

Background:

Diabetic foot ulcers (DFUs) affect up to 25% of individuals with diabetes and remain a major cause of non-traumatic lower-limb amputation and healthcare expenditure. Healing outcomes are influenced by clinical severity (e.g., Wagner Grade) and social determinants of health, yet the interaction between these factors is not fully understood.

The Area Deprivation Index (ADI) is a validated neighborhood-level socioeconomic measure linked to poorer health outcomes and may help identify patients at risk for delayed healing. This study evaluated whether clinical severity and socioeconomic disadvantage independently predict DFU healing in an inner-city population.

Methods:

- Post-hoc analysis of 40 patients enrolled in a randomized clinical trial at an inner-city wound care clinic.
- **Primary Outcome:** Ulcer complete wound closure (healed vs. not healed).
- **Predictor Variables:**
 - Wagner Grade
 - Area Deprivation Index (ADI; ZIP+4 derived)
 - Age, gender, race
- **Data Sources:** Prospectively maintained clinical trial registry and census-derived ADI database.
- **Statistical Methods:**
 - Correlation (point-biserial)
 - Wilcoxon rank-sum testing
 - Binary logistic regression
 - Significance set at $p < 0.05$
- **Validation:** ADI calculated from 17 socioeconomic indicators across income, education, employment, and housing.

Results:

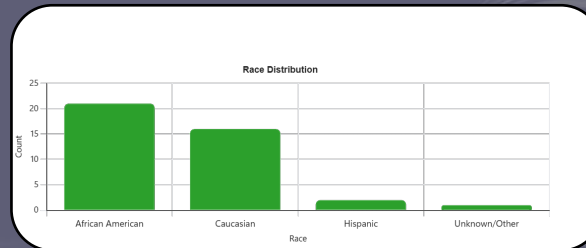
Study Cohort

N = 40 total participants.

Gender: 75% male, 25% female

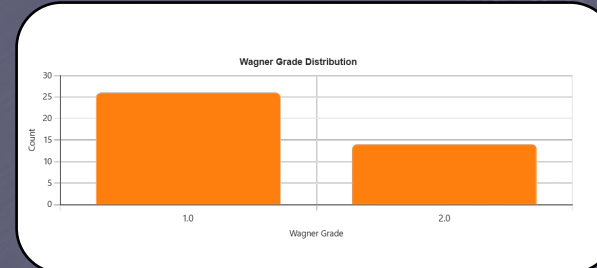
Race:

~52% African American, 40% Caucasian, 5% Hispanic, 2.5% other



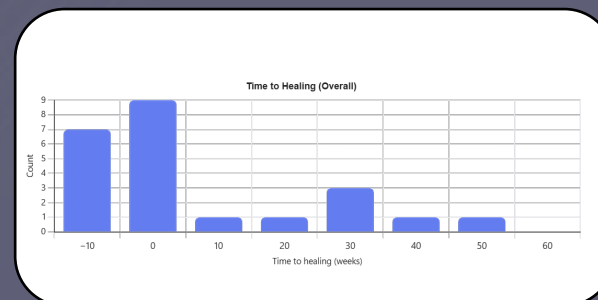
Wagner Grade:

65% Grade 1; 35% Grade 2



Time to healing:

Median 10 weeks (IQR 5–24).



Healing Outcomes:

Overall healing rate: 62.5% (25/40).

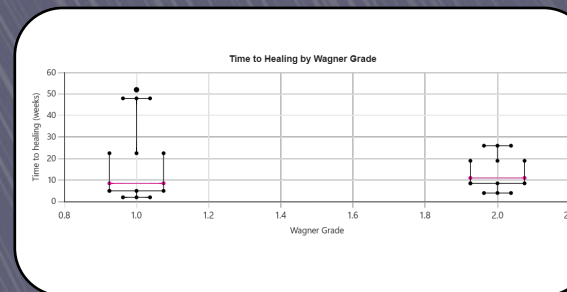
Key Predictors of Healing
Wagner Grade was the strongest predictor of healing

Logistic regression:

$\beta = -2.767, p = 0.0057$

Higher grades = significantly lower healing probability

Negative correlation with healing ($r = -0.340$)



ADI showed a non-significant trend toward poorer healing

$r = 0.216, p = 0.1366$

Suggests possible influence but underpowered

Hispanic ethnicity showed marginal significance ($\beta = -1.961, p = 0.0567$).

Age and gender were not significant predictors in any model.

Discussion:

- **Clinical severity (Wagner Grade) is the dominant predictor** of short-term DFU healing in this population.
- **Higher Wagner Grades** demonstrated **markedly lower healing rates**, consistent with regression findings.
- **Socioeconomic disadvantage (ADI)** did **not** independently predict healing in this small, single-site cohort, though trends suggest potential relevance.
- Findings reinforce the critical importance of **early detection, aggressive management, and prevention of progression** to higher Wagner grades.
- While ADI did not reach significance here, addressing **social determinants of health** remains essential for long-term DFU outcomes and equitable care.
- Larger, multi-site studies incorporating **individual-level socioeconomic data** are needed to clarify the role of neighborhood disadvantage.