

Have People Like Me Experienced Pain After Their Hip Arthroplasty? Insights From DEdiCADE, An Information Tool Based On Registry Data

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BACKGROUND

The number of people undergoing total hip arthroplasty (THA) is increasing. Although most patients report great improvement in pain relief, many have concerns about the expected benefits and risks of the operation. However, there are no friendly tools available to support shared decision making between patients and clinicians when considering an elective THA.

OBJECTIVE

To develop an information tool (DEdiCADE) to provide patients considering an elective THA and their clinicians with information about how patients “like them”, who had previously undergone surgery, performed their most relevant pain outcomes over 10 years after surgery.

METHODS

We surveyed patients’ and surgeons’ views about the risks and benefits of THA and extracted the specific pain outcomes they considered most important. Data from patients receiving a primary elective THA between 1996 and 2019 were collected from an institutional arthroplasty registry.

The tool was developed based on five pain outcomes:

1. Pain while walking (WOMAC)
2. Pain climbing stairs (WOMAC)
3. Night pain (WOMAC)
4. Pain interference (SF12)
5. Patient-reported pain medication use

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

RESULTS

Overall, 6,836 operations were included in the analysis and 24 pre-specified baseline predictor candidates were assessed. Considering all 5 pain outcomes and the 3 time points, a total of 15 CITs were generated.

- WOMAC baseline pain score, SF12 self-rated health (SRH), comorbidity count, SF12 mental component score, and BMI were the most common predictors determining the outcome cluster into which a patient was placed, with these appearing in 9, 8, 5, 5, and 5 trees, respectively.
- Predictors and their relative importance changed at different time points within the same outcome. For example, for night pain, whilst clusters at year 1 were generated based on SRH, WOMAC night pain, WOMAC pain score, and the Charnley score, by year 5 only WOMAC pain score, SRH, and WOMAC night pain were significant, and by year 10 clusters were generated based on baseline BMI alone.
- Outcome profiles varied markedly by clusters. For night pain, among patients with good to excellent baseline SRH, and no, slight, or moderate (WOMAC) baseline night pain, 79.4% reported absence of night pain 1 year after surgery, whilst among those with “fair” or “poor” SRH, regardless of (WOMAC) baseline night pain, this figure was only 49.8% (Figure 1).
- For the outcome “pain medication need” (no vs. yes/sometimes), among women with baseline WOMAC pain score <30 indicating a high level of pain and >2 comorbidities, 34% reported taking no pain medication 1 year after surgery, whereas among men with similar WOMAC pain scores and comorbidities this proportion was 51.5%.

CONCLUSIONS

- The tool we developed can provide prospective patients and their clinicians with valuable information on how previous THA patients like them did over time regarding the most important pain outcomes.
- The great majority of patients perform exceedingly well after surgery, but distinct clusters with different outcomes can be identified and this information can help patients inform their expectation and treatment decisions.

Acknowledgments

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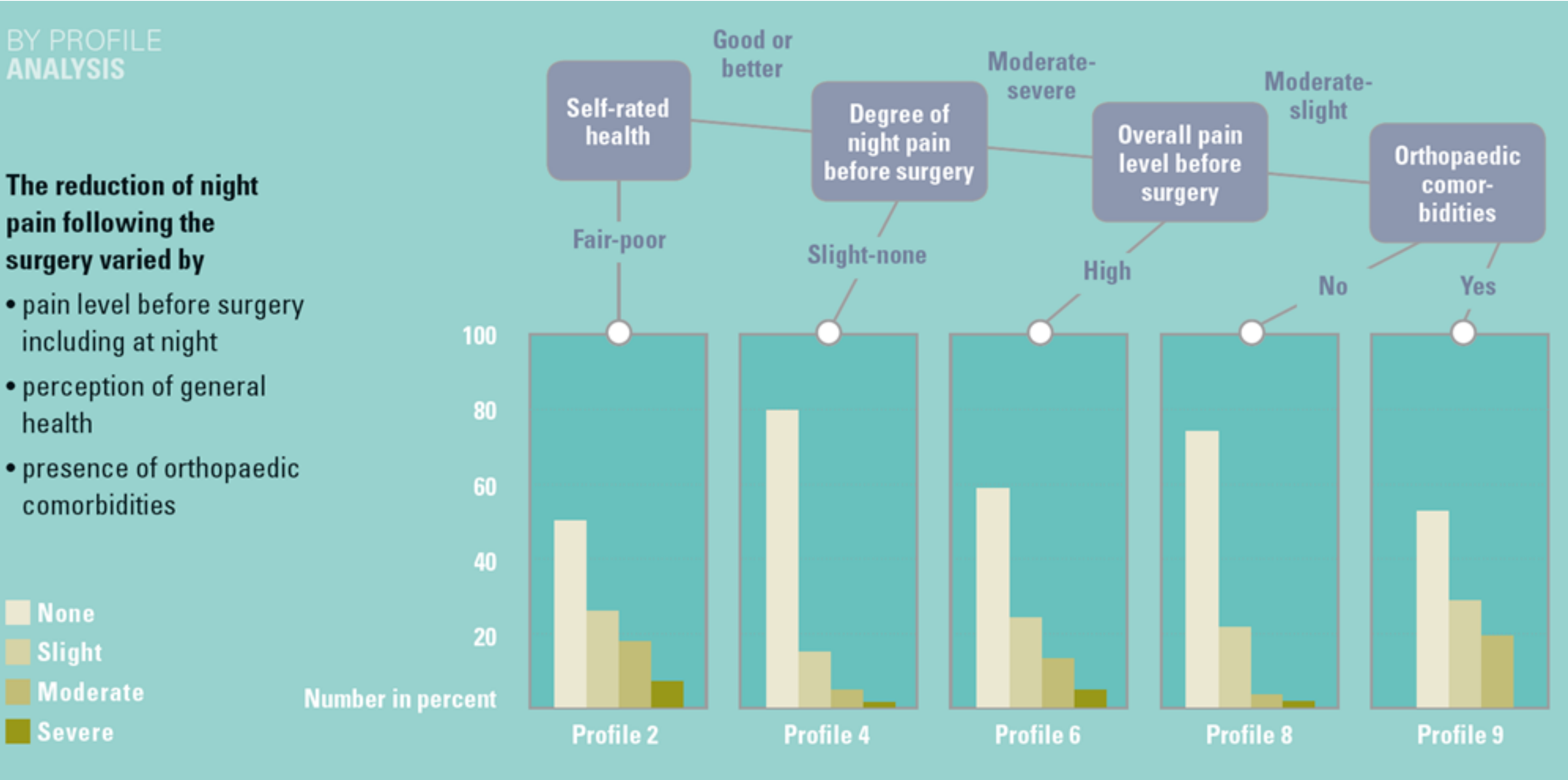


Figure 1: Conditional inference Tree for night pain at year 1

