

Socioeconomic Factors Increase Delays to Treatment for Nonunions Without Significantly Compromising Outcomes

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INTRODUCTION: Nonunions are physically and financially burdensome for patients and clinically challenging for orthopedic surgeons. There is evidence that socioeconomic factors are associated with delays to care in general, theoretically increasing the risk of nonunion and malunion treatment failure. The purpose of this study was to determine if the social determinants of health (SDOHs) are associated with delays to care, treatment course complexity, and adverse outcomes among patients with fracture nonunion or malunion.

METHODS: We conducted a retrospective analysis of all patients ≥ 18 years old with fracture nonunion or malunion who underwent surgical correction at a three-hospital health system in an underserved urban community between November 2015 and June 2024. SDOHs considered include race, ethnicity, spoken language, insurance, Distressed Community Index, and prior treatment location (domestic, abroad). Outcomes assessed include time from initial injury to corrective operation, incidence of postoperative complications within 90 days, and bone union within 12 months. For patients achieving union, additional outcomes include number of operations required, total hospital length of stay for operations, unexpected reoperations, and time to union. P-values were obtained from Wilcoxon rank-sum, Kruskal-Wallis, or Fisher's exact tests as appropriate.

RESULTS:

Of 246 patients, other and black race ($p = 0.011$), non-English language ($p = 0.001$), and initial treatment abroad ($p = 0.001$) were significantly associated with longer time to treatment from initial injury. Of 212 patients with ≥ 90 days of follow-up, the selected SDOHs were not significantly associated with complications or rehospitalizations. Of 162 patients with ≥ 12 months of follow-up, the selected SDOHs were not associated with achieving union within 12 months of operation. Of 136 patients achieving union, those initially treated abroad experienced significantly longer times to union ($p = 0.020$). Private insurance was associated with more corrective operations ($p = 0.043$), and public insurance was associated with achieving union with the original surgical plan ($p = 0.032$). The selected SDOHs were not significantly associated with total length of stay or unexpected reoperation.

DISCUSSION AND CONCLUSION: SDOHs are associated with delays to nonunion or malunion care. Patients initially treated abroad experience longer times to union following surgery. The lack of association between SDOHs and complication and reoperation rates suggests institutional success in addressing these disparities, suggesting that institutions serving diverse communities are positioned to bridge prevalent disparities in chronic fracture management.