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Vaping may increase respiratory disease risk by more than 40%, study finds

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A growing body of evidence points to the health risks of using e-cigarettes (or "vaping"). But because e-cigarettes are marketed as a less harmful alternative to traditional cigarettes, it has been difficult to tell

whether the association between vaping and disease is just a matter of smokers switching to vaping when they start experiencing health issues.

Now, a study by researchers from the Boston University School of Public Health (BUSPH) and School of Medicine (BUSM) is one of the first to look at vaping in a large, healthy sample of the population over time, independently from other tobacco product use.

Published in *JAMA Network Open*, the study found that participants who had used e-cigarettes in the past were 21% more likely to develop a respiratory disease, and those who were current e-cigarette users had a 43% increased risk.

"This provides some of the very first longitudinal evidence on the harms associated with e-cigarette products," says corresponding author Dr. Andrew Stokes, assistant professor of global health at BUSPH.

"In recent years we have seen dramatic increase in e-cigarette use among youth and young adults which threatens to reverse decades of hard-fought gains," Stokes says. "This new evidence also suggests that we may see an increase in respiratory disease as youth and young adults age into midlife, including asthma, COPD, and other respiratory conditions."

Most previous research on the respiratory health effects of vaping have used animal or cell models, or, in humans, only short-term clinical studies of acute conditions.

For this study, the researchers used data on 21,618 healthy adult participants from the first four waves (2013-2018) of the nationally-representative Population Assessment of Tobacco and Health (PATH), which is the most comprehensive national survey of tobacco and e-cigarette-related information to date.

To make sure they weren't simply seeing cigarette smokers switching to e-cigarettes specifically because of health issues (rather than vaping itself causing these issues), the researchers only included people with no reported respiratory issues when they entered PATH, and adjusted for a comprehensive set of health conditions. They also adjusted for having ever used other tobacco products (including cigarettes, cigars, hookah, snus, and dissolvable tobacco) and for marijuana use, as well as childhood and current secondhand smoking exposure. They repeated the analyses among subgroups of healthy respondents who had no self-reported chronic conditions, and whose self-rated overall health was good, great, or excellent.

Adjusting for all of these variables and for demographic factors, the researchers found that former e-cigarette use was associated with a 21% increase in the risk of respiratory disease, while current e-cigarette use was associated with a 43% increase. Current e-cigarette use was associated with a 33% increase in chronic bronchitis risk, 69% increase in emphysema risk, 57% increase in chronic obstructive pulmonary disease (COPD) risk, and 31% percent increase in asthma risk.

"With a longitudinal study design and extensive sensitivity analyses, the study adds to a growing body of evidence indicating long-term health risks of e-cigarette use to the respiratory system," says study lead author Wubin Xie, a postdoctoral associate in the Department of Global Health at BUSPH.

Evidence of the health effects of vaping, from this and other studies, also "highlight the importance of standardizing documentation of e-cigarette product use in electronic health records, and pushing the CDC to develop International Classification of Diseases codes for e-cigarette product use, so that providers can facilitate cessation discussions and identify adverse events related to e-cigarette use," says study co-author Dr. Hasmeena Kathuria, associate professor of pulmonary medicine and

a member of the Pulmonary Center at BUSM.

Provided by Boston University School of Medicine