

The Association Between Social Determinants of Health and Distal Radius Fracture Outcomes

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BACKGROUND

- Distal radius fractures are the most common upper extremity fracture, particularly in the elderly population
- Social determinants of health (SDOH) have been associated with higher complication rates in ankle fractures, spinal pathology, and rotator cuff tears
- Purpose:**
 - To determine if adverse SDOH are associated with increased rates of post-operative complications for distal radius fractures

METHODS

- Cross-sectional analysis of patients from 2010-2020 using the Mariner PearlDiver database
- International Classification of Diseases (ICD) and Current Procedural Terminology (CPT) codes were used to identify patients who underwent ORIF for an isolated distal radius fracture
- Cohorts: identified patients facing economic, social, healthcare, environmental, or educational adversities using ICD codes and propensity score matched patients to create two cohorts based on the presence/absence of SDOHs
- Statistical analysis: multivariate logistic regression analyses adjusted for patient demographic factors and comorbidities
- Primary Outcomes:**
 - Odds of 90-day and 1-year post-op complications by presence/absence of SDOH and specific SDOH domain

Social Determinants of Health are Associated with Increased Complication Rates Following Distal Radius Fracture Fixation

Table 2. Adjusted ORs for the Comparison of Post-Operative Complications by Presence or Absence of SDOH

Complications	SDOH n = 57,025	Control n = 57,025	SDOH vs Control Adjusted Odds Ratios* (95% CI)
90-Day Complications, n (%)			
ED Admission	17,411 (30.5)	5,266 (9.2)	3.18 (3.07 – 3.29)
Infection	1,487 (2.6)	424 (0.7)	2.37 (2.12 – 2.66)
Wound Dehiscence	587 (1.0)	164 (0.3)	2.06 (1.72 – 2.49)
1-Year Complications, n (%)			
Nerve Injury or CTR	80 (0.1)	66 (0.1)	1.15 (0.81 – 1.61)
CRPS	386 (0.7)	288 (0.5)	1.35 (1.15 – 1.58)
Malunion/nonunion	1,221 (2.1)	892 (1.6)	1.18 (1.08 – 1.29)
Malunion/nonunion Repair	241 (0.4)	172 (0.3)	1.17 (0.95 – 1.44)
Removal of Hardware	3,275 (5.7)	2,712 (4.8)	1.13 (1.07 – 1.20)



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RESULTS

- Compared to the control cohort, patients facing an adverse SDOH were significantly more likely to experience both 90-day and 1-year post-op complications
- Subsequent analyses controlling for fracture pattern demonstrated that regardless of fracture severity, patients facing adverse SDOH were still significantly more likely to experience ED visits, wound dehiscence, and surgical site infection
- Economic and social factors were most associated with increased odds of complications, particularly for ED visits, surgical site infection, malunion/nonunion, and hardware removal

DISCUSSION

- SDOH are associated with increased complications following distal radius fracture fixation, even when controlling for demographic and clinical factors
- Routine screening for adverse SDOH and inclusion of SDOH data into health records are necessary to inform quality-improvement initiatives and risk-adjustment for outcome-based quality measurements
- SDOH data will also allow providers to address barriers to care patients face during the peri-operative period to decrease complications and disparities