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Research Report

Background and Aims

Electronic cigarette use amongst adolescents is culminating a rapid and pressing crisis in public health, with numerous experts referring to it as an ‘epidemic’ (Jones & Salzman, 2020; Limb, 2024). Despite the introduction of e-cigarettes as an aid for smoking cessation, data reflects that many users have never used traditional cigarettes (McMillen, 2014). The term ‘e-cigarette’ describes a range of products, which function similarly; using a battery to power an electrical heating element, which aerosolises a liquid for the user to inhale (Breland et al., 2016). Products vary widely in their appearance and customisability. ‘Cigalikes’ are an early kind of e-cigarette, that closely resemble traditional cigarettes in appearance, are often disposable, and more often flavoured with menthol or tobacco (Alexander et al., 2018). More modern designs reflect the changing nature of vaping behaviours; they are often available in a variety of flavours and colours, with more customisability (CITATION HERE). Adolescents tend to favour more complex, customisable designs, as well as sweet flavours, such as fruits or candy (Pepper et al., 2019; Everaert et al., 2026).

Despite the motivation for their invention, recent studies have found that adolescent’s use of e-cigarettes could be associated with uptake of traditional cigarettes, or even using other illicit substances (Bhutia et al., 2019; Hanafin et al., 2021). Regardless,

single use of e-cigarettes poses significant dangers to both mental and physical health. Nicotine, the active ingredient in most e-cigarettes, is a highly addictive chemical, and withdrawals can cause anxiety, irritability, depression, and restlessness (Benowitz, 2010). This can encourage the behaviour of vaping being sustained, while physical health issues arise. Vaping can lead to e-cigarette or vaping associated lung injury (EVALI), an umbrella term for many serious conditions that can be caused by using e-cigarettes, which has proven fatal in some cases. Vaping also negatively impacts oral health. Furthermore, e-cigarettes have been found to contain carcinogenic compounds, but it is unclear what long-term consequences exist, as the products are relatively new (Becker & Rice, 2021).

The prevalence of youth vaping is high, and continuing to increase (Salari et al., 2024). Whilst the exact numbers differ by region, age, gender, and socioeconomic factors, but has been estimated at 22.65% overall (Gebeyehu et al., 2025). As of 2024, 37 countries have completely banned the sale of e-cigarettes, whilst 74 countries do not regulate them at all (Seal, 2024). Interestingly, even in countries where vaping is strictly prohibited, it is not necessarily rare; Tan, Tan, and van der Eijk (2024, p. 3) found that youth in Singapore “described it as a social norm, with vaping done in an open and conspicuous manner”, despite the country strictly prohibiting e-cigarette use. This highlights a key issue with the normalisation of vaping among youth. Adolescents are particularly susceptible to social influence, such as that from their friends, family, and social media (Valente et al., 2023; Vasse et al., 2022; Zajdel et al., 2025). Given that vaping can spread through social networks regardless of legality, it seems that bans alone will not be enough to combat the epidemic of youth vaping. Rather, successful interventions should consider social context, and other key factors of adolescent behaviour.

It is particularly disheartening to see the increasing rates of adolescent vaping, given that the percentage of adolescents who were regular smokers was steadily declining (Mongilio et al., 2025). However, the percentage of adolescents who both regularly vaped and smoked in 2018 was the same as the percentage of adolescents who regularly smoked in 1974. Not only does this display that e-cigarettes are not actually replacing traditional cigarettes; but it also raises the question of how adolescents have been made susceptible to use tobacco again, after its use had been declining for 40 years. Much of the answer lies in marketing: companies producing vapes produce childish flavours and advertise on platforms primarily used by teenagers, which have both been associated with adolescents’ uptake of e-cigarettes (Chadi & Belanger, 2019). Corporations have been scrutinised for youth marketing, with Juul Laboratories made to pay a \$462 million USD settlement in 2023 as well as agreeing to terms to restrict their marketing (Dyer, 2023).

Many systematic reviews have been conducted in this area. For example, Izquierdo-Condoy et al. (2025) and Jane Ling et al. (2023) both examine the prevalence of e-cigarette use and associated factors among adolescents, but place geographic restrictions, focusing on Latin America and Southeast Asia, respectively. Sarrudin et al. (2025) conducted a global systematic review of predictors of adolescent vaping intentions, including sociodemographic, personality and psychological, social, environment and cognitive factors. Though this work bears similarities to the current review, there are key differences. Sarrudin et al. focus on vaping intentions, rather than actual use of e-cigarettes. Their review also excludes non-English publications, as well as qualitative studies.

This systematic review attempts to fill this gap, by synthesising the factors that lead adolescents to initiate e-cigarette use and map these factors onto the COM-B model of behaviour. All aspects of the model will be considered – including physical and psychological capability, physical and social opportunity, and automatic and reflective motivation. To achieve this, the following primary research questions will be examined:

- What motivations lead adolescents to initiate e-cigarette use?

- What behavioural, social, and environmental factors influence adolescent vaping?

- What perceptions and beliefs about e-cigarettes do adolescents report?

Additional secondary research questions will also be considered, but will not have direct influence on screening:

- What role do social media, advertising, and marketing play in adolescent vaping behaviour?

- What conceptual or behavioural frameworks have been used to explain adolescent vaping?

Methodology

A review protocol was created and submitted to PROSPERO (number CRD420261458222); a registry platform specifically for systematic reviews. Throughout the process of designing and carrying out the systematic review, care has been taken to adhere to the Preferred Reporting Items of Systematic reviews and Meta-analyses.

Preliminary searches were conducted to identify key terms to be used in the search strategy. These were compiled into a master list (see figure 1), and individual researchers adapted the strategy for each database by adjusting the terms to add subject headings, include truncations, wildcards, and search field tags. The databases used were MEDLINE, APA PsycInfo, Scopus, Global Index Medicus, Global Health, CINAHL, Embase, and Web of Science. After the final search was conducted, all references were exported to Zotero, and duplicate records were removed.

Figure 1: Master search strategy.

Population	Exposure	Outcome
adolescen* teen* student* youth* child* emerging adult* young*	motiv* driv* incentiv* reason* intent* influenc* risk* perception* determin* norm* attitud* market* behavio?r* predict* social*	vaping* vape* electronic smok* ecigarette* e-cigarette* electronic cigarette* electronic nicotine* electronic vapo?r* juul* heated tobacco* e vapo?r* iqos*

Studies were screened for inclusion manually using Rayyan based on the inclusion/exclusion criteria (see figure 2). We completed a pilot screening of 79 studies, which were screened by all four reviewers. This allowed us to develop and make amendments to our criteria and resolve any discrepancies or queries between reviewers. After the pilot, we began the title-abstract screening phase. This involves sorting the references into 6 samples. Two reviewers screen each sample, deciding whether they should be included based on the title and abstract alone, while regularly discussing and addressing conflicts. This stage is still ongoing. After it is completed, references included from the title-abstract screening will be screened again based on the full text by two reviewers.

Figure 2: Eligibility criteria.

Inclusion	Exclusion
Population	
Adolescents aged 10-19 years. Studies may include a broader age range if data within the adolescent range can be extracted.	Participants all older than 20, or younger than 9. Studies in which adolescent data cannot be separated. Adolescents with a physical health condition that may impact their e-cigarette behaviour (e.g. asthma or cardiac problems).
Exposure	
At least one of: motivations, incentives, reasons, behavioural drivers, risk factors, perceptions, or attitudes associated with the initiation of e-cigarette use.	Motivations, incentives, etc. for vaping continuation or cessation. Ability or ease of adolescents to obtain e-cigarettes (accessibility).
Outcome	

Current or former vaping. Studies also examining other risk behaviours or kinds of tobacco use may be included if vaping can be separated.	Use of electronic smoking devices containing cannabis, THC, or CBD. Use or cessation of combustible cigarettes. Dual or poly tobacco use, where vaping cannot be separated. Efficacy of interventions.
Study Design	
Published after 01/01/2003. Primary research containing original analyses, including quantitative, qualitative and mixed-methods data. Data may be collected longitudinally or cross-sectionally. Studies may use an experimental, quasi-experimental, or observational method.	Published before 01/01/2003. Secondary research, e.g. reviews and meta-analyses. Publications without original data, e.g. editorials, commentaries, letters, patents, and analyses of media campaigns. Case reports. Animal studies.

After the full-text screening, data will be extracted from included studies and condensed into a table (see figure 3). Additionally, the quality of every included study will be assessed.

Figure 3: Data extraction table to be used, with one completed example.

The study ID (1 st author, year, country)	Type (quantitative /qualitative)	Method	Vaping measure (use, intention, susceptibility)	Other variables/measures	Analysis	Capability		Opportunity		Motivation		Key Findings	Statistical Significance
						Physical	Psychological	Physical	Social	Reflective	Automatic		
Hanafin, 2020, Ireland	Quantitative	Survey	Current Use	Socio-demographic, individual, peer and familial characteristics, individual risk behaviours or protective factors.	logistic regression analysis		X	X	X		X	Male gender and additional substance use are more likely to use EC. Findings concerning SES are inconsistent.	X

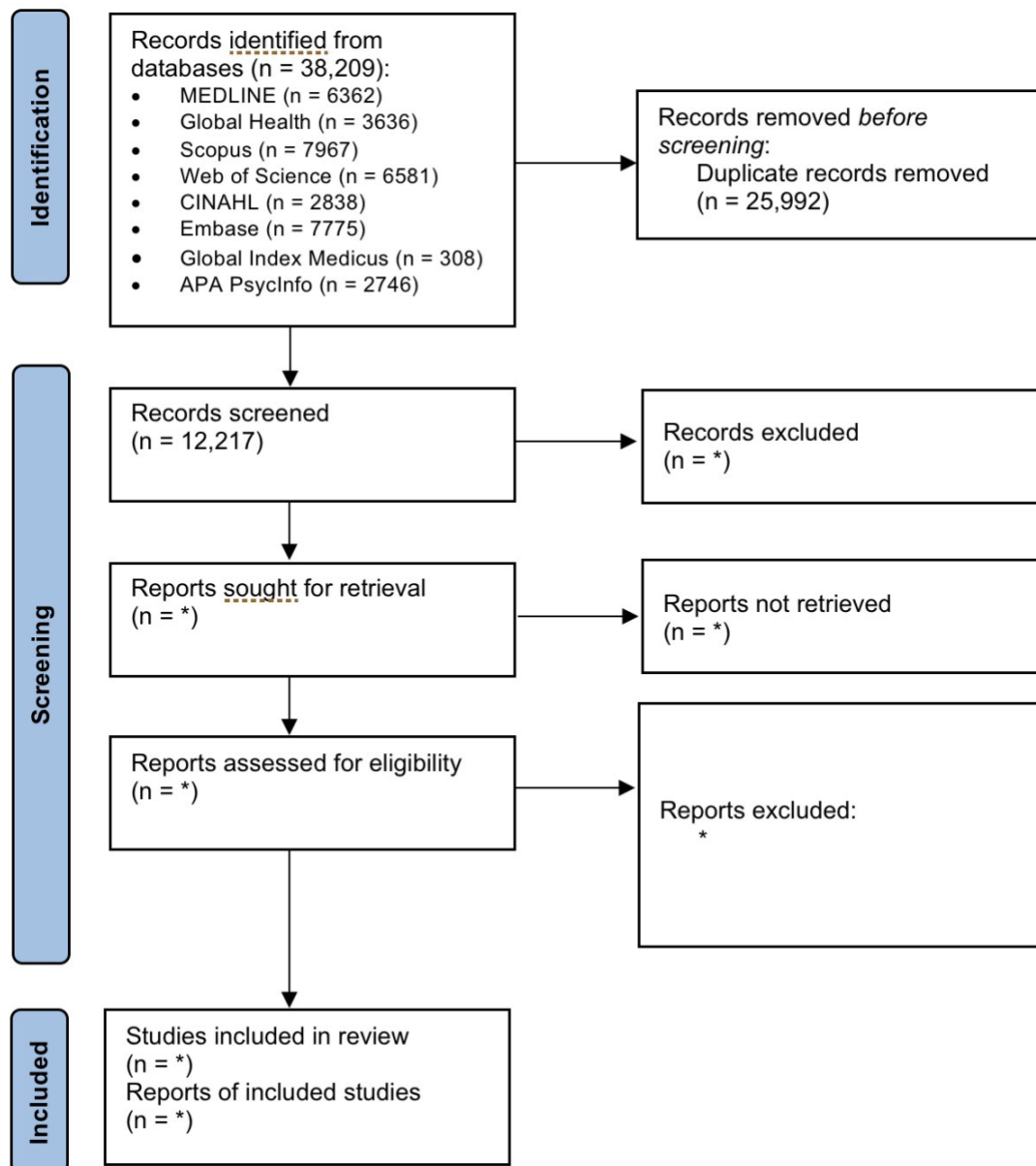
After data extraction, a narrative synthesis will be used to describe the trends identified from the data in relation to the research questions.

Findings

This systematic review is still in the screening phase. As such, there are not yet concrete findings. Currently, the findings centre around the results that have been retrieved thus far (see figure 4). The initial search yielded 38,209 results, demonstrating research featuring e-cigarette use in adolescents is frequent in the databases we have searched. However, many of these results are irrelevant to our primary research questions: for example, they assess the efficacy of e-cigarette use for the cessation of traditional cigarette use, or the efficacy of interventions to prevent vaping, or the

prevalence of vaping without considering motivations, and so forth. So far, I have independently screened 1,596 records but have included only 210 to be screened in the next stage, illustrating that even though the initial number of studies was extremely high, the number included in the review will likely be far fewer.

Figure 4: Current PRISMA flow diagram, demonstrating number of records at each stage. *Indicates incomplete field.



Discussion

One potential limitation of our review is that many studies do not use independently sourced data – but rather data collected in larger surveys or cohort studies. One instance that illustrates this is that two studies included from the first screening, Tam and Brouwer (2021) and Watson et al. (2023), both take data from the 2019 National

Youth Tobacco Survey. This means that two studies treated separately, may use the same participants and data. This could cause our findings to overemphasise certain points as they have appeared in multiple papers – even though it occurred in only one data set. However, it is beneficial to include studies that use national or global surveys, as they are more representative of the population, and allow researchers to use much larger samples than they may otherwise have access to.

Another potential limitation of our review is that our findings will be subject to publication bias. Publication bias is the phenomenon where scientific studies are more likely to be published if they find statistically significant relationships or less likely to be published if the findings are inconclusive or not statistically significant. Systematic reviews are vulnerable to this, as they include only research that has been published in peer-reviewed databases, so any bias in the publishing could have a strong impact on the findings of the review (Rothstein et al., 2006, as cited in Makrygianni et al., 2018).

Another consideration is that many studies will rely on self-reported data. Surveys and questionnaires that ask participants the reason they initiated e-cigarette use are susceptible to social desirability effects – in which participants respond in a way that propagates a positive self-impression (Gower et al., 2022). For example, a participant may claim ‘curiosity’ was their reason for initiating e-cigarette use, but an underlying reason, like negative mental health may go unreported despite its significant effect (Guerra Castillo et al., 2024). This is particularly poignant as age may be associated with a participant’s susceptibility to the social desirability effect (Rickwood & Coleman-Rose, 2023). Therefore, it must be remembered that a finding being reported more or less frequently does not necessarily indicate that it is equally significant or pervasive.

Equally, this review also has many strengths. Many other reviews in this subject area specify language(s) of publication in their eligibility criteria and exclude studies that are not published in these languages (Biles et al., 2025; Motos-Sellés et al., 2025; Vanderkam et al., 2022). In this review, studies were included regardless of language of publication – with translations being created and verified when necessary. This helps to reduce cultural bias, as studies from non-English speaking countries are less likely to be excluded. This also strengthens the global nature of our systematic review, as it helps to ensure that research is considered fairly, regardless of where it was conducted.

Another important strength of this review is its scope. This review was devised to fill a gap in the research, and care was taken to design a rigorous search strategy with many key terms, and this was used many relevant databases. As such, a large number of studies have been identified for the title and abstract screening. Whilst this is costly in terms of time, it will considerably strengthen our final findings.

When completed, this review will provide important insight into the mechanisms that lead adolescents to initiate use of e-cigarettes. The findings will be mapped directly onto Michie's (2011) behaviour change wheel, which can advise the design of interventions to prevent adolescents initiating use of e-cigarettes.

Reflections

Personal Impact

Before the project began, I felt growingly doubtful about my capability to produce high quality work. As I chatted about how I would be spending my summer, I was struck by how unsure I felt. I had never conducted thorough literature searches, analysed data in this way, or written for publication – all of which were expected for this project. The earliest days of the project were a complete relief; I realised that my teammates were in a similar position to me, but that we could trust in the guidance of our supervisor and take each step slowly. Dissecting the project into week-long goals made me feel far more certain. Armed with a clear to-do list, solid advice, and the camaraderie of my fellow researchers, I worked through the creation of the search strategy, the inclusion criteria, and the PROSPERO registration with confident ease. However, about halfway through the six weeks, my attitude shifted. Our search returned a staggering number of results, and our workdays swiftly became far less collaborative, instead spent grappling with unfamiliar software and struggling with technical issues. The many hours spent sifting through titles and abstracts alone felt perpetual, and the 'percent completed' number felt discouragingly low, considering how much motivation I was losing and how disengaged I was becoming. Thankfully, with the support of my fellow scholars and teammates, I was able to redirect my focus to the future. Even though my project would last significantly longer than the six weeks I had originally anticipated, by the end of it I will have contributed to work beyond an undergraduate standard, and forged connections with people I would never met, let alone work with them extensively.

If I were to start this project anew, the most significant change I would make would be to allocate my time differently. Whilst spending multiple weeks focused on the search strategy allowed me to develop a much stronger understanding, I think it would have been much more productive to do this quickly and dedicate more time to the screening. If anything, I think our search strategy was too extensive, and a more concise version would have improved efficiency at later stages. An important lesson for me has been that the amount of work put into something does not always equate to a better result; attempting to identify every possible key term inflated our results with irrelevant studies that will be time-consuming to sort through.

Leadership

During this project, I was fortunately part of a great team – myself and two visiting students from the University of Alberta met daily to work on the project and attended weekly meetings with our supervisor Dr. Ba-Break, and PhD student Dr. Kasabeh, both of whom provided feedback on our work and guidance for how to move forward. Whilst I was not a leader in our group, I have learned multitudes about collaboration and leadership, and I fully intend to use these capacities in my future endeavours.

As we worked together for much of the summer, collaborative mindset was one of the main capacities I developed. We had key decisions to make early on: which research questions to prioritise, which databases to search, and how to form the search strategy. Naturally, every team member had strong positions on these subjects, so it was imperative to have constructive deliberations to reach a final decision that reflected our joint interests. I found this difficult at first – as I had formed my own idea of what the systematic review should entail, which was not identical to how my team had imagined it. Moreover, we were having these discussions before we were very well acquainted or had built our communication style. Initially, I was very conscious of juggling both asserting my opinions and attentively listening to others, but I found this balance felt much more natural as the project continued. Ultimately, I have much improved my ability to think and act with everyone in mind; it is a reflex to turn to my team for input to ensure we are working together effectively.

Unsurprisingly, we met numerous obstacles over the project, which allowed me to develop my problem-solving. One of the most irritating periods of the project was the exporting and deduplication of records following the initial search. We had a series of setbacks that made the process far lengthier and more tiring than it should have been; some of which caused by our mistakes, and many of which caused by technological issues, and other extraneous factors. Altogether, I have learned that the best step to take after encountering the problem, is a step away. Discovering a new issue often invoked an instantaneous panic, usually exaggerating the severity of the problem. By stepping away from my work for a few minutes after realising that we had incorrectly built our search strategy, it became far easier to assess the simplest way to solve the problem. By redirecting our energy to the PROSPERO registration while our shared platform spent hours synchronising, we were able to maintain efficiency even if we moved away from our original goal for that day. Crucially, this project has taught me that problems are unavoidable, and the key to problem solving is being open-minded and adaptable.

Dissemination

Currently, the only plans to disseminate this study is at the 2026 Laidlaw Scholar's Conference. Whilst I would hope to attend further conferences to continue presenting our work, I feel this will be more effective once the study is complete and we have clear findings to share. We also hope to publish our completed review in an academic journal, which will allow our findings to reach more people, including other academics and public health authorities.

I have also spoken to my supervisor about the prospect of disseminating this research directly with the media or educational institutions. As vaping is an extremely pervasive behaviour, and is often discussed in mainstream media, if we have novel findings, it may be pertinent to raise awareness. Alternatively, we could consider working with schools directly to discuss our findings, and how they could advise interventions.h

Career

Although I still do not have a concrete career ambition; this project has certainly made me feel more capable of pursuing a career in academia or research. It also highlighted the importance of passion in one's area of research; though I am not sure I would like to stay in health psychology, this experience has motivated me to explore my subject more and find the area most engaging to me. I have thoroughly enjoyed researching adolescence and behaviour change; I hope to explore this more in the second year of my degree and potentially specialise in this later.

This experience has also made me feel far more confident about pursuing a master's or PhD in the future. Although postgraduate education is far more extensive than my six weeks of research, many postgraduate students choose to do some form of literature review as a dissertation or thesis, and my experience in this area makes me feel much more certain that I have the potential to conduct a project like this.

References

- Alexander, J. P., Williams, P., Coleman, B., & Johnson, S. E. (2018). A qualitative examination of the ENDS experience by device type: Cigalike and tank users' attitudes, beliefs, and behaviors. *Tobacco Regulatory Science*, 4(5), 71–83.
- Becker, T. D., & Rice, T. R. (2021). Youth vaping: A review and update on global epidemiology, physical and behavioral health risks, and clinical considerations. *European Journal of Pediatrics*, 181(2).
<https://doi.org/10.1007/s00431-021-04220-x>

- Benowitz, N. L. (2010). Nicotine addiction. *New England Journal of Medicine*, 362(24), 2295–2303. <https://doi.org/10.1056/nejmra0809890>
- Bhutia, T., Mehendale, A., Lad, N., & Vaishnav, P. (2019). E-cigarettes: Gateway to tobacco addiction among adolescents. *13Th ASIA PACIFIC CONFERENCE ON TOBACCO OR HEALTH APACT 2021*.
<https://www.tobaccoinduceddiseases.org/E-cigarettes-Gateway-to-tobacco-addiction-among-adolescents,140847,0,2.html>
- Biles, J., Kornhaber, R., Irwin, P., Schineanu, A., Kavisha Sookraj-Baran, M., & Cleary, M. (2025). Perspectives, motivations, and experiences of adolescents and young adults using nicotine vapes: A qualitative review. *Health Promotion International*, 40(2). <https://doi.org/10.1093/heapro/daaf007>
- Breland, A., Soule, E., Lopez, A., Ramôa, C., El-Hellani, A., & Eissenberg, T. (2016). Electronic cigarettes: What are they and what do they do? *Annals of the New York Academy of Sciences*, 1394(1), 5–30. <https://doi.org/10.1111/nyas.12977>
- Chadi, N., & Belanger, R. E. (2019). Teen vaping: There is no vapour without fire. *Paediatrics & Child Health*, 25(6), 337–339.
<https://doi.org/https://doi.org/10.1093/pch/pxz137>
- Dyer, O. (2023). E-cigarette maker Juul will pay \$462M to settle deceptive marketing allegations in six US states. *BMJ*, 381, p859. <https://doi.org/10.1136/bmj.p859>
- Everaert, S., Lardon, F., Deconinck, E., Barhdadi, S., Adang, D., Larebeke, N. Van, Schoeters, G., Meunier, A., Maes, V., Gabriels, S., Remue, E., Eger, K., Goeminne, P., & Matthys, F. (2026). Toxicity and appeal of flavoured e-cigarettes and flavour ban outcomes: A narrative review. *International Journal of Environmental Research and Public Health*, 23(4), 416.
<https://doi.org/10.3390/ijerph23040416>
- Gebeyehu, N. A., Gelaw, K. A., Atalay, Y. A., Walle, B. G., Gesese, M. M., Admass, B. A., Birhan, B., Geberemariam, A. E., Alemu, B. W., Shewangashaw, N. E., & Tegegne, K. D. (2025). Global prevalence of e-cigarette use among students:

- Systematic review and meta-analysis. *PLOS One*, 20(12), e0332160.
<https://doi.org/10.1371/journal.pone.0332160>
- Gower, T., Pham, J., Jouriles, E. N., Rosenfield, D., & Bowen, H. J. (2022). Cognitive biases in perceptions of posttraumatic growth: A systematic review and meta-analysis. *Clinical Psychology Review*, 94.
<https://doi.org/10.1016/j.cpr.2022.102159>
- Guerra Castillo, C., Hoeft, K. S., Couch, E. T., Halpern-Felsher, B., & Chaffee, B. W. (2024). Adolescent perspectives on their e-cigarette initiation experiences. *American Journal of Health Promotion : AJHP*, 39(2).
<https://doi.org/10.1177/08901171241277669>
- Hanafin, J., Sunday, S., & Clancy, L. (2021). E-cigarettes and smoking in Irish teens: A logistic regression analysis of current (past 30-day) use of e-cigarettes. *Journal of Public Health*, 31. <https://doi.org/10.1007/s10389-021-01610-1>
- Izquierdo-Condoy, J. S., Sosa, K. R., Salazar-Santoliva, C., Restrepo, N., Olaya-Villareal, G., Castillo-Concha, J. S., Loaiza-Guevara, V., & Ortiz-Prado, E. (2025). E-cigarette use among adolescents in Latin America: A systematic review of prevalence and associated factors. *Preventive Medicine Reports*, 49, 102952.
<https://doi.org/10.1016/j.pmedr.2024.102952>
- Jane Ling, M. Y., Abdul Halim, A. F. N., Ahmad, D., Ahmad, N., Safian, N., & Mohammed Nawi, A. (2023). Prevalence and associated factors of e-cigarette use among adolescents in Southeast Asia: A systematic review. *International Journal of Environmental Research and Public Health*, 20(5), 3883.
<https://doi.org/10.3390/ijerph20053883>
- Jones, K., & Salzman, G. A. (2020). The vaping epidemic in adolescents. *Missouri Medicine*, 117(1), 56–58. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7023954/>
- Limb, M. (2024). BMA calls for action to curb “vaping epidemic”. *BMJ*, q1877.
<https://doi.org/10.1136/bmj.q1877>
- Makrygianni, M. K., Gena, A., Katoudi, S., & Galanis, P. (2018). The effectiveness of applied behavior analytic interventions for children with autism spectrum

- disorder: A meta-analytic study. *Research in Autism Spectrum Disorders*, 51(1750–9467), 18–31. <https://doi.org/10.1016/j.rasd.2018.03.006>
- McMillen, R. C., Gottlieb, M. A., Shaefer, R. M. W., Winickoff, J. P., & Klein, J. D. (2014). Trends in electronic cigarette use among U.S. adults: Use is increasing in both smokers and nonsmokers. *Nicotine & Tobacco Research*, 17(10), 1195–1202. <https://doi.org/10.1093/ntr/ntu213>
- Mongilio, J. M., Staff, J., Seto, C. H., Maggs, J. L., & Evans-Polce, R. J. (2025). Risk of adolescent cigarette use in three UK birth cohorts before and after e-cigarettes. *Tobacco Control*, 0, tc–2024-059212. <https://doi.org/10.1136/tc-2024-059212>
- Motos-Sellés, P., María-Teresa Cortés-Tomás, & José-Antonio Giménez-Costa. (2025). Theory of planned behavior factors influencing e-cigarette use among adolescents: A systematic review. *Current Addiction Reports*, 12(1). <https://doi.org/10.1007/s40429-025-00612-3>
- Pepper, J. K., MacMonegle, A. J., & Nonnemaker, J. M. (2017). Adolescents' use of basic, intermediate, and advanced device types for vaping. *Nicotine & Tobacco Research*, 21(1), 55–62. <https://doi.org/10.1093/ntr/ntx279>
- Rickwood, D., & Coleman-Rose, C. L. (2023). The effect of survey administration mode on youth mental health measures: Social desirability bias and sensitive questions. *Heliyon*, 9(9), e20131–e20131. <https://doi.org/10.1016/j.heliyon.2023.e20131>
- Salari, N., Rahimi, S., Darvishi, N., Abdolmaleki, A., & Mohammadi, M. (2024). The global prevalence of e-cigarettes in youth: A comprehensive systematic review and meta-analysis. *Public Health in Practice*, 17(7), 100506–100506. <https://doi.org/10.1016/j.puhip.2024.100506>
- Saruddin, M. Z., Abdul Manaf, R., Hamzah, K. Q. A., & Ahmad Khusairi, A. A. (2025). Predictors of vaping intention among adolescents: A systematic review. *BMC Public Health*, 25(1). <https://doi.org/10.1186/s12889-025-24518-x>

- Seal, W. (2024, February 14). *New report: WHO urges urgent government actions to protect youth and prevent the uptake of e-cigarettes*. World Health Organization: WHO. Who.Int. <https://www.who.int/laos/news/detail/14-02-2024-new-report--who-urges-urgent-government-actions-to-protect-youth-and-prevent-the-uptake-of-e-cigarettes>
- Tam, J., & Brouwer, A. F. (2021). Comparison of e-cigarette use prevalence and frequency by smoking status among youth in the United States, 2014–19. *Addiction*, 116(9). <https://doi.org/10.1111/add.15439>
- Tan, G. P. P., Tan, X. Z., & van der Eijk, Y. (2024). “If I could try it, I’d try it”: Qualitative study of the illegal vaping culture in Singapore. *Addictive Behaviors Reports*, 20(20), 100556. <https://doi.org/10.1016/j.abrep.2024.100556>
- Valente, T. W., Piombo, S. E., Edwards, K. M., Waterman, E. A., & Banyard, V. L. (2023). Social network influences on adolescent e-cigarette use. *Substance Use & Misuse*, 58(6), 780–786. <https://doi.org/10.1080/10826084.2023.2188429>
- Vanderkam, P., Bonneau, A., Kinouani, S., Dzeraviashka, P., Castera, P., Besnier, M., Binder, P., Doux, N., Jaafari, N., & Lafay-Chebassier, C. (2022). Duration of the effectiveness of nicotine electronic cigarettes on smoking cessation and reduction: Systematic review and meta-analysis. *Frontiers in Psychiatry*, 13, 915946. <https://doi.org/10.3389/fpsyt.2022.915946>
- Vassey, J. (2022). Frequency of social media use and exposure to tobacco or nicotine-related content in association with e-cigarette use among youth: A cross-sectional and longitudinal survey analysis. *Preventive Medicine Reports*, 14(30), 102055. <https://doi.org/10.1016/j.pmedr.2022.102055>
- Watson, C. V., Puvanesarajah, S., Hawkins, N. A., & Trivers, K. F. (2023). Racial disparities in flavored tobacco product use, curiosity, susceptibility, and harm perception, national youth tobacco survey 2019–2020. *Health Equity*, 7(1), 137–147. <https://doi.org/10.1089/heq.2022.0087>
- Zajdel, K., Merecz-Sadowska, A., Sadowski, A., Jęcek, A., Bakalarz, M., & Kaleta, D. (2025). Parental influence and multiple nicotine product use patterns among

adolescents: A cross-sectional study of family context and e-cigarette use. *International Journal of Occupational Medicine and Environmental Health*, 38(5), 512–527. <https://doi.org/10.13075/ijomeh.1896.02618>