

Socioeconomic Deprivation Predicts Worse Functional Status Two Years after Orthopaedic Surgery

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INTRODUCTION: Socioeconomic deprivation has been shown to be associated with worse general surgery outcomes. And within orthopaedics, increased deprivation has been demonstrated to be associated with worse baseline functional status. Yet, there is little research examining the association between deprivation and postoperative outcomes in orthopaedic surgery. This study aimed to determine if there is an association between level of socioeconomic deprivation and two-year postoperative patient-reported outcomes assessing function, pain, satisfaction, mental health, and joint-specific metrics.

METHODS: Patients undergoing orthopaedic elective surgery from June 2015 to November 2018 at a single urban tertiary referral center were enrolled in an orthopaedic registry. All patients who completed both baseline and two-year follow-up questionnaires were included. Area Deprivation Index (ADI) was computed from zip code-based census block groups. Patients were administered Patient-Reported Outcome Metric Information System (PROMIS) computer-adaptive testing, Musculoskeletal Outcomes Data Evaluation and Management System (MODEMS) expectations questionnaires, Surgical Satisfaction Questionnaire (SSQ-8), joint-specific surveys, and other orthopaedic patient-reported outcome metrics. Patients were determined to have achieved minimal clinically important differences (MCID) for multiple patient-reported outcomes based on established values from the literature. Bivariate analyses were run to analyze for associations with deprivation. Regression models were run to assess if level of deprivation was an independent predictor of two-year outcomes scores, improvement from baseline, or achieving MCID.

RESULTS: A total of 1,483 of 2,117 patients (70.1%) were enrolled in the registry and completed two-year follow up. Greater deprivation was associated with older age, female gender, race, education, employment status, insurance status, site of operation, and number of prior surgeries among other demographic and operative factors (Table 1 & 2). Bivariate analysis found that greater ADI was associated with worse scores on all patient-reported outcomes at 2 years except PROMIS Anxiety and Depression and less patients reporting their condition "completely better" (Table 3). Increased deprivation was also associated with less improvement from baseline and a lesser percentage of patients achieving MCID for PROMIS Physical Function, Pain Interference, Social Satisfaction, Tegner Activity Scale (TAS), and International Knee Documentation Committee Questionnaire (IKDC) at two years (Table 4 & 5). Multivariate analysis demonstrated that ADI was an independent predictor of worse two-year Physical Function, Pain Interference, Fatigue, Numeric Pain Scale at operative site, TAS, Marx Activity Rating Lower Extremity, and IKDC (Table 6). ADI was also an independent predictor of less improvement in Physical Function, Pain Interference, and IKDC as well as a lesser probability of achieving MCID for IKDC (Table 7 & 8).

DISCUSSION AND CONCLUSION: Greater levels of socioeconomic deprivation as measured by neighborhood specific ADI are associated with worse two-year scores, less improvement, and decreased chance of achieving MCID for multiple patient-reported outcomes.