Patient-Reported Outcome Measures for Anxiety and Depression Are Correlated with and Predict Physical Function in Patients with Orthopaedic Injuries

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Purpose: The primary goal of this study is to establish the link between physical function and depression/ anxiety/pain interference. To do this we examined whether PROMIS Physical Function (PF) CAT (computer adaptive test) scores are correlated to PROMIS Depression CAT and PROMIS Anxiety CAT scores at three and six month follow-up in orthopaedic trauma patients. The secondary goal is to determine whether scores on the PROMIS Depression CAT and Anxiety CAT at initial clinical follow up can predict low PF CAT scores at final follow-up.

Methods: All patients (2014-2016) at the orthopaedic trauma clinic at our level 1 trauma center are administered the PROMIS Physical Function (PF), Depression (Dep), Anxiety (Anx) and Pain intereference (PI) CATs at all clinic visits. The PROMIS domains are all normalized to the general population with a mean score of 50 points and each standard deviation set to 10 points. After IRB approval, all orthopaedic trauma patients with PRO scores were reviewed from this database; further clinical data was gathered from this source including CPT codes, dates, and clinical treatment variables. Inclusion criteria consisted of a history of an operative fracture and PRO scores at the two week, three-month and six-month clinical visits. Linear regression and Spearman's (S) rank correlation (non-normally distributed numeric variables) were used for bivariate analyses.

Results: Five hundred and sixty two patients met inclusion criteria. Three and six-month follow-up PROMIS PF scores were negatively correlated with three and six-month follow-up PROMIS Dep scores (S -0.468; 95% CI -0.534, -0.396; $p<0.0001$), PROMIS Anx scores (S -0.536; 95% CI -0.596, -0.469; $p<0.0001$) and PROMIS PI scores (S -0.663; 95% CI -0.711, -0.609 $p<0.0001$). A PROMIS Dep score with a value greater than 60 at first clinical visit was predictive of a lower PF CAT and higher Dep CAT score at final follow-up ($p<.0001$). An elevated Anx CAT value at first clinical visit was predictive of both a lower PF CAT score and higher Anx CAT score at final follow-up ($p<.0001$).

Conclusion: Self-reported depression and anxiety are negatively correlated with patient reported physical function at three and six months follow-up. Measuring depression and anxiety in patients at their two week visit identifies patients that may benefit from intervention to treat their anxiety and depression and improve overall function after traumatic injury. Further research into the effect of targeted intervention on these mental health comorbidities is warranted.

See pages 401 - 442 for financial disclosure information.