



Nicotine Pouch Use in the United States: Increased Rates, Health Effects, and Considerations

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Background

Across the United States (U.S.), nicotine pouches have emerged as a popular, new nicotine product, especially among young adults and adolescents. Nicotine pouches are small, white packets, typically sold in round tins that resemble mint containers, that contain synthetic or naturally derived nicotine, flavoring, and other ingredients. To use a nicotine pouch, someone would place the pouch between his/her gum and lip, allowing nicotine to be absorbed through the oral mucosa into the bloodstream. Nicotine pouches produce no smoke, vapor, or smell. Thus, nicotine pouches are a discreet and odorless tobacco alternative that can be used without spitting and be easily concealed and used undetected, even in classrooms or other restricted environments. While nicotine pouches contain no tobacco leaf, the nicotine inside them can come from two sources: the tobacco plant or manufactured artificially. Nicotine in all forms can harm brain development, including the areas of the brain that control attention, learning, mood, and impulses.¹

These products were first introduced in the U.S. in 2016 and have grown rapidly in popularity since then.¹ Some of the most widely recognized nicotine pouch brands include Zyn (Phillip Morris International), On! (Altria), and Velo (British American Tobacco),²⁻⁴ though youth may refer to them using slang terms such as "lip pillows," "upper/lower decky," or simply "Zyn,"⁵ as people often consider the brand Zyn as synonymous with nicotine pouches (akin to Kleenex and tissues or Xerox and photocopiers). A 2021 national survey found that 31.9% of

adolescents, 33.2% of young adults, and 28.3% of adults surveyed had ever used Zyn and 18.5% of all survey respondents indicated that Zyn was the most popular brand among peers.⁴ In 2025, the Centers for Disease Control and Prevention (CDC) Foundation-funded TEEN+ Study confirmed that Zyn was the most common nicotine pouch brand used in the past month among youth and young adults (84.3%).³

While researchers are still exploring the short- and long-term effects of nicotine pouches, the evidence is clear that there is no such thing as a safe nicotine product for developing brains. Youth should especially abstain from any nicotine product use; parents, practitioners, and other concerned adults should educate adolescents on key nicotine facts (see Box 1). This research brief will discuss rates of nicotine pouch use, current nicotine pouch research landscapes, and future considerations for researchers, practitioners, and concerned adults.

Box 1. Key Nicotine Facts for Parents and Practitioners to Share with Youth

There is no safe tobacco product for anyone, especially youth.⁸

Nicotine is addictive and harmful to developing brains.

While research about nicotine pouches is still emerging, we do know that nicotine pouches contain dangerous chemicals in them like formaldehyde.

Rates and Major Concerns

Mimicking the growth trajectory of other nicotine products like e-cigarettes (Juul), nicotine pouch use, especially among youth and young adults, has increased dramatically after its introduction to the market. Since the 1970s, the Monitoring the Future (MTF) study, conducted by researchers at the University of Michigan's Institute for Social Research and funded by the National Institute on Drug Abuse, has surveyed adolescents and adults in the U.S. annually on alcohol, tobacco, and drug use behaviors.⁶ According to the MTF study, the annual prevalence of nicotine pouch use among 12th graders doubled between 2023 (3.0%) and 2024 (6.0%). Past 30-day use in the same age group increased from 1.4% to 3.5% over the same period. Similarly, data from the National Youth Tobacco Survey (NYTS), the annual, school-based, self-administered survey of U.S. middle and high school students, run by the CDC,⁷ indicates that approximately 890,000 middle and high school students had ever tried a nicotine pouch between 2023–2024, and about 480,000 reported nicotine pouch use in the past 30 days. Given this data, we can conclude that parents, researchers, prevention practitioners, and other concerned adults should be gravely concerned about nicotine pouch use among adolescents. While e-cigarettes continue to dominate as the most used tobacco product among youth, the rapid rise of nicotine pouches as the second most prevalent product is cause for serious concern.⁷

Mirroring the surge in smokeless tobacco use seen in the 1990s, nicotine pouch use is escalating most rapidly among male and White students—a trend that calls for immediate attention. In 2024, male students (5.0%) were more than twice as likely as female students (1.9%) to report using nicotine pouches, and use among White students rose substantially from 2023 (1.4%) to 2024 (2.2%).⁷ These demographic differences were also seen in the MTF data, which show that lifetime use among 12th-grade males (10.1%) is more than three times that of females (3.3%). Also, White students reported substantially higher lifetime use (12.0%) than their Black (2.1%) or Hispanic (3.1%) peers, pointing to consistent patterns about who is most likely to be exposed to, experiment with, and regularly use these addictive products.⁶

Current Nicotine Pouch Research Landscape

Nicotine pouches are widely commercially available and marketed similarly to other tobacco products, such as e-cigarettes. Nicotine pouches use enticing yet dangerous flavorings and sleek packaging to grab the attention of youth. Although nicotine pouches are often marketed by their brands as a “cleaner” or “tobacco-free” alternative,¹ early research by academics, CDC, and the Food and Drug Administration (FDA) indicates that they are not risk-free.^{1,8-14} Preliminary laboratory analyses have detected carcinogenic tobacco-specific nitrosamines (TSNAs), heavy metals, and formaldehyde in several nicotine pouch products.⁹⁻¹⁴ While TSNA levels are generally lower than those found in combustible tobacco, the consistent presence of formaldehyde — a known human carcinogen — raises serious concerns. Formaldehyde was detected in all tested nicotine pouch brands at levels comparable to those found in snus,¹³ a moist smokeless tobacco product placed under the lip that is linked to cancer, cardiovascular disease, and other diseases.^{15,16} Alarmingly, some white granular powder nicotine pouches contained formaldehyde concentrations three to four times higher than snus,⁹ and ZYN dry pouches were found to contain levels approximately five times higher.¹⁰ Because nicotine pouches are a newer product, research on short-term and long-term effects is still limited. However, early findings of formaldehyde and carcinogens in nicotine pouches are concerning.

Because nicotine pouches are administered orally rather than inhaled, their potentially harmful constituents are more likely to affect oral, gastrointestinal, and cardiovascular systems rather than the respiratory system. Some self-reported side effects among users include mouth pain or lesions, sore throat, nausea, and upset stomach.^{12,17,18}

Beyond chemical and physiological risks, the addictive potential of nicotine pouches remains a primary concern—particularly as these products gain popularity among adolescents and young adults. Research shows that the adolescent brain is particularly sensitive to nicotine’s effects, making young people more vulnerable to developing addiction.¹⁹ In fact, youth can show signs of nicotine addiction, even without daily or heavy use. These signs may include strong cravings, difficulty stopping use despite wanting to quit, and developing a tolerance—needing more nicotine to achieve the same effect. Nicotine addiction can also negatively impact school performance, relationships with family and friends, and participation in other activities.¹ Animal studies further suggest that early exposure to nicotine can lead to long-lasting changes in the brain, increasing the risk of continued use and behavioral issues over time.¹⁹ This makes early experimentation with nicotine products, including pouches, particularly concerning.

Emerging evidence also suggests that some nicotine pouches are formulated with lower-nicotine content, potentially mirroring the historical design of starter smokeless tobacco products. These products were marketed to individuals new to nicotine use and crafted to be more palatable, easing initiation and encouraging eventual “graduation” to products with higher nicotine content.²⁰ This pattern raises concerns that nicotine pouches may, whether intentionally or inadvertently, facilitate nicotine initiation and progression rather than prevention.

In addition, patterns of dual and poly-nicotine use—referring to the use of two (dual) or more (poly) nicotine products either simultaneously or within the same timeframe—are

increasingly being observed in research. Among youth aged 13–20 years who reported using nicotine pouches, 78.5% also used at least one other tobacco product. This trend was similar among young adult users aged 21–27 years, with 80.4% reporting multiple product use.³ Lifetime and current use of nicotine pouches are the highest among youth who also use smokeless tobacco, followed by e-cigarettes and cigarettes, suggesting that nicotine pouches may not replace other products but rather become part of a broader pattern of nicotine consumption and dependence.²¹ Consequently, dual use, or the use of more than one nicotine product concurrently, is associated with greater health risks and higher addiction rates.²²

As awareness of these risks grows, parents, teachers, prevention specialists, and researchers must recognize the dangers of nicotine pouches, track their use, understand their harms, and communicate effectively with youth to prevent use.

Future considerations for researchers, practitioners, and concerned adults

Researchers

Nicotine pouches are a relatively new product, and while some basic information is available, significant gaps remain regarding their health and behavioral impacts. The CDC and FDA indicate that nicotine pouches are not approved as cessation tools and warn against using them as a means for quitting tobacco.^{1,8}

Research is needed to better understand the effects of nicotine pouch use, particularly on oral, cardiovascular, and gastrointestinal health.^{9,12,23} Ongoing toxicology testing of nicotine pouch products is essential to better understand the ingredients being used in their manufacturing, and to predict potential health consequences from exposure to such ingredients. There is also a critical need to examine the neurological effects of nicotine pouches, particularly among youth, as nicotine is known to pose risks to brain development during adolescence.²⁴

Beyond health effects, researchers should continue to examine behavioral and perception patterns, including how users perceive risk and harm, their motivations for use, and sociodemographic factors that may increase the likelihood of nicotine pouch use. Consistent surveillance through national and state-level surveys can help identify emerging trends and inform evidence-based strategies. The insights gained from this research are critical for scientists and also equip prevention practitioners with the evidence needed to develop education, prevention messaging, and intervention programs.

Prevention Practitioners

Nicotine pouch use has surged among youth and young adults for many reasons ranging from marketing of nicotine pouches to social trends. Nicotine pouches are often marketed as “discreet to use” and “smoke-free” because users do not exhale vapor or smoke, which may lead adolescents to perceive them as less harmful than other nicotine or tobacco products, or even as safe.²⁵ Additionally, nicotine pouch companies engage with adolescents through popular social media like TikTok and gamify nicotine pouch use through a points reward system.²⁶ Similar to the marketing of vapes, over 70% of nicotine pouch ads highlight flavors, with an emphasis on fruit and mint flavors.²⁷ Incorporation of flavors, especially fruit flavors, has been shown to increase initiation of nicotine products among adolescents.²⁸

The misperception that nicotine pouches are harmless compared to traditional cigarettes or vapes^{29,30} is particularly troubling given adolescents' rising nicotine pouch use. Fortunately, adolescents 13–18 years old are also at a pivotal stage for substance use prevention, and they can still be reached through targeted, systematic community-based prevention efforts.^{6,31,32} Consequently, there is a critical need for evidence-based, engaging programs to help these adolescents understand the risks of nicotine pouches and build the skills they need to avoid use.^{29,30} To address this knowledge gap, new prevention programs must incorporate proven elements from successful interventions while using innovative approaches to engage adolescents and encourage healthier decisions.³³

Concerned Adults (Parents, Teachers, Community Leaders)

As nicotine pouch use continues to rise among youth and young adults, parents, teachers, and community leaders play an essential role in building awareness and creating open, informed conversations. Many adults may not recognize these products or understand how they differ from other tobacco or nicotine items, making education about nicotine pouches a crucial first step toward prevention. Concerned adults should begin by reviewing trusted resources on tobacco and nicotine products, including websites of the CDC,³⁴ American Cancer Society,³⁵ and Campaign for Tobacco-Free Kids.³⁶

Concerned adults can also support tobacco and nicotine prevention efforts among adolescents by: 1) talking with adolescents about the dangers of nicotine and tobacco use, especially given their age; 2) maintaining tobacco-free environments at home, school, and other settings; and 3) supporting them through their nicotine quitting journey. Evidence-based resources recommend opening a dialogue by asking what young people know about nicotine products, discussing addiction's effects, and highlighting how these products are often marketed toward youth.³⁷

Conclusion

Despite marketing to the contrary, there is no safe nicotine or tobacco product. While researchers are still exploring the short-term and long-term effects of nicotine pouch use, the research is clear. Nicotine in any form can harm brain development and lead to addiction. Strong and clear messaging is needed to inform adolescents of risks of both casual and chronic nicotine pouch use. For support quitting nicotine pouches and other nicotine products, visit the quit resources on the CDC website: [How to Quit Smoking | Quit Smoking | Tips From Former Smokers | CDC](https://www.cdc.gov/tobacco/nicotine-pouches/index.html)

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