2025 NEW YORK REGIONAL SOCIETY OF PLASTIC SURGEONS ANNUAL RESIDENTS' NIGHT RESEARCH COMPETITION

MONDAY, MARCH 10, 2025
NEW YORK ACADEMY OF MEDICINE

ABSTRACT SUBMISSION TITLE: *B5 - Influence of Socioeconomic Status on Complications following Open Reduction Internal Fixation of Distal Radius Fractures: A Retrospective Cohort Study*

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Abstract Text:

PURPOSE:

Distal radius fractures (DRFs) are among the most common fractures. Lower socioeconomic status (SES) has been linked to poorer health and surgical outcomes across various specialties. Therefore, this study aimed to investigate the relationship between SES and complications following distal radius fractures (DRFs) treated with open reduction internal fixation (ORIF). Considering the multifactorial nature of SES, we used the Area Deprivation Index (ADI), a census-based composite metric, to represent socioeconomic deprivation.(1) We hypothesized that greater neighborhood socioeconomic deprivation predisposes patients to postoperative complications after ORIF of DRFs.

METHODS:

A retrospective review of medical charts at a single institution from 2013 to 2020 identified 618 patients who underwent ORIF. Patients were mostly middle-aged (55 ± 17 years), predominantly female (74.6%), White (82.2%), overweight/obese (58.1%), and

American Society of Anesthesiologists (ASA) class > 1 (83.6%). Fractures were mostly due to falls (87.8%), predominantly intra-articular (89.7%), with 30.3% undergoing supplemental external fixation.

RESULTS:

ADIs were obtained using documented ZIP codes. Patients were stratified into three ADI groups: Group 1 (percentiles 0-33) denoted least deprivation, Group 2 (percentiles 33-66) encompassed intermediate deprivation, and Group 3 (percentiles 66-100) indicated the highest deprivation. Primary outcomes included major, minor, and any complication. Major complications were defined as those necessitating additional surgery following initial fixation. Statistical analyses were performed using SPSS version 29.0 (IBM, Armonk, NY).

Variables found to be significantly associated with outcomes were included in main effects multivariable binomial logistic regression models assessing the effect of ADI score on primary outcomes. This analysis revealed that ASA class, supplemental external fixation, and prolonged operative time were associated with increased complication rates.

Specifically, ADI Group 3 emerged as a significant predictor of any complication (OR 3.05; p = 0.003) and minor complications (OR 3.03; P = 0.016), but not major complications (OR 2.85; p = 0.056). ADI Group 2 did not significantly predict any, major, or minor complications. ASA class 2 (OR 2.81; p = 0.050), ASA class 3-4 (OR 3.41; p = 0.027), operation time (OR 1.01; p = 0.014), and supplemental external fixation (OR 2.380; p = 0.004) were all significant predictors for any complication.

Stratified multivariable regression analysis revealed that ADI Group 3 was a significant predictor of any complication among patients belonging to ASA class 3-4 (OR 3.249; 95% CI, 1.21-8.76) and among patients who required supplemental external fixation (OR 2.758; 95% CI, 1.02-7.47). In patients belonging to ASA class 2 or lower and in patients who did not receive external fixation, the odds of experiencing any complication were increased, though not significantly.

CONCLUSIONS:

Collectively, these results demonstrate an association between SES and complications after ORIF. Additionally, there appears to be a more pronounced interaction between lower SES (higher ADI) and the occurrence of postoperative complications in individuals predisposed to poorer outcomes—specifically, those with a high comorbidity burden (i.e. ASA class 3-4) and severe fractures (i.e. presence of additional external fixation). This underscores the importance for surgeons to carefully consider the potential association between SES and surgical outcomes, particularly for patients with higher perioperative risk profiles.