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“Neighborhood Deprivation Negatively Affects Survival Rate in Pediatric Oncology Patients”

Increasing evidence has shown that neighborhood characteristics have significant effects on healthcare outcomes. Historically, studies examining neighborhood deprivation have used an individual's residential zip code or county as the geographical unit of analysis. More recently, the Area Deprivation Index (ADI), a factor-based measure of neighborhood deprivation created by the University of Wisconsin School of Medicine and Public Health, has been used to analyze deprivation more precisely. The ADI utilizes census-tract level metrics based on 17 census derived factors, including education, income, type of employment, neighborhood characteristics, and housing quality to assign a deprivation score. This more precise methodology for calculating neighborhood deprivation is unique in that it utilizes an individual's complete home address versus zip code alone. This allows for increased geographic specificity, as well as a more accurate representation of the diversity within zip codes since some zip codes span wide geographic areas with extreme variations in resource availability.

We evaluated the ADI scores of 309 pediatric cancer survivors from the Treatment After Cancer and Late Effects (TACLE) Clinic and deceased patients from the Pathology Department at Children's Hospital of New Orleans (CHNOLA). Participants were grouped into quintiles based on ADI score, with scores of 80-100 representing the most deprived. We found that patients residing in the most deprived neighborhoods had statistically significantly higher mortality ($p = 0.0233$) compared to those living in the least deprived neighborhood. For every increase of 10 in ADI score, the odds of cancer survival decreased by 14.4% ($OR = 0.856, 95\% CI = (0.746, 0.981)$). Additional variables including race, ethnicity, parish, rurality, Acadian versus non-Acadian, and type of cancer (B-Acute Lymphocytic Leukemia and T-Acute Lymphocytic Leukemia) were not statistically significant in our cohort. In conclusion, neighborhood deprivation is negatively associated with survival odds, such that as neighborhood deprivation increases, survival odds decrease. These findings support that neighborhood deprivation is a key factor in a person's cancer survival odds and thus should be an included component in future studies on childhood cancer survivorship. Further, these findings support the development of interventions targeting improving these survival odds in children with cancer.