Purpose: The Foot and Ankle Outcome Score (FAOS) is a 42-item questionnaire with 5 subscales: pain, other symptoms, activities of daily living (ADL), sport and recreational function (Sport/Rec), and foot and ankle related quality of life (QOL). This measure has been validated among 213 Caucasian patients 20–60 years of age with lateral ankle instability. The purpose of this analysis was to determine the psychometric properties of the FAOS in a large, community-based biracial sample of males and females 45+ years of age.

Methods: FAOS data were available for analyses from 1670 participants enrolled in the Johnston County Osteoarthritis Project during 2006–2010 (mean age 69 years, 68% female, 31% African American, mean body mass index [BMI] 31.5 kg/m2, 24% with foot symptoms, 15% with ankle symptoms). The FAOS was administered by trained interviewers. Each item was scored 0–4 (none, mild, moderate, severe, and extreme problems), and a normalized score was calculated for each subscale (100 = no problems and 0 = extreme problems). Internal consistency, construct validity, and factor structure of the FAOS subscales were examined for the total sample and for subgroups according to race (African American and Caucasian), gender, age (45–55, 55–65, 65+ years), BMI (<25, 25–30, 30+ kg/m²), presence of knee or hip osteoarthritis, and presence of chronic knee, hip or low back symptoms (pain, aching, or stiffness on most days).

Results: For the total study sample and all subgroups, the internal consistency was high for the pain (0.92–0.96), ADL (0.97–0.99), Sport/Rec (0.94–0.96), and QOL (0.87–0.92) subscales. The Cronbach’s alphas were slightly lower for the symptoms subscale (0.72–0.82). Correlations between FAOS subscales were moderate to high for the total study sample and all subgroups (r = 0.47–0.91). Overall, construct validity was supported for the total sample and subgroups, as the pain and symptoms subscales were moderately correlated with participant report of chronic foot and ankle symptoms (r = −0.25 to −0.55), and the ADL and Sport/Rec subscales were moderately correlated with the function subscale of the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC; worst score of both hips and knees; r = −0.30 to −0.60). Separate principal component analysis for each subscale revealed that all items loaded on a single factor for the pain, ADL, Sport/Rec, and QOL subscales (eigenvalues 6.9, 12.5, 4.3, and 3.2, respectively). For the symptoms subscale, all but the two range of motion items (those addressing straightening and bending foot/ankle fully) loaded on a single factor (eigenvalues: Factor 1 = 3.1, Factor 2 = 1.6). For these two items, the level of severity expressed in the response options was reversed compared to other FAOS items. Similar results for each subscale were noted across subgroups.

Conclusion: The FAOS was found to be a valid measure when applied by trained interviewers in this sample and across subgroups. The internal consistency of the symptoms subscale and the lack of all items loading on a single factor may be explained by confusion in responding to the reversed polarity of the two range of motion symptoms items compared to other FAOS items. Alerting interviewers and participants of these differences may improve the performance of the symptoms subscale.

Predictor variables | Odds ratio | Confidence Interval | p-value
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Pre-surgery WOMAC score, per 10-point increase (increasing values indicate increasing pain and disability) | 0.43 | 0.32 to 0.58 | <0.0001
Pre-surgery SF-36 mental health score, per 10-point increase (increasing SF-36 values indicate improved health) | 0.79 | 0.64 to 0.98 | 0.031
Presence of 1+ other troublesome hip/knee at surgery | 3.06 | 1.02 to 9.17 | 0.046
Inflammatory arthritis | 8.47 | 1.70 to 41.7 | 0.009

Purpose: When medical management of hip or knee arthritis fails, total joint arthroplasty (TJA) is recommended. On average, TJA outcomes are good to excellent, but significant variability has been observed. The determinants of suboptimal TJA outcome have not been well studied; this information would be useful in patient-physician decision making about this procedure. Our aim was to evaluate the determinants of suboptimal TJA outcome at a patient level (pain and functioning).

Methods: Participants were members of a longitudinal population cohort with hip/knee arthritis, recruited from 1996–98 through screening 100% aged 55+ years in two regions, one rural and one urban (n = 2,411 at baseline). Annual interviews assessed socio-demographics, arthritis type (OA versus inflammatory arthritis, IA); IA arthritis severity (WOMAC), other MSK complaints (presence of other troublesome hips/knees, low back pain), joint replaced (hip versus knee), health status (SF36 mental health and general health scores) and comorbidity (0, 1, 2, 3+ conditions). Survey data were linked with health administrative databases to examine receipt of TJA. Previously defined algorithms were used to identify primary, elective TJs from 1988 to 2008. Suboptimal outcome was defined as a pre-post change in WOMAC summary score < Minimal Important Difference (MID) proposed by Wyrich et al (MID = 0.5 5D change of the mean difference in scores). Pre- and post-surgery WOMAC scores were those obtained at the interview closest in date and prior to the index TJA date, and closest in date to the end of the post-operative period (i.e. 6 months post surgery), respectively. Logistic regression was used to model predictors of sub-optimal outcome. First, Akaike’s Information Criterion (AIC) was used to determine the size of the best predictive model, and then all possible subset regression was used to identify the final model of the selected size. Sensitivity analyses used alternate definitions of suboptimal outcome.

Results: 166 cohort members received a primary, elective TJA following their baseline interview and completed a post-TJA assessment. The mean age at TJA was 71 years; most TJA recipients were female and had a knee replaced. Almost half the TJA recipients (48.7%) met the criterion for sub-optimal outcome (reduction in WOMAC score of <9/100 points; 49.5% knees versus 42.4% hips, p = 0.42). In univariate analyses, only the pre-surgery WOMAC score distinguished those with versus without a suboptimal outcome, with a lower (better) score associated with suboptimal outcome. The multivariable predictive model found that the probability of a suboptimal outcome following TJA increased with lower pre-surgery pain and disability (WOMAC summary score) and poorer pre-surgery mental health, and increased if the patient had another troublesome hip/knee and/or a diagnosis of IA (Table 1) (c-statistic 0.79). Using alternate suboptimal outcome definitions provided similar results.

Conclusions: In a population cohort with hip/knee arthritis, almost half experienced a suboptimal outcome, as we defined it. Suboptimal outcome was associated with lower levels of arthritis pain and disability, poor mental health status, and the presence of other troublesome hips/knees or IA diagnosis pre-surgery. These results may help prospective patients and their health care providers make an informed cost-benefit decision on the expected outcomes of the procedure.