

Funding & declarations

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Please add 'yes' or 'no' to each table cell. If 'yes', please use cell background color to yellow.	Tobacco industry	E-cigarette & nicotine product industry (including pharma)	Pharma industry
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NUFFIELD DEPARTMENT OF
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The impacts of e-cigarette flavours: An overview of systematic reviews

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Introduction

- E-cigarette flavours have the potential to impact the appeal, harms, and use of e-cigarettes and combustible tobacco. Systematic reviews have synthesised evidence on their impacts but have always focused on specific outcomes or populations.

Objectives

- Evaluate the potential impacts of e-cigarette flavours on the appeal, harms, and use of e-cigarettes and combustible tobacco

Results

Appeal/perceptions of vaping

•Appeal of EC:

- Seven (H₃L₄) reported increased the appeal of EC
- One^H reported mixed evidence.
- One^H reported among people who smoke non-menthol tobacco, tobacco flavours were also appealing

•Motivation to try or continue using EC:

- Five (H₁L₄) reported increased motivation to start or continue use in various populations (youth, pregnancy, tobacco use experience, mixed)

•Perceptions of harm from EC

- One^L reported increased concerns among young hookah users of 'gateway effect' from tobacco-flavoured EC
- A review^L of HCPs reported concerns over the potential impact on respiratory health. HCPs recommended restricting flavours.
- Decreased harm perceptions among mixed young populations (L₂) and young people with EC no combustible tobacco use history (L₁)

Harms from vaping

- Most reviews found increased risk of harms from specific flavours or flavour components.
- Evidence of: cell damage when exposed to flavoured EC liquid, chemical analyses observing potentially toxic components, or reports of adverse events like throat irritation.
- No reviews reported any evidence of serious harms in humans

Smoking behaviours

•Smoking cessation:

- Five (H₄L₁) comparing non-tobacco flavours with tobacco-flavours use did not find any association between flavours and quitting smoking.

•Smoking initiation

- Two^H found no clear evidence of an association

Vaping behaviours

•Initiation:

- Two (H₁L₁) indicated that the availability of flavours may promote uptake of EC use; two (H₁L₁) found mixed/inconclusive evidence.

•Flavour selection and preference:

- Fruit and sweet flavours consistently popular
- Tobacco/menthol flavours sometimes more popular among current/former and older combustible tobacco users
- Preferences varied based on a range of factors

*H₁ = one higher quality review; L₁ = one lower quality review

Methods

Inclusion criteria: peer reviewed and published systematic reviews investigating the impacts of e-cigarette flavours on any outcome

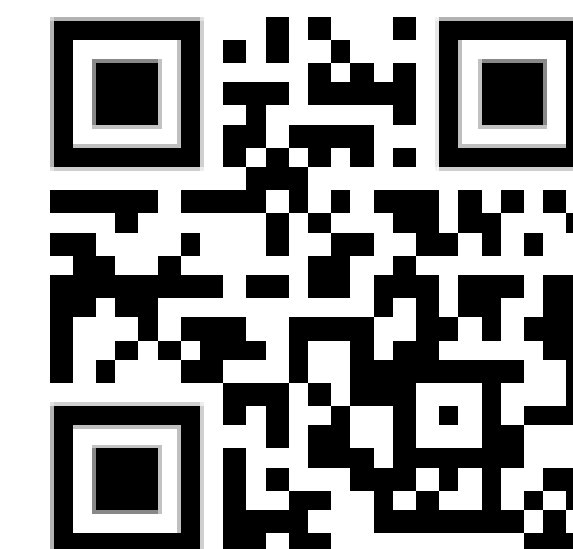
Searches: MEDLINE, Embase, PsycINFO, Cochrane Database of Systematic Reviews, PROSPERO, and Epistomonikos. Search date February 2024

Screening and data extraction: screening in duplicate, data extraction extracted and independently checked by second reviewer

Study appraisal: using critical domains of AMSTAR2

Synthesis: Narrative synthesis and review findings charted in effect/association direction plots, following Synthesis Without Meta-analysis (SWiM) guidance.

Full protocol available here →



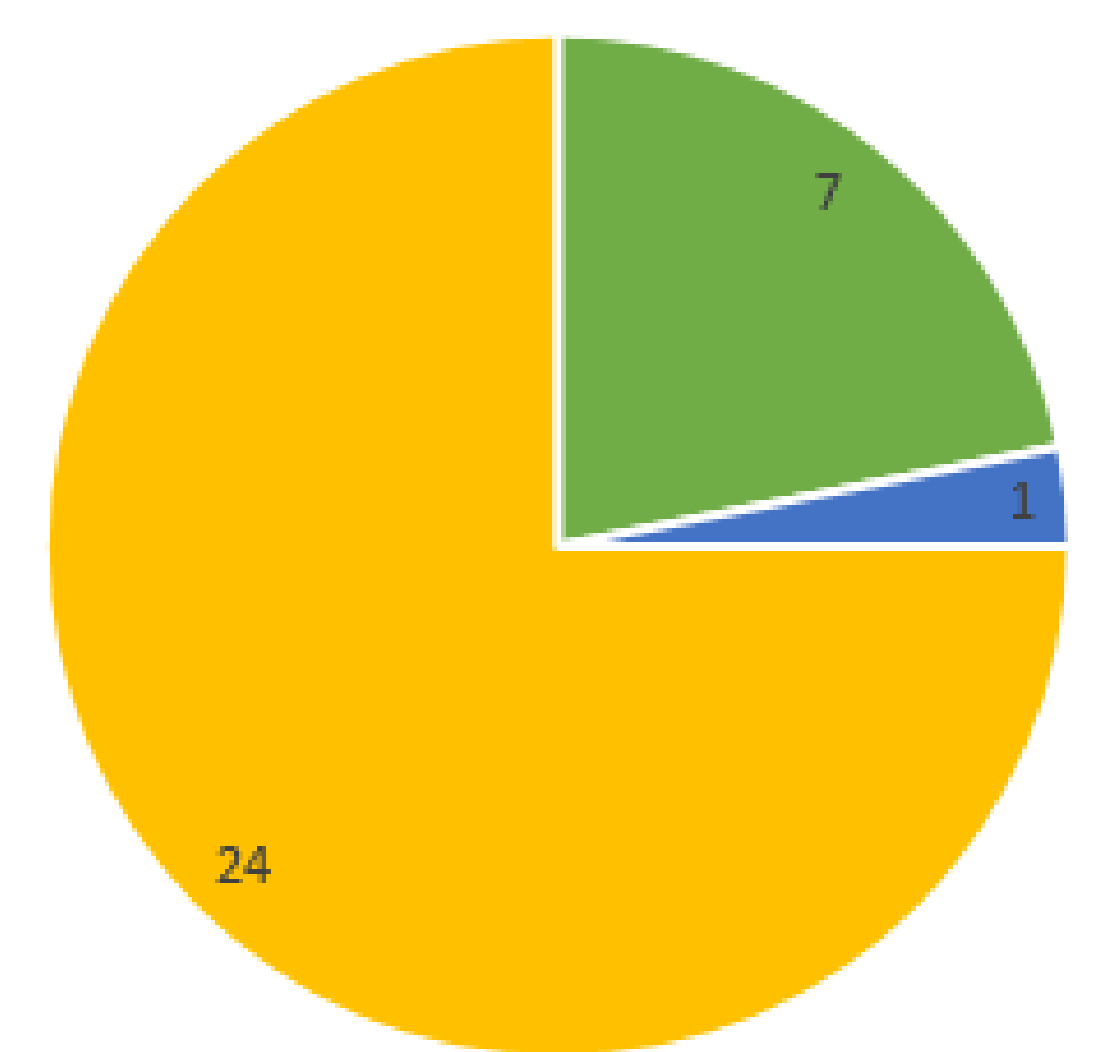
We found:

- Thirty-two reviews including 1967 primary studies (including overlap)
- Eleven reviews of higher quality; 21 of lower quality.
- Review search dates ranged from 2013-24
- Relevant evidence from 326 unique primary studies. Of these, 33 were included in more than one review.
- No reviews declared funding from tobacco or EC industry, or financial conflicts for reviews in question.

Outcomes

- Reviews reported the impacts of flavours on:
 - appeal/perceptions of vaping (13)
 - harms from vaping (12)
 - smoking behaviours (7)
 - vaping behaviours (13)

■ Flavours as primary focus
■ Secondary focus on flavours
■ Incidental findings



Conclusions

- Non-tobacco flavourings for e-cigarettes may increase e-cigarette appeal and harms, which may vary by flavour, and apply across different population groups.
- The impacts of e-cigarette flavours on e-cigarette and cigarette use are inconclusive.
- There is still a paucity of evidence. Trials and well-designed longitudinal studies should report outcomes categorized by flavours used.

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