

## E-Cigarettes in Children and Adolescents The Snake in the Grass

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DOI: <https://doi.org/10.15354/si.24.op199>

Funding: No funding source declared.

COI: The author declares no competing interest.

AI Declaration: The author affirms that artificial intelligence did not contribute to the process of preparing the work.

**E-cigarettes, once touted as a safer alternative to traditional cigarettes for adult smokers, have rapidly gained popularity among a younger demographic - children and adolescents. The allure of sleek designs, enticing flavors, and perceived social acceptance has made these electronic devices like a snake in the grass, silently creeping into the hands of youth across the globe. However, this burgeoning trend comes with a host of concerning implications, from the potential health risks associated with vaping at a young age to the insidious marketing tactics employed to target this vulnerable population.**

**Keywords:** E-cigarettes; Adolescents; Risks; Potential Targets; Smoking

Science Insights, 2024 October 31; Vol. 45, No. 4, pp.1551-1555.

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**T**HE INCREASING prevalence of e-cigarettes among children and adolescents has emerged as a significant public health concern in recent years (Leslie, 2020; Mattingly & Hart, 2024; Singh et al., 2020). E-cigarettes are promoted as a less hazardous substitute for conventional tobacco products, rendering them more attractive to younger demographics (Chen et al., 2024; Costantino et al., 2024; Ferkol et al., 2018; Leslie, 2020; Murthy, 2016; The Harmful Consequences of Vaping: A Public Health Threat, 2020). Nevertheless, the elevated nicotine concentrations present in numerous e-cigarette brands may result in addiction and possible long-term health ramifications, including heightened risk of cardiovascular disease and respiratory complications (Daiber et al., 2023; Khouja et al., 2024; Wang et al., 2024; Wong et al.,

2023). Moreover, delicious e-liquids frequently entice youthful users who may be oblivious to the detrimental consequences of inhaling these substances into their lungs (Singh et al., 2020). This tendency is concerning as it may undermine the advancements achieved in decreasing smoking rates among adolescents during recent decades. To tackle this escalating issue, extensive preventive measures and more stringent laws on marketing and sales to minors are necessary.

Adolescents who utilize e-cigarettes are more prone to initiate smoking conventional cigarettes subsequently, resulting in a lifelong dependency and adverse health ramifications (Chapman & Wu, 2014; Ferkol et al., 2018). Moreover, e-cigarette use among adolescents has been associated with compromised brain development, diminished cognitive performance, and respiratory

complications (Herman & Tarran, 2020). The enticing flavors and elegant forms of e-cigarettes render them more alluring to youth, heightening the probability of experimentation and sustained addiction. It is essential for healthcare professionals, educators, and policymakers to adopt comprehensive strategies to prevent youth access to e-cigarettes, inform parents and caregivers about the risks associated with these devices, and regulate the marketing and sale of e-cigarettes to safeguard the health and well-being of younger generations.

### **Factors Contributing to the Appeal of E-Cigarettes among Children and Adolescents**

A primary aspect contributing to the allure of e-cigarettes among children is the extensive selection of flavors offered (Chacón et al., 2024; Ramo et al., 2014). E-cigarettes are available in a variety of flavors, including fruity, sweet, and dessert-inspired selections (Ferrara et al., 2020; Ramo et al., 2014). These flavors attract toddlers and teenagers who may be intrigued by the prospect of sampling something novel or relishing the variety of distinct tastes.

A further aspect enhancing the allure of e-cigarettes among minors is the belief that they are less detrimental than conventional cigarettes. A significant number of children and adolescents perceive e-cigarettes as a safer substitute for tobacco smoking (Schneller et al., 2018), which may increase their propensity to experiment with them. This fallacy is perilous, as e-cigarettes still harbor detrimental ingredients and may induce adverse health consequences (Schraufnagel, 2015).

The promotion and advertising of e-cigarettes significantly contribute to their allure for minors. E-cigarette businesses employ creative and targeted marketing techniques to engage young consumers, including social media campaigns and celebrity endorsements (Amrock et al., 2016; Kong et al., 2014). These marketing initiatives can render e-cigarettes fashionable and appealing, thereby luring children to experiment with them.

Peer pressure and societal pressures contribute to the allure of e-cigarettes among children (Hunter & Martin, 2019; Singh et al., 2020). Adolescents frequently experience peer influence and may feel compelled to experiment with e-cigarettes to conform or integrate into a social group (Glantz & Bareham, 2018; Singh et al., 2020). This pressure may facilitate experimenting with e-cigarettes among adolescents.

The simplicity and user-friendliness of e-cigarettes is an additional feature enhancing their allure to youth (Fairman et al., 2023; Rayes et al., 2023). E-cigarettes are compact and inconspicuous, facilitating their use in diverse environments without being noticed. This accessibility facilitates children's experimentation with e-cigarettes, leading to nicotine addiction. The addictive properties of nicotine significantly contribute to the allure of e-cigarettes for children (Schraufnagel, 2015). Nicotine is an exceedingly addictive compound, and once youngsters get dependent on nicotine via e-cigarettes, it can be challenging for them to cease usage (Chacón et al., 2024; Jackson et al., 2024; Janssen & Boykan, 2019). This addiction may result in chronic health issues and reliance on e-cigarettes.

The cost-effectiveness of e-cigarettes is an additional element that enhances their attractiveness to youth. E-cigarettes are frequently less expensive than conventional cigarettes, ren-

dering them more attainable for children who may lack the financial resources to buy cigarettes (Glantz & Bareham, 2018; Khoury et al., 2016). The affordability of e-cigarettes may render them more appealing to children as a less expensive substitute for traditional smoking.

The absence of legislation and monitoring around e-cigarettes significantly contributes to their allure for minors (Goldenson et al., 2019; Leslie, 2020; Pesko et al., 2017). E-cigarettes are subject to less stringent regulation compared to regular cigarettes, with little limitations on their marketing and accessibility (Glantz et al., 2024; Rigotti, 2024). The absence of regulation facilitates children's access to e-cigarettes, hence enhancing their allure.

The impression of e-cigarettes as a "safer" alternative to traditional smoking is an additional feature that enhances their allure among youth (Huang et al., 2014). A significant number of children and adolescents perceive e-cigarettes as a healthier alternative to conventional cigarettes, which may increase their propensity to experiment with these products (Luca et al., 2023; Marshall et al., 2016; Oliver et al., 2023). This fallacy may result in prolonged e-cigarette usage and possible health ramifications.

### **The Hidden Risks Associated with E-Cigarette Use in Youth**

The potential impact on brain development is one of the primary concerns associated with the use of e-cigarettes among young people. Exposure to nicotine during this critical period can have enduring effects on cognitive function and memory (Quam et al., 2024; Singh et al., 2020; *The Harmful Consequences of Vaping: A Public Health Threat*, 2020), as the human brain continues to develop until the age of 25 (Castro et al., 2023; England et al., 2015). In comparison to their non-smoking counterparts, adolescents who use e-cigarettes are more likely to experience learning and attention problems (Conti & Baldacchino, 2023; Counotte et al., 2008; Xie et al., 2020; Yuan et al., 2015).

In addition to the cognitive effects of nicotine, there is also evidence to suggest that addiction may result from the use of e-cigarettes by young people. Nicotine is a highly addictive substance (Early Nicotine Use May Lead to Lasting Addiction, 2023; *What Is Nicotine? (For Parents)*, 2022), and youthful individuals who begin using e-cigarettes may find it challenging to discontinue (Kasza et al., 2024; *Nicotine Addiction and Mental Health: Breaking the Cycle*, 2023; Rigotti, 2024). This can result in a cycle of dependence that is challenging to escape, which can have long-term health consequences.

Additionally, the respiratory system may be adversely affected by the presence of hazardous chemicals and toxins in e-cigarettes. The lungs may be irritated by the aerosol generated by these devices, which can result in respiratory issues such as coughing, wheezing, and shortness of breath (Callahan-Lyon, 2014; Eltorai et al., 2018; Thota & Latham, 2014; Puliyakote et al., 2021). Additionally, the prolonged use of e-cigarettes has been associated with an elevated risk of respiratory infections and asthma in adolescents (Ferrara et al., 2020; Murthy, 2016; Puliyakote et al., 2021).

The potential for cardiovascular issues is another concealed concern associated with the use of e-cigarettes by young

people. Nicotine can result in an increase in heart rate and blood pressure (Chen et al., 2024), which can place a strain on the cardiovascular system. This can elevate the likelihood of stroke and heart disease in adolescents who utilize e-cigarettes on a consistent basis.

The potential for e-cigarette use to serve as a gateway to traditional cigarette consumption is also a source of concern. Research has demonstrated that adolescents who utilize electronic cigarettes are considerably more inclined to experiment with conventional cigarettes than their non-vaping peers (Chacón et al., 2024; Kasza et al., 2024; Jenssen & Boykan, 2019). This can increase the probability of forming a nicotine habit, which can have severe long-term health repercussions.

In addition to the physical health hazards associated with e-cigarette use, there are also mental health implications on which to reflect. Adolescents who utilize electronic cigarettes are considerably more susceptible to anxiety and depression than their counterparts (Grant et al., 2019; Leslie, 2020; Leventhal et al., 2015). This can have a significant effect on their overall quality of life and well-being.

Additionally, the marketing strategies employed by e-cigarette manufacturers may contribute to the acceptance of vaping among young people. These companies frequently employ advertising strategies and flavors that appeal to young people, presenting it as an innocuous and fashionable activity

(Cheng et al., 2023; Luca et al., 2023). This can exacerbate the challenge for young individuals in identifying the potential hazards of e-cigarette use.

It is crucial to evaluate the social consequences of adolescent e-cigarette usage. The behavior of young people can be significantly influenced by peer pressure and social influences, and the widespread use of vaping among their peers can suggest that it is a socially permissible activity (Chapman & Wu, 2014). This can exacerbate the difficulty for young individuals in resisting the urge to experiment with e-cigarettes, even if they are cognizant of the potential hazards.

## Concluding Remarks

E-cigarettes are not the risk-free substitute that they are frequently portrayed as. Rather, they are akin to the snake in the grass, carrying significant health hazards for juvenile users and having the potential to reverse decades of advancements in the decline in youth smoking rates. It is critical that parents, public health professionals, and legislators understand the risks associated with e-cigarettes and take appropriate measures to shield children from these products' negative impacts. We can contribute to a healthier future for the next generation by addressing the marketing strategies, lack of regulation, and potential for gateway use connected with e-cigarettes. ■

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