

Are non-smoking young adults who use e-cigarettes more likely to smoke in the future?

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Young people who have tried e-cigarettes but have never smoked before are nearly five times more likely to go on to try smoking, a new study has found. However, the findings do not provide clear support for the

claim that e-cigarettes cause young people to start smoking (the so-called possible "gateway effect").

Researchers from the University of Bristol's Tobacco and Alcohol Research Group (TARG), with support from Bristol's MRC Integrative Epidemiology Unit (IEU) and the NIHR Bristol Biomedical Research Centre (BRC), combined the results of 17 studies to investigate whether [e-cigarette use](#) compared to non-use in young non-smokers is associated with subsequent cigarette smoking.

The research, funded by the MRC IEU and NIHR BRC, is published today [11 March 2020] in *Tobacco Control*.

Existing evidence suggests that e-cigarette use is less harmful than smoking and is an effective aid to stop smoking, but there are concerns that e-cigarettes may be a route into smoking cigarettes, especially among [young people](#). If this is correct, rather than smoking rates falling, smoking rates might remain stable or increase due to a new generation of smokers where e-cigarettes have instigated smoking.

In this study, the researchers combined evidence from 17 studies that had investigated e-cigarette use and subsequent smoking, where an odds ratio could be calculated, to explore whether e-cigarette use, compared to non-use, in young non-smokers is associated with subsequent cigarette use.

Jasmine Khouja, a Ph.D. student in TARG based in the School of Psychological Science, said: "Policymakers have used the findings of studies, including the studies we reviewed in this research, to support the heavy regulation of e-cigarettes, including restrictions on flavours and even total bans, but the evidence that e-cigarette use might cause young people to take up smoking is not as strong as it might appear."

The study found that young people who had never smoked before but had used e-cigarettes were four-and-a half times more likely to go on to use e-cigarettes. However, the research team also identified a number of issues with the studies included in this analysis, which makes them cautious to conclude that e-cigarette use is causing young people to start smoking.

Whilst the association between e-cigarette use among non-smokers and subsequent smoking appears strong, the available evidence is limited by the reliance on self-report measures of smoking history without biochemical verification. None of the studies included negative controls which would provide stronger evidence for whether the association may be causal. Much of the evidence also failed to consider the nicotine content of e-liquids used by non-smokers meaning it is difficult to make conclusions about whether nicotine is the mechanism driving this association.

The researchers recommend future studies should address the issues which have been highlighted by using more advanced tests to confirm whether or not young people are smokers or e-cigarette users, using different statistical analyses, and considering whether the e-cigarettes contain nicotine or not.

A previous meta-analysis study carried out in 2016 combined the results of nine studies, which explored whether e-cigarette use among non-smoking adolescents and young adults was linked to later smoking. The study found that young people who had used an [e-cigarette](#) were nearly four times more likely to go on to try [smoking](#) than those who hadn't.

More information: 'Is e-cigarette use in non-smoking young adults associated with later smoking? A systematic review and meta-analysis' *Tobacco Control* (2020). [DOI: 10.1136/tobaccocontrol-2019-055433](https://doi.org/10.1136/tobaccocontrol-2019-055433)

Provided by University of Bristol

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