

# For urban children with asthma, where they live is strongest predictor of exacerbations, finds research

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For children with asthma residing in urban areas, the neighborhood they live in is a stronger predictor of whether they will have exacerbations

(asthma attacks) than their family's income or their parents' level of educational attainment, according to research published at the [ATS 2023 International Conference](#).

"Research has shown that social determinants of health underlie significant health disparities among children with [asthma](#)," said the study's corresponding author Emily Skeen, MD, pediatric pulmonary fellow, University of Colorado at Children's Hospital Colorado, Aurora.

"We know that these factors do not act in isolation, so we used a composite score of neighborhood-level child opportunity to determine whether it would predict exacerbation-prone asthma better than individual socioeconomic indicators. We hypothesized that having fewer opportunities would be associated with being prone to asthma exacerbations."

The researchers used the Childhood Opportunity Index (COI) 2.0, which includes 29 measures relevant to [child development](#) across three domains: education, health/environment and social/economic. Higher scores represent greater opportunity.

Dr. Skeen explained, "We chose to use the COI in our study as it is the only composite measure of neighborhood conditions that is specific to children."

Dr. Skeen and colleagues looked at 193 children ages 8-17 from the Denver area who had asthma and were participating in an [observational study](#) at a tertiary care hospital—a study in which researchers observe the effect of a risk factor, [diagnostic test](#), treatment or other intervention without trying to change it.

They computed COI from the participants' home address and gathered information on [household income](#) and parental [educational attainment](#).

Using two statistical models, they compared neighborhood and individual socioeconomic predictors with asthma exacerbation history. Asthma status was classified as asthma-null (no exacerbations in the previous five years) or exacerbation-prone (one or more exacerbation within the previous year).

The exacerbation-prone group of children had a median age of 11.8—younger than the group that was not exacerbation-prone. In the study, 74% (142) of children were exacerbation-prone. The most heavily represented ethnic group (65%) identified as Hispanic.

The odds of children being classified as exacerbation-prone increased by 40% with a 20-point decrease in overall neighborhood-level COI. The study showed similar results for the education and social/economic domains but not for health/environment.

Odds of being exacerbation-prone increased 10% with a \$5,000 decrease in household income, while parental education was not significantly associated with the outcome.

"Our finding that lower neighborhood-level opportunity is associated with increased risk of exacerbation-prone asthma suggests that the significant burden caused by frequent asthma exacerbations could be mediated with targeted community interventions rather than focusing on individual-level interventions alone," said Dr. Skeen.

"Our work is in line with prior studies that lower COI scores are associated with increased asthma-related emergency visits and ICU admissions, but ours is the first data published looking at how the COI predicts exacerbation prone status and how that compares to individual-level predictors."

Provided by American Thoracic Society

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