Published in final edited form as:

Subst Abuse. 2017 ; 38(3): 278–284. doi:10.1080/08897077.2016.1275924.

Smokeless Tobacco Use Among United States Air Force Trainees

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Abstract

Background: The prevalence of smokeless tobacco use in the United States Air Force (USAF) exceeds civilian use rates. We assessed the prevalence of smokeless tobacco use and evaluated the correlates of smokeless tobacco use in a sample of United States Air Force trainees.

Methods: We conducted a cross-sectional survey of USAF Technical Training school personnel at Joint Base San Antonio-Lackland and Fort Sam Houston (N=14,810). Survey completion rate was 78%. Logistic regression was used to analyze the associations between demographic variables, tobacco use, and social factors for both regular and infrequent smokeless tobacco (e.g., chewing tobacco, snuff) users.

Results: Overall, 16.0% of Airmen had ever used smokeless tobacco and 10.0% regularly used smokeless tobacco. In multivariate analyses, men had greater odds than women of regular smokeless tobacco use (adjusted OR [odds ratio] 15.2; 95% CI: 10.8, 21.5) and infrequent smokeless tobacco use (adjusted OR 4.2; 95% CI: 3.1, 5.7). Smokeless tobacco use was associated with participation in high school sports (adjusted OR 2.0; 95% CI: 1.6, 2.3 for regular users; adjusted OR 1.4; 95% CI: 1.1, 1.7 for infrequent users), smoking cigarettes (adjusted OR 4.3; 95% CI: 3.6, 5.1 for regular users; OR 4.0; 95% CI: 3.2, 5.0 for infrequent users), or living with someone who used smokeless tobacco (adjusted OR 2.2; 95% CI: 1.9, 2.6 for regular users; OR 1.4; 95% CI: 1.1, 1.7 for infrequent users). Black or African Americans were less likely than

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AUTHOR CONTRIBUTIONS

BDL, JOE, GWT, and RCK conceptualized the work; GWT collected the data; DRS and ACH analyzed the data; BDL and JOE drafted the manuscript; DRS, ACH, GWT, and RCT provided critical revisions to the manuscript; BDL, JOE, GWT, RCK, DRS, ACH approved the final manuscript and agree to be accountable for its content.

The authors declare they have no conflicts of interest.

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Whites to be regular (adjusted OR 0.3; 95% CI: 0.2, 0.4) or infrequent users (adjusted OR 0.30; 95% CI: 0.2, 0.4) of smokeless tobacco.

Conclusions: Smokeless tobacco use among incoming Air Force recruits is common and negatively impacts the Air Force's goal to be tobacco-free. Understanding sociodemographic characteristics perpetuating smokeless tobacco use in the Air Force population can inform the development of health promotion interventions.

Keywords

smokeless tobacco; tobacco use; military personnel

INTRODUCTION

Smokeless tobacco is tobacco consumed orally and not burned. Use of smokeless tobacco is the greatest exogenous source of human exposure to carcinogenic nitrosamines.¹ Long-term smokeless tobacco use is associated with tobacco dependence and adverse health consequences. Smokeless tobacco has been linked to periodontal disease,^{2,3} precancerous oral lesions,⁴ and cancers of the mouth,⁵ kidney,^{6,7} pancreas,⁸ and gastrointestinal tract.⁹ Smokeless tobacco use increases the risk for cerebrovascular disease.⁹

Use of smokeless tobacco is more prevalent in the military than in civilians. In 2014, 3.3% of the United States (US) population reported current smokeless tobacco use.^{10,11} In the military, 14.5% of Active Duty United States Air Force (USAF) and 13.1% of Navy personnel used smokeless tobacco.^{12,13} The total force (i.e., Army, Navy, Marine Corps, Air Force, and Coast Guard) prevalence for past 12-month use was 19.5% and at least weekly use was 11.4%, respectively.¹⁴ Smokeless tobacco use has been observed to increase to 24% during military deployment and combat exposure, although rates declined substantially post-deployment.^{15,16}

The USAF discourages the use of all tobacco products and has the goal to be tobacco-free.¹⁷ In the past, the Air Force has implemented and enforced a number of provisos related to tobacco-free living including having designated tobacco use areas, restriction of tobacco use while in uniform for certain personnel, restrictive policy of tobacco use in privately-owned vehicles while on an Air Force installation, and deterrence of use by commanders and leadership.¹⁷ However, many other factors contribute to the higher tobacco use rates by military personnel,^{14,18} including recruiting individuals who are at high risk for re-initiation of tobacco use after Basic Military Training (BMT). We studied a large cohort of Air Force Technical School trainees to advance our understanding of the prevalence of smokeless tobacco use and the sociodemographic correlates of smokeless tobacco use among individuals entering the USAF.

METHODS

Study Overview

The current study was a cross-sectional survey of USAF trainees as part of a larger, longitudinal, collaborative study of tobacco use in the Air Force. The study was funded by

the National Institutes of Health and the US Food and Drug Administration. All study procedures were approved by the USAF medical facility's Institutional Review Board. Data was collected from March 2011 to March 2013.

Participants and Procedures

Participants were 14,810 USAF Technical Training students, called "Airmen" regardless of rank or gender, from the 342nd (e.g., Pararescue, Tactical Air Control), 343rd (e.g., Security Forces), and 344th (e.g., Aircrew) Training Squadrons on Joint Base San Antonio (JBSA)-Lackland (JBSA-Lackland) and the 937st Training Squadron (e.g. Medical personnel) on Fort Sam Houston in San Antonio, TX. To be considered a trainee, potential recruits must have first successfully completed 8 ½ weeks of Basic Military Training (BMT) at JBSA-Lackland. During BMT, trainees have an involuntary forced abstinence to remain alcohol- and tobacco-free. Upon graduation from BMT, Airmen enter Technical Training school where they acquire advanced job skills (e.g., linguistics, loading plane cargo). Trainees are required to continue to abstain from tobacco and alcohol during the first two weeks of Technical Training and are carefully monitored by leadership during this time. The current study collected data at the end of the two-week Technical Training abstinence period following graduation from BMT.

The survey was a self-completed questionnaire provided to Airmen as part of their ongoing Technical Training curriculum. Trainees were not compensated for their participation. Consent forms were signed prior to administration of the questionnaire. Both the consent forms and study staff administering the questionnaire emphasized that participation was voluntary. During the questionnaire completion period, Airmen were encouraged to sit "at ease" whether or not they chose to participate. Choosing to not participate imposed no personal or professional risks. Non-volunteers sat quietly while those who chose to complete the questionnaire did so. No supervisory leadership was allowed access to the study location during questionnaire administration. Questionnaires were administered by trained University of Tennessee Health Science Center research staff members to groups of up to 50 Airmen. The questionnaire was not anonymous since it was a component of a longitudinal tobacco use study. The questionnaire took approximately 15 minutes to complete. Upon completion of the questionnaire, all Airmen, regardless of participation, received food and additional relaxation time until their leadership retrieved them.

Baseline Questionnaire

The questionnaire consisted of 37 items assessing demographics, frequency of smokeless tobacco (i.e., chewing tobacco and snuff) use, tobacco use among family and friends, ownership of items with tobacco advertising, perceived harm of smokeless tobacco relative to cigarettes, sports participation in high school, and intentions to return to tobacco use. Because Airmen were tobacco- and alcohol-free when surveyed, questions related to their tobacco use prior to BMT.

Smokeless tobacco use was defined as "never," "former," "infrequent," or "regular." Participants were classified as *never users* if they had not used smokeless tobacco prior to BMT; *former users* if they indicated that they used smokeless tobacco in the past but quit

prior to entering BMT; *infrequent users* if they reported using smokeless tobacco less than once per month prior to BMT; and *regular users* if they reported using smokeless tobacco at least once per month prior to BMT.¹⁹

Statistical Analysis

The frequency of smokeless tobacco use was summarized overall, and according to questionnaire items response categories. In addition to a descriptive summary, analyses were performed to assess characteristics associated with *infrequent* (<once per month) and *regular* (monthly) smokeless tobacco use. The characteristics included in these analyses were selected *a priori* and chosen because they were identified as potentially associated with smokeless tobacco use in previous investigations. Analyses were performed using nominal logistic regression with the frequency of smokeless tobacco use prior to BMT as the response variable. Given the small number of former users and the fact that the frequency of their smokeless tobacco use prior to quitting was unknown this group was excluded from the analyses. Thus, the dependent variable for the multinomial logistic regression analysis includes three categories [*never*, *infrequent* (<once per month) and *regular* (monthly) smokeless tobacco use], with *never* users being the reference group.

In addition to univariate analyses, a multivariable analysis was performed using logistic regression. The response variable for the logistic regression analysis included *infrequent* (<once per month) and *regular users* (monthly). Given the small number of former users and the fact that the frequency of their smokeless tobacco use prior to quitting was unknown, former users were excluded from the logistic regression analyses. Three items chosen for the descriptive summary were not included as explanatory variables in the analyses. Two items assessing the recruit's intentions regarding smokeless tobacco use after BMT were not included as explanatory variables because they were not relevant prior to BMT, and a single item asking whether the recruit lived with someone who used both smokeless tobacco and cigarettes prior to BMT was excluded because it was redundant with other items. All other variables included in the univariate analyses were included in the multivariable model. In all cases, results are reported using odds ratios (OR) and corresponding 95% confidence intervals (CI).

RESULTS

Participant Characteristics

Seventy-eight percent of a cohort of 14,810 Airmen participated in the survey (**Table 1**). Forty-two percent of the sample was younger than twenty years old. The sample was predominantly White (68%), non-Hispanic (85%), single (90%) males. Women constituted 25.5% of the sample. The largest proportion of recruits from racial minorities was Black or African American. Most participants had a high school education (52%). Regular smokeless tobacco use was reported by 10% of the sample (n=1,448). Twenty-seven percent of Airmen reported that they were thinking about or definitely considering using tobacco after their training was complete, and 9% planned to use tobacco to meet mandatory weight standards. Among individuals reporting regular smokeless tobacco use, daily use was most commonly reported (42%) [*data not shown*].

Univariate Correlates of Smokeless Tobacco Use

Univariate correlates of both infrequent and regular users are presented in **Table 2**. Non-Hispanic White males were more likely to be smokeless tobacco users. Playing high school sports, smoking cigarettes at least once per month, having friends or living with someone who used tobacco products, owning at least one item that had tobacco advertising on it, and being willing to try a tobacco product that claimed to be safer than cigarettes was associated with both infrequent and regular smokeless tobacco use.

Multivariate Correlates of Smokeless Tobacco Use

Results of the multivariate logistic regression analysis are presented in Table 3. Male gender, playing sports, cigarette smoking, having any friends who used smokeless tobacco, willingness to try a tobacco product claiming to be safer than cigarettes, and living with someone who uses smokeless tobacco were all positively associated with infrequent and regular smokeless tobacco use. Black or African American race, having friends who smoke cigarettes, and living with somebody who smokes cigarettes were associated with a lower odds of both infrequent and regular smokeless tobacco use.

DISCUSSION

Our findings demonstrate that rates of smokeless tobacco use are higher in the USAF than in the civilian population, but demographic and social characteristics of smokeless tobacco use are otherwise consistent with extant literature. For example, we observed an association between smokeless tobacco use, athletics, and smokeless tobacco peer use. Most Airmen played sports in high school, and one out of every five athletes used smokeless tobacco prior to joining the Air Force. In the general population, smokeless tobacco use is higher among males who participate in organized sports,²⁰ and almost two-thirds of high school athletes report that they use smokeless tobacco because their friends do.²¹ Although smokeless tobacco may not be generally considered a “social” form of tobacco use, such as hookah smoking,²² we observed strong relationships between regular smokeless tobacco use and having friends who use smokeless tobacco. Smokeless tobacco use may be reinforced through social acceptability in peer relationships,^{14,23} and the USAF may be inheriting a social culture of smokeless tobacco use in which trainees are reinforcing smokeless tobacco use among each other. The 2013 DOD Health Related Behaviors Survey of Active Duty Service Members observed that 61.2% of Active Duty members reported that smokeless tobacco use facilitated social networking (i.e., “some” or “most” friends of their friends use smokeless tobacco in their presence).

In the current study, cigarette smoking was associated with a higher likelihood of smokeless tobacco use. “Dual use” (i.e., combined use of cigarettes and smokeless tobacco) is common among smokeless tobacco with users with 72% of adolescents reporting concomitant use of smokeless tobacco and smoking combustible tobacco products (i.e., cigarettes).²⁴ Compared to individuals who smoke only cigarettes, dual users have higher estimated total nicotine exposure²⁵ and have been observed to be the less likely to quit tobacco compared to exclusive cigarette smokers or exclusive smokeless tobacco users.²⁵ Dual users have also been reported to use more alcohol than other types of tobacco users.²⁶ Dual use may be

associated with a higher risk of adverse cardiovascular outcomes than smokeless tobacco use alone.²⁷ No interventions currently exist that specifically target dual users, and it is unknown if targeting the products simultaneously increases tobacco abstinence rates compared to addressing cigarette smoking or smokeless tobacco exclusively.

We observed that 26.7% of Airmen reported they are thinking about or definitely planning on returning to tobacco products after completing training. Re-initiation of smokeless tobacco is concerning based upon our previous data that 87% of Airmen are more like to engage in harm escalation (i.e., switching from smokeless tobacco use to smoking or dual use of cigarettes and smokeless tobacco) than in harm reduction (quitting smokeless tobacco).²⁸ Interventions timed to the transition period after forced tobacco abstinence in the USAF may be effective for reducing smokeless tobacco use.

The major strengths of this study are the large sample size and the population under study (i.e., non-college bound young adults aged 18–24 years). Although our sample is comprised of Airmen, it is more likely to be representative of civilian populations given this early stage of training. Our study may have limited generalizability to other Air Force service members because we assessed a sample of individuals early in their military careers. Furthermore, smokeless tobacco use in the USAF is not representative of smokeless tobacco use across the service branches since rates for the Air Force are consistently lower than the rest of the military.¹⁴ Higher smokeless tobacco use rates are observed in the Marine Corps and Coast Guard.¹⁴ Finally, limitations exist to the use of self-reported smokeless tobacco use, and the cross-sectional nature of this study does not allow us to infer causality.

We conclude that smokeless tobacco use in USAF trainees prior to entering service is influenced by gender, ethnicity, race, and social environment. Regular smokeless tobacco use in the Air Force is higher than the civilian population¹¹ and may be partially attributed to the prevalence of individuals using smokeless tobacco “up to the gate” of BMT. Use of smokeless tobacco threatens the health of USAF members and conflicts with the Air Force goal of being tobacco-free.¹⁷ Research on the factors influencing regular smokeless tobacco use in the military, re-initiation of smokeless tobacco after BMT, and interventions timed to the transition period after forced tobacco abstinence need to be developed and disseminated. Through advanced understanding of these issues, we can formulate public health strategies and clinical approaches to address smokeless tobacco use in the military that may be generalizable to civilian smokeless tobacco users.

ACKNOWLEDGEMENTS

This study is a collaborative endeavor between the United States Air Force and the University of Tennessee Health Science Center via a Cooperative Research and Development Agreement (CRADA #11–118-WHMC-CRADA01) and approved by the Wilford Hall Ambulatory Surgical Center’s Institutional Review Board on Joint Base San Antonio-Lackland. The opinions expressed in this document are solely those of the authors and do not represent an endorsement by or the views of the United States Air Force, the Department of Defense, or the United States Government. The authors gratefully acknowledge the support of 2nd Air Force, the leadership branch for training in the United States Air Force.

FUNDING

The study was funded by two grants (DA036510 and DA037273) from the National Institute of Drug Abuse (R. Klesges, Principal Investigator). The funding organization did not have any role in the design or conduct of the

study; data collection management, analysis, or interpretation of the data; preparation, review or approval of the manuscripts; or the decision to submit the manuscript for publication.

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Table 1.

Sample Demographics and Use of Smokeless Tobacco

	Total	Never	Former	Infrequent	Regular
No. of Participants	14,810 ^a	12,447	337	578	1,448
Characteristics					
Age					
<20 years	6,186	5,698 (84%)	128 (2%)	274 (4%)	716 (11%)
20 years	7,994	6,749 (84%)	209 (3%)	304 (4%)	732 (9%)
Gender					
Female	3,786	3,678 (97%)	15 (0%)	52 (1%)	41 (1%)
Male	11,024	8,769 (80%)	322 (3%)	526 (5%)	1,407 (13%)
Ethnicity					
Not Hispanic	12,546	10,377 (83%)	314 (3%)	516 (4%)	1,339 (11%)
Hispanic	2,181	2,001 (92%)	22 (1%)	61 (3%)	97 (4%)
Marital status					
Living as single	13,284	11,145 (84%)	289 (2%)	530 (4%)	1,320 (10%)
Living as married	1,519	1,296 (85%)	48 (3%)	48 (3%)	127 (8%)
Race					
White	10,065	7,982 (79%)	288 (3%)	502 (5%)	1,293 (13%)
Black or African American	2,237	2,188 (98%)	8 (0%)	15 (1%)	26 (1%)
Other single race	1,390	1,280 (92%)	20 (1%)	26 (2%)	64 (5%)
More than one race	1,064	947 (89%)	20 (2%)	33 (3%)	64 (6%)
Education					
High school graduate/G.E.D.	7,664	6,374 (83%)	162 (2%)	311 (4%)	817 (11%)
Some education after high school	6,091	5,168 (85%)	147 (2%)	224 (4%)	552 (9%)
4-year degree or more	1,027	882 (86%)	27 (3%)	41 (4%)	77 (7%)
Played sports in high school					
No	4,848	4,401 (91%)	74 (2%)	139 (3%)	234 (5%)
Yes	9,941	8,028 (81%)	263 (3%)	438 (4%)	1,212 (12%)
Smoked cigarettes at least once per month					
No	12,415	10,970 (88%)	256 (2%)	347 (3%)	842 (7%)

	Total	Never	Former	Infrequent	Regular
Yes	2,368	1,453 (61%)	81 (3%)	230 (10%)	604 (26%)
Number of friends who smoked cigarettes					
None	2,408	2,265 (94%)	18 (1%)	37 (2%)	88 (4%)
Few (<20%)	5,209	4,592 (88%)	90 (2%)	163 (3%)	364 (7%)
Some (20%–49%)	3,494	2,822 (81%)	103 (3%)	152 (4%)	417 (12%)
Many or almost all (≥ 50%)	3,687	2,757 (75%)	126 (3%)	226 (6%)	578 (16%)
Number of friends who used smokeless tobacco					
None	5,161	5,089 (99%)	19 (0%)	26 (1%)	27 (1%)
Few (<20%)	4,935	4,390 (89%)	92 (2%)	208 (4%)	245 (5%)
Some (20%–49%)	2,459	1,792 (73%)	91 (4%)	180 (7%)	396 (16%)
Many or almost all (≥ 50%)	2,246	1,169 (52%)	135 (6%)	163 (7%)	779 (35%)
Own at least one item that has tobacco advertising on it					
No	14,037	12,003 (86%)	299 (2%)	529 (4%)	1,206 (9%)
Yes	770	441 (57%)	38 (5%)	49 (6%)	242 (31%)
Would try a tobacco product that claims to be safer than cigarettes					
No	12,786	11,355 (89%)	256 (2%)	388 (3%)	787 (6%)
Yes	1,976	1,055 (53%)	80 (4%)	188 (10%)	653 (33%)
Lived with someone that smoked cigarettes					
No	8,797	7,481 (85%)	181 (2%)	323 (4%)	812 (9%)
Yes	6,001	4,954 (83%)	156 (3%)	255 (4%)	636 (11%)
Lived with someone that used smokeless tobacco					
No	12,132	10,632 (88%)	222 (2%)	420 (3%)	858 (7%)
Yes	2,669	1,806 (68%)	115 (4%)	158 (6%)	590 (22%)

^dDue to missing data, total for some analysis variables will not sum to 14,810.

Table 2.

Univariable Multinomial Logistic Regression Summary

Characteristic	Infrequent Use OR (95% CI)	Regular Use OR (95% CI)	P value [#]
Age			0.025
<20 years	Reference	Reference	
20 years	0.94 (0.79 to 1.11)	0.86 (0.77 to 0.96)	
Gender			<0.001
Female	Reference	Reference	
Male	4.24 (3.18 to 5.66)	14.39 (10.53 to 19.68)	
Ethnicity			<0.001
Not Hispanic	Reference	Reference	
Hispanic	0.61 (0.47 to 0.80)	0.38 (0.30 to 0.46)	
Marital status			0.048
Living as single	Reference	Reference	
Living as married	0.78 (0.58 to 1.05)	0.83 (0.68 to 1.00)	
Race			<0.001
White	Reference	Reference	
Black or African American	0.11 (0.07 to 0.18)	0.07 (0.05 to 0.11)	
Other single race	0.32 (0.22 to 0.48)	0.31 (0.24 to 0.40)	
More than one race	0.55 (0.39 to 0.79)	0.42 (0.32 to 0.54)	
Education			0.002
High school graduate/G.E.D.	Reference	Reference	
Some education after high school	0.89 (0.75 to 1.06)	0.83 (0.74 to 0.93)	
4-year degree or more	0.95 (0.68 to 1.33)	0.68 (0.53 to 0.87)	
Played sports in high school			<0.001
No	Reference	Reference	
Yes	1.73 (1.42 to 2.10)	2.84 (2.46 to 3.28)	
Smoked cigarettes at least once per month			<0.001
No	Reference	Reference	
Yes	5.00 (4.20 to 5.96)	5.42 (4.81 to 6.09)	

Characteristic	Infrequent Use OR (95% CI)	Regular Use OR (95% CI)	P value [#]
Number of friends who smoked cigarettes			<0.001
None	Reference	Reference	
Few (<20%)	2.17 (1.52 to 3.12)	2.04 (1.61 to 2.59)	
Some (20%–49%)	3.30 (2.29 to 4.74)	3.80 (3.00 to 4.82)	
Many or almost all (≥ 50%)	5.02 (3.53 to 7.14)	5.40 (4.28 to 6.80)	
Number of friends who used smokeless tobacco			<0.001
None	Reference	Reference	
Few (<20%)	9.27 (6.16 to 13.97)	10.52 (7.05 to 15.68)	
Some (20%–49%)	19.66 (12.99 to 29.76)	41.65 (28.10 to 61.74)	
Many or almost all (≥ 50%)	27.29 (17.95 to 41.48)	125.60 (85.13 to 185.31)	
Own at least one item that has tobacco advertising on it			<0.001
No	Reference	Reference	
Yes	2.52 (1.85 to 3.43)	5.46 (4.62 to 6.46)	
Would try a tobacco product that claims to be safer than cigarettes			<0.001
No	Reference	Reference	
Yes	5.22 (4.33 to 6.28)	8.93 (7.91 to 10.08)	
Lived with someone that smoked cigarettes			0.002
No	Reference	Reference	
Yes	1.19 (1.01 to 1.41)	1.18 (1.06 to 1.32)	
Lived with someone that used smokeless tobacco			<0.001
No	Reference	Reference	
Yes	2.21 (1.83 to 2.68)	4.05 (3.60 to 4.55)	

[#] P values are from univariate multinomial logistic regression. Odds ratios greater than one indicate an increased likelihood of regular (at least once per month) or infrequent (less than once per month) ST use compared to never use. Former users (n=337) were removed from the analysis.

Table 3.

Multivariable Multinomial Logistic Regression Summary

Characteristic	Infrequent Use Adjusted OR (95% CI)	Regular Use Adjusted OR (95% CI)	P value [#]
Age			0.248
<20 years	Reference	Reference	
20 years	1.02 (0.82 to 1.28)	1.16 (0.97 to 1.37)	
Gender			<0.001
Female	Reference	Reference	
Male	4.18 (3.08 to 5.67)	15.23 (10.78 to 21.50)	
Ethnicity			0.009
Not Hispanic	Reference	Reference	
Hispanic	0.95 (0.69 to 1.29)	0.65 (0.50 to 0.86)	
Marital status			0.476
Living as single	Reference	Reference	
Living as married	0.87 (0.63 to 1.21)	1.10 (0.86 to 1.40)	
Race			<0.001
White	Reference	Reference	
Black or African American	0.25 (0.15 to 0.43)	0.27 (0.18 to 0.42)	
Other single race	0.57 (0.37 to 0.87)	0.78 (0.56 to 1.08)	
More than one race	0.79 (0.54 to 1.18)	0.82 (0.59 to 1.14)	
Education			0.725
High school graduate/G.E.D.	Reference	Reference	
Some education after high school	1.02 (0.82 to 1.27)	0.98 (0.82 to 1.16)	
4-year degree or more	1.31 (0.88 to 1.93)	1.02 (0.73 to 1.41)	
Played sports in high school			<0.001
No	Reference	Reference	
Yes	1.37 (1.11 to 1.69)	1.95 (1.63 to 2.33)	
Smoked cigarettes at least once per month			<0.001
No	Reference	Reference	
Yes	3.98 (3.19 to 4.96)	4.29 (3.59 to 5.12)	

Characteristic	Infrequent Use Adjusted OR (95% CI)	Regular Use Adjusted OR (95% CI)	P value [#]
Number of friends who smoked cigarettes			<0.001
None	Reference	Reference	
Few (<20%)	0.80 (0.54 to 1.18)	0.61 (0.45 to 0.82)	
Some (20%–49%)	0.63 (0.42 to 0.94)	0.44 (0.32 to 0.60)	
Many or almost all (≥ 50%)	0.60 (0.40 to 0.91)	0.35 (0.25 to 0.48)	
Number of friends who used smokeless tobacco			<0.001
None	Reference	Reference	
Few (<20%)	6.51 (4.25 to 9.97)	7.13 (4.69 to 10.84)	
Some (20%–49%)	12.62 (8.11 to 19.63)	25.32 (16.63 to 38.55)	
Many or almost all (≥ 50%)	17.89 (11.35 to 28.20)	73.82 (48.42 to 112.55)	
Own at least one item that has tobacco advertising on it			<0.001
No	Reference	Reference	
Yes	1.34 (0.96 to 1.88)	2.34 (1.86 to 2.94)	
Would try a tobacco product that claims to be safer than cigarettes			<0.001
No	Reference	Reference	
Yes	2.74 (2.21 to 3.39)	4.71 (3.99 to 5.55)	
Lived with someone that smoked cigarettes			<0.001
No	Reference	Reference	
Yes	0.83 (0.68 to 1.00)	0.73 (0.63 to 0.85)	
Lived with someone that used smokeless tobacco			<0.001
No	Reference	Reference	
Yes	1.40 (1.14 to 1.73)	2.23 (1.91 to 2.60)	

[#] P values are from multinomial logistic regression. Adjusted odds ratios greater than one indicate an increased likelihood of regular (at least once per month) or infrequent (less than once per month) ST use compared to never use. Former users (n=337) were removed from the analysis.