Function Outcomes Of 'Patients Like Me' After Hip Replacement? Insights From DEdiCADE, An Information Tool Based On Registry Data

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BACKGROUND

The ability to carry out regular activities after total hip arthroplasty (THA) is of great importance to patients and although function improves significantly for most, the amount of improvement varies widely. There are no friendly tools supporting shared decision making that help patients understand post-surgical function outcomes.

OBJECTIVE

To provide patients considering an elective THA and their clinicians with information about how previous patients "like them" performed in terms of their most relevant function outcomes over 10 years after surgery.

METHODS

We surveyed patients' and surgeons' views about the risks and benefits of THA and extracted those specific function outcomes they considered most important.

Data were collected from participants of an institutional arthroplasty registry who underwent a primary elective THA between 1996 and 2019. We examined five function outcomes:

1. Getting in/out of the car (WOMAC)
2. Getting dressed autonomously (WOMAC)
3. Level of activity (UCLA)
4. Interference in social activities (SF12)
5. Independence in weekly tasks (SF12)

Clusters of patients with homogeneous outcomes were generated at 1, 5 and 10 years after surgery using Conditional Inference trees (CITs) based on known and available predictors at baseline. Missing data were imputed using Multivariate Imputation by Chained Equations.

Figure 1: Conditional inference tree for "getting in/out of the car" (WOMAC) at year 10

RESULTS

Overall, 6,836 operations were included in the analysis and 27 pre-specified baseline predictor candidates were assessed. Considering all 5 function outcomes and 3 time points, a total of 15 CITs were generated.

- Overall, the SF12 mental component score (MCS), SF12 self-rated health (SRH), ASA score, BMI and comorbidity count were the most common predictors determining the outcome cluster into which participants were placed, with these appearing in 9, 8, 6, 6, and 6 trees, respectively.

- Predictors and their relative importance changed at different time points for the same outcome. For example, for "ability to get in/out the car", whilst clusters at year 1 were generated based on WOMAC function, SRH, mental health, WOMAC pain walking, and SF12 physical interference, at year 5, ASA score, BMI, SF12 physical & mental health, activity level and insurance type were significant. By year 10, clusters were generated based only on ASA score, SRH and WOMAC pain getting up.

- Outcome profiles varied by clusters. For "ability to get in/out the car", of all patients with ASA =1 and SRH excellent or very good at baseline, 56.3% reported having no difficulty 10 years after surgery (Figure 1). In contrast, of those with ASA score >1 and at least "slight" baseline difficulty when sitting down, only 28.5% reported no difficulty getting in/out the car 10 years after surgery.

- For "activity level" at 1 year after surgery, of those with baseline Harris function score >30, one or no comorbidity, SF12 MCS >47.1, and ≤61 years of age, 54.2% reported their activity levels as "high". For those with a Harris function score ≤30, ≥2 comorbidities, baseline WOMAC function score <32.1 and aged >65, this figure was 2.8%.
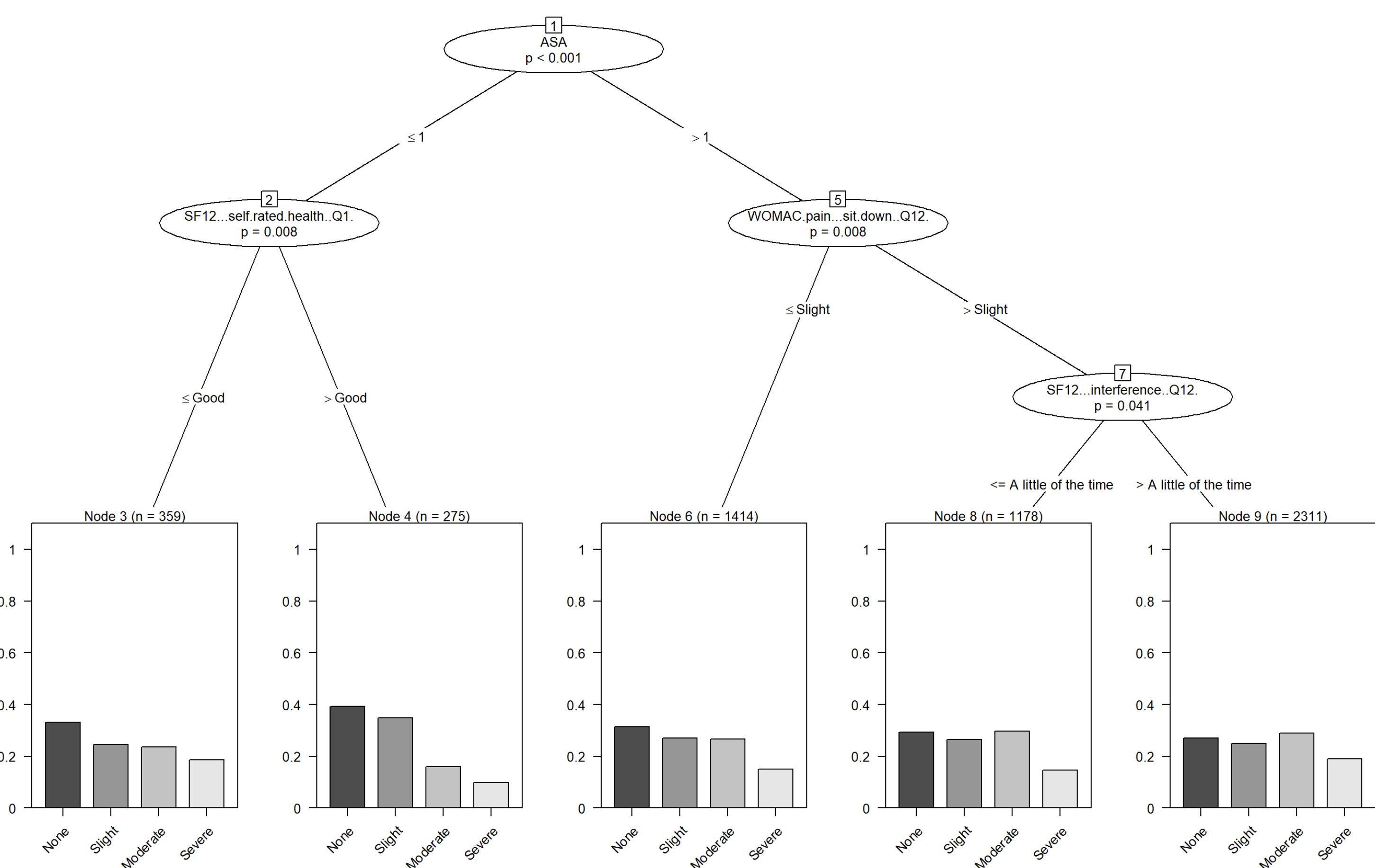
CONCLUSIONS

- The tool provides prospective patients and clinicians with detailed information about how previous THA patients "like them" did regarding key function outcomes.
- Most patients perform exceedingly well after surgery, but distinct clusters based on baseline patient characteristics were identified and knowing this can help inform patients' expectation and treatment decisions.

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