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Title: *Patterns of electronic-cigarette use, cigarette use, or dual use and asthma outcomes among adults with asthma*

Background: The use of e-cigarettes is increasing in the United States. The health effects of e-cigarette components remain unknown and have potential to be an asthma trigger. Therefore, it is important to evaluate how asthma outcomes differ between e-cigarette, cigarette, and dual users.

Objective: To assess the association between electronic-cigarette, cigarette, or dual use and asthma outcomes among adults with asthma.

Methods: This was a retrospective, cross-sectional study using data from the National Health Interview Survey (NHIS) from years 2014 to 2017. The sample included current asthmatics aged 18 to 85 years old. The Andersen Model was used to determine which variables are most likely to impact the use of e-cigarettes and/or cigarettes and asthma outcomes. Appropriate sampling weights and variance estimation for years 2014-2017 were accounted for pooling of the data. Descriptive statistics including weighted percentages were used to describe the sample. Smoking status and Andersen Model variables were assessed using multivariate logistic regression models.

Results: The sample included 10,385 adults with current asthma. Overall, 44.6% of the sample reported an asthma attack in the past 12 months and were more likely to be former cigarette users who ever used e-cigarettes compared to those who didn't have an asthma attack [aOR: 1.4, 95% CI: 1.1 to 1.8]. Additionally, 11.7% reported an ER or UC visit due to asthma in the past 12 months and were less likely to be exclusive e-cigarette ever users compared to those who didn't have an asthma related ER or UC visit [aOR: 0.52, 95% CI: 0.30 to 0.90].

Conclusion: This study found that the prevalence of asthma attack and asthma related ER or UC visits within the past 12 months were influenced by smoking status, though in different ways. Further investigation into the association between current exclusive e-cigarette use and asthma outcomes is needed.