that of the study's preoperative cohort. However, when the same cohort is observed pre and postoperatively, this problem is addressed because patients are their own controls.

## How Do We Get There?

The Knee Society Score is distinctive in its composition because it collects both clinical and patient-reported information. Ultimately, the goal of developing such a measure is to establish it as the best measure of quality of clinical care for patients undergoing TKA. Future studies should therefore enhance clinical interpretability of the short form score. One method to establish the clinical relevance of PROMs that is increasingly being utilized for these purposes is to calculate the minimum clinically important difference (MCID) for the short form scores. The MCID value extends beyond statistically significant changes between preoperative and postoperative scores, which the authors have established, to determine how large a difference in the score would be perceived by a patient as clinically relevant. To illustrate the applicability of this method, we provide the example of the WOMAC function and pain subscales, which are also widely used for evaluation of TKA patients. After applying the method, a minimum change in scores of 30 points

was deemed clinically meaningful for TKA [2]. This number was further adjusted for baseline scores to account for the potential room for improvement for each patient [1, 8]. Similar work is needed to derive baseline-adjusted MCID values for the shorter form to further strengthen its clinical relevance.

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