Children's Hospital of Philadelphia
PolicyLab

Does Living Near Trees and Other Vegetation Affect the Contemporaneous Odds of Asthma Exacerbation among Pediatric Asthma Patients?

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Vegetation may influence asthma exacerbation through effects on aeroallergens, localized climates, air pollution, or children's behaviors and stress levels. We investigated the association between residential vegetation and asthma exacerbation by conducting a matched case-control study based on electronic health records of asthma patients, from the Children's Hospital of Philadelphia (CHOP). Our study included 17,639 exacerbation case events and 34,681 controls selected from non-exacerbation clinical visits for asthma, matched to cases by age, sex, race/ethnicity, public payment source, and residential proximity to the CHOP main campus ED and hospital. Overall greenness, tree canopy, grass/shrub cover, and impervious surface were assessed near children's homes (250 m) using satellite imagery and high-resolution landcover data. We used generalized estimating equations to estimate odds ratios (OR) and 95% confidence intervals (CI) for associations between each vegetation/landcover measure and asthma exacerbation, with adjustment for seasonal and sociodemographic factors-for all cases, and for cases defined by diagnosis setting and exacerbation frequency. Lower odds of asthma exacerbation were observed in association with greater levels of tree canopy near the home, but only for children who experienced multiple exacerbations in a year (OR = 0.94 per 10.2% greater tree canopy coverage, 95% CI = 0.90-0.99). Our findings suggest possible protection for asthma patients from tree canopy, but differing results by case frequency suggest that potential benefits may be specific to certain subpopulations of asthmatic children.

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Topics

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