March 2023

Residential Racial Segregation and Neighborhood Adversity: Associations with Hemoglobin A1c in Adolescents with Type 1 Diabetes

Zechariah Jean  
*Wayne State University, fw2823@wayne.edu*

April Carcone  
*Wayne State University, acarcone@med.wayne.edu*

Deborah Ellis  
*Wayne State University, dellis@med.wayne.edu*

Follow this and additional works at: [https://digitalcommons.wayne.edu/som_srs](https://digitalcommons.wayne.edu/som_srs)

Part of the Behavioral Medicine Commons, Clinical Epidemiology Commons, Endocrinology, Diabetes, and Metabolism Commons, Family Medicine Commons, Other Public Health Commons, Pediatrics Commons, Preventive Medicine Commons, and the Primary Care Commons

**Recommended Citation**

Jean, Zechariah; Carcone, April; and Ellis, Deborah, "Residential Racial Segregation and Neighborhood Adversity: Associations with Hemoglobin A1c in Adolescents with Type 1 Diabetes" (2023). *Medical Student Research Symposium*. 237.  
[https://digitalcommons.wayne.edu/som_srs/237](https://digitalcommons.wayne.edu/som_srs/237)

This Research Abstract is brought to you for free and open access by the School of Medicine at DigitalCommons@WayneState. It has been accepted for inclusion in Medical Student Research Symposium by an authorized administrator of DigitalCommons@WayneState.
Residential Racial Segregation and Neighborhood Adversity: Associations with Hemoglobin A1c in Adolescents with Type 1 Diabetes

Black adolescents with Type 1 Diabetes (T1D) are at increased risk for disparities in health outcomes. More research is necessary on the effects of neighborhood characteristics such as residential racial segregation (RRS) and neighborhood adversity on health.

149 Black youth with T1D were recruited from seven pediatric diabetes clinics in Detroit and Chicago to participate in a clinical trial to improve diabetes management. RRS was calculated at the census block group level based on US census data using Location Quotients. LQs represented the ratio of patients to total population in the block group compared to the same ratio in the metro area. Neighborhood adversity was assessed at the census block group level using the Neighborhood Adversity Index (NAI). Bivariate associations between RRS, NAI and HbA1c were calculated at baseline and 18-month follow-up, controlling for multiple factors including age, sex, and family income.

At baseline, mean youth age = 13.4 years ± 1.7, mean family income = $35,276 ± $27,181, and 49.7% were from single-parent households. Mean HbA1c = 11.49 ± 2.71, suggesting suboptimal control. In bivariate associations, HbA1c was significantly associated with RRS (r = .32, p = .002) and NAI (r = 0.35 p < 0.001) at baseline and with RRS (r = .38, p < .001) and NAI (r = .25 p = .016) at follow-up.

Black adolescents with T1D residing in adverse and segregated neighborhoods are more likely to have persistently poorer glycemic control. Culturally competent physicians are vital for providing information to patients on neighborhood resources and improving glycemic outcomes.

Authors:
Zechariah Jean, MS-3
April Carcone, PhD
Deborah Ellis, PhD

Research Mentor: Deborah Ellis, PhD

Acknowledgments:
Thank you to my mentors, friends, and family for your love and support.
Thank you to Dr. Malcolm P. Cutchin, PhD, for your expertise on neighborhoods.
Thank you to Dr. Colleen Buggs-Saxton, MD, for your expertise on Pediatric Endocrinology.