

Asthma and Rhinitis in Newark: Characterization of Clinical and Epidemiological Features

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Background: Newark has one of the highest rates of asthma in New Jersey. Urban populations experience disproportionate rates of asthma morbidity, while indoor allergen sensitization can contribute to poor health outcomes. In our previously uncharacterized urban population, we sought to evaluate the relationship between ethnicity, allergen sensitization and allergic co-morbidities among children with asthma and/or rhinitis.

Methods: A retrospective chart review was performed on patients with a diagnosis of asthma and/or rhinitis seen from 2013-2019 at the Rutgers University, pediatric allergy/immunology clinic. We conducted data analysis using Chi-square, Fisher exact tests and logistic regression to evaluate the association between allergic diagnosis, allergen sensitization, race/ethnicity and co-morbidities.

Results: 296 charts were reviewed, median age 9 years (range 1-18), with equal gender distribution and predominant race/ethnic group was Black/African American (46.6%) and Hispanic (31.1%). Diagnoses include asthma only (8.5%), rhinitis only (28.2%) or both (62.8%). Aeroallergen-specific testing was done in 251 patients: 82.9% atopic and median IgE 437 IU/mL (IQR 1140). There was a high prevalence of sensitization to pollen (N=163, 64.9%), followed by cat and/or dog (N=157, 62.6%), dust mite (N=40, 55.8%), cockroach (N=111, 44.2%), mouse (N=92, 36.7%), and mold (N=75, 29.9%). Among those with both asthma and rhinitis, there was a strong association with sensitivity to mouse allergen (aOR 3.34, 95% CI 1.74-6.42, p=0.0003). Black/African-American patients had an increased likelihood of sensitization to all allergens. Regardless of patient's address by zip code, sensitization to any of the allergens was a risk factor for development of asthma and rhinitis.

Conclusions: Pediatric patients of Newark are highly burdened by allergic diseases. Though outdoor allergens are more prevalent, indoor allergens such as mouse are significant risk factor in patients with both asthma and rhinitis.