

Understanding youth nicotine use to prevent initiation and escalation

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Using multiple nicotine products can be associated with higher levels of nicotine dependence among youth and increased mortality in adults, compared with the use of one product alone. Yale researchers have now

uncovered factors that contribute to adolescents using multiple nicotine products.

These findings, they say, will help inform efforts to prevent escalation from single to multiple product use.

Their [findings](#) were reported April 24 in the journal *Preventative Medicine*.

While [public health campaigns](#) have spread awareness on the harms of smoking and, more recently, vaping, an increasingly diverse landscape of [nicotine](#) products, widespread adoption of e-cigarettes, and a growing use of multiple products among [young people](#) may require updated strategies, says Patricia Simon, an assistant professor adjunct of psychiatry at Yale School of Medicine (YSM) and lead author of the study.

"Using nicotine products has numerous health impacts and multiple product use can have additional negative consequences, including increased nicotine dependence, reduced intent to quit, and increased mortality," said Simon. "One challenge now is to find ways to prevent young people from progressing from single to multiple product use, but we need to know what contributes to that progression in order to develop effective interventions."

For the study, Simon and her colleagues used data from the Population Assessment of Tobacco and Health (PATH) Study, a long-term evaluation of tobacco use in the United States that began in 2013 and is administered by the National Institutes of Health (NIH) and the U.S. Food and Drug Administration (FDA).

The researchers analyzed data from more than 10,000 individuals who joined the PATH study when they were between the ages 12 and 17. The

participants completed the PATH Study assessments in 2013 and 2014 (Wave 1 of the PATH Study) and again in 2017 and 2018 (Wave 4).

Among the study group during Wave 4, nearly 11% reported having used multiple nicotine products, over 13% reported using one product, and just over 76% said they had not used any nicotine products during the previous 30 days. Cigarettes were the product most reportedly used followed by e-cigarettes, cigars, hookah, and [smokeless tobacco](#).

"We also found several personal, familial, and [environmental factors](#) that contributed to nicotine product use and multiple product use," said Ralitza Gueorguieva, a senior research scientist in the Department of Biostatistics at Yale School of Public Health (YSPH) and co-author of the study.

Those who reported using nicotine products in Wave 4 of the study reported more problems with sleep, anxiety, or feelings of hopelessness, were less likely to have talked with parents or guardians about not using tobacco products, and more likely to have seen advertisements for tobacco products in Wave 1, compared with those not reporting nicotine use.

The researchers then compared individuals who used multiple products with those who reported using just one in Wave 4, finding they were more likely to be male, in the older 15- to 17-year-old age group, and to have reported ever using a nicotine product at the start of the study (Wave 1).

When asked to rate how much harm they thought came from using various nicotine products, those who used multiple products assigned less harmful ratings than those who used just one product.

"This more nuanced understanding of nicotine use in adolescents allows

us to better differentiate those who use single products versus multiple products, which is an important new perspective," said Elina Stefanovics, a research scientist in the Department of Psychiatry at YSM and co-author of the study.

These findings should be considered by regulators aiming to align policies with modern usage patterns, clinicians advising parents on risk and protective factors, and prevention scientists developing targeted programs based on specific risk factors for youth, said the researchers.

"This study provides crucial evidence that will help shape interventions aimed at preventing both the initiation and escalation of nicotine product use among adolescents," said Eugenia Buta, a research scientist with the Yale Center for Analytical Sciences at YSPH and co-author of the study.

"By understanding these factors, we can develop more effective public health strategies and regulatory policies to reduce the prevalence of multiple nicotine product use among our youth."

More information: Patricia Simon et al, Socioecological factors associated with multiple nicotine product use among U.S. youth: Findings from the population assessment of tobacco and health (PATH) study 2013–2018, *Preventive Medicine* (2024). [DOI: 10.1016/j.ypmed.2024.107956](https://doi.org/10.1016/j.ypmed.2024.107956)

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