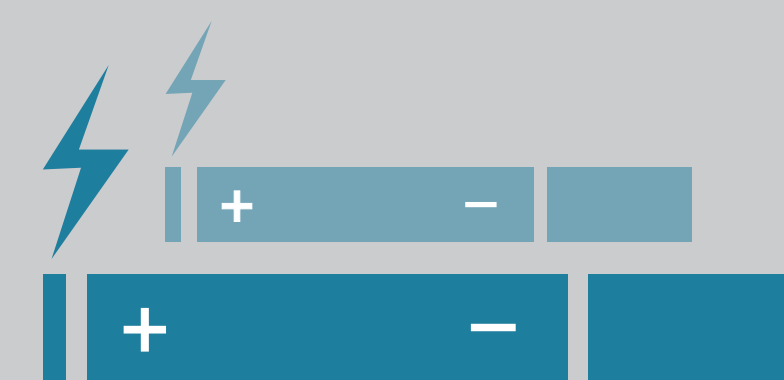
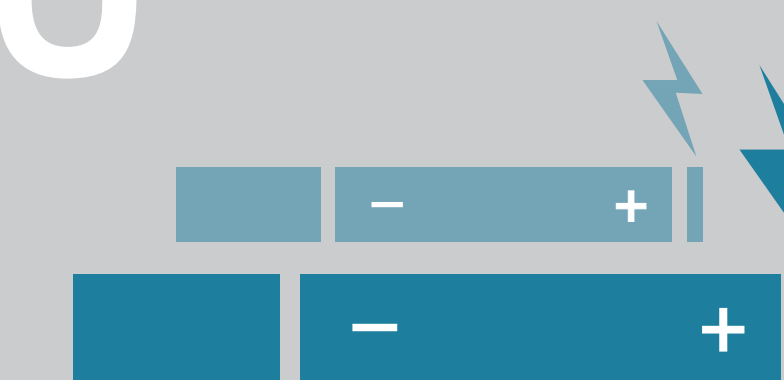


Three Year Trends In The Use Of Emerging Tobacco Products Among Parents



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ABSTRACT

Purpose: Snus and electronic cigarettes have recently been introduced to the US market. These products and waterpipes have been heavily promoted; however, to date, the FDA has only regulated snus. We assessed three year trends in use of these products among US parents, and current predictors of electronic cigarette use.

Methods: Three consecutive cross-sectional surveys representing national probability samples of adults were administered from 2010 to 2012. The mixed-mode design includes an RDD frame and a probability-based internet panel frame to reduce bias due to wireless substitution. Analyses were based on adults who responded that at least one person under the age of 18 resided in their household.

Results: Within the overall samples, 37.1% of 2010 respondents (n=1190) and 32.6% of the 2012 respondents (n=1012) were classified as parents. Lifetime prevalence of snus use (6.4% to 5.0%) did not significantly change from 2010 to 2012. Lifetime prevalence of electronic cigarettes increased from 1.3% to 10.2% and use of water pipe increased from 7.0% to 10.7%, p <.001. In 2012, current smokers (41.1%) and former smokers (13.7%) were the most likely to have tried electronic cigarettes than never smokers (2.6%). Current smokers (20.7%) were more likely than never smokers (11.1%) to have tried smoking a waterpipe. Ever use of electronic cigarettes and waterpipe also varied with age, younger parents were more likely to have tried these products. White parents and parents of other race were more likely to have tried water pipe than black parents. In multivariable analysis, cigarette smoking status and age remained significant for both products. Race and sex were also significant predictors of waterpipe use.

Conclusion: Use of emerging tobacco products raises concerns about nonsmokers being at risk for nicotine dependence, current smokers maintaining their dependence, and the impact of polytobacco use. Greater awareness of emerging tobacco product prevalence and the high risk demographic user groups will inform efforts to determine appropriate public health policy and regulatory action. This is one of the first studies to examine the prevalence of alternative tobacco product use among parents. Future research should address whether parents use these products to help reduce the harmful effects of secondhand smoke on their children and see their use as a way to create a smoke-free home.

INTRODUCTION

Recently, snus and electronic cigarettes have been introduced to the US market, while water pipes (hookah), especially in group social settings, have gained popularity. These products are often promoted as safer alternatives to traditional cigarettes and a potential way to decrease the harm caused by tobacco. However, people who may never have smoked a cigarette or who had been addicted to nicotine in the past may be enticed to use tobacco by these alternative products, posing an individual and public health risk. There is also the potential that current smokers may use these products as an alternative to cessation. In the absence of sufficient data and FDA (and state/local) regulation, the public health community needs more research on the population prevalence of use of these products. The purpose of this study is to assess three year trends in use of these emerging products among US parents. Results from this study can inform regulatory decisions about these products, and can guide clinical counseling efforts regarding the risks of any tobacco use.



METHODS

Cross-sectional dual-frame surveys representing national probability samples of adults were administered in 2010, 2011, and 2012. The design included a Random Digit Dialing (RDD) frame and an internet panel frame developed from a probability sample of U.S. adults, in order to reduce non-coverage issues arising from wireless substitution. The RDD frame included households with listed and unlisted landline telephones; five attempts were made to contact those selected adults who were not home. The Survey Research Laboratory at Mississippi State University's Social Science Research Center administered the surveys via computer-assisted telephone interviews to respondents in this frame. The probability-based panel frame included an online survey conducted by Knowledge Networks, administered to a randomly selected sample from a nationally representative research panel. This panel is based on a sampling frame which includes both listed and unlisted numbers, those without a landline telephone, and does not accept self-selected volunteers, and provides sample coverage for 99% of U.S. households. Data were weighted to adjust for age, race, gender, and region, as well as frame overlap among internet panel respondents who also had a landline telephone and were therefore also eligible for the RDD frame.

RESULTS//WEIGHTED SAMPLE CHARACTERISTICS

	2010 Unweighted N=991	2011 Unweighted N=949	2012 Unweighted N=1012
Smoking Status			
Never Smoker	60.5%	59.7%	63.6%
Former Smoker	20.8%	21.3%	19.6%
Current Smoker	18.7%	19.0%	16.8%
Region			
Northeast	11.4%	11.9%	17.5%
Midwest	16.9%	18.5%	20.8%
South	39.7%	37.6%	36.4%
West	32.0%	31.9%	25.3%
Race			
White	66.9%	62.5%	64.2%
Black	12.7%	12.5%	12.4%
Other	20.4%	25.0%	23.4%
Age			
18-24	13.9%	11.0%	14.5%
25-44	61.7%	61.2%	59.3%
45+	24.3%	27.8%	26.2%
Sex			
Male	45.9%	45.6%	44.5%
Female	54.1%	54.4%	55.5%
Education			
Less than HS	10.3%	12.4%	9.2%
High School	28.6%	27.5%	28.7%
Some College	29.6%	28.7%	28.6%
College Degree	31.6%	31.5%	33.5%

RESULTS//LIFETIME PREVALENCE OF USE OF EMERGING PRODUCTS, 2010-2012

	2010 %, (95% C.I.)	2011 %, (95% C.I.)	2012 %, (95% C.I.)
Snus	6.4% (4.9%, 7.9%)	8.2% (6.4%, 10.0%)	7.5% (5.7%, 9.3%)
Water Pipe	7.0% (5.4%, 8.6%)	9.9% (8.0%, 11.8%)	14.2% (11.9%, 16.5%)
Electronic Cigarette	1.2% (0.5%, 1.9%)	7.9% (6.2%, 9.6%)	11.4% (9.4%, 13.4%)

RESULTS//LIFETIME PREVALENCE OF USE OF ELECTRONIC CIGARETTES, 2010-2012

	2010 %, (95% C.I.)	2011 %, (95% C.I.)	2012 %, (95% C.I.)
Smoking Status			
Never Smoker	0.0% (0.0%, 0.0%)	0.8% (0.1%, 1.5%)	2.6% (1.3%, 3.9%)
Former Smoker	1.2% (0.0%, 2.7%)	9.1% (5.0%, 13.2%)	13.7% (8.8%, 18.6%)
Current Smoker	5.0% (1.9%, 8.1%)	28.9% (21.4%, 36.4%)	41.1% (33.6%, 48.6%)
Region			
Northeast	0.0% (0.0%, 0.0%)	10.4% (5.4%, 15.4%)	7.7% (3.6%, 11.8%)
Midwest	2.0% (0.2%, 3.8%)	9.1% (5.3%, 12.9%)	17.1% (12.1%, 22.1%)
South	0.6% (0.0%, 1.4%)	6.0% (3.3%, 8.5%)	9.0% (6.0%, 12.0%)
West	2.1% (0.1%, 4.1%)	8.3% (4.5%, 12.1%)	12.9% (8.5%, 17.3%)
Race			
White	1.1% (0.3%, 1.9%)	10.7% (8.3%, 13.1%)	13.4% (10.8%, 16.0%)
Black	2.0% (0.0%, 4.6%)	2.2% (0.0%, 5.0%)	8.1% (2.9%, 13.3%)
Other	1.2% (0.0%, 2.9%)	3.6% (0.9%, 6.3%)	7.3% (3.4%, 11.2%)
Age			
18-24	1.8% (0.0%, 4.4%)	7.3% (2.0%, 12.6%)	19.4% (11.4%, 27.4%)
25-44	1.0% (0.2%, 1.8%)	9.6% (7.0%, 12.2%)	12.6% (9.8%, 15.4%)
45+	1.4% (0.1%, 2.7%)	4.3% (2.1%, 6.5%)	4.5% (2.2%, 6.8%)
Sex			
Male	1.5% (0.3%, 2.7%)	7.6% (5.0%, 10.2%)	12.6% (9.4%, 15.8%)
Female	0.9% (0.1%, 1.7%)	8.1% (5.8%, 10.4%)	10.4% (7.8%, 13.0%)
Education			
Less than HS	0.0% (0.0%, 0.0%)	12.9% (5.8%, 20.0%)	7.6% (2.0%, 13.2%)
High School	1.8% (0.1%, 3.5%)	8.2% (4.7%, 11.7%)	18.8% (13.7%, 23.9%)
Some College	2.0% (0.4%, 3.6%)	11.4% (7.5%, 15.3%)	11.3% (7.7%, 14.9%)
College Degree	0.3% (0.0%, 0.9%)	2.6% (0.9%, 4.3%)	6.5% (3.9%, 9.1%)

RESULTS//LIFETIME PREVALENCE OF USE OF WATERPIPE, 2010-2012

	2010 %, (95% C.I.)	2011 %, (95% C.I.)	2012 %, (95% C.I.)
Smoking Status			
Never Smoker	3.6% (2.1%, 5.1%)	5.2% (3.4%, 7.0%)	11.1% (8.5%, 13.7%)
Former Smoker	8.9% (4.9%, 12.9%)	18.6% (13.0%, 24.2%)	18.6% (12.8%, 24.4%)
Current Smoker	15.4% (10.3%, 20.5%)	15.2% (9.3%, 21.1%)	20.7% (14.2%, 27.2%)
Region			
Northeast	4.4% (1.2%, 7.6%)	9.7% (4.9%, 14.5%)	7.6% (3.4%, 11.8%)
Midwest	8.0% (4.5%, 11.5%)	7.7% (4.2%, 11.2%)	17.0% (11.8%, 22.2%)
South	2.5% (1.0%, 4.0%)	10.8% (7.6%, 14.0%)	13.9% (10.0%, 17.8%)
West	12.9% (8.2%, 17.6%)	10.1% (5.9%, 14.3%)	16.7% (11.7%, 21.7%)
Race			
White	8.2% (6.2%, 10.2%)	11.0% (8.6%, 13.4%)	15.5% (12.6%, 18.4%)
Black	2.0% (0.0%, 4.6%)	5.8% (1.4%, 10.2%)	6.5% (1.3%, 11.7%)
Other	5.8% (2.2%, 9.4%)	9.1% (4.9%, 13.3%)	14.6% (9.2%, 20.0%)
Age			
18-24	12.8% (6.3%, 19.3%)	13.7% (6.7%, 20.7%)	23.7% (14.9%, 32.5%)
25-44	7.2% (5.1%, 9.3%)	11.4% (8.6%, 14.2%)	13.8% (10.7%, 16.9%)
45+	2.8% (1.0%, 4.6%)	5.0% (2.6%, 7.4%)	9.7% (6.3%, 13.1%)
Sex			
Male	10.4% (7.5%, 13.3%)	14.0% (10.6%, 17.4%)	17.6% (13.9%, 21.3%)
Female	4.1% (2.5%, 5.7%)	6.6% (4.5%, 8.7%)	11.2% (8.4%, 14.0%)
Education			
Less than HS	9.9% (3.4%, 16.4%)	7.2% (1.7%, 12.7%)	10.2% (3.5%, 16.9%)
High School	6.2% (3.2%, 9.2%)	4.2% (1.7%, 6.7%)	16.9% (11.7%, 22.1%)
Some College	8.3% (5.1%, 11.5%)	17.4% (12.8%, 22.0%)	13.5% (9.4%, 17.6%)
College Degree	5.6% (3.3%, 7.9%)	9.3% (6.2%, 12.4%)	13.6% (9.9%, 17.3%)

RESULTS//MULTIVARIABLE ANALYSES

	O.R., 95% C.I. N=935 Electronic Cigarettes	O.R., 95% C.I. N=856 Waterpipe
Smoking Status		
Never Smoker	REF	REF
Former Smoker	8.5 (4.4, 16.4)	2.1 (1.3, 3.3)
Current Smoker	35.3 (19.2, 64.8)	2.5 (1.5, 4.0)
Region		
Northeast	0.4 (0.2, 0.9)	0.4 (0.2, 0.8)
Midwest	1.4 (0.8, 2.6)	1.1 (0.6, 1.8)
South	0.6 (0.3, 1.0)	0.8 (0.5, 1.3)
West	REF	REF
Race		
White	1.5 (0.7, 3.2)	3.0 (1.3, 6.6)
Black	REF	REF
Other	1.1 (0.4, 2.8)	2.8 (1.2, 6.5)
Age		
18-24	7.7 (3.5, 17.2)	3.9 (2.1, 7.2)
25-44	3.8 (2.0, 7.3)	1.5 (0.9, 2.5)
45+	REF	REF
Sex		
Male	1.2 (0.8, 1.9)	1.7 (1.2, 2.5)
Female	REF	REF
Education		
Less than HS	0.4 (0.1, 0.9)	0.5 (0.2, 1.0)
High School	1.7 (0.9, 3.1)	0.9 (0.5, 1.4)
Some College	1.1 (0.6, 2.1)	0.8 (0.5, 1.2)
College Degree	REF	REF



CONCLUSION

- Use of emerging tobacco products raises concerns about nonsmokers being at risk for nicotine dependence, current smokers maintaining their dependence, and the impact of polytobacco use.
- Smoking rates decreased due to health concerns, regulatory and taxation burden, and the denormalization of tobacco use. Increased prevalence of electronic cigarette and waterpipe use raises concerns about the renormalization of tobacco use.
- The substantial growth in the use of electronic cigarettes over the past three years raises is cause for concern. In an environment in which industry claims suggest low health risks for electronic cigarettes, regulatory and taxation action is very limited, and the products are aggressively marketed, federal, state, and local action is needed to protect public health and prevent the renormalization of tobacco use.
- Greater awareness of emerging tobacco product prevalence and the high risk demographic user groups will inform efforts to determine appropriate public health policy and regulatory action.
- Future research should address whether parents use these products to help reduce the harmful effects of secondhand smoke on their children and see their use as a way to create a smoke-free home.
- Limitations
 - The dual frame methodology is designed to reduce the potential for sample bias associated with either RDD or internet panel samples alone, but we still can't eliminate the potential for noncoverage bias.
 - These data are self-report and cross-sectional, and we could not verify that responses concerning cigarette smoking and electronic cigarette use were not biased.