

# TOBACCO, ELECTRONIC NICOTINE DELIVERY SYSTEMS, AND RELATED TRENDS



A quarterly newsletter brought to you by the U.S. Public Health Service  
Smoking and Tobacco Use Advisory Committee (STUAC)

JULY 2023

## Nicotine Vaping and Co-occurring Substance Use Among Adolescents in the United States from 2017-2019

Despite significant public health efforts aimed at mitigating the harmful effects of electronic nicotine delivery systems (ENDS) and curbing youth access, adolescents persist to use electronic cigarettes (e-cigarettes) or vaping. This underscores the ongoing importance for this topic to remain a public health concern, especially considering the potential link between e-cigarette, alcohol, and cannabis consumption.

Even though there was a decrease in cigarette smoking in adolescents from 2017-2019, vaping rates continue to increase during that time frame. Vaping rates stabilized in 2020 and a decline was seen in 2021. However, prevalence remains high with over 13% among the 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders combined identified having vaped within the last 30 days.

Long-term effects of vaping are still unknown. Therefore, the public health costs of this behavior are uncertain. Vaping is associated with the increased risk of using cannabis, alcohol, and other substances - increasing the physiological toll on adolescents.

This study collected data from 51,872 US adolescents in grades 8, 10, and 12 from 2017-2019 from Monitoring the Future Survey (MTF). Data collection occurred annually through self-administered student surveys with demographic variables to include school grade, sex, race/ethnicity, parental education (at least one college grad parent or no college grad parent), and urbanicity (urban, suburban, or rural).

- It aimed to identify the associations between nicotine vaping and both binge drinking and cannabis use by surveying a large nationally represented adolescent sample.
- Multinomial logistic regression analyses studied links of past 30-day nicotine use (i.e., none, smoking only, vaping only, smoking and vaping) with both past 30-day cannabis use and past two-week binge drinking. Cannabis use included marijuana or hashish. Binge drinking was considered positive if the student had 5+ drinks over the two-weeks span.

Students who responded to the surveys were evenly distributed across grade and sex. They were mostly suburban, non-Hispanic White individuals with at least one college degree parent.

### Bottom Line:

- Vaping-only nicotine use was strongly associated with cannabis use through vaping than non-cannabis vaping.
- Students who smoked and vaped nicotine also had a strong association with cannabis use that included cannabis vaping.
- All levels of inhaled nicotine use were found to be associated with binge drinking. Those who smoked and vaped had 5.60X the odds of binge drinking on at least one occasion compared to those that did not use nicotine. The odds ratio was 2.80 for those that only smoked nicotine only, while for those that vaped only had an odds ratio of 4.27.

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Nicotine use was strongly associated with a greater likelihood of cannabis use and binge drinking. Because of this, there is a continued need for interventions, advertising, and promotions for public education to reduce vaping among the adolescent population to mitigate nicotine, cannabis, and alcohol misuse

## Limitations:

- Data was collected from students during the day, therefore excluding absent or home-schooled students.
- Nicotine vaping and smoking was self-reported and relied on recall biases and honesty.
- Binge drinking was recorded as a uniform number of more than 5 or more drinks for all individuals. Assessing separately as 4 or more drinks for females and 5 or more drinks for males would be the better assessment.
- Data is cross-sectional and could not establish directionality.

## Practice considerations:

The results of this study indicate that nicotine vaping is not an isolated behavior. It is strongly connected to other substance use, which is harmful to adolescences and can make cessation more difficult. Many US adolescents are targeted with nicotine vaping advertisements in retail settings and online through social media.

- Availability and marketing of nicotine to adolescents should be restricted and there have been efforts to address this:
  1. FDA requirements for health warnings on packaging and advertisements.
  2. Minimum age for e-cigarette purchase raised to 21 from the previous of 18 years old.
- Anti-vaping campaigns have been established to reduce the use of e-cigarette use among adolescents:
  1. FDA's "The Real Cost" advertisements that lower vaping intensions and promote negative views of vaping.
  2. Other campaigns have focused on increasing knowledge about vaping and the harmful side effects.
  3. Newer campaigns are focusing on engaging teens with social media and texting. One program found that almost 60% of teens who engaged with a cessation program online with texts from the outlook of a supportive friend, stopped or reduced use of electronic cigarettes.

## Reference

Kreski NT, Ankrum H, Cerdá M, et al. Nicotine Vaping and Co-occurring Substance Use Among Adolescents in the United States from 2017-2019. *Subst Use Misuse*. 2023;58(9):1075-1079. doi:10.1080/10826084.2023.2188462

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