

The effect of preoperative mental health and socioeconomic status on outcomes following primary total shoulder arthroplasty

Wojciech Dzieza, Anton Khlopas, Logan Wright, Kevin A Hao, Akshay Reddy, Joseph John King¹, Jonathan O Wright, Bradley S Schoch, Kevin W Farmer², Thomas W Wright³

¹UF Orthopaedics & Sports Medicine Institute, ²University of FL Department of Orthopaedic Surgery, ³UF Orthopaedics

INTRODUCTION: Lower socioeconomic status has been associated with poorer patient-reported outcome scores (PROs) after primary total shoulder arthroplasty (TSA). However, it is unclear whether poorer mental health, which has been associated with lower socioeconomic status, may be a confounding variable. The purpose of this study was to determine the influence of socioeconomic status on PROs and implant survivorship following primary TSA independent of self-reported mental health scores.

METHODS: We performed a retrospective review of a prospectively-collected database at a single institution to identify patients who underwent primary anatomic TSA (aTSA) and reverse TSA (rTSA). Preoperatively, patients were asked to rate how often they felt calm, energized, and depressed over the past month (Table 1). Patient zip codes were used to determine their national Area Deprivation Index (ADI) rank, which served as a surrogate for socioeconomic status. Outcomes assessed included revision-free implant survivorship and three PROs (American Shoulder and Elbow Surgeons [ASES] score, Shoulder Pain and Disability Index [SPADI], and Simple Shoulder Test [SST]) collected at annual postoperative clinical visits. A multivariable linear and cox regression analyses were performed to determine whether preoperative mental health scores and/or ADI rank were associated with each outcome independent of age at surgery, sex, follow-up, tobacco use, TSA type, and preoperative PROs.

RESULTS: A total 987 patients who underwent primary TSA were identified (326 aTSA and 661 rTSA) (Table 2). The follow-up for aTSA and rTSA was 5.7±3.0 and 4.7±2.5 years, respectively. ADI and preoperative mental health scores demonstrated a weak but statistically significant correlation, demonstrating that lower socioeconomic status is weakly correlated with poorer mental health (|R| range from 0.08 to 0.13) (Figure 1). When controlling for covariates on multivariable linear regression, both greater ADI and greater preoperative depression scores were significantly associated with poorer postoperative scores for all three PROs evaluated (P<.05), whereas greater preoperative calmness scores were significantly associated with more favorable revision-free implant survivorship (P=0.001) (Table 3).

DISCUSSION AND CONCLUSION: Lower socioeconomic status and greater preoperative depression symptoms are both independently associated with poorer PROs after primary TSA. Greater preoperative ratings of feeling calm and peaceful were associated with reduced need for revision. These findings highlight the impact mental health and socioeconomic status have on outcomes in primary TSA, their relationship, and the importance of appropriate preoperative assessment to maximize patient satisfaction and function.

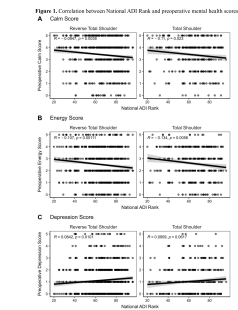


Table 1. Questions used in preoperative assessment to determine the state of mental health, with using frequency (1=Never, 2=Often)

Question	1 (Never)	2 (Often)
1. How much of the time during the past month have you felt calm and peaceful?	1	2
2. How much of the time during the past month have you had a lot of energy?	1	2
3. How much of the time during the past month have you felt downhearted and blue?	1	2

Characteristic	aTSA (n=326)	rTSA (n=661)
Age at surgery (years)	63.9 ± 8.0	68.8 ± 8.2
Follow-up (years)	5.7 ± 3.0	4.7 ± 2.5
BMI (kg/m ²)	25.3 ± 5.2	26.3 ± 6.4
Female sex	62.5% (203)	55.0% (363)
Previous surgery	42.5% (140)	33.0% (219)
Comorbidities		
Inflammatory Arthritis	6.5% (21)	8.5% (56)
Hypertension	60.7% (198)	62.2% (412)
Heart disease	12.9% (42)	20.5% (134)
Diabetes	10.9% (35)	22.0% (145)
Tobacco use	9.5% (31)	7.0% (46)
Previous MI/Stroke	1.8% (6)	3.0% (20)
Previous hip	1.5% (5)	6.2% (41)
Previous knee	12.5% (41)	12.2% (81)
Previous shoulder	42.5% (140)	33.0% (219)
Previous spine	10.5% (34)	10.5% (70)
Previous elbow	1.5% (5)	1.5% (10)
Previous wrist	1.5% (5)	1.5% (10)
Previous hand	1.5% (5)	1.5% (10)
Previous foot	1.5% (5)	1.5% (10)
Previous ankle	1.5% (5)	1.5% (10)
Previous leg	1.5% (5)	1.5% (10)
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