What are the main factors associated with reductions in anxiety after joint arthroplasty?

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INTRODUCTION:
Research has begun to focus on whether mental health, particularly anxiety and depression, are impacted by arthroplasty procedures in patients with end-stage osteoarthritis. While studies suggest that anxiety is improved following surgical intervention, it is unclear what factors drive these changes. The aim of this study was to investigate baseline patient characteristics and changes in objective mobility to determine their association with changes in anxiety following arthroplasty.
METHODS:
This was a secondary analysis of a multicenter prospective observational cohort study. Patients undergoing partial knee arthroplasty (PKA), total knee arthroplasty (TKA) or total hip arthroplasty (THA) who owned a smartphone were eligible and were provided a smartwatch at least two weeks prior to surgery to allow for pre- and post-operative collection of gait metrics including step counts, gait speed, and walking asymmetry. Patients completed questionnaires including a numeric pain rating score and the Generalized Anxiety Disorder-7 instrument (GAD-7) pre-operatively and at 90-days post-operatively. Change in each of these variables was calculated from baseline and included in generalized linear models, including age, body mass index (BMI), and sex to quantify the impact on change in GAD-7 scores at 90 days post-arthroplasty.
RESULTS:
Evaluable data was available for 1,530 patients, including 260 (17%) PKA, 398 (26%) THA, and 872 (57%) TKA cases. The overall change in GAD-7 score was -0.68±2.83 points, with the smallest change in TKA patients (-0.52±2.9) and the largest in those undergoing THA (-0.97±2.69, p=0.03). On multivariable analysis, change in pain (β=0.20, 95%CI 0.03 – 0.67, p= 0.02), sex (β=-0.78, 95%CI -1.44 – -0.12, p=0.02), and change in step count (β=-0.0002, 95%CI -0.0003 – -0.0001, p=0.004) were associated with change in GAD-7 in PKA patients. In the THA cohort, only change in pain (β=0.23, 95%CI 0.10 – 0.6, p=0.0006) and BMI (β=0.10, 95%CI 0.05 – 0.15, p=0.0002) were significantly associated with change in anxiety. In those undergoing TKA, change in pain (β=0.16, 95%CI 0.07 – 0.26, p=0.0008), BMI (-0.04, 95%CI -0.07 - -0.003, p=0.03), sex (β=-0.59, 95%CI -0.97 - -0.20, p=0.003), and change in gait speed at 90 days (β=-2.45, 95%CI -4.68 - -0.23, p=0.03) were associated with change in anxiety at 90 days post-operatively.
DISCUSSION AND CONCLUSION:
Patients experience reductions in anxiety following knee and hip arthroplasty, which appears to be affected by baseline characteristics. Changes in objective gait metrics may impact anxiety in knee arthroplasty patients, however, changes in pain appear to be more strongly and consistently associated with anxiety reduction post-operatively.