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Predictors of Patient-reported Outcomes after TKR not Included in Risk Models Based on Administrative Data

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Introduction: Because total knee replacement (TKR) surgery is performed to relieve pain and improve physical function in patients with advanced arthritis, patient-reported outcomes (PROs) are important to assess TKR effectiveness. The UK and others require PROs. Understanding pre-existing clinical factors that influence PROs after surgery is needed before comparing PROs across providers. We evaluated the roles of medical and musculoskeletal comorbidities in explaining variation in 6 month post-TKR pain relief and functional gain in a national cohort of TKR patients.

Materials & methods: FORCE-TJR, funded by the Agency for Healthcare Research and Quality (AHRQ), is a national consortium in which 100% patients, surgeons and hospitals submit data: patients demographics (age, gender, BMI, race), complete medical and musculoskeletal comorbidities, PROs including SF-36 Physical Component Score (PCS), Knee injury and Osteoarthritis Outcome Score (KOOS), clinically refined adverse events and implant data. Predictors of change in pre-to-6 month post-TKR pain and function were examined using linear mixed models adjusting for clustering within site.

Results: TKR patients had a mean age of 67 years, mean BMI of 31.2, were 63% female and 4.5% black, 9% with Charlson Comorbidity Index (CCI) of 2-5, 15% with CCI of 6, 7% moderate/severe pain in 2-3 knee/hip joints, 27% moderate/severe lumbar pain. After adjusting for socio-demographic factors, significant predictors of poorer 6 month post-TKR pain included poorer emotional health, higher CCI, 1-2 nonsurgical hip/knee joints with moderate/severe pain, any lumbar pain at time of TKR. These same factors also predicted poorer 6 month function.

Conclusion: Before adopting PROs as a standard measure of TKR outcome, a complete understanding of pre-existing clinical factors associated with poorer pain relief and functional gain is needed. Greater musculoskeletal, and medical, comorbid conditions were associated with post-operative PROs and should be included in risk-adjustment models before cross-hospital comparisons can be made.