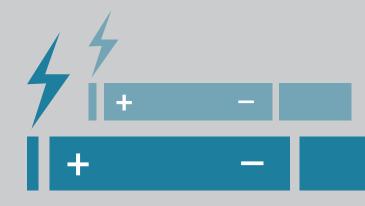
Three Year Trends In The Use Of Emerging Tobacco Products



ABSTRACT

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

Methods: In 2010-2012, we applied a mixed mode survey to obtain annual, representative samples of US adults

Results: In weighted analysis, lifetime prevalence of snus use (5.1% to 4.6%) did not significantly change from 2010 to 2012. Lifetime prevalence of water pipe increased from 8.8% to 11.9%, p < .05, and electronic cigarettes increased from 1.8% to 10.6%, p <.001. In 2012, daily smokers (44.6%) and nondaily smokers (27.1%) were the most likely to have tried electronic cigarettes, compared to former smokers (11.7%) and never smokers (2.4%). Ever use of electronic cigarettes also varied by age and education. In multivariable analysis, current daily (OR=43.0, 95% CI = 28.7–64.6), nondaily (19.1, 11.0–33.2), and former smoking status (7.6, 5.1–11.4) remained significant, as did young (12.2, 6.0–24.9) and middle aged adults (10.0, 5.2-18.9).

Conclusion: Use of emerging tobacco products raises concerns about: a) nonsmokers' risk for nicotine dependence; b) current smokers maintaining their dependence; and c) the impact of poly tobacco use. Greater awareness of emerging tobacco product prevalence and the high risk demographic user groups will inform efforts to determine appropriate clinical approaches, public health policy, and regulatory actions.

(1) Social Science Research Center, Mississippi State University, One Research Blvd., Suite 103, Starkville, MS 39759. (2) Public Health Advocacy Institute / AAP Richmond Center, 102 The Fenway, Suite 117, Boston, MA 02115. (3) Julius B Richmond Center of Excellence, American Academy of Pediatrics, 141 Northwest Point Blvd., Elk Grove Village, IL 60007. (4) MGH Center for Child and Adolescent Health Policy, 50 Staniford Street, Suite 901, Boston, MA 02114.

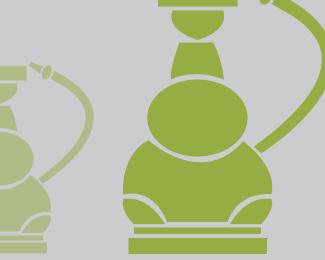
Recently, snus and electronic cigarettes have been introduced to the US market, while water pipes (hookah), especially in group social settings, have gained popularity. These products are often promoted as safer alternatives to traditional cigarettes and a potential way to decrease the harm caused by 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 adults. Results from this study can inform regulatory decisions about these products, and can guide clinical counseling efforts regarding the risks of any tobacco use.



Robert C. McMillen, PhD, Mark A. Gottlieb, JD,² Regina M. Shaefer, MPH,³ Jonathan P. Winickoff, MD, MPH,⁴ Jonathan Klein, MD, MPH.⁵

INTRODUCTION

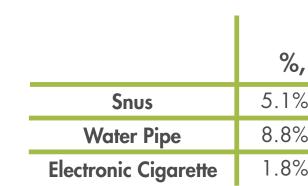
METHODS



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 computerassisted telephone interviews to respondents in this frame. The probabilitybased 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.

	2010 Unweighted N=3,240	2011 Unweighted N=3,097	2012 Unweighted N=3,101
Smoking Status Never Smoker Former Smoker Non-daily Smoker Daily Smoker	56.9% 24.8% 4.6% 13.7%	56.9% 25.0% 3.4% 14.7%	59.6% 24.8% 3.8% 11.8%
Region Northeast Midwest South West	12.6% 18.4% 37.6% 31.4%	12.9% 18.9% 37.2% 31.0%	17.8% 21.7% 37.5% 23.0%
Race White Black Other	74.2% 11.5% 14.3%	69.5% 11.3% 19.2%	71.5% 11.4% 17.1%
Age 18-24 25-44 45-64 65+	13.7% 38.8% 33.3% 14.2%	9.3% 39.7% 34.9% 16.1%	11.4% 38.3% 34.7% 15.6%
Sex Male Female	47.6% 52.4%	48.3% 51.7%	48.1% 51.9%
Education Less than HS High School Some College College Degree	9.2% 28.5% 29.3% 33.0%	10.5% 27.3% 29.6% 32.6%	9.8% 28.8% 28.1% 33.4%

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







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RESULTS//WEIGHTED SAMPLE CHARACTERISTICS

2010 , (95% C.I.)	2011 %, (95% C.I.)	2012 %, (95% C.I.)
% (4.3%, 5.9%)	7.1% (6.2%, 8.0%)	4.6% (3.9%, 5.3%)
% (7.8%, 9.8%)	9.3% (8.3%, 10.3%)	11.9% (10.8%, 13.0%)
% (1.3%, 2.3%)	7.3% (6.4%, 8.2%)	10.6% (9.5%, 11.7%)

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	0.3% (0.0%0.6%)	1.2% (0.7%, 1.7%)	2.4% (1.7%, 3.1%)
Former Smoker	1.5% (0.7%, 2.3%)	6.5% (4.8%, 8.2%)	11.7% (9.5%, 13.9%)
Non-daily Smoker	8.2% (2.6%, 13.8%)	13.9% (6.5%, 21.3%)	27.1% (18.3%, 35.9%
Daily Smoker	6.2% (4.0%, 8.4%)	30.9% (26.4%, 35.4%)	44.6% (39.3%, 49.9%
Region			
Northeast	2.7% (1.4%, 4.0%)	4.8% (3.0%, 6.6%)	8.9% (6.5%, 11.3%)
Midwest	1.4% (0.6%, 2.2%)	7.8% (5.9%, 9.7%)	12.9% (10.5%, 15.3%
South West	1.6% (0.9%, 2.3%) 1.9% (0.8%, 3.0%)	7.0% (5.5%, 8.5%)	10.0% (8.3%, 11.7%) 10.6% (8.2%, 13.0%)
Race	1.7% (0.0%, 3.0%)	8.2% (6.1%, 10.3%)	10.0% (0.2%, 13.0%)
White	1.7% (1.2%, 2.2%)	8.3% (7.2%, 9.4%)	12.3% (11.0%, 13.6%
Black	1.9% (0.3%, 3.5%)	3.7% (1.7%, 5.7%)	5.3% (2.8%, 7.8%)
Other	1.8% (0.4%, 3.2%)	5.6% (3.4%, 7.8%)	7.3% (4.7%, 9.9%)
Age			
18-24	2.5% (0.6%, 4.4%)	7.3% (4.5%, 10.1%)	15.0% (9.9%, 20.1%)
25-44	2.1% (1.2%, 3.0%)	10.7% (8.4%, 13.0%)	13.9% (11.6%, 16.2%
45-64	1.6% (0.9%, 2.3%)	4.9% (3.6%, 6.2%)	9.6% (7.9%, 11.3%)
65 +	0.4% (0.0%, 0.9%)	4.4% (3.1%, 5.7%)	2.3% (1.3%, 3.3%)
Sex			
Male	2.2% (1.4%, 3.0%)	8.8% (7.3%, 10.3%)	11.1% (9.4%, 12.8%)
Female	1.4% (0.9%, 1.9%)	5.8% (4.7%, 6.9%)	10.1% (8.7%, 11.5%)
Education			0 50/ 15 00/ 11 00/1
Less than HS High School	0.7% (0.0%, 1.7%)	11.6% (7.8%, 15.4%)	8.5% (5.2%, 11.8%)
High School Some College	1.7% (0.9%, 2.5%) 3.7% (2.4%, 5.0%)	7.5% (5.8%, 9.2%) 8.3% (6.5%, 10.1%)	14.0% (11.7%, 16.3%) 13.9% (11.6%, 16.2%)
College Degree	0.5% (0.1%, 0.9%)	4.8% (3.5%, 6.1%)	5.6% (4.3%, 6.9%)

RESULTS//MULTIVARIABLE ANALYSES

	O.R., 95% C.I. N=935 Electronic Cigaret
Smoking Status Never Smoker Former Smoker Non-daily Smoker Daily Smoker	REF 7.6 (5.1, 11.4) 19.1 (11.0, 33.2 43.0 (28.7, 64.0
Region Northeast Midwest South West	0.9 (0.6, 1.4) 1.2 (0.8, 1.9) 0.8 (0.6, 1.2) REF
Race White Black Other	2.4 (1.4, 4.2) REF 1.9 (1.0, 3.6)
Age 18-24 25-44 45-64 65+	12.2 (6.0, 24.9 10.0 (5.2, 18.9 3.9 (2.0, 7.4) REF
Sex Male Female	1.0 (0.7, 1.3) REF
Education Less than HS High School Some College College Degree	0.5 (0.3, 1.0) 1.4 (1.0, 2.1) 1.6 (1.1, 2.4) REF

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CONCLUSION

- Use of emerging tobacco products raises concerns about nonsmokers' risk for nicotine dependence, current smokers maintaining their dependence, and the impact of polytobacco use.
- Historically, smoking rates decreased due to health concerns, price increases, smoking policies, and the denormalization of tobacco use. Increased prevalence of electronic cigarette and waterpipe use raises concerns about the renormalization of tobacco use.
- The remarkable 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 motivation for use of these products, as well as frequency and amount of Use.
- 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.