

Smokers who are also using smokeless tobacco products in the US: a national assessment of characteristics, behaviours and beliefs of 'dual users'

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ABSTRACT

Background Marketing and advertising of smokeless tobacco products towards cigarette smokers has increased recently. Because the use of multiple tobacco products is a growing public health concern, the present work assesses the use of smokeless tobacco among cigarette smokers, a behaviour termed as 'dual use', as well as attitudes and beliefs on their 'dual use' of tobacco.

Methods Data were used from the 2008 ConsumerStyles survey, a nationally representative, mail-in survey of consumers in the USA (n=10 108).

Results 'Dual use' was more common among cigarette smokers who were young, white men living in the Midwest or South. The majority of 'dual users' reported using smokeless tobacco in places where they could not smoke (67.7%) and did not believe smokeless tobacco would help in quitting smoking (75.1%). 'Dual users' reported planning to quit within the next 6 months less often than adults who smoke cigarettes exclusively and close to half (42.3%) never plan to quit smoking.

Conclusions Tobacco use is attributed to a number of diseases and deaths worldwide, and cessation of tobacco use can reduce these health risks. The prevalent use of smokeless tobacco in places with smoking restrictions and lack of planning to quit by 'dual users' suggest the need to promote cessation among these users.

INTRODUCTION

Use of multiple tobacco products is an issue of increasing concern in the tobacco control community.¹ Researchers have observed increased advertising and promotion of smokeless tobacco in recent years, which target cigarette smokers.² Additionally, the opportunity exists to use smokeless tobacco for nicotine delivery in public places and workplaces covered by smoke-free indoor air policies, a behaviour which could deter smoking cessation attempts and negate social norm change induced by this policy intervention. These two factors may result in increased use of cigarettes and smokeless tobacco, termed 'dual use'. Because 'dual use' may hinder successful smoking cessation³ and smokeless tobacco and cigarette smoking increase the risk of pancreatic and oesophageal cancers^{4,5} and cardiovascular disease,^{6,7} 'dual use' may pose deleterious health consequences. However, very little information currently exists on this group of users. As an initial step in assessing these users, the present study assessed what proportion of smokers use smokeless tobacco ('dual users'), who these users are and how they are using these products in comparison to other tobacco users.

METHODS

In 2008, The Centers for Disease Control and Prevention licensed data from a consumer-based survey conducted by Porter Novelli from May to June 2008. ConsumerStyles is a mail-in survey sent to 20 000 consumers nationally in the USA. Sampling and data collection for the survey are conducted by Synovate, a global market research company that draws the sample from an existing consumer mail panel of 340 000 potential respondents. Survey respondents are recruited to this mail panel through a four-page recruitment survey and are given small monetary incentives (<US\$5) in exchange for their participation. A stratified random sample of 20 000 respondents was selected in 2008. The main sample (n=11 000) was stratified according to region, household income, population density, age and household size to approximate a nationally representative sample, and oversampled for low-income and minority populations (n=3000). In 2008, 10 108 adults completed the ConsumerStyles survey (response rate: 50.5%).

We defined current cigarette smoking as having smoked 100 cigarettes in their entire life and currently smoking every day or some days. Smokeless tobacco use was defined as having used chewing tobacco, snuff, dip, or snus on one or more of the past 30 days. Respondents were separated into three groups based on their tobacco use: those who smoke cigarettes and do not use smokeless tobacco (cigarette smokers), those who use smokeless tobacco and do not smoke cigarettes (smokeless tobacco users), and those who smoke cigarettes and use smokeless tobacco ('dual users'). We compared demographic characteristics between these three groups, and multiple logistic regression models were used to control for age, sex, race, income and region of residence, and to compare responses to the following questions:

1. 'What best describes your intentions regarding quitting tobacco? Would you say you: do not currently use tobacco, never plan to quit, will quit in the next 7 days, will quit in the next month, will quit in the next 6 months, will quit in the next year?'
2. 'Smokeless tobacco products like chewing tobacco, snuff, dip, or snus are: more harmful than cigarettes, as harmful as cigarettes, less harmful than cigarettes, don't know?'
3. 'Which, if any, of the following products do you think help smokers quit: nicotine lozenges or nicotine gum; prescription pills like [three anti-depressants were named]; nicotine replacement

patches; chewing tobacco, snuff, dip, or snus; nicotine inhaler; nicotine nasal spray; or none of these?'

4. 'During the past 30 days, did you use chewing tobacco, snuff, or dip in situations where you could not smoke?' and 'During the past 30 days, did you use snus in situations where you could not smoke?'

Weighted percentages, ORs and corresponding 95% CIs were computed using surveyfreq and surveylogistic procedures in SAS version 9.2 (SAS Institute, Cary, North Carolina, USA).

RESULTS

Approximately 20.5% of the adults sampled used either smokeless tobacco or cigarettes; 17.8% of adults smoked cigarettes

only, 1.6% used smokeless tobacco only and 1.1% were 'dual users'. Among smokeless tobacco users, 41.3% reported they also smoke cigarettes every day or some days; conversely, 6.1% of smokers were smokeless tobacco users. The majority of 'dual users' and smokeless tobacco users were men (80.5% and 97.3%, respectively), whereas only half of cigarette smokers were men (47.2%) (table 1). Young adults were more likely to be 'dual users' than cigarette smokers and smokeless tobacco users (data not shown; $p<0.01$). One-third (34.5%) of 'dual users' were between the ages of 18 and 24 years, whereas 16.4% of cigarette smokers and 13.2% of smokeless tobacco users were between 18 and 24 years of age. Hispanics and adults with lower income were more likely to be 'dual users' than smokeless tobacco users

Table 1 Characteristics of adults (aged 18+ years) who are 'dual users' of cigarettes and smokeless tobacco, exclusively cigarette smokers and exclusively smokeless tobacco users (ConsumerStyles 2008, USA)

Characteristic	Dual users* (n = 79)		Cigarette only smokers† (n = 1622)		Smokeless tobacco only users‡ (n = 127)	
	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI
Overall	1.1	0.9 to 1.5	17.8	17.2 to 18.9	1.6	1.3 to 2.0
Sex						
Men	80.5	70.2 to 90.8	47.2	43.7 to 50.7	97.3	94.8 to 99.9
Women	19.5	9.2 to 29.8	52.8	49.3 to 56.3	2.7	0.1 to 5.2
Age						
18–24 years	34.5	14.5 to 54.4	16.4	12.1 to 20.7	13.2	0.0 to 31.6
25–34 years	29.3	15.6 to 43.0	20.2	17.7 to 22.8	23.7	13.1 to 34.3
35–44 years	15.2	7.3 to 23.0	20.7	18.4 to 23.02	31.2	20.5 to 41.9
45–54 years	14.7	7.5 to 21.8	21.3	19.2 to 23.4	19.8	12.2 to 27.3
55+ years	6.4	1.0 to 11.9	21.4	19.1 to 23.7	12.1	6.0 to 18.2
Race						
White	75.7	61.1 to 90.4	69.8	66.3 to 73.2	87.2	80.4 to 94.0
Black	11.1	0.0 to 25.3	11.4	9.1 to 13.7	6.9	1.4 to 12.4
Hispanic	8.5	2.6 to 14.3	13.6	10.7 to 16.5	1.4	0.0 to 3.3
Other	4.6	0.9 to 8.3	5.2	3.6 to 6.9	4.5	1.1 to 7.9
Region						
Northeast	18.9	5.3 to 32.6	15.9	13.4 to 18.4	11.5	5.3 to 17.8
Midwest	29.9	13.3 to 46.4	32.1	28.5 to 35.7	42.0	27.0 to 57.0
South	38.1	21.7 to 54.5	35.0	31.8 to 38.2	36.6	24.9 to 48.3
West	13.1	4.4 to 21.8	17.0	14.7 to 19.3	9.9	4.6 to 15.2
Annual household income						
<US\$15K	25.9	7.7 to 44.2	19.0	16.4 to 21.6	5.2	1.7 to 8.7
US\$15K–US\$24.9K	17.3	5.7 to 28.9	15.5	12.9 to 18.1	11.2	4.2 to 18.2
US\$25K–US\$39.9K	19.7	7.2 to 32.1	21.5	18.2 to 24.9	28.9	12.1 to 45.7
US\$40K–US\$59.9K	15.0	1.8 to 28.2	16.6	14.2 to 19.1	21.1	12.1 to 30.1
≥US\$60K	22.1	11.9 to 32.3	27.3	24.6 to 30.1	33.6	22.7 to 44.6
Use smokeless tobacco when cannot smoke						
Yes	67.7	50.9 to 84.4	NA		NA	
No	32.3	15.6 to 49.1	NA		NA	
Believe smokeless tobacco is more/less harmful than cigarettes						
More harmful than cigarettes	6.2	0.0 to 13.3	16.9	14.3 to 19.4	2.3	0.1 to 4.4
As harmful as cigarettes	63.6	48.7 to 78.5	48.1	44.6 to 51.6	38.1	25.7 to 50.5
Less harmful than cigarettes	7.5	1.7 to 13.3	2.1	1.3 to 3.0	45.2	30.5 to 59.8
Do not know	22.7	10.4 to 34.9	32.9	29.7 to 36.1	14.5	6.5 to 22.4
Believe smokeless tobacco helps to quit smoking						
No	75.1	61.2 to 88.9	97.4	96.4 to 98.4	73.6	56.7 to 90.5
Yes	24.9	11.1 to 38.8	2.6	1.6 to 3.5	26.4	9.5 to 43.3
Plan to quit tobacco use*						
Never	42.3	26.0 to 58.6	26.3	23.3 to 29.4	32.4	21.4 to 43.4
Will quit in the next month	2.2	0.0 to 4.8	14.3	11.8 to 16.8	7.3	2.2 to 12.5
Will quit in the next 6 months	17.8	5.3 to 30.4	22.0	18.9 to 25.2	9.5	4.2 to 14.7
Will quit in the next year	37.6	20.2 to 55.0	37.3	34.0 to 40.7	50.8	36.9 to 64.6

*Dual users are respondents who said they have smoked 100 cigarettes in their lifetime, currently smoke cigarettes every day or some days, and have also used chewing tobacco, snuff, dip, or snus in the past 30 days.

†Cigarette smokers are respondents who said they have smoked 100 cigarettes in their lifetime, currently smoke every day or some days but do not have not used smokeless tobacco in the past 30 days.

‡Smokeless tobacco users are respondents who said they have used chewing tobacco, snuff, dip, or snus in the past 30 days, but are not current smokers.

($p < 0.01$). One-quarter (25.9%) of 'dual users' reported an annual household income $< US\$15\,000$ per year, whereas 5.2% of smokeless tobacco users reported this same income. 'Dual users' commonly resided in the South (38.1%), but no difference between tobacco users were identified in terms of region of residence ($p \geq 0.05$).

The majority of 'dual users' reported using smokeless tobacco in places where they couldn't smoke (67.7%) and did not believe smokeless tobacco can help in quitting smoking (75.1%). The majority (63.6%) of 'dual users' also believed smokeless tobacco is as harmful as cigarettes and less often reported smokeless tobacco was less harmful than cigarettes compared to smokeless tobacco users (OR 0.21, 95% CI 0.08 to 0.54). One-quarter (22.7%) of 'dual users' did not know whether smokeless tobacco was as harmful as or less harmful than cigarettes.

Regarding their intentions to quit tobacco use, 'dual users' commonly reported that they would never quit (42.3%), more so than cigarette smokers (OR 2.03, 95% CI 1.22 to 3.37). 'Dual users' were 50% less likely to report planning to quit within the next 6 months compared to cigarette smokers, regardless of sex, race, age, income and region (OR 0.5, 95% CI 0.3 to 0.9); however, this difference was not observed between 'dual users' and smokeless tobacco users (OR 0.9, 95% CI 0.36 to 2.16).

DISCUSSION

The US has recently seen an evolution of smokeless products with the introduction of new, more discreet products, such as snus, a moist smokeless tobacco product, usually sold in small pouches. These products are accompanied by new marketing strategies and new targeted users. Recent advertising campaigns for snus appear to be designed to attract more urban adults and women as well as smokers in smoke-free environments.⁸ These advertisements depict settings of airplanes and corporate boardroom meetings⁸ and indicate that these products are suitable for use in these smoke-free situations. It is interesting to note then the high proportion of male and lower income 'dual users', and the high proportion of 'dual users' using smokeless tobacco in places where they cannot smoke. This indicates the more urban, women smokers targeted by the tobacco industry have not yet initiated smokeless tobacco use,⁸ and there is the possibility that smoke-free laws and other anti-smoking efforts are impacting dual usage.

Our findings indicate that 'dual users' differ in key ways from other tobacco users. 'Dual users' are significantly younger, have less income and reported less intention to quit tobacco use than other tobacco users. Policy interventions, such as increasing excise tax on tobacco products and smoke-free indoor air laws have the largest impact in reducing tobacco use among young adults and those of lower income.^{9,10} Because taxes on smokeless tobacco are often lower than taxes placed on cigarettes¹¹ and smokeless tobacco provides smokers the ability to use tobacco in smoke-free places, it is possible that young adults and lower income populations engage in 'dual use' to continue their tobacco use rather than quitting. Because half of 'dual users' are considering quitting and only one-quarter of 'dual users' believed that smokeless tobacco products could aid in the smoking cessation process, it seems unlikely that they are using smokeless tobacco to help them quit. Furthermore, the majority of 'dual users' captured in our study were using smokeless tobacco when they could not smoke rather than as a cessation aid, a behaviour which may delay smoking cessation. In 2004, the US Surgeon General's Report on the health consequences of smoking highlighted the risk of developing lung cancer and other

smoking-related disease increases with duration of smoking.⁷ Considering these findings and the substantial health benefits of smoking cessation,¹² additional efforts may be required to encourage tobacco cessation attempts among 'dual users' not contemplating quitting and to assist in successful smoking cessation using evidence-based treatments and services.

Scientific reports have found that smokeless tobacco poses significant health risks and is not a safe alternative to cigarette smoking.^{3,13–15} Previous studies have found that smokers may underestimate the health risks of smoking^{16,17} and smokeless tobacco¹⁸; however, the majority of 'dual users' in our study believed smokeless tobacco was as harmful to their health as cigarettes and were less likely than adults who use smokeless tobacco alone to believe smokeless tobacco is less harmful than cigarettes. These findings suggest that most 'dual users' do not perceive smokeless tobacco as less harmful to their health than cigarettes. As a result, our findings indicate that 'dual users' are a particularly unique segment of tobacco users who may require specifically tailored public health messages, because they may be more aware of the health risks associated with smokeless tobacco.

The ConsumerStyles survey offers novel tobacco-related data unavailable in other data sources. However, there are some limitations to the ConsumerStyles survey that should be considered. First, it is a mail-in survey, which means persons in the US without a mailing address may be underrepresented. Second, only 50.5% of recipients responded to the survey, which may introduce some non-response bias. Third, only 79 adults were 'dual users', and this small number of adults reduced the precision of our estimates. It is difficult to make inferences based on 79 respondents; however, because no other population-based data exist on some of the measures we were able to include in our study, our results offer an initial foundation in this area of tobacco research. Furthermore, our sample was weighted to be representative of the US national population. Fourth, because respondents are asked to self-report on their cigarette and smokeless tobacco use, these estimates are subject to self-report bias. However, previous literature has indicated that self-report can be a valid measure of cigarette and smokeless tobacco use^{19,20} and estimates of smoking prevalence and smokeless tobacco use were statistically similar to estimates from other national data sources.^{21,22} Finally, completion of the survey requires literacy in English, which means persons who cannot read or write in English may be omitted from the survey and as a result be under-represented.

Although 'dual users' represent a small proportion of adult smokers in our study (6.1%) and cigarette smoking impacts a much larger proportion of adults, this is an area of tobacco control that warrants further monitoring. The ways in which smokeless tobacco products are being used by smokers indicate a potential problem to the tobacco control community. Our results suggest that these 'dual users' are using smokeless tobacco to maintain their cigarette addiction and not to help them quit smoking. Because smokeless tobacco is most common among young, white men and Native Americans/Alaskan Natives,²³ it would be helpful to replicate our study with population-based national data among certain demographic subgroups, such as adolescent and young adult men, particularly those who are white and Native Americans/Alaskan Natives. Our findings emphasise the need for the public health community to (1) continue to investigate and monitor 'dual use' nationally; and (2) promote public health messages to this population of tobacco users that emphasise the need to quit all tobacco products.

What this paper adds

- A number of new smokeless tobacco products have been developed and marketed towards cigarette smokers in the US, and these products may deter smoking cessation since they can be used in places where smoking is prohibited.
- Despite the health risks 'dual use' may pose, it has not yet been determined whether 'dual users' are using smokeless tobacco in smoke-free places, and although some evidence exists indicating 'dual users' are less successful in quitting, their intentions to quit are less understood.
- We found that the majority of 'dual users' use smokeless tobacco in places where they cannot smoke and nearly half of 'dual users' have no plans to quit tobacco use. These findings highlight the need to promote public health messages to this population of tobacco users that emphasise the need to quit all tobacco products.

Competing interests None.

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