

Prospectively Collected Resiliency Score Associated with Preoperative Patient-Reported Outcomes in Sports Medicine Surgical Population

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INTRODUCTION:

Numerous studies have highlighted the importance of psychological factors in recovery after surgery. Resiliency, commonly known as the ability to adapt and “bounce back” from trauma, adversity, tragedy, or stressful situation, has been shown to predict better outcomes, including quality of life, functional outcomes, lower pain intensity, and physical health after a variety of orthopaedic procedures such as total knee arthroplasties (TKAs), total shoulder arthroplasties (TSAs), rotator cuff repairs, and hip fractures. This study aims to use the Brief Resilience Scale (BRS) to assess patients' resiliency before common shoulder and knee surgeries in a sports medicine patient population and to assess whether patient demographic, clinical characteristics, and preoperative pain and function are associated with preoperative resiliency.

METHODS:

Between October 2017 and February 2022, all patients from a single orthopaedic surgeon in a single orthopaedic practice at an academic institution who were undergoing shoulder or knee arthroscopies were included in this prospective study. Inclusion criteria included patients being over the age of 18 and no previous enrollment in this study. Exclusion criteria included open surgery as well as incomplete preoperative patient-reported outcome measures (PROMs). At the preoperative clinic visit, each patient was administered a preoperative questionnaire that included Visual Analog Scale (VAS) for pain, expectations of pain, history of opioid pain medication use, 6-item Brief Resiliency Score (BRS) questionnaire, and a standard preoperative form. Patients also filled out a preoperative questionnaire that evaluated PROMs, including the Veterans Rand 12-item Health Survey (VR-12), mental and physical components. The BRS has a range from theoretical range 1-5 and was examined on a continuous scale and as low (<3), normal (3-4.3), and high (>4.3) resilience.

Linear regression was used to assess the association between continuous BRS score and patient factors, including age, sex, BMI, race, preoperative opioid use, smoking status, workers' compensation status, surgery type (knee vs. shoulder), and preoperative activity level. Variables with p-value < 0.10 were included in a multivariable logistic regression model. An interaction between sex and age was pre-specified. Associations between preoperative BRS and PROMs were assessed with Pearson Correlation.

RESULTS: A total of 809 patients were enrolled in this study, 591 underwent knee arthroscopy and 218 shoulder arthroscopy. The mean (SD) BRS was 3.96 (0.62); 35 (4%) were classified as having low resilience, 536 (66%) normal resilience, and 238 (29%) high resilience. Sex by age interaction, smoking status, workers' compensation status, and preoperative opioid use were associated with BRS score in linear regression models. Multivariable linear regression showed that in the overall cohort, sex by age interaction ($p=0.0008$), preoperative opioid use ($p=0.0301$), and workers' compensation status ($p=0.0004$) were significantly associated with BRS score. Males had on average higher resilience than females. For both men and women those under age 25 had the lowest average BRS score; females under age 25 had the lowest average BRS score across all groups. Those who used opioids preoperatively, were current smokers, or were workers' compensation cases had on average lower BRS scores compared to those who were not. There was no significant difference in the overall cohort in adjusted BRS score between those undergoing knee vs. shoulder arthroscopy. Associations between demographic and clinical characteristics and BRS scores were similar in the shoulder and knee cohorts. No significant associations were seen between preoperative PROs and BRS except for a moderately positive association between BRS and VR-12 Mental in both the knee and shoulder cohorts ($p=0.38$ 95% CI: (0.30, 0.44)).

DISCUSSION AND CONCLUSION: In general, the sports medicine surgical population has very few low resilience patients. Females under the age of 25 have lower resiliency scores compared to males and other age groups. Patients who were current smokers, were workers' compensation cases, and who took preoperative opioids had lower resiliency scores, indicating that potential attention could be paid to ensure good outcomes.