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Misplaced Trust: Racial Differences in Use of Tobacco Products and Trust in Sources of Tobacco Health Information

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Abstract

Introduction: Recently, the rates of utilization of alternative tobacco products have increased. Providing health information about tobacco products from trustworthy sources may help decrease the popularity of these products. Using a nationally representative study of adults, we fill the current gap in research on racial and ethnic disparities in utilization of alternative tobacco products as well as in trust of sources of health information about tobacco products.

Aims and Methods: Data came from the Health Information National Trends Survey (*N* = 3738), which was collected in 2015. Logistic regression models were used to calculate odds of use of seven different tobacco product (eg, hookah, e-cigarettes, etc.), trust in seven different sources of e-cigarette health information (eg, family or friends, health care providers, etc.), and trust in six different sources of tobacco health information, adjusting for control variables.

Results: There were disparities in utilization of alternative tobacco products and in trust, in tobacco companies across racial and ethnic groups. Blacks and Asians were far more likely than whites to trust tobacco (adjusted odds ratios = 8.67 and 4.34) and e-cigarette companies (adjusted odds ratios = 6.97 and 3.13) with information about the health effects of e-cigarettes than whites.

Conclusions: The popularity of alternative tobacco products appears to be high and may offset recent observed decreases in cigarette use. Blacks and Asians appear to trust tobacco companies as sources of information when compared to whites.

Implications: Higher levels of trust in tobacco companies among Asians and blacks may translate to greater susceptibility to utilize tobacco products among these groups, thereby increasing disparities. There is a need for social marketing and education efforts focused on increasing awareness of adverse health effects of using alternative tobacco products as well as on the untrustworthiness of tobacco and e-cigarette companies, especially among racial and ethnic minorities.

Introduction

Addressing morbidity and mortality due to tobacco use is one of the leading public health and policy concerns in the United States. Yet, rates of smoking remain high among adults as recent reports indicate that approximately 17% of the adult population are current smokers.[1] Tobacco use remains the leading cause of preventable disease and death in the United States, causing approximately 40,000 deaths per year.[2] The economic costs of smoking are roughly $300 billion per year, with about half of that ($156 billion) resulting

from lost productivity.[3] However, the impact of tobacco is not uniform, with many disparities in smoking behavior existing in the US population.[4,5]

In recent years, cigarette smoking has decreased in the adult population from 21% in 2005 to 18% in 2012.[6] At first glance, this decrease in cigarette smoking suggests the effectiveness of public health antismoking campaigns. However, recent studies indicate that as rates of cigarette smoking have declined, adoption of other tobacco products, such as hookah,[7,8] e-cigarettes,[9] cigars (including little cigars and cigarillos), and snus[10] has increased. The health effects of these other tobacco products, also referred to as alternative tobacco products or "ATPs,"[11] is of growing interest for public health research, as it remains unclear whether or not they serve as "gateways" to cigarette smoking initiation.[10] Moreover, existing research suggests that some ATPs, including cigars and hookah, are more detrimental to one's health than cigarettes.[10,12,13]

Racial and Ethnic Disparities in Tobacco Use

There are marked racial and ethnic disparities in cigarette smoking. Specifically, American Indians have the highest rate of smoking (29%) compared to all other racial/ethnic groups in the United States, followed by people reporting multiple races (28%) with the second highest rate.[14] Moreover, there are notable differences by gender and nativity. For example, foreign-born Hispanic women have very low rates of smoking (4%).[15] Women tend to smoke less than men, although since the 1970s, rates of smoking have fallen more so among men than among women.[16]

Despite existing policy and research focused on racial/ethnic disparities in cigarette smoking, the body of evidence on racial/ethnic disparities in ATP use is limited. One review of the literature on e-cigarette use found mixed results in regard to racial and ethnic differences in prevalence of use.[9] In addition, the preponderance of published studies on correlates of ATP use have focused only on adolescents and young adults[8,17] and are limited to specific states or regions.[8,18–20] These findings highlight the need for more research on the topic using diverse, nationally representative samples.

Racial Differences in Sources of Information

Trust in a health information source is important because research has shown that, for various health behaviors including smoking cessation, higher levels of patient trust is linked with greater adherence to recommended health behaviors.[21–23] Therefore, examining who people trust to provide them with information on the health effects of tobacco products is key for determining the quality of the health information people are receiving and to identify the most effective venues for delivering tobacco prevention and cessation messages. More than ever, people are bombarded with health information from various sources outside of their primary care providers.[24] People may be receiving messages about the health effects of tobacco from family and friends, government agencies, health advocacy groups, religious organizations, and even tobacco companies themselves. Although patients seem to value their physicians as the most highly trusted source of health information, studies have shown that patients often look for health information elsewhere, such as online, before talking with their physicians.[24,25] In an age when health care providers have less time to communicate with their patients in-person, it is vital to determine where patients are turning for trusted health information about tobacco products outside of their primary care providers. In particular, it is important to understand the degree to which people trust sources of information (ie, tobacco companies) with a history of making deceptive claims about the health effects of tobacco.[26,27]

Furthermore, trust in various sources of health information differs by race/ethnicity, which may be one factor underlying disparities in deleterious health behaviors, like tobacco use. African Americans and Hispanics have lower levels of trust in their health care providers than whites.[28] On the other hand, African Americans and Hispanics are more likely to trust health messages on television than whites.[24,29] Differences in trust in sources of health information about tobacco products may help to explain disparities in knowledge about the harms of using tobacco and subsequent disparities in tobacco use.[30] To our knowledge, previous studies have not examined racial differences in the level of trust of the various sources of information about the health effects of tobacco.

The purpose of this study is to add to the limited literature on racial/ethnic disparities in use of ATPs and trust in sources of tobacco-related information using a nationally representative sample of adults. In specific, this study had two goals. The first is to determine if race/ethnicity is associated with use of different tobacco products, including a wide array of ATPs. This provides an update to existing research,[31] thus capturing emerging disparities due to increase in use of ATPs. The second is to determine the relative trust in health information about tobacco products (both in general and e-cigarettes specifically) and if race/ethnicity was associated with trust in source of tobacco-related information.

Methods

Data Source

Data for this study come from the 2015 iteration of the Health Information National Trends Survey (HINTS). This national survey was sponsored by the National Cancer Institute, in collaboration with the Food and Drug Administration (FDA) Center for Tobacco Products. This cycle of the HINTS is referred to as the HINTS-FDA. Data were collected from May 29, 2015 to September 8, 2015[32] using a mail-based survey of randomly sampled households in the United States. The sampling strategy made use of stratification by county-level smoking rates and oversampling of areas with higher rates of cigarette smoking. The HINTS-FDA was conducted in both English and Spanish.[32]

Using the "Next Birthday Method,"[33] one adult in the household over age 18 was selected to complete the questionnaire. Potential respondents received a $2 incentive to encourage survey completion and return. A total of 3738 surveys were completed and returned by eligible respondents and a 34.59% response rate was achieved.[32] The original data collection for the HINTS-FDA was approved by the Office of Management and Budget.[32] The present analyses focuses on publically available and deidentified HINTS-FDA data and were thus deemed exempt from institutional review board approval.

Variables

Race

The main predictor of interest was respondent's race and ethnicity. This was measured using the Office of Management and Budget's race and ethnicity categories: non-Latino white, non-Latino black, non-Latino Asian, and non-Latino other race. A sizable proportion of respondents (8%) were missing data on race and ethnicity. As a result, and because it was a key study variable, a dummy variable for missing race was created.

Use of Tobacco Products

Respondents were asked if they had ever used any of the following tobacco products: (1) hookah or water pipes filled with tobacco; (2)

electronic cigarettes; (3) pipe filled with tobacco; (4) "roll your own" cigarettes; and (5) snus. These were used to create dichotomous indicators of ever usage, with respondents who reported never hearing of the product coded as never using. Also, respondents were asked to indicate the number of cigars, cigarillos, or little filtered cigars smoked during their lifetime. This was used to create a dichotomous measure of ever using cigars. Current smokers were defined as those who reported currently smoking and who smoked at least 100 cigarettes in their lifetimes. Ever smoking was defined as those who smoked at least 100 cigarettes in their lifetimes. All variables were dichotomized so that most "ever use" rates would be comparable across products.

Trust in Sources of Tobacco-Related Information
Respondents were asked to indicate their level of trust in the information about the health effects of electronic cigarettes from seven sources: (1) health care providers; (2) family or friends; (3) government health agencies; (4) health organizations or groups; (5) religious organizations and leaders; (6) tobacco companies; and (7) electronic cigarette companies. Trust was measured on a Likert scale with four possible responses: "not at all," "a little," "some," or "a lot."

Additionally, respondents were asked to indicate their level of trust in the sources of health information about tobacco products in general. For this set of questions, sources of health information included 1 through 6 above. Responses to trust in sources of information items were dichotomized (1 = source trusted "a lot" and 0 = source not trusted "a lot"). These measures were dichotomized to ensure that cell sizes were large enough to allow weighted models to converge.

Control Variables
Gender, educational attainment, nativity, and age were included as control variables in all multivariate analyses. Gender (male or female), educational attainment (some college or less than some college), and nativity (US-born or foreign-born) were measured using dichotomous variables. Age was measured using a continuous variable. Insurance status and current smoking status were included as control variables when estimating odds of trust in e-cigarette and tobacco-related health information. Insurance status (insured or uninsured) was measured using a dichotomous variable. Dichotomous variables were used, where indicated, to ensure that cell sizes were large enough to allow weighted models to converge.

Analyses

All analyses were conducted using Stata 14.1, using replicate weights to account for survey design. Descriptive statistics (ie, means and frequencies) were computed for all variables. Logistic regression models were used to calculate odds of ever use of seven different tobacco products, trust in seven different sources of e-cigarette health information, and trust in six different sources of tobacco health information for race, adjusting for control variables. Additionally, the coefficient of variation (CV) was calculated to indicate the stability of selected logistic regression models. Each model included all cases with complete information, with analytic samples ranging from a high of 3387 to a low of 3201.

Results

Univariate Statistics

Table 1 shows the weighted sample characteristics for respondents. The majority of respondents were white and about half were female. More than half of respondents had completed at least some college. The majority of respondents were born in the United States. The vast

majority of respondents had health insurance (91%). Table 1 also shows the use of various tobacco products. The most common non-cigarette product respondents reported ever trying was cigars (38%) and the least common was snus (9%). More than half of respondents had ever used any ATP (52%). Almost 15% of respondents were current smokers, and almost 40% were ever smokers.

Finally, Table 1 shows the trust in sources of e-cigarette and tobacco-related health information. The source of information about the health effects of e-cigarettes that was most trusted was health care providers (57% trusted "a lot"), whereas tobacco companies were trusted the least (4% trusted "a lot"). Similarly, the source of information about the health effects of tobacco that was most trusted was health care providers (71% trusted "a lot"), whereas tobacco companies were trusted the least (4% trusted "a lot").

Racial Disparities in Use of Tobacco Products

Table 2 shows the multivariate models calculating odds of use of several tobacco products by race, after controlling for gender, education, nativity, and age. There were no racial disparities in use of e-cigarettes or hookah, accounting for controls. Blacks had 0.27 times the odds of ever trying a tobacco pipe (adjusted odds ratio [AOR] = 0.27; 95% confidence interval [CI]: 0.12, 0.58), when compared to whites. Latinos had 0.42 times the odds of being current smokers (AOR = 0.42; 95% CI: 0.18, 0.98), when compared to whites. Relative to whites, Asians had 0.23 times the odds of ever trying cigars (AOR = 0.23; 95% CI: 0.08, 0.63), 0.22 times the odds of ever trying "roll your own" cigarettes (AOR = 0.22; 95% CI: 0.07, 0.70), 0.07 times the odds of ever trying a tobacco pipe (AOR = 0.07; 95% CI: 0.02, 0.28), 0.05 times the odds of ever trying snus (AOR = 0.05; 95% CI: 0.00, 0.65), and 0.17 times the odds of being a current smoker (AOR = 0.17; 95% CI: 0.05, 0.52). Relative to whites, those with missing race information had 0.55 times the odds of ever trying cigars (AOR = 0.55; 95% CI: 0.34, 0.89), 0.58 times the odds of ever trying "roll your own" cigarettes (AOR = 0.58; 95% CI: 0.38, 0.88), and 0.36 times the odds of ever trying a tobacco pipe (AOR = 0.36; 95% CI: 0.20, 0.64).

Racial Disparities in Trust in Sources of Information About Health Effects of E-Cigarettes

Table 3 shows the multivariate models calculating odds of trusting a source of information about the health effects of e-cigarettes by race, controlling for gender, education, nativity, age, insurance, and current smoking status. Supplemental Table 1, shows the CVs for all odds ratios presented in these models. There were no racial disparities in trust of health care providers or family and friends. Relative to whites, blacks had 3.89 times the odds of trusting religious organizations and leaders (AOR = 3.89; 95% CI: 1.69, 8.95), 8.76 times the odds of trusting tobacco companies (AOR = 8.76; 95% CI: 3.34, 22.55), and 6.97 times the odds of trusting e-cigarette companies (AOR = 6.97; 95% CI: 2.46, 19.72) "a lot." Relative to whites, Asians had 4.34 times the odds of trusting tobacco companies (AOR = 4.34; 95% CI: 1.45, 13.00), and 3.13 times the odds of trusting e-cigarette companies "a lot" (AOR = 3.13; 95% CI: 1.08, 9.08). Relative to whites, "other" race individuals had 0.19 times the odds of trusting e-cigarette companies "a lot" (AOR = 0.19; 95% CI: 0.08, 0.44).

Racial Disparities in Trust in Sources of Information About Health Effects of Tobacco

Table 4 shows the multivariate models calculating odds of trusting a source of information about the health effects of tobacco by

Table 1. Demographic Characteristics for HINTS Sample (*N* = 3738)

Variable	N	% or Mean	SE
Race/ethnicity			
White	2633	59.58	0.56%
Black	232	10.43	0.36%
Latino	241	14.81	0.21
Asian	119	4.94	0.19
Other	141	2.12	0.09
Missing	372	8.12	0.64
Gender			
Male	1497	49.10	0.24
Female	2018	50.90	0.24
Educational attainment			
Less than some college	1270	40.09	0.79
Some college	2404	58.40	0.75
Nativity			
US-born	326	15.10	1.05
Foreign-born	3371	84.90	1.05
Age	3628	56.8	0.28
Insured			
No	207	8.51	0.23
Yes	3444	91.49	0.23
Ever tried hookah			
No	3227	82.20	1.02
Yes	384	17.80	1.02
Ever tried e-cigarettes			
No	3114	81.01	1.27
Yes	497	18.99	1.27
Ever tried tobacco pipe			
No	2984	84.37	1.05
Yes	624	15.63	1.05
Ever tried rolling own cigarettes			
No	2853	77.88	1.08
Yes	757	22.12	1.08
Ever tried snus			
No	3419	91.23	0.89
Yes	190	8.77	0.89
Ever tried cigars			
No	2361	62.09	1.54
Yes	1300	37.91	1.54
Ever used any ATP			
No	1877	47.93	1.33
Yes	1861	52.07	1.33
Ever smoked cigarettes			
No	2041	60.24	0.94
Yes	1631	39.76	0.94
Currently smokes cigarettes			
No	3171	85.15	0.97
Yes	495	14.85	0.97
Trust info about the health effects of e-cigarettes "a lot" from			
Health care providers	2039	57.47	1.63
Family or friends	235	7.26	0.85
Government health agencies	1173	34.47	1.23
Health organizations or groups	1300	39.10	1.47
Religious organizations or leaders	231	7.09	0.83
Tobacco companies	94	3.96	0.74
E-cigarette companies	91	4.04	0.77
Trust info about the health effects of using tobacco "a lot" from			
Health care providers	2505	71.33	1.45
Family or friends	387	11.64	0.94
Government health agencies	1307	38.84	1.43
Health organizations or groups	1449	43.55	1.54
Religious organizations or leaders	265	8.08	0.78
Tobacco companies	97	4.05	0.72

HINTS = Health Information National Trends Survey; SE = standard error.

Table 2. Logistic Models for Ever Use of Tobacco Products

Variable	Ever used e-cigarettes N = 3348		Ever used cigars N = 3387		Ever rolled own cigarettes N = 3347		Ever tried tobacco pipe N = 3345		Ever tried hookah N = 3348		Ever tried snus N = 3346		Current smoker N = 3384	
	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI
Race														
White	Reference		Reference		Reference		Reference		Reference		Reference		Reference	
Black	0.44	(0.18, 1.08)	0.70	(0.39, 1.28)	0.62	(0.30, 1.27)	**0.27**	**(0.12, 0.58)**	1.08	(0.55, 2.10)	0.16	(0.03, 1.02)	1.17	(0.63, 2.00)
Latino	0.52	(0.25, 1.07)	0.64	(0.35, 1.18)	0.49	(0.23, 1.03)	0.70	(0.28, 1.79)	0.77	(0.32, 1.89)	0.64	(0.25, 1.66)	**0.42**	**(0.18, 0.98)**
Asian	0.08	(0.01, 1.07)	**0.23**	**(0.08, 0.63)**	**0.22**	**(0.07, 0.70)**	**0.07**	**(0.02, 0.28)**	0.37	(0.11, 1.28)	**0.05**	**(0.00, 0.65)**	**0.17**	**(0.05, 0.52)**
Other	0.97	(0.41, 2.30)	1.05	(0.45, 2.47)	1.21	(0.66, 2.21)	0.79	(0.42, 1.46)	0.95	(0.37, 2.40)	0.48	(0.14, 1.63)	1.04	(0.45, 2.43)
Missing	0.39	(0.15, 1.04)	**0.55**	**(0.34, 0.89)**	**0.58**	**(0.38, 0.88)**	**0.36**	**(0.20, 0.64)**	0.49	(0.17, 1.44)	0.62	(0.22, 1.75)	0.91	(0.48, 1.71)
Gender														
Male	Reference		Reference		Reference		Reference		Reference		Reference		Reference	
Female	0.77	(0.54, 1.10)	**0.33**	**(0.26, 0.42)**	**0.53**	**(0.41, 0.70)**	**0.18**	**(0.12, 0.26)**	**0.50**	**(0.33, 0.74)**	**0.37**	**(0.21, 0.66)**	0.90	(0.70, 1.14)
Education														
<Some college	Reference		Reference		Reference		Reference		Reference		Reference		Reference	
Some college	0.75	(0.46, 1.21)	1.15	(0.83, 1.59)	**0.57**	**(0.41, 0.82)**	1.06	(0.73, 1.53)	**2.27**	**(1.36, 3.78)**	0.60	(0.30, 1.17)	**0.38**	**(0.26, 0.55)**
Nativity														
Foreign-born	Reference		Reference		Reference		Reference		Reference		Reference		Reference	
US-born	1.24	(0.53, 2.93)	**2.35**	**(1.41, 3.92)**	**2.55**	**(1.20, 5.42)**	**3.02**	**(1.08, 8.47)**	1.86	(0.71, 4.88)	1.47	(0.45, 4.86)	1.64	(0.80, 3.36)
Age	**0.95**	**(0.94, 0.96)**	0.99	(0.98, 1.00)	0.99	(0.98, 1.00)	1.01	(1.00, 1.02)	**0.93**	**(0.92, 0.94)**	**0.96**	**(0.94, 0.97)**	0.99	(0.98, 1.00)

Bolded values denote significant associations

AOR = adjusted odds ratio; CI = confidence interval.

Table 3. Trust Information About Health Effects of E-Cigarettes "a lot", by Source of Information

Variable	Health care provider N = 3243		Family or friends N = 3214		Government health agencies N = 3220		Health organizations or groups N = 3209		Religious organizations and leaders N = 3204		Tobacco companies N = 3209		E-cigarette companies N = 3212	
	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI
Race														
White	Reference		Reference		Reference		Reference		Reference		Reference		Reference	
Black	0.92	(0.54, 1.57)	1.95	(0.82, 4.63)	1.53	(0.85, 2.74)	1.58	(0.96, 2.60)	**3.89**	**(1.69, 8.95)**	**8.67**	**(3.34, 22.55)**	**6.97**	**(2.46, 19.72)**
Latino	0.83	(0.47, 1.45)	2.00	(0.71, 5.63)	1.25	(0.69, 2.26)	1.05	(0.60, 1.84)	1.61	(0.46, 5.46)	3.18	(0.65, 15.51)	2.68	(0.56, 12.87)
Asian	0.73	(0.32, 1.66)	1.97	(0.30, 12.96)	**2.16**	**(1.02, 4.55)**	1.30	(0.58, 2.92)	3.05	(0.52, 17.86)	**4.34**	**(1.45, 13.00)**	**3.13**	**(1.08, 9.08)**
Other	0.64	(0.36, 1.14)	0.52	(0.18, 1.47)	0.58	(0.33, 1.01)	0.75	(0.40, 1.40)	2.31	(0.24, 22.20)	0.76	(0.09, 6.17)	**0.19**	**(0.08, 0.44)**
Missing	0.70	(0.39, 1.26)	1.96	(0.89, 4.31)	0.81	(0.47, 1.41)	0.90	(0.54, 1.47)	1.54	(0.59, 4.03)	1.18	(0.27, 5.08)	1.18	(0.27, 5.06)
Gender														
Male	Reference		Reference		Reference		Reference		Reference		Reference		Reference	
Female	1.04	(0.85, 1.28)	1.20	(0.75, 1.92)	1.15	(0.90, 1.48)	1.10	(0.89, 1.37)	0.81	(0.46, 1.44)	0.88	(0.37, 2.11)	1.04	(0.40, 2.72)
Education														
<Some college	Reference		Reference		Reference		Reference		Reference		Reference		Reference	
Some college	**1.43**	**(1.07, 1.89)**	**0.61**	**(0.38, 0.99)**	1.23	(0.89, 1.71)	1.09	(0.82, 1.44)	0.63	(0.31, 1.29)	0.47	(0.17, 1.26)	0.54	(0.20, 1.42)
Nativity														
Foreign-born	Reference		Reference		Reference		Reference		Reference		Reference		Reference	
US-born	0.94	(0.51, 1.72)	2.95	(0.78, 11.11)	1.22	(0.70, 2.13)	0.98	(0.57, 1.71)	2.11	(0.80, 5.55)	5.01	(0.88, 28.43)	2.81	(0.59, 13.49)
Age	0.99	(0.99, 1.00)	1.00	(0.99, 1.01)	0.99	(0.99, 1.00)	1.00	(0.99, 1.00)	1.00	(0.99, 1.02)	0.98	(0.96, 1.00)	0.98	(0.96, 1.00)
Insurance status														
Uninsured	Reference		Reference		Reference		Reference		Reference		Reference		Reference	
Insured	0.92	(0.50, 1.68)	1.19	(0.48, 2.95)	1.43	(0.84, 2.45)	1.01	(0.55, 1.86)	0.79	(0.31, 1.99)	1.42	(0.37, 5.51)	1.21	(0.36, 4.10)
Smoking status														
Not current smoker	Reference		Reference		Reference		Reference		Reference		Reference		Reference	
Current smoker	0.81	(0.56, 1.19)	0.51	(0.24, 1.08)	0.68	(0.44, 1.06)	0.90	(0.58, 1.37)	0.48	(0.22, 1.06)	0.93	(0.38, 2.25)	0.93	(0.40, 2.15)

Bolded values denote significant associations
AOR = adjusted odds ratio; CI = confidence interval.

Table 4. Trust Information About Health Effects of Tobacco "a lot", by Source of Information

Variable	Health care provider N = 3238		Family or friends N = 3201		Government health agencies N = 3214		Health organizations or groups N = 3208		Religious organizations and leaders N = 3210		Tobacco companies N = 3214	
	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI
Race												
White	Reference		Reference		Reference		Reference		Reference		Reference	
Black	1.13	(0.67, 1.89)	1.31	(0.50, 3.39)	1.62	(0.95, 2.75)	1.50	(0.92, 2.45)	**4.47**	**(2.02, 9.91)**	**8.07**	**(2.37, 27.42)**
Latino	0.70	(0.35, 1.41)	0.74	(0.36, 1.55)	0.86	(0.50, 1.48)	0.94	(0.56, 1.58)	1.72	(0.63, 4.70)	3.45	(0.72, 16.66)
Asian	0.52	(0.21, 1.27)	2.26	(0.85, 6.02)	1.54	(0.76, 3.10)	1.12	(0.52, 2.42)	2.15	(0.44, 10.50)	5.19	(0.09, 311.53)
Other	0.92	(0.47, 1.81)	0.42	(0.15, 1.16)	0.97	(0.51, 1.87)	1.22	(0.73, 2.04)	0.97	(0.35, 2.66)	1.38	(0.19, 10.09)
Missing	**0.42**	**(0.22, 0.78)**	1.14	(0.57, 2.29)	0.90	(0.53, 1.54)	0.85	(0.49, 1.47)	**2.75**	**(1.25, 6.04)**	2.54	(0.67, 9.59)
Gender												
Male	Reference		Reference		Reference		Reference		Reference		Reference	
Female	1.05	(0.79, 1.39)	1.00	(0.64, 1.57)	1.00	(0.79, 1.25)	1.03	(0.84, 1.27)	0.97	(0.63, 1.49)	1.11	(0.43, 2.88)
Education												
<Some college	Reference		Reference		Reference		Reference		Reference		Reference	
Some college	1.15	(0.86, 1.53)	0.93	(0.57, 1.51)	1.12	(0.83, 1.51)	1.11	(0.80, 1.54)	0.57	(0.27, 1.19)	0.49	(0.15, 1.60)
Nativity												
Foreign-born	Reference		Reference		Reference		Reference		Reference		Reference	
US-born	0.93	(0.48, 1.82)	1.97	(0.92, 4.21)	1.06	(0.64, 1.78)	0.81	(0.47, 1.40)	0.86	(0.30, 2.45)	5.49	(0.47, 63.48)
Age	0.99	(0.98, 1.00)	1.00	(0.99, 1.01)	0.99	(0.99, 1.00)	1.00	(0.99, 1.00)	1.00	(0.99, 1.02)	0.98	(0.95, 1.00)
Insurance status												
Uninsured	Reference		Reference		Reference		Reference		Reference		Reference	
Insured	1.55	(0.85, 2.83)	0.53	(0.22, 1.27)	1.36	(0.78, 2.37)	1.15	(0.72, 1.86)	1.04	(0.47, 2.29)	2.66	(0.76, 9.24)
Smoking status												
Not current smoker	Reference		Reference		Reference		Reference		Reference		Reference	
Current Smoker	0.83	(0.55, 1.25)	1.32	(0.73, 2.39)	0.77	(0.54, 1.11)	1.13	(0.78, 1.64)	0.70	(0.36, 1.36)	1.36	(0.50, 3.72)

Bolded values denote significant associations

AOR = adjusted odds ratio; CI = confidence interval.

race, controlling for gender, education, nativity, age, insurance, and current smoking status. There were no racial disparities in trust of family and friends, government health agencies and health organizations or groups. Supplemental Table 2 shows the CVs for all odds ratios presented in these models. Relative to whites, blacks had 4.47 times the odds of trusting religious organizations and leaders (AOR = 4.47; 95% CI: 2.02, 9.91) and 8.07 times the odds of trusting tobacco companies "a lot" (AOR = 8.07; 95% CI: 2.37, 27.42). Relative to whites, those with missing race information had 0.42 times the odds of trusting a health care provider (AOR = 0.42; 95% CI: 0.22, 0.78) and 2.72 times the odds of trusting religious organizations and leaders "a lot" (AOR = 2.75; 95% CI: 1.25, 6.04).

Discussion

Recent evidence of declining current smoking rates hint at progress in antismoking public health efforts. However, the results of this current study mirror other findings suggesting that the lower rates of cigarette use are occurring alongside the increase of use of ATPs.[11,34] In specific, we found that less than 40% of the respondents reported ever smoking and more than half reported ever using any ATPs. In terms of specific ATPs, 18% ever tried hookah and 38% had tried cigars. There were noticeably lower levels of ever using snus (9%). Such trends have led some to deem ATPs "a second front in the war on tobacco."[35] Even if rates of specific ATPs are low, their use is still a great concern because some ATPs may pose more health risks than cigarettes. For example, a typical hour-long hookah session involves inhaling the volume of smoke equal to smoking 100 cigarettes.[36]

Our findings yielded some illuminating trends in tobacco use by race/ethnicity: in comparison to whites, Latinos, and Asians have lower odds of cigarette smoking and Asians had much lower odds of ever using ATPs. However, scholars have noted the importance of disaggregating data within the Asian racial/ethnic categories as they reveal significant variations. For example, although only 9.2% of all Asian Americans were current smokers in 2013, 28.1% of Pacific Islanders, 20.0% of Koreans, and 16.3% of Vietnamese in the United States were current smokers.[37,38] Moreover, the HINTS-FDA was only administered in English and Spanish which limits the representativeness of the Asian respondents considering 23% of Asian households do not have a resident who is proficient in English.[39] Therefore, these findings on ATP use among Asians should be interpreted with some caution, and future research on ATPs should consider oversampling racial subgroups in various languages other than only English and Spanish, to illuminate potential racial disparities. Overall, our findings expand our understanding of ATP use disparities by being one of the few nationally representative studies to examine use of several specific ATPs.

The results of this study show sizable race differences in whom people trust to provide them with reliable information on the health effects of tobacco and e-cigarettes. Blacks were more likely than whites to trust their religious leaders to provide them with reliable health information on tobacco products. This finding coincides with what we currently know about the instrumental role that Black churches play in promoting both spiritual and physical well-being in black communities.[40,41] Furthermore, this study supports the involvement of the leadership in black churches as an effective means for delivering health tobacco cessation interventions aimed at addressing smoking disparities between blacks and whites.[42]

Our findings also reveal the startling disparities in trust in tobacco companies. Blacks and Asians were far more likely than whites to trust tobacco and e-cigarette companies to provide them with reliable information about the health effects of e-cigarettes. The disparities were vast; blacks were nine times and Asians were four times more likely than whites to substantially trust health information about e-cigarettes from tobacco companies. Blacks were additionally eight times as likely as whites to put their trust in tobacco companies to provide them with information about the health risks of tobacco. To our knowledge, this is the first study to highlight these disconcerting racial disparities in trust in sources of health information on tobacco.

These findings are alarming given the long history of tobacco companies providing misleading information about the health effects of their products, such as making false claims about the health "benefits" of their products and subverting all efforts to bring public awareness to the health risks of tobacco.[43,44] Higher levels of trust in tobacco companies may translate to greater susceptibility among minority groups to the misleading messages that downplay the health impacts and endorse the social benefits of tobacco use. Blacks and Asians may be especially at risk of believing these health messages and initiating tobacco use. Furthermore, the misplaced trust of blacks and Asians in this study may be an indication of the already successful efforts by tobacco companies in targeting these minority groups in their advertisement campaigns. Research has revealed how tobacco companies have prepared and implemented tactics aimed at increasing use of their products among Asian Americans, blacks, and immigrants.[45–47] In any case, our findings emphasize a great need to counter these disparities in misplaced trust in tobacco companies among blacks and Asians. Public health campaigns that focus on the untrustworthiness of tobacco and e-cigarette companies, especially in light of their objectionable targeting of minorities and immigrants, may be especially effective.

Given our findings, more efforts need to focus on reducing the appeal of ATPs including the reduction of the product, promotion, placement, and price advantage of these products.[34] In addition, there needs to be more social marketing and education efforts focused on increasing awareness of adverse health effects of using these products. The 2009 Family Smoking Prevention and Tobacco Control Act reduced tobacco use among minors but left the majority of ATPs unregulated.[11] This law was updated in 2016 and now gives the FDA authority to regulate any product that is "made or derived from tobacco that is intended for human consumption."[48] This allows for the regulation of both existing and future products, including cigars, hookah, e-cigarettes, pipe tobacco, and any other product that contains tobacco or nicotine derived from tobacco. However, this law is not without loopholes and includes exemptions for e-cigarettes that contain nicotine-free liquid.[48] Nonetheless, this is a step forward and introduces the need for future research on whether and how this regulation influences changes in utilization of these products.

Several limitations must be considered when interpreting the results of the present study. First, because the HINTS-FDA is cross-sectional in nature, recall bias cannot be ruled out and causality or temporality cannot be determined. Second, based on the available measurements, we were unable to determine the level of trust in information about the health effects of specific tobacco products that were not e-cigarettes. Finally, given the distribution of race and ethnicity seen in this sample, analyses may not have been adequately powered to detect differences between non-Latino whites and smaller groups. However, significant differences were observed in spite of this limitation. Second, the measures of tobacco use and

trust in sources of information were limited because information about use of different products was not identical in some cases, and no information was ascertained about trust in health information for specific tobacco products besides e-cigarettes. As mentioned earlier, the representativeness of the Asian subgroups may be compromised by the study design including the survey only being administered in English and Spanish and the inability to examine differences across Asian subgroups. Finally, although the weighting in HINTS does adjust for nonresponse bias, the low response rate of the survey is important to consider when interpreting the findings.

Limitations notwithstanding, results highlight important disparities in the utilization of tobacco products and levels of trust in the sources of tobacco-related health information. Given that some racial groups that use tobacco at equal or lower rates than non-Latino whites also have higher rates of trust in the health information provided by tobacco companies, these companies may be able to take advantage of this discrepancy to make inroads with these populations. That is, tobacco companies can take advantage of the higher levels of trust seen among blacks and Asian Americans to boost utilization of their products among these groups. This is a real concern because tobacco companies have used tailored messaging, specific brands, and a high concentration of advertisements to target minority customers.[46,49–52]

Supplementary Material

Supplementary data are available at *Nicotine & Tobacco Research* online.

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Declaration of Interests

None declared.

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