

# Review of: "What substances are adolescents vaping? Estimating nicotine-specific and marijuana-specific vaping from US national youth surveys"

Khaled Hasan<sup>1</sup>

<sup>1</sup> University of Maryland Eastern Shore

Potential competing interests: No potential competing interests to declare.

**Reviewer: Dr. Khaled M. Hasan**

**Article title:** What substances are adolescents vaping? Estimating nicotine-specific and marijuana-specific vaping from US national youth surveys

The study aimed to determine the prevalence of nicotine and marijuana vaping among adolescents in the US using data from two national youth surveys (Monitoring the Future 2020 and National Youth Tobacco Survey 2021). The results showed that a significant proportion of adolescents who reported using e-cigarettes in the past 30 days did not vape nicotine. Instead, nearly half of them reported using marijuana. The findings highlight the importance of capturing the variety of substances used in e-cigarettes for accurate public health surveillance, given the different risks and regulations associated with nicotine and marijuana. The results also showed that current and former cigarette smokers and frequent e-cigarette users were more likely to vape both nicotine and marijuana, while never-smokers were more likely to only vape marijuana.

**Study design:** the study used data from the MTF and NYTS surveys to examine nicotine and marijuana vaping among middle and high school students in the US. The MTF survey was the main source of data for the study and had a sample size of 2,506 students who reported vaping and provided valid responses on substance use. The NYTS survey data were used to supplement the MTF data. The measures used in the two surveys were slightly different, with MTF asking about the frequency of substance use, while NYTS asked about ever and past-30-day use. The study calculated the prevalence of each substance vaped and analyzed it by different demographic and substance use categories. The data were weighted to account for the different sample sizes and response rates. The results were analyzed using chi-square tests. The study also contextualized the vaping prevalence of each substance by comparing it to the overall prevalence of substance use.

**Sample size:** The smaller sample size raises concerns about the representativeness of the data and the potential for sampling bias. Additionally, the sample size for the NYTS 2021 data was limited to N=1436 adolescents who reported current (past-30-day) e-cigarette use, which is also a relatively small sample size for generalizability. A larger sample size would have increased the power of the analyses and the generalizability of the results to the target population.

The information provided does not specify whether the study populations of the "above Methods" are representative of the

population of interest or not, so it is not possible to determine whether there is selection bias or not. It would be necessary to have more information about the study design, population selection, and data collection procedures to determine the presence of selection bias.

**Results:** the results appear to have been analyzed using appropriate statistical methods, including chi-square tests to examine the differences between groups (e.g. past-30-day vapers and non-vapers, current and former smokers, frequent and infrequent vapers, etc.). The p-values reported in the results suggest that the differences in vaping patterns between groups are statistically significant, indicating that the results are unlikely to have occurred by chance.

**Conclusions:** the conclusions of the study seem to be supported by the results. The study found that a significant proportion of youth who vape, report vaping substances other than nicotine, and specifically, a significant number of youth report vaping marijuana. The results emphasize the need for more detailed questions about the substances being vaped to accurately assess the risk and develop effective prevention efforts. The conclusions align with the results of the study and provide important insights into the behavior of youth vaping.

**Relevant to my area of interest and practice** This study is relevant to my area of interest and practice as it pertains to substance use disorders, specifically in regard to marijuana. The study's focus on the prevalence of marijuana vaping among adolescent past-month vapers and its impact on the accurate measurement and surveillance of substance use behaviors makes it relevant to your expertise and interests.

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As restrictions on nicotine tighten, marijuana restrictions are loosening, with recreational marijuana now being legal for adult consumption in **18 states and District of Columbia**, which could increase availability for youth.

**These data need to be updated.**

**Attitudes and knowledge about cannabis and cannabis-based therapies**

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US public support and state-based legalization of cannabis for medical or recreational (adult) use are spreading. A total of 93% percent of Americans support medical use [4], and over 60% support legal recreational adult use [4–6]. As many as 34 states, District of Columbia (DC), Guam, Puerto Rico, and US Virgin Islands have comprehensive, publicly available medical cannabis programs, and 12 states allow use of low THC, high CBD products for limited medical purposes; only four states have no public cannabis access programs [7]. Ten states and DC have legalized adult (21 years+) cannabis use, and nine states regulate cannabis pro-duction and sales, including taxing. Two US territories (Guam, Northern Mariana Islands) have also legalized adult use and passed laws to tax and regulate sales [8].

