



Short communication

Patterns of oral nicotine pouch use among U.S. adolescents and young adults

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ABSTRACT

Oral nicotine pouches are gaining popularity, yet national-level research on youth and young adult use is still needed. We examined characteristics of those who use oral nicotine pouches and trends in use over time in a sample of U.S. youth and young adults. Data were obtained from a weekly, national, online, continuous tracking survey of approximately 315 unique participants (aged 15–24) per week. Bivariate analyses were conducted on those surveyed December 2021 to May 2022 ($n = 7,832$) summarizing demographic and tobacco product use characteristics of those currently using oral nicotine pouches, those who had ever used oral nicotine pouches, but not currently, and those who never used pouches. From December 2021 to May 2022, 16% of participants ever used nicotine pouches and 12% currently used the product. Participants who currently used oral nicotine pouches were more likely to report being aged 21+, male, and lower income. Seventy-three percent of those who currently used pouches and 33% of those who ever, but not currently, used pouches reported current cigarette smoking. Results suggest that many young people who smoke cigarettes are concurrently using oral nicotine pouches. We also examined current and ever use in respondents surveyed between September 2020 and May 2022 to assess trends over the two-year period ($n = 25,944$) and findings indicate stable oral nicotine product use rates over time among adolescents and young adults. Appropriate regulation is needed so nicotine naïve individuals do not initiate use and those currently using tobacco do not use oral nicotine pouches concurrently with other products.

1. Introduction

Oral nicotine pouches are rapidly gaining ground in the nicotine product landscape. From 2016 to 2020, dollar sales of oral nicotine pouches increased by 305% (Marynak et al., 2021) with the product market projected to reach almost \$33 billion by 2026 (Gupta and Mehrotra, 2021). This rise has occurred amidst a well-resourced marketing campaign positioning oral nicotine pouches as enticing and easy to use, as well as a replacement for combustible tobacco or vape products in locations where their use may be restricted. The top six brands of nicotine pouch products spent a total of \$11.2 million on advertising in 2019 (Ling et al., 2022). Content analyses of these ads, both online and in print, identified common themes highlighting the ease with which their products can be used, claiming to be spit-, smoke- and tobacco-free (Ling et al., 2022; Czaplicki et al., 2022). These colorful, eye-catching ads promote a wide selection of flavors to a diverse user base (Ling et al., 2022; Hendlin et al., 2023; Unger et al., 2022).

National data shows that oral nicotine pouches may be particularly appealing to people who use cigarettes and e-cigarette (Felicione et al., 2022; Hrywna et al., 2021). A cross-sectional survey examining use of a variety of relatively new oral nicotine products, including pouches, among high schoolers in Southern California identified higher prevalence of use among those who use e-cigarettes, Hispanic youth, and sexual and gender minority youth (Harlow et al., 2022). Research that focuses on oral nicotine pouch use among youth and young adults, including user characteristics and national-level trends in prevalence over time, is still needed. This analysis examines the trends in use of oral nicotine pouches over two years in a U.S. sample of youth and young adults, and uses the most recent data available to summarize the demographic and tobacco use characteristics of young people.

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Table 1

Demographic and tobacco product use characteristics among current and non-current ever oral nicotine pouch product use among participants surveyed from December 2021- May 2022 (N = 7,832).

	Never ONP Use (n = 6586)			Current ONP Use (n = 908)			Non-current Ever ONP Use (n = 338)			Total (N = 7832)			p-value
	Freq	Wt. %	CI	Freq	Wt. %	CI	Freq	Wt. %	CI	Freq	Wt. %	CI	
Age													<0.001
15–17	2109	32.21	(31.09, 33.35)	108	11.86	(9.91, 14.13)	65	19.38	(15.50, 23.97)	2282	29.28	(28.28, 30.30)	
18–20	2034	30.48	(29.38, 31.60)	241	26.13	(23.38, 29.07)	102	29.94	(25.30, 35.03)	2377	29.94	(28.94, 30.97)	
21+	2443	37.32	(36.15, 38.50)	559	62.02	(58.81, 65.12)	171	50.68	(45.36, 55.98)	3173	40.78	(39.69, 41.87)	
Gender													<0.001
Male	3213	49.45	(48.24, 50.66)	527	59.02	(55.79, 62.17)	214	63.81	(58.55, 68.75)	3954	51.19	(50.08, 52.30)	
Female	3373	50.55	(49.34, 51.76)	381	40.98	(37.83, 44.21)	124	36.19	(31.25, 41.45)	3878	48.81	(47.70, 49.92)	
Financial Situation													<0.001
Don't meet basic expenses	614	9.30	(8.62, 10.03)	97	10.66	(8.81, 12.84)	42	12.52	(9.39, 16.52)	753	9.60	(8.97, 10.27)	
Just meet basic expenses with nothing left over	1960	29.69	(28.60, 30.81)	369	40.61	(37.46, 43.85)	119	35.20	(30.28, 40.44)	2448	31.20	(30.19, 32.24)	
Meet needs with a little left over	2306	35.04	(33.89, 36.20)	254	27.89	(25.07, 30.90)	114	33.74	(28.89, 38.95)	2674	34.15	(33.11, 35.21)	
Lives comfortably	1706	25.97	(24.92, 27.04)	188	20.84	(18.31, 23.61)	63	18.55	(14.76, 23.04)	1957	25.05	(24.10, 26.02)	
Race/Ethnicity													<0.001
Non-Hispanic White	3330	50.64	(49.43, 51.84)	344	37.77	(34.67, 40.97)	215	63.56	(58.28, 68.52)	3889	49.69	(48.58, 50.80)	
Non-Hispanic Black	962	14.74	(13.90, 15.62)	167	18.44	(16.04, 21.10)	27	8.11	(5.62, 11.57)	1156	14.88	(14.11, 15.70)	
Hispanic	1489	22.40	(21.41, 23.42)	329	36.37	(33.30, 39.56)	57	16.83	(13.21, 21.20)	1875	23.79	(22.86, 24.74)	
Non-Hispanic Other	805	12.23	(11.46, 13.04)	68	7.42	(5.89, 9.31)	39	11.50	(8.52, 15.36)	912	11.64	(10.95, 12.37)	
Census region													0.002
South	2506	38.10	(36.93, 39.28)	365	40.15	(37.01, 43.38)	130	38.45	(33.41, 43.75)	3001	38.36	(37.28, 39.44)	
East	1344	20.41	(19.45, 21.40)	163	18.00	(15.63, 20.65)	61	18.14	(14.38, 22.62)	1568	20.03	(19.16, 20.93)	
Midwest	1412	21.45	(20.48, 22.46)	160	17.63	(15.28, 20.25)	87	25.77	(21.38, 30.71)	1659	21.19	(20.30, 22.11)	
West	1324	20.04	(19.09, 21.02)	220	24.22	(21.53, 27.12)	60	17.64	(13.94, 22.07)	1604	20.42	(19.54, 21.33)	
Ever cigarette use (Yes)	2066	31.41	(30.30, 32.54)	735	80.97	(78.28, 83.39)	257	76.13	(71.30, 80.37)	3058	39.12	(38.04, 40.21)	<0.001
Current cigarette use (Yes)	1014	15.43	(14.57, 16.32)	662	72.98	(69.99, 75.77)	112	33.19	(28.37, 38.39)	1788	22.91	(21.99, 23.85)	<0.001
Ever e-cigarette use (Yes)	2236	33.92	(32.79, 35.07)	465	51.03	(47.77, 54.28)	277	81.88	(77.39, 85.64)	2978	37.98	(36.91, 39.07)	<0.001
Current e-cigarette use (Yes)	1410	21.38	(20.41, 22.39)	450	49.40	(46.15, 52.66)	189	56.00	(50.65, 61.20)	2049	26.14	(25.18, 27.13)	<0.001
Ever chewing tobacco use (Yes)	365	5.56	(5.03, 6.14)	301	33.27	(30.27, 36.41)	135	39.98	(34.88, 45.30)	801	10.28	(9.62, 10.97)	<0.001
Current chewing tobacco use (Yes)	164	2.50	(2.15, 2.91)	265	29.32	(26.44, 32.38)	21	6.21	(4.08, 9.34)	450	5.79	(5.29, 6.33)	<0.001
Ever snus use (Yes)	94	1.43	(1.17, 1.75)	134	14.77	(12.61, 17.24)	54	15.94	(12.42, 20.24)	282	3.61	(3.22, 4.05)	<0.001
Current snus use (Yes)	47	0.72	(0.54, 0.96)	117	12.93	(10.89, 15.28)	9	2.67	(1.40, 5.06)	173	2.23	(1.92, 2.58)	<0.001

2. Methods

2.1. Sample

Data were obtained from a continuous tracking survey collecting information weekly from approximately 315 unique participants (aged 15–24) per week. The convenience sample of respondents are drawn from a national online research panel maintained by Dynata (<http://www.dynata.com>). Data was collected in compliance with ethical standards and was overseen by an institutional review board. Survey weights and sampling quotas for age, gender and race/ethnicity were applied to approximate a national sample. We assess trends in use over time using an analytic sample of respondents surveyed between

September 2020 and May 2022 (n = 25,944). A descriptive analysis of oral nicotine pouch use characteristics was conducted on a subsample of respondents, surveyed December 2021 to May 2022 (n = 7,832).

2.2. Measures

Demographic information was collected including age, gender, financial situation, race/ethnicity, and census region. Response categories are indicated in Table 1. Ever nicotine pouch use was assessed with the following question, “Have you ever tried an oral nicotine pouch (like Zyn, On!, or Velo)?” To assess for current use, those who responded “yes” were asked on how many of the past 30 days they used pouches; this was dichotomized to “no” if 0 days, and “yes” if 1–30 days.

Characteristics were also assessed for those participants reporting ever using a product, but not using that product in the past 30 days. Ever and current use was also assessed for cigarettes, e-cigarettes, chewing tobacco/dip/snuff and snus. Example products were listed when asking about e-cigarettes, chewing tobacco and snus.

2.3. Analysis

To examine pouch use over time, current and non-current ever pouch use was calculated for the population surveyed at each month from September 2020 to May of 2022. Demographic and tobacco product use characteristics of those who currently, non-currently ever, and never use oral nicotine pouches were assessed using bivariate analyses on a subsample of the most recent six-month period of data collection (December 2021 to May 2022). Using Pearson’s Chi-Squared tests, we also report a global p-values denoting significant differences in characteristics by pouch use behavior. Statistical significance was evaluated at the $p < 0.05$ level. Population weights were applied for all analyses.

3. Results

Current oral nicotine pouch use has remained steady over time with rates increasing from 11% to 14% from September 2020 to May of 2022. Non-current ever use also increased from 3% in September 2020 to 5% in May of 2022 (Fig. 1).

From December 2021 to May 2022, 16% (n = 1,246) of the population reported ever having used nicotine pouches. Twelve percent of the total population, and 73% of those who ever used (n = 908) nicotine pouches, reported current use. Resultingly, n = 338 participants ever, but not currently, used oral nicotine, making up 4% of the total population and 27% of those who had ever used nicotine pouches.

Individuals who used oral nicotine pouches currently and those who had ever used them, but not currently, were more often 21+ (62% and 51%, respectively) than those who never used oral nicotine (37%). Individuals who used currently (59%) and ever (64%) used oral nicotine were more often male compared those who never used the product (50%). Individuals who used currently more often reported just meeting basic expenses (40%) and not meeting basic expenses (11%) as compared to those who never used (30% and 9%, respectively).

Similarly, 35% of those who ever used oral nicotine reported just meeting basic expenses and 13% reported not meeting basic expenses. Individuals who currently used were more often Hispanic (36%) and NH-Black (18%) compared those who ever used (17% and 8%, respectively) and those who never used (22% and 15%, respectively). Individuals who ever used were more often NH-white (64%) compared with those who used currently (38%) and those who never used (51%). Finally, many of those that currently used resided in the West (24%) compared to those who ever (18%) and never (20%) used. Many of those who ever used resided in the Midwest (26%) compared to those who currently used (18%) and those who never used (22%) (Table 1).

Eighty-one percent of those who currently used oral nicotine pouches and 76% of those who ever, but not currently, used oral nicotine had ever smoked cigarettes compared to 31% of those who never used oral nicotine. Seventy-three percent those currently using oral nicotine currently smoked cigarettes compared to 33% of those who ever used and 15% of those who never used oral nicotine. Fifty-one percent of those who currently used oral nicotine and 82% of those who had ever used oral nicotine, had ever used e-cigarettes, compared to 34% of those who never used oral nicotine. Forty-nine percent of those who currently used oral nicotine currently used e-cigarettes and 56% of those who ever used oral nicotine currently used e-cigarettes, compared to 21% of those who never used. Thirty-three percent of those who currently used oral nicotine and 40% of those who ever used oral nicotine had ever used chewing tobacco, compared to 6% of those who never used oral nicotine. Of those who currently used oral nicotine, 29% also currently used chewing tobacco while 6% of those who only ever used oral nicotine and 3% of those who never used oral nicotine reported current chewing tobacco use. Fifteen percent of those who currently used oral nicotine and 16% of those who ever used, had ever used snus, compared to 1% of those who never used oral nicotine. Among those who currently used oral nicotine, 13% currently used snus while 3% of those who ever and 1% of those who never used oral nicotine currently used snus. All differences were statistically significant (Table 1.).

4. Discussion

Our findings indicate that oral nicotine pouch use is stable at the national level among youth and young adults. Although the proportion

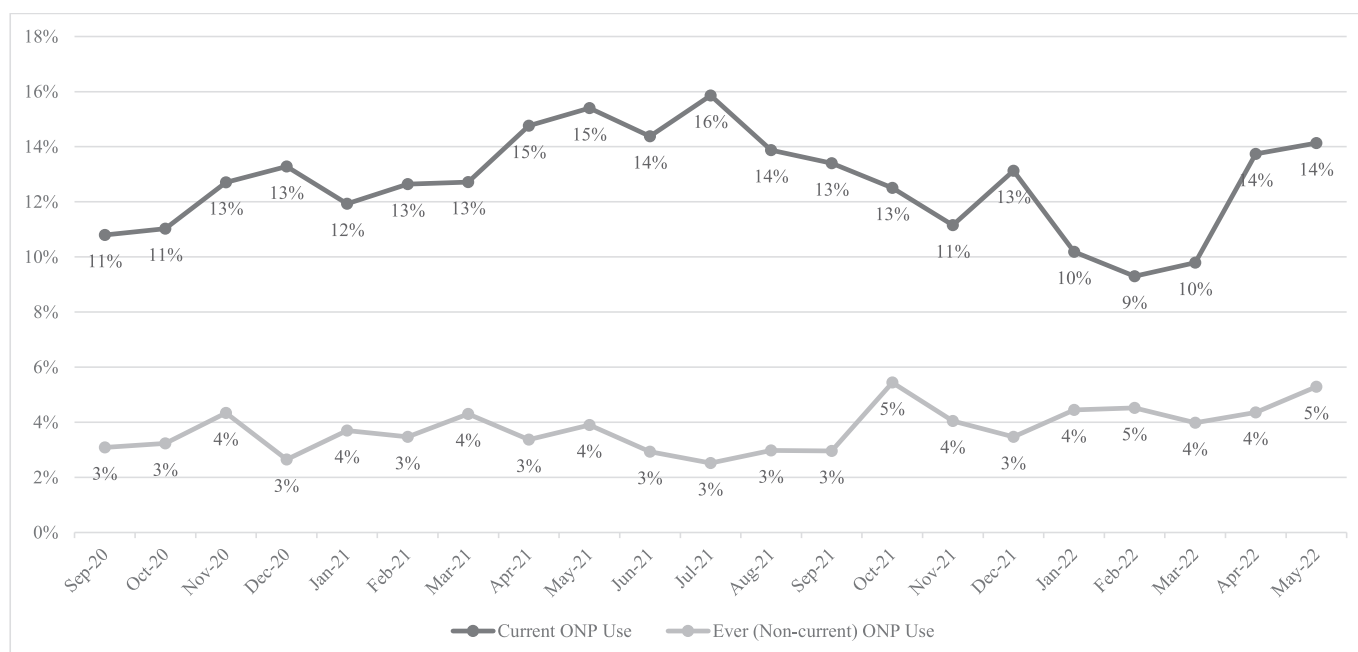


Fig. 1. Current and non-current ever oral nicotine product use September 2020- May 2022 (N = 25,944).

of our sample who reported ever using a pouch product (16%) is smaller than national estimates of ever combustible or e-cigarette use in this age group, it is notable that the majority of those who had ever used oral nicotine pouches also currently used the product. By contrast, among other tobacco products, ever use is typically markedly higher than current use. Although the relative recency of the product could account for some of this difference, the trend is notable and surveillance should continue. While oral nicotine pouch use is, in itself, concerning for youth, the potential for multiple product use is also cause for concern. Most of the population who reported current pouch use also currently smoked cigarettes, and almost half reported current e-cigarette use. The concurrent use of oral nicotine pouches simultaneously with other products could heighten nicotine addiction and dependence among young people.

Oral nicotine pouches are marketed as “tobacco-free” and may include claims that they are potentially safer than smoking (Ling et al., 2022; Hendlin et al., 2023; Unger et al., 2022). Despite explicit or implied reduced harm claims, the findings of this study suggest that many youth and young adults who smoke cigarettes are using these products concurrently. It is unknown whether those dual-using oral nicotine pouches and cigarettes are attempting to use them as an unapproved quitting aid, or whether oral nicotine pouches instead provide opportunities to sustain nicotine delivery in situations where other product use is not allowed. Further research is needed to understand the degree to which these products could serve as a replacement for combustible tobacco products.

More research on the relative harm of oral nicotine products is needed and FDA oversight is necessary to ensure that evidence supports claims of reduced harm. Marketing practices that downplay the harms of nicotine addiction are of concern, given the recent history of problematically marketed nicotine products such as Juul. The e-cigarette company’s advertising tactics were of particular concern due to their youth appeal (Czaplicki et al., 2020). Oral nicotine pouch companies are using similarly engaging ads with youthful images; (Hendlin et al., 2023) emphasizing the need for continued surveillance and regulatory action limiting youth-appealing product marketing.

This study has limitations. Although our study examines oral nicotine pouch use at a national level, our data are not sampled to be nationally representative. However, given national surveillance systems are still collecting data on these products, our research provides much-needed evidence of emerging product use patterns. Knowledge on oral nicotine pouches may be limited, and younger participants may underreport pouch use if they do not recognize them as a nicotine-containing product. We did not include images of products in our survey, however, to mitigate underreporting, our survey item listed select brands that may be recognized by youth. Finally, we do not capture the long-term use of these products and whether they are replacing or supplementing other tobacco use; a more nuanced understanding is needed to better support policies.

5. Conclusion

Emergence of oral nicotine pouch products with potential youth appeal has implications for addiction and other tobacco product use among youth and young adults. Early intervention is needed to appropriately regulate these products, such that nicotine naïve individuals do not initiate use and those currently using nicotine do not dual use with other tobacco products.

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Data availability

Data is housed at Truth Initiative. Data may be made available per request to the authors.

CRedit authorship contribution statement

Minal Patel: Conceptualization, Methodology, Formal analysis, Writing – original draft. **Elexis C. Kierstead:** Project administration, Formal analysis, Writing – original draft. **Jennifer Kreslake:** Supervision, Writing – review & editing. **Barbara A. Schillo:** Supervision, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request, at the authors’ discretion.

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Minal Patel, while at Truth Initiative while the research was conducted, now serves as a Senior Principal Scientist at the American Cancer Society’s Tobacco Control Research team in their Surveillance and Health Equity Science department.

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