

Nicotine pouch product awareness, interest and ever use among US adults who smoke, 2021

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ABSTRACT

Background Tobacco-free nicotine pouches are one of the fastest growing tobacco product categories in the US market. However, data on awareness, appeal or ever use of these products in the USA are limited.

Methods We surveyed a population-based sample of US adults who smoked (n=1018) between January and February 2021 about awareness, ever use of or interest in nicotine pouches. Multivariable logistic regression models explored the relationship between nicotine pouch variables and demographic and tobacco use characteristics.

Results In early 2021, 29.2% of adults who smoked had ever seen or heard of nicotine pouches, 5.6% had ever tried pouches and 16.8% reported interest in using pouches in the next 6 months. Adults who smoked aged 18–44 years and those who had ever used smokeless tobacco (SLT) were more likely to be aware of nicotine pouches. Interest in using nicotine pouches was more prevalent among adult smokers who were Hispanic, planned to quit within 6 months, attempted to quit before using counselling or another tobacco product and had ever used pouches. Among adults who smoked, those with more education had lower odds of ever using nicotine pouches while those who had attempted to quit before using traditional methods or ever used SLT had higher odds of ever use.

Conclusion Levels of awareness, appeal and trial of nicotine pouches among US adults who smoke were modest, with variation by age, education, quit plans and quit attempt methods. Continued surveillance is warranted, including among naïve users and users of other tobacco and nicotine products.

INTRODUCTION

In the changing tobacco and nicotine product landscape, tobacco-free nicotine pouches represent a new class of products growing in popularity in the USA. Tobacco-free nicotine pouches, such as the market leader Zyn, first entered select US markets around 2015 before appearing in retail sales data in 2016 and reaching wider distribution in 2019 and 2020.^{1–3} Recent industry projections suggest continued accelerated growth in this product category.^{3–5}

Although containing similar nicotine levels, nicotine pouch products, either tobacco-derived or synthetic, are different from traditional smokeless tobacco (SLT) or snus in that they contain no tobacco leaf.⁶ Product manufacturers claim that nicotine pouches likely fall between snus and nicotine replacement therapies on the toxicant delivery continuum, with substantially less toxicant exposure

relative to cigarettes, tobacco-heating products, snus and vapour.^{7,8} Market surveys among Swedish users conducted by the industry also suggest lower average daily composition of nicotine pouches (8.6 per day) compared with snus (12.0/day).⁸ In addition, companies selling tobacco-derived nicotine pouch brands, including Zyn, on!, Velo and Rogue, submitted Premarket Tobacco Product Applications to the US Food and Drug Administration (FDA) by a 9 September 2020 deadline.^{9,10} If FDA grants these marketing orders, nicotine pouches will remain on the market.

There is little research on ever use, interest or awareness of such products at a population level. Data collected among US adolescents in 2019 reported low past 30-day use of nicotine pouches—1.5% among adolescents aged 16–19 years.¹¹ More recently, data collected from adults who currently smoke cigarettes and recent quitters in four countries, including the USA, indicated very low prevalence of current nicotine pouch use (0.8%).¹² However, the extent of awareness, interest and ever use of nicotine pouches in the USA is unknown. We assessed awareness, interest and ever use of nicotine pouches among a nationally representative sample of adult smokers collected in early 2021.

METHODS

Sample

Data came from a web-based survey of current US adults who smoke fielded between 21 January 2021 and 4 February 2021 (n=1018). Respondents were drawn from KnowledgePanel, a probability-based web panel designed to be representative of the USA.¹³ Eligible respondents included adults who were aged ≥18 years, had smoked at least 100 cigarettes in their lifetime and smoked now every day or some days (current established smoking). The primary study aim was to understand consumers' reactions to messages claiming some tobacco products were less risky than cigarettes.

Measures

We conducted a secondary analysis of questions related to nicotine pouches. Respondents were given the following description with product images: “The next few questions are about a new group of nicotine products—tobacco-free nicotine pouches. Many of these come in pouches and packages that look like snus or other smokeless tobacco, but they are white and do not contain any tobacco in them. They do contain nicotine. Some brands include Zyn, Velo, On!, and Dryft”. Then participants were asked, “Before this survey, had you ever



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Table 1 Per cent of nicotine pouch awareness, ever use and interest among adult current cigarette smokers and AORs by demographic and tobacco use characteristics, 2021

	Ever seen/heard of nicotine pouches			Ever used nicotine pouches			Interest in using nicotine pouches		
	N	Weighted %	AOR (95% CI)	N	Weighted % (95% CI)	AOR (95% CI)	N	Weighted % (95% CI)	AOR (95% CI)
Overall	1018	27.1	29.2 (25.77 to 32.71)	39	5.6 (3.51 to 7.63)	ref	174	16.8 (13.97 to 19.56)	ref
Sex									
Male	532	52.8	30.6 (25.63 to 35.56)	23	5.7 (2.84 to 8.53)	0.68 (0.29 to 1.58)	96	17.6 (13.54 to 21.64)	1.27 (0.83 to 1.93)
Female	486	47.3	27.7 (22.89 to 32.54)	16	5.4 (2.46 to 8.41)	ref	78	15.8 (12.04 to 19.64)	ref
Age (years)									
18-29	63	17.3	37.3 (27.74 to 50.77)			2.04 (1.05 to 3.97)*			
30-44	271	29.6	32.6 (26.51 to 38.66)			1.68 (1.11 to 2.54)*			
45-59	326	29.8	28.4 (23.20 to 33.56)			1.44 (0.96 to 2.14)			
60+	358	23.3	20.4 (15.88 to 24.93)			ref			
Age (years)†									
18-44	334	46.9	8.4 (4.34 to 12.43)	19	8.4 (4.34 to 12.43)	2.91 (1.40 to 6.03)*	54	16.6 (11.71 to 21.51)	0.85 (0.55 to 1.30)
45-60+	684	53.1	3.1 (1.67 to 4.60)	20	3.1 (1.67 to 4.60)	ref	120	16.9 (13.90 to 19.91)	ref
Race/Ethnicity									
White, non-Hispanic	734	70.7	28.8 (24.70 to 32.93)	27	5.9 (3.26 to 8.54)	ref	120	16.4 (13.07 to 19.78)	ref
Non-white‡	284	29.3	30.3 (23.79 to 36.75)	12	4.8 (1.82 to 7.72)	1.29 (0.55 to 2.99)	54	17.6 (12.54 to 22.62)	1.19 (0.76 to 1.88)
Education									
High school or less	488	56.3	26.9 (22.00 to 31.77)	20	6.8 (3.52 to 10.15)	ref	65	15.0 (11.00 to 19.04)	ref
Some college or higher	530	43.7	32.1 (27.31 to 37.08)	19	4.0 (1.99 to 5.96)	0.44 (0.20 to 0.98)*	109	19.0 (15.21 to 22.78)	1.19 (0.80 to 1.79)
Quit plans for smoking									
No plans	367	37.3					47	13.4 (8.57 to 18.19)	ref
Plans to quit ≤6 months	319	30.7					75	23.6 (18.07 to 29.23)	1.90 (1.12 to 3.22)*
Plans to quit >6 months	328	32.0					51	13.9 (9.97 to 17.73)	1.22 (0.74 to 2.03)
Quit attempt using traditional methods§									
Yes	406	34.4	31.8 (26.30 to 37.14)	27	9.7 (5.59 to 13.77)	4.18 (1.85 to 9.48)*	106	26.0 (21.15 to 30.88)	1.62 (1.02 to 2.56)*
No	610	65.6	28.0 (23.54 to 32.50)	12	3.4 (1.16 to 5.66)	ref	68	12.0 (8.63 to 15.38)	ref
Quit attempt using another tobacco product¶									
Yes	278	26.2	34.2 (27.35 to 41.13)	18	8.8 (4.10 to 13.52)	1.13 (0.39 to 3.26)	82	30.0 (23.4 to 36.54)	2.08 (1.22 to 3.57)*
No	735	73.8	27.6 (23.55 to 31.61)	21	4.4 (2.20 to 6.66)	ref	91	12.2 (9.26 to 15.05)	ref
Ever used SLT									
Yes	177	19.6	52.5 (43.43 to 61.47)	22	17.5 (9.45 to 25.62)	10.00 (4.02 to 24.88)**	48	29.5 (20.62 to 38.48)	1.62 (0.95 to 2.76)
No	834	80.4	23.9 (20.43 to 27.32)	17	2.7 (1.27 to 4.17)	ref	124	13.5 (10.99 to 16.09)	ref
Ever used vape product									
Yes	546	55.7	31.5 (26.51 to 36.41)	22	6.2 (3.15 to 9.17)	0.49 (0.16 to 1.45)	121	21.0 (16.84 to 25.24)	1.25 (0.76 to 2.07)
No	467	44.3	26.7 (21.92 to 31.52)	17	4.9 (2.15 to 7.60)	ref	52	11.3 (7.89 to 14.70)	ref
Ever used nicotine pouch									
Yes	39	5.6					21	54.1 (35.19 to 73.02)	5.82 (2.27 to 14.90)*
No	969	94.4					152	14.3 (11.84 to 16.76)	ref

Boldface indicates statistical significance (p<0.05).
AOR from multivariable logistic regression models controlling for all variables in the model.
*P<0.05, **P<0.001.
†Age presented in two categories due to small sample size with >0.3 coefficient of variance.
‡Included respondents who self-identified as non-Hispanic black, non-Hispanic other, Hispanic and non-Hispanic multirace.
§Included respondents who had ever made a quit attempt using medication, counselling or other programme.
¶Included respondents who had ever made a quit attempt using another tobacco product (eg, e-cigarettes, vapes, smokeless tobacco).
AOR, adjusted OR; ref, reference; SLT, smokeless tobacco.

seen or heard of these tobacco-free nicotine pouches?" (yes/no). Those who responded 'yes' were asked, "Have you ever tried any of these tobacco-free nicotine pouches?" (yes/no). Finally, all respondents were asked "How interested, if at all, are you in using any of these tobacco-free nicotine pouches in the next 6 months?" with response options being not at all, not very, somewhat, very and extremely interested. For analysis, these response options were dichotomised as 'interested' (somewhat, very or extremely) or 'not interested' (not at all, not very). Respondents who reported not being aware of pouches were coded as not using them before.

Analyses

We calculated descriptive statistics overall and by sex, age, race/ethnicity, other tobacco use, quit plans and prior quit attempt methods. Using multivariable logistic regression, we calculated the adjusted ORs (AORs) of pouch awareness, ever use and interest in future use controlling for sex, age, race, education, quit plans, prior quit attempt method (medication, counselling/other cessation programme, another tobacco product), ever use of SLT and ever use of e-cigarettes. Significance was determined based on a p value <0.05. Analyses were weighted and conducted using SAS software V.9.4 (SAS Institute, Cary, North Carolina, USA) complex survey procedures with variance estimated using Taylor Series Linearization.

RESULTS

The analytic sample included 1018 adults who reported current established smoking. Most were men, aged between 45 and 59 years, non-Hispanic white, had a high school education or less, no plans to quit smoking and reported ever use of e-cigarettes or vaping products (table 1). In early 2021, 29.2% had ever seen or heard of tobacco-free nicotine pouches. Awareness of nicotine pouches differed significantly by age group, such that compared with smokers aged 60 years and above, those aged 18–29 years had 2.0 times the odds and those aged 30–44 years had 1.7 times the odds of being aware of nicotine pouches. Pouch awareness was also significantly higher among those who had ever used SLT (AOR=3.38).

Approximately 5.6% of all smokers had ever tried tobacco-free nicotine pouches. Compared with those aged ≥ 45 years, individuals aged 18–44 years had 2.9 times the odds of ever using nicotine pouches. Ever use was also significantly higher among individuals who ever attempted to quit using traditional methods such as medication, counselling or other cessation programmes (AOR=4.18) and those who had ever used SLT (AOR=10.00). Odds of ever using nicotine pouches was significantly lower among smokers who had some college or higher education (AOR=0.44).

Finally, 16.8% of smokers expressed being at least somewhat interested in using tobacco-free nicotine pouches in the next 6 months. In comparison, only 6.9% (95% CI: 4.56 to 9.18) were at least somewhat interested in using an SLT product (such as dip, spit or chew tobacco, moist snuff or snus) in the next 6 months (data not shown). Increased odds of having interest in using pouches was also associated with having plans to quit in <6 months (AOR=1.90), having a prior quit attempt using traditional methods (AOR=1.62) or another tobacco product (AOR=2.08) and having ever used nicotine pouches (AOR=5.82).

DISCUSSION

This study provides the first estimates of awareness, appeal and ever use of tobacco-free nicotine pouches among US adult

smokers. As of early 2021, nearly 30% of current adult smokers were aware of these nicotine pouches, with awareness being higher among younger adults and those who had ever used SLT, and about 17% of smokers expressed interest in using them, with greater interest among those with imminent plans to quit and those who previously tried quitting with traditional methods or another tobacco or nicotine product.

Among US smokers, 5.6% had ever tried nicotine pouches in early 2021. Comparatively, a study conducted in late 2019 among UK current and former smokers and vapers found that 16% had ever heard of nicotine pouches and 4% had ever used them.¹⁴ Our study also found ever use of nicotine pouches significantly associated with age, education, previous quit attempts with traditional methods and ever SLT use. Given the similarities between products, it might be expected that smokers who ever used SLT were more likely to be aware of nicotine pouches as well as report trying nicotine pouches.

Although survey measures of nicotine pouch awareness, ever use and interest were accompanied by brand names, product images and descriptions, these data were limited by self-report and product misclassification was possible. Our survey sample also consisted solely of cigarette smokers so we were unable to assess awareness, interest or ever use among primary or exclusive SLT users, who may be the likely target for this product given the likeness between traditional SLT and nicotine pouches. Additionally, our sample did not include adolescents or adults who had never used tobacco or nicotine and thus, we cannot examine product initiation among those with no other tobacco or nicotine experience. Future studies should assess awareness among the general public. Moreover, due to our sample having a small number of individuals who had ever used nicotine pouches, estimates of this behaviour were less precise and should be interpreted with caution. Finally, questions about nicotine pouch products were included towards the end of a survey that also asked participants about modified risk statements related to snus and e-cigarettes; although the survey did not refer to any modified risks about nicotine pouches, question order bias is possible and may influence responses to questions about these products.

Our findings suggest that awareness and use of tobacco-free nicotine pouches among adult smokers is substantial enough to warrant their inclusion in surveys with tobacco or nicotine product measures to better understand patterns of use, including poly tobacco use. Continued surveillance of overall trends in nicotine pouch prevalence is important given recent sales growth and brand expansion in the modern oral nicotine product

What this paper adds

- ▶ Studies have highlighted the recent growth in sales of tobacco-free nicotine pouches in the USA; however, there is little research on ever use, interest or awareness of such products at a population level.
- ▶ This study is the first to estimate awareness or interest in nicotine pouches as well as prevalence of ever use among adults who currently smoke in the USA.
- ▶ In 2021, 29.2% of adults who smoke had ever seen or heard of nicotine pouches, 5.6% had ever tried nicotine pouches and 16.8% reported interest in using nicotine pouches in the next 6 months.
- ▶ Awareness, appeal and trial of nicotine pouches among adults who smoke varied by age, and education as well as smoking quit plans and prior quit attempt methods.

category, including synthetic brands.^{3 15 16} To date, much of the research on interest in and use of nicotine pouches has been industry-funded. In addition to surveillance, further independent research is needed on actual and perceived risk of nicotine pouches, reasons and settings for use across various population groups, including naïve tobacco users. Additional research should also clarify whether use of nicotine pouches is associated with tobacco smoking quit attempts, cessation or harm reduction for smokers, or whether pouches may facilitate dual use and delayed cessation.

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