Risk Factors Associated with Repeat Pediatric Asthma Visits to Emergency Departments

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Introduction

The burden of asthma is characterized by the number of asthma-related emergency department (ED) visits. The purpose of this study was to identify factors associated with repeat pediatric ED visits due to asthma over time.

Data

We conducted a retrospective cross-sectional study to explain the resulting effects of multiple ED visits for pediatric asthma. We used the Healthcare Cost and Utilization Project (HCUP), State Emergency Department Databases (SEDD) discharge records for the states of Florida, Maryland, and Wisconsin over years 2016 through 2019.

Method

We used the ICD-10 codes provided through the AHRQ Pediatric Quality Indicators to identify asthma-related conditions. We used zero truncated Poisson regression model and obtained robust standard errors for the parameter estimates.

Measures

The response variable was the count of ED visits for the same patient in a year. The predictive factors were age, sex, race and ethnicity, insurance status, income, and rurality. All non-metro counties including micropolitan and noncore counties were defined as rural. We also controlled for the exposure hospital patient-year and estimated incidence-rate ratios. P-values of <.05 were considered statistically significant. All analyses were performed by Stata 17.

Population

We studied children at age 0-4, 5-11, 12-14 (young teens), and 15-17 (teenagers) with at least one ED visit for asthma.

Findings

We identified 108,847 traceable patients with more than one asthma visit across the time of the study. We found that 16% of these patients had two or more ED visits for asthma within the same year. Our findings showed that the incident rate for repeat asthma ED visits among children ages 15-17 was 1.04 times that of the reference group, ages 0-4. Likewise, the incident rate for patients identified as Black (1.34) and multiracial (1.34) was found to be greater as compared to White patients. For Hispanics, the incident rate was 0.82 times that of Whites. The incident rate for patients with Medicaid and no insurance were respectively 1.34 and 1.08 times that of privately insured patients. The incident rates for repeat asthma ED visits increased as we moved from wealthier (1.19) to the poorest counties (1.25), compared to the wealthiest counties. Also, the incident rate for large fringe counties (1.81), medium metro counties (1.26), small metro counties (2.86), and rural (3.77) were greater than that of large central metro areas.

Conclusions

Our findings showed that children most at risk for multiple ED asthma visits are teenagers, black and multi-race patients, patients with Medicaid and no insurance, and patients in rural and smaller metro areas.

Implication for Policy or Practice

To prevent asthma ED visits, policymakers should incorporate control and management interventions that mitigate the severity of asthma symptoms and frequency of attacks for the above population.

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