

Secondhand nicotine vaping at home linked to heightened risk of bronchitic symptoms in young adults

If proved causal, “compelling rationale” for e-cig ban in public places, say researchers

Secondhand exposure at home to the nicotine vapour from e-cigarettes is linked to a heightened risk of bronchitic symptoms and shortness of breath among young adults, finds research published online in the respiratory journal ***Thorax***.

If these findings prove causal, there would be a “compelling rationale” for banning the use of e-cigarettes and other vaping devices in public spaces, conclude the researchers.

Despite the popularity of vaping, little is currently known about the possible health effects of secondhand exposure to nicotine vapour from e-cigarettes and other vaping devices, say the researchers.

And while secondhand exposure to particulate matter from e-cigarettes is lower than that from conventional cigarettes, levels of ultrafine particles in e-cigarette aerosol can be higher. This aerosol also contains volatile compounds and metals known to harm lung tissue.

To explore the impact on respiratory health further, the researchers drew on information supplied by 2090 participants in the Southern California Children’s Health Study.

This study collected detailed annual information on respiratory health, and active and secondhand nicotine vaping, and conventional tobacco and cannabis smoke exposure in the household from 2014, when participants were 17, on average, to 2019.

Participants were considered to have bronchitic symptoms if they reported any of the following: bronchitis in the previous 12 months; daily cough in the morning for 3 consecutive months; daily cough at other times of the day for 3 months in a row; congestion or phlegm that weren’t cold symptoms.

Wheeze was based on self-reported wheezing or whistling in the chest during the previous 12 months. And shortness of breath was based on experiencing this when hurrying on level ground or walking up a slight hill.

The prevalence of secondhand nicotine vaping increased from 12% to 16% between 2014 and 2019, while the prevalence of secondhand smoking fell from 27% to 21%. Past 30-day active use of cigarettes, e-cigarettes, and cannabis rose over the study period.

Most participants (76%–93%) who had been exposed to secondhand nicotine vaping during any of the study years were also more likely to actively use tobacco or cannabis products themselves or to have been exposed to secondhand smoking.

The prevalence of self-reported wheeze and bronchitic symptoms rose from 12% to 15% and from 19.5% to 26%, respectively. The prevalence of shortness of breath didn't show any clear trend over time, ranging from 16.5% to 18%.

Compared with participants who hadn't been exposed to secondhand nicotine vaping, those who had, were more likely to report bronchitic symptoms and shortness of breath, but not wheeze.

After adjusting for secondhand smoking and cannabis exposure, and active vaping or smoking, those exposed to secondhand nicotine vaping were 40% more likely to report bronchitic symptoms and 53% more likely to report shortness of breath.

When the analysis was restricted to the 1181 participants who reported no personal vaping or smoking in the past 30 days, stronger associations emerged.

These participants were more than twice as likely to report wheeze, 3 times as likely to report bronchitic symptoms, and twice as likely to report shortness of breath as those who hadn't been exposed to secondhand nicotine vaping, after adjusting for demographic factors and secondhand smoking/cannabis exposure.

This is an observational study, and as such, can't establish cause. But the findings are similar in magnitude to those observed for secondhand smoking, say the researchers.

If proved causal in further studies, a ban on vaping in public places would be warranted, they suggest.

"If causal, reduction of secondhand e-cigarette exposure in the home would reduce the burden of respiratory symptoms and would provide a compelling rationale for regulation of e-cigarette use in public places," they write.

In a linked editorial, Drs Anna Lucia Fuentes and Laura Crotty Alexander of, respectively, the University of California San Diego and the San Diego Healthcare System, point out that vaping devices were originally marketed as a lower health risk nicotine replacement.

"But increasing evidence points to the contrary," they write. "Even more concerning is that marketing has targeted the vulnerable adolescent population, with 78% of middle school and high school students exposed to at least one e-cigarette advertisement between 2014 and 2016."

They add: "Some may be comforted by studies that argue that nicotine use has not increased with the rise of vaping. However, it is important to note that the nicotine content reported on product labels and what is chemically measured can vary widely.

"This means that users may be unaware of what they are truly vaping and thus are at risk of unwittingly becoming nicotine addicts."

They conclude: “While association is not causation, this study is the first to describe the negative effects of [secondhand nicotine vape] exposure on respiratory symptoms.

“More work needs to be done to prove that this exposure directly causes harm. Ultimately, this is a public health concern that—if not addressed—has the potential to negatively affect our population, including those who are most vulnerable.”