

Viewing e-cigarette research through a broad lens

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This issue of *Nicotine & Tobacco Research* focusses on e-cigarettes and tobacco harm reduction, and reflects the wide range of research questions and study designs that are needed to develop a robust evidence base on this topic. In particular, it highlights the challenges associated with objectively interpreting the evidence related to a product that has the potential to benefit public health, but risks of which are not – and, in the short term, cannot be – fully understood.

This month's Editor's Choice article by Warner provides an overview of key issues and evidence relevant to the debate on tobacco harm reduction.(1) One important message from this article is the need to triangulate evidence from a range of study designs when considering the evidence on central issues such as the gateway effect and the effectiveness of e-cigarettes for smoking cessation. This is reflected in a systematic review by Glasser and colleagues on the impact of youth and young adult e-cigarette use on cigarette smoking in this month's issue.(2) The authors conclude that existing longitudinal studies consistently show that e-cigarette use is associated with subsequent cigarette smoking, but emphasise that existing studies are subject to a number of key limitations and that strong causal inferences cannot currently be made. They highlight the need for future research to focus on characteristics which put young people at risk of both cigarette smoking and e-cigarette use, an issue which is tackled by a further article in this month's issue.(3) Glasser and colleagues also draw attention to evidence from population-level studies from both the US and the UK, which suggest that youth cigarette smoking has decreased since e-cigarettes became widely available.

Two further studies contribute to the evidence regarding the effectiveness of e-cigarettes for smoking cessation. Johnson and colleagues find that, based on US survey data, current e-cigarette use is associated with significantly higher past-12-month quit attempts and past-12-month cessation.(4) Using a different source of US survey data (the PATH study), Verplaetse and colleagues identify e-cigarettes as a potential aid for smoking cessation, but also identify e-cigarettes as a potential risk for smoking relapse in men.(5) These studies provide some support for Warner's conclusion that e-cigarettes appear to be increasing smoking cessation, but demonstrate the need for long-term follow up in e-cigarette smoking cessation studies.(1) Warner also highlights the fact that much of the existing evidence on e-cigarettes for smoking cessation is based on older generation products, and that newer products may be more effective. The majority of the research reported in this issue predates the introduction of newer products such as JUUL, and new research based on new devices is warranted, not just in relation to cessation, but also in relation to issues such as youth e-cigarette use and the health risks of vaping.

Another central theme amongst the articles in this issue is the potential effect of e-cigarettes on health inequalities. An analysis of US PATH data finds that exclusive e-cigarette use is higher among white and higher-income smokers in US.(6) Similarly, US National Health Interview Survey data show that smokers who have one or more years of college are more likely to transition to exclusive e-cigarette use than those who have not.(7) A study of Australia's indigenous peoples, in whom smoking prevalence is high, finds that e-cigarette use is higher in this population than in Australian smokers overall, and that misperceptions about the relative harm of e-cigarettes compared with regular cigarettes are more widespread.(8) Several modelling studies have concluded that, even when taking into account uncertainty about the harms of e-cigarettes and their effectiveness for smoking cessation, overall the benefits of e-cigarettes are likely to outweigh the costs.(9, 10) These new studies indicate the need to investigate approaches which ensure that those benefits extend to populations where cigarette smoking is most common and that e-cigarettes do not exacerbate socioeconomic disparities in health.

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