

Incidence of Preoperative Depression in Knee and Shoulder Arthroscopy Using Patient Health Questionnaire-2

Michael Gaudiani, Joshua P. Castle, Noah Kamel Elagamy, Matthew Gasparro, Justin Bennie, Thomas Sean Lynch, Vasilios Moutzourous, Eric C Makhni¹

¹Henry Ford Health

INTRODUCTION:

Preoperative depression has been associated with worse outcomes following orthopaedic surgery including lower patient-reported outcomes, increased pain and impairment, and a higher rate of complications. Patient Health Questionnaire-2 (PHQ-2) is a commonly administered screening tool for measuring depressive symptoms, however the relationship between PHQ-2 and preoperative characteristics of patients presenting for arthroscopic knee and shoulder surgery have not been established. The purpose of this study is to investigate the association between depression and preoperative demographics and patient-recorded outcomes of patients presenting for arthroscopic knee and shoulder surgery.

METHODS:

This retrospective chart review evaluated data from all patients who underwent elective primary arthroscopic shoulder and knee surgery at one health system. Current Procedural Terminology (CPT) were used to identify patients undergoing anterior cruciate ligament reconstruction (ACLR), meniscectomy, meniscus repair, knee chondroplasty, labral repair, rotator cuff repair, and capsulorrhaphy. Patients were included if they had completed Patient-Reported Outcomes Measurement Information System (PROMIS) Pain Interference (PROMIS-PI) and a PHQ-2 score at least 3 months prior to their surgery. The PHQ-2 is a validated tool used to screen for depression with scores ranging from 0-6. Patients were categorized as either depressed (PHQ-2 ≥ 3) or non-depressed (PHQ-2 < 3). Demographic and PROMIS were compared and a multivariate regression analysis was performed.

RESULTS:

A total of 979 patients were included with 128 (13%) depressed patients and 851 non-depressed patients. No significant differences were found in age (49.0±15.7 vs. 49.1±16.1; P=0.925), gender (53% vs. 47.8% female; P=0.262), median household income (\$65,230±\$24,684 vs. \$66,810±\$22,414; P=0.464), area deprivation index (62±24 vs. 64±24; P=0.493), and depression diagnosis (4.69% vs. 3.06%; P=0.332). Preoperative PROMIS-PI was significantly worse in the depressed cohort versus non-depressed (66.1±5.9 vs. 63.6±6.3; P<0.0001). Preoperative PROMIS-Depression score (R²=0.34) was the highest correlated variable to preoperative PHQ2 score.

DISCUSSION AND CONCLUSION:

Overall, a larger number of patients screened positive for depression among patients undergoing knee and shoulder arthroscopy than were formally diagnosed. Demographic and socioeconomic variables were similar indicating these patients may be hard to identify without a screening tool like PHQ-2. Preoperative pain scores were higher among the depressed patients indicating possibly patients with higher pain are more likely to be depressed. This highlights the need for further research on preoperative mood screening before arthroscopic surgery.

Table 1. Clinical Characteristics of Study Population

Clinical Characteristic	Depressed† (n = 84)	Non-Depressed† (n = 154)	P Value
Age, mean (SD)	49.0 (15.7)	49.2 (16.1)	0.925
Female, n (%)	68 (53)	407 (47)	0.262
BMI, mean (SD)	31.1 (7.91)	31.09 (6.15)	0.802
Race, n (%)			0.164
White	92 (72)	659 (77)	
Black	24 (19)	132 (16)	
Other	12 (9)	60 (7)	
Hispanic or Latino, n (%)	6 (5)	37 (4)	0.865
Smoking Status, n (%)			0.465
Current	24 (19)	139 (17)	
Former	41 (33)	254 (30)	
Never	61 (48)	452 (54)	
Comorbid Diagnoses, n (%)			
Depression	6 (5)	26 (3)	0.332
Anxiety	28 (22)	190 (22)	0.912
Income Measurements, mean (SD)			
Area Deprivation Index (ADI)			
National Percentile	64 (25)	62 (24)	0.493
State Decile	5 (3)	5 (3)	0.444
Median Household Income (MHI)	\$65,230 (\$24,685)	\$66,810 (\$22,414)	0.463
Pre-operative PROMIS-PI (SD)	66.1 (6.0)	63.6 (6.3)	<.0001*

* indicates P value with significance <0.05. †PHQ-2 positive defined as ≥3, PHQ-2 negative defined as <3.

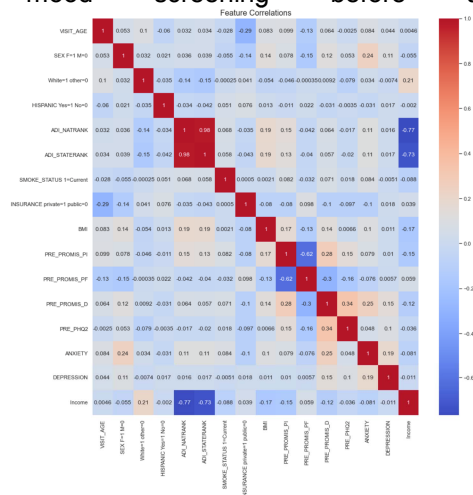


Figure 1. Correlations between variables amongst patients undergoing knee and shoulder arthroscopy