

Is Living in a Food Desert Associated With Risk of Complications After Fracture Surgery?

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Purpose: Socioeconomic factors have been implicated in higher complication rates after fracture surgery. A potential mechanism for this disparity is nutrition, which may be impacted by access to healthy food. One in 4 Americans lives in a food desert, defined by the US Department of Agriculture (USDA) as census tracts with poor access to healthy food. Living in a food desert is associated with inferior outcomes in non-orthopaedic domains. This study aimed to determine the prevalence of patients residing in a food desert in a large fracture population and the association between living in a food desert and unplanned reoperation using prospectively collected, adjudicated, multicenter data.

Methods: This cohort study included patients with extremity fracture enrolled in the Aqueous-PREP or PREPARE trials who reported zip codes (n = 2607). The primary outcome was unplanned reoperation within 1 year of injury. The exposure was residence in a food desert, using USDA Research Atlas criteria. We used multivariable logistic regression analysis to control for potential confounders, including socioeconomic measures such as race, employment status, education level, smoking history, substance abuse, insurance status, and median income.

Results: 1453 patients (56.1% of the total cohort) resided in a food desert. Living in a food desert was independently associated with increased odds of unplanned reoperation (odds ratio [OR] 1.40, 95% confidence interval [CI] 1.06-1.85, P= 0.02). This result was driven by reoperations for wound healing complications (OR 1.60, 95% OR 1.01-2.54, P= 0.04) and delayed union/nonunion (OR 1.75, 95% CI 1.19-2.57, P= 0.004) and not by surgical site infection (OR 0.98, 95% CI 0.61-1.33, P= 0.612).

Conclusion: Fracture patients residing in a food desert have 1.4 times the odds (or a 33% higher risk) of requiring any unplanned reoperation, driven primarily by reoperation for delayed union/nonunion and wound healing complications. These findings suggest access to healthy food as a potentially modifiable risk factor that may contribute to disparities in surgical outcomes after traumatic injury. Recognizing this may lead to targeted preventative peri- and postoperative interventions to improve outcomes.