Neighborhood-Level Socioeconomic Deprivation and Patient-Reported Outcomes following Total Ankle Replacement with Minimum 2-Year Follow Up

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INTRODUCTION:

Previous research outside of foot and ankle orthopaedics has demonstrated that socioeconomic factors negatively influence outcomes following reconstructive procedures. We assessed the impact of neighborhood-level socioeconomic factors using the area deprivation index (ADI), a composite measure of 17 census variables, on minimum 2-year patient-reported outcomes following total ankle replacement (TAR) surgery.

METHODS:

A single-institution retrospective cohort study of 331 patients who underwent TAR between 2003 and 2020 was identified from a prospectively collected TAR registry. Univariate and multivariate regression models were used to examine the association between ADI and risk of postoperative surgical failure (defined as need for explantation, revision, conversion to fusion, or amputation) and patient-reported outcome measures including Foot and Ankle Ability Measure Score (FAAM) Activities of Daily Living (ADL) score, FAAM-Sports score, Veterans Rand 12 Item Health Survey (VR-12) Physical Component Score (PCS), VR-12 Mental Component Score (MCS), and visual analog score (VAS) for pain. For analysis, the ADI was categorized into tertiles.

RESULTS:

At the time of surgery, 63 (17%) of patients lived in the most deprived neighborhoods (lower-third ADI tertile). Patients from the most deprived neighborhoods were more likely to have a higher BMI (30.8, p-value 0.006), be female (64%, p-value 0.009), and non-White (18%, p-value 0.0035). There was no significant difference in rates of failure between neighborhood tertiles (mean 14.9%, p-value 0.738). Compared to the least deprived, the most deprived neighborhoods had the lowest postoperative FAAM-ADL scores (65.5, p-value <0.001), FAAM-Sports scores (28.1, p-value 0.024), PCS (38.9, p-value 0.0014), MCS (57.1, p-value 0.007), and VAS pain (26, p-value <0.001).

DISCUSSION AND CONCLUSION:

Neighborhood deprivation is negatively associated with long-term patient-reported outcomes. There is not an association between neighborhood-level socioeconomic deprivation data and rates of failure. This may be a consequence of failure being uncommon and our cohort being relatively small.

There is a need for population-level health interventions to better understand and attenuate the risk of area-based socioeconomic deprivation following TAR. Socioeconomic factors should be considered when considering indicating a patient for TAR.