

E-cigarette use among youth in China

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Smoking has become a serious yet imminent public health concern afflicting every person worldwide, causing nearly 9 million deaths in 2019.¹ China is the largest consumer of tobacco globally, while the emergence and prosperity of e-cigarettes have endangered vulnerable populations, especially young people. Flavoring, favorable prices, and increasing accessibility and availability could be the underlying motivations of youth for uptake, placing them at risk of nicotine addiction. An online survey of 2042 young people aged 12–18 years conducted in 2015 showed that more than one quarter (26.4%) have ever used e-cigarettes.² Results from the survey also revealed potential reasons for youth to pick up e-cigarettes, including but not limited to fashionable (15.4%) and out-of-curiosity (26.6%).² Another national youth tobacco survey with 288,192 middle school students reported that the awareness and the use of e-cigarettes have increased from 45% to 69.9% and from 1.2% to 2.7%, respectively, between 2014 and 2019.^{3,4} Of note, the prevalence of e-cigarette use is higher among young people than in other age groups.⁵ Consistent evidence has shown that e-cigarette use may link to acute adverse physical conditions, such as impaired endothelial function and cerebral and vascular oxidative.⁶ Nevertheless, there is a shortage of research exploring long-term exposure to e-cigarettes on health among youth, leaving a critical gap in the research landscape. The severity of potential health outcomes incurred by e-cigarette use necessitates further research with the aim of promoting public awareness and assisting policymakers in regulations.^{7,8}

To date, China has adopted a range of measures attempting to regulate the crescively prevalent marketing campaigns of e-cigarettes and reduce the potential risks of nicotine addiction among youth. On June 1, 2021, the Law on the Protection of Youth was put into practical effect, indicating the government has noticed the

prosperity of e-cigarette use among youth and its nature as a potential public health threat. The Notice of the Special Action Plan for the Protection of Youth from Tobacco Abuse “Guarding Growth” targeting e-cigarettes was promulgated to respond to the law, between June 15 and September 14, 2021. Nevertheless, although the government has paid extra attention to regulating the operation of electronic cigarettes according to the aforementioned governmental legislation and notice, no corresponding market operation supervision strategy was outlined and implemented nationwide, resulting in the fact that young consumers could still purchase e-cigarettes from local stores and online retail environments in 2021 and the beginning of 2022. The situation may be changed as of May 1, 2022, when the “Measures for the Administration of Electronic Cigarettes” of the People’s Republic of China have come into effect. The implementation of this regulation, for the first time, clearly prohibits the sale of e-cigarette products to young people aged less than 18 years. The sale of flavored e-cigarettes and e-cigarettes featured with self-replaceable inhaling fluid are also prohibited, as stated in the regulation.

Although the authority has promulgated the aforementioned regulations, there are still challenges in practice. First, strict enforcement of laws and regulations and strong supervision of the enforcement process is necessary, such as hiring a third-party agency to test the taste of cigarettes. Effective strategies on age verification to regulate e-cigarettes are crucial. Current approaches such as warning signs of age limitations for e-cigarette purchase may not be efficacious in achieving the goal of limiting youth access to e-cigarettes.⁹ Follow-up tracking of the incidence of e-cigarette use among youth is required to help policymakers identify opportunities for interventions and measures, considering the potential and unpleasant health impacts of e-cigarettes. Second, for youth with e-cigarette use, extra attention from a governmental level should be paid to intervention development and implementation in tobacco control institutions and mental health facilities. Nicotine dependence treatment entails screening and determining readiness to change the behavior of e-cigarette use. The primary methods employed are counseling and nicotine cessation medications. Gaps between awareness of the harmfulness of vaping and treatment approaches to e-cigarette cessation should be mitigated. Third, rather

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than highlighting addiction treatments, e-cigarette prevention strategies should also incorporate other components on the policy spectrum, such as public awareness, media guidelines, school-based programs, and strategies for restricting the availability of e-cigarettes. Campus-based prevention is also necessary, and middle and high school curricula should include courses that promote the negative consequences of e-cigarette use. Youth with multiple important factors associated with e-cigarette initiation, such as secondhand smoking exposure, should be targeted. Online psychoeducation regarding knowledge about e-cigarettes, such as Vaping Prevention Online Lessons¹⁰ developed by Stanford medicine, should be established for the community and school. In particular, youth at risk of nicotine addiction can be recognized via big data by monitoring their posts on social media and promoting online psychoeducation programs accordingly.

Declaration of interests

The authors declare no conflict of interests.

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