Quality of neighborhood residence in early life may be linked to obesity risk through adolescence

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Residence in neighborhoods with higher opportunity or lower vulnerability in early life, especially at birth, may be associated with

lower mean BMI trajectory and lower risk of obesity through adolescence, according to a new study led by researchers at the Harvard Pilgrim Health Care Institute.

"Our findings support the notion that the quality of neighborhoods where children reside is an important factor that may promote the development of favorable BMI patterns, potentially mitigating future chronic disease risk," said lead author Izzuddin Aris, Ph.D., Assistant Professor in the Department of Population Medicine at the Harvard Pilgrim Health Care Institute and Harvard Medical School.

The study, "Associations of Neighborhood Opportunity and Social Vulnerability with Trajectories of Child Body Mass Index and Obesity Among U.S. Children," was published December 22, 2022 in *JAMA Network Open*.

The physical and social attributes of neighborhoods where children reside is increasingly recognized as an important determinant of health across the life course. Compared with adults, children may be particularly vulnerable to adverse neighborhood conditions with consequences for lifelong health. The extent to which these attributes relate to childhood BMI and obesity risk remains understudied.

Prior studies have often been limited by small sample sizes, lack of geographical diversity, and insufficient variation in individual-level characteristics, all of which might hamper the ability to detect these associations.

The study team addressed these research gaps by examining novel neighborhood indices and using a geographically diverse cohort of over 20,000 children from 54 birth cohorts across the U.S. participating in the Environmental influences on Child Health Outcomes (ECHO) program. They linked geocoded residential addresses obtained at birth, infancy,

early childhood, and mid-childhood to census-tract level Child Opportunity Index (ChOI) and Social Vulnerability Index (SVI) and examined the associations of ChOI or SVI with child BMI and obesity over time.

Study researchers found that at every life stage, children who resided in areas with higher ChOI had lower mean BMI trajectories and lower risk of obesity from childhood to adolescence, independent of family sociodemographics and prenatal characteristics. The team observed similar patterns of findings for children who resided in areas with lower SVI.

These associations were strongest for children residing in neighborhoods with highest opportunity or lowest vulnerability. Importantly, these associations were strongest for exposure to neighborhoods at birth compared with exposure at later life stages, indicating that pregnancy is an important window for exposure.

"This study bolsters the need for a focus on investments that address the structures that consistently compromise the health of marginalized communities," said Dr. Aris. "Results may also inform future studies on whether initiatives or policies that alter specific components of neighborhood environment would be effective in preventing excess weight and obesity in children."

More information: Associations of Neighborhood Opportunity and Social Vulnerability With Trajectories of Childhood Body Mass Index and Obesity Among US Children, *JAMA Network Open* (2022). DOI: 10.1001/jamanetworkopen.2022.47957

Provided by Harvard Pilgrim Health Care Institute

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