The influence of patient activation, pain self-efficacy, and resilience on patient-reported pain and function in patients with hip and knee arthritis

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BACKGROUND

In patients with end-stage osteoarthritis of the hip and knee, total joint arthroplasty significantly improves pain, function, and health-related quality of life for the vast majority [8]. However, a subset of patients fails to achieve improvement, with rates of dissatisfaction as high as 19% in the literature [6, 25, 28]. Studies have sought to determine how to predict postoperative outcomes, with results ranging from preoperative function and patient-reported outcomes [3, 4, 9, 15, 20], sociodemographics [14, 21], and mental and emotional health [2, 7, 10, 28]. Indeed, the impact of psychosocial well-being on outcomes after hip and knee arthroplasty has been well-studied, with numerous studies describing the positive correlation between emotional health and better surgical outcomes [19].

Despite the depth of literature devoted to understanding postsurgical outcomes, there is still a significant amount of variation that is unexplained, after taking into account age, gender, comorbidities, preoperative functional status, mental health, and social deprivation [17]. There has been recent interest in understanding the impact of patient activation and self-efficacy, which are important measures of the degree to which patients engage in and take ownership of their health. Results have shown that higher patient activation is associated with greater pain relief, symptom improvement, and satisfaction postoperatively [1]. Self-efficacy has likewise been shown to predict postoperative functional ability, but not pain [29]. However, these studies did not determine the relative importance on outcomes of patient activation or self-efficacy in comparison to other measures.

We seek to understand the relative importance of patient activation, pain self-efficacy, and resilience on patient-reported pain and function among patients with hip and knee osteoarthritis. Our primary null hypothesis is that these patient-reported outcomes have overlapping 95% confidence intervals with pain intensity. Our secondary hypotheses seek to assess the correlation between these three measures and hip or knee function, and to determine what amount of variation each measure accounts for.

METHODS

Data collection

Patients of two fellowship-trained orthopaedic arthroplasty surgeons were enrolled in this cross-sectional study. Adult patients were eligible for inclusion if they carried a diagnosis of hip or knee arthritis. Patients were excluded if they were approached within three months of their hip or knee replacement, or were not primarily English-speaking. Patient comorbidities were self-reported or obtained through medical charts. Patient-reported outcome measures included the Patient Activation Measure [13], Pain Self-Efficacy Questionnaire [5], Brief Resilience Scale [26], Hip Disability and Osteoarthritis Outcomes Score – Joint Replacement (HOOS, JR) [23], Knee Injury and Osteoarthritis Outcome Score – Joint Replacement (KOOS, JR) [22], and Numeric Rating Scale for pain [12]. Either the HOOS, JR or KOOS, JR was administered as appropriate based on the patient’s chief complaint.

Data were collected using tablet devices and stored in a HIPAA-compliant REDCap database hosted at the University of Texas at Austin [11]. No patient identifiers were collected, and this study was reviewed and approved by the University of Texas Institutional Review Board (IRB).
An *a priori* power analysis was performed and determined that for an effect size of 0.3 and $\alpha = 0.05$, a total sample size of 109 patients was required to determine significance at a power of 90%.

**Data analysis**

Descriptive statistics will be performed on patient demographic information. Pearson correlation will be performed. Multivariate logistic regression will be performed to control for patient demographics and comorbidities.

**RESULTS**

Results are pending completion of data collection and will be updated shortly. We are near completion of patient enrollment.

**DISCUSSION**

As the health care system, particularly arthroplasty, moves towards alternative payments, understanding the underlying reasons that contribute to variability in outcomes is more important than ever. Rather than simply providing more care, as was prevalent under the traditional fee-for-service model, providers will be responsible for demonstrating value, defined as outcomes per dollar expended [24]. Early results under bundled payments for arthroplasty have shown promise [16]. However, studies showing unexplained variation in outcomes illustrate that there is still opportunity to better understand the arthroplasty patient population [17]. This study focused on patient activation, self-efficacy, and resilience as key factors that explain the degree to which patients exert impact on their health.

A surprisingly limited amount of variation in outcomes can be explained by traditional elements such as pain, function, or demographics [17]. Under a model of comprehensive care, providers must consider a patient’s holistic health, inclusive of pathophysiology, symptoms, emotional health, and propensity to engage in their own care. Tenets of a value-based approach emphasize patient-centered, multidisciplinary care that emphasizes patient education and utilizes shared decision-making with patients [18, 27]. Hence, a patient’s preferences, goals, and values must be understood and incorporated into the treatment plan. For example, surgery may not always be the most appropriate treatment for every patient.

Understanding the contribution of patient factors such as activation, self-efficacy, and resilience is critical for providers to optimally care for their patients. We hope that this study will highlight the importance of engaging patients to share responsibility in their care and empowering them to take management of their health. At the very least, we hope this encourages providers to initiate conversations to encourage self-care and enhance their patients’ natural abilities to cope with and overcome the stresses of illness.
REFERENCES


