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Use of Other Combustible Tobacco Products among Priority Populations of Smokers: Implications for U.S. Tobacco Regulatory Policy

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Abstract

Certain sub-populations (e.g., those living in poverty, racial/ethnic minorities, sexual minorities, and people with mental health conditions) experience profound tobacco-related health disparities. Ongoing surveillance of use of various combustible tobacco products by priority populations of cigarette smokers is needed, particularly in the changing U.S. tobacco regulatory landscape. In 2018 the FDA announced their consideration of a tobacco product standard that would limit the level of nicotine in combustible cigarettes, and such regulations should consider potential effects on tobacco-related disparities. If certain subgroups of cigarette smokers are also using other combustible products, they may be particularly likely to continue dual use or switch to exclusive use of those products if a nicotine reduction standard only applies to cigarettes. Accordingly, this study provided recent U.S. nationally representative data on use of other combustible tobacco products among current cigarette smokers by sociodemographic characteristics. Data were drawn from current cigarette smokers ($n = 2,559$) in 2016 and 2017 U.S. nationally representative surveys. Associations between sociodemographic variables (poverty status, education, race/ethnicity, sexual orientation, and mental health status) with use of little cigars and cigarillos (LCCs), traditional cigars, and hookah were examined. Among current cigarette smokers, those living in poverty, racial/ethnic minorities, and those with mental health conditions were

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Contributors

All authors collaborated to conceive the research question, design the study, and write and edit the manuscript. D.M.J. conducted statistical analyses.

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particularly likely to use LCCs. Racial/ethnic minority smokers were more likely to smoke traditional cigars. Non-heterosexual smokers, Hispanic smokers, and smokers with mental health conditions were particularly likely to use hookah. These findings have important implications for tobacco regulatory policy and other efforts to combat tobacco-related disparities.

Keywords

disparities; combustible tobacco; little cigars and cigarillos; cigars; hookah

Introduction

Tobacco use is the leading cause of preventable morbidity and mortality in the overall U.S. population, but significant disparities persist, with certain subpopulations bearing the greatest burden of tobacco.¹ Rates of tobacco-related morbidity and mortality are more pronounced for certain subgroups, such as those with low socioeconomic status (SES); certain racial/ethnic minorities; people identifying as lesbian, gay, bisexual, or transgender (LGBT); and adults with mental health conditions (MHC)^{2,3} Whereas the prevalence of combustible cigarette smoking has declined substantially in the general U.S. population, smoking prevalence remains disproportionately high among adults living in poverty, those identifying as LGBT, and individuals with MHC.⁴ Although Blacks and Whites exhibit similar overall rates of cigarette smoking, Blacks tend to have greater difficulty quitting and higher rates of tobacco-related morbidity and mortality.² There is an urgent need for research, intervention, and policy efforts to combat tobacco disparities for these priority populations.¹⁻⁴

Although much of the research on tobacco disparities has focused on traditional cigarettes, studies have also documented disproportionately high use of other combustible tobacco products in priority populations. U.S. representative surveys have observed higher use of any combustible tobacco product (e.g., cigarettes, cigars, little cigars and cigarillos [LCCs], water pipes/hookah) among adults with lower income, those identifying as LGB/LGBT, and those experiencing serious psychological distress.^{2,5,6} Moreover, the prevalence of using two or more tobacco products is higher among adults with lower SES, LGB individuals, and those experiencing serious psychological distress.⁵⁻⁷ Compared to studies providing rates of combustible tobacco use among adults overall, fewer studies have documented use of particular combustible products by sociodemographic characteristics specifically among cigarette smokers. For example, based on 2008 data among cigarette smokers, those who also used LCCs tended to have lower income levels.⁸ Similarly, based on 2006-2011 National Surveys on Drug Use and Health, dual use of both cigarettes and cigars was most common among low-income adults.⁹ Using 2010 U.S. nationally representative data, Richardson, Xiao, and Vallone¹⁰ found that dual users of both cigarettes and cigars were more likely to be non-Hispanic Black and have lower education. In a 2015 survey of a national probability sample of cigarette smokers aged 18-44, Black and Hispanic participants were more likely to use LCCs than Whites.¹¹

Ongoing surveillance of use of various combustible tobacco products by priority populations of cigarette smokers is needed, particularly in the changing U.S. tobacco regulatory landscape. In 2018 the U.S. Food and Drug Administration (FDA) announced their consideration of a tobacco product standard that would limit the level of nicotine in combustible cigarettes to reduce their addiction potential.¹² Simulation modeling suggests that a nicotine reduction standard for cigarettes could considerably reduce smoking-related morbidity and mortality in the overall population.¹³ In examining the potential of such regulations, it will be important to consider effects on use of other combustible tobacco products, particularly for subgroups that bear disproportionate adverse health burden of tobacco use. It is possible that if a nicotine reduction standard applies only to combustible cigarettes, cigarette smokers will switch to other combustible products. If certain subgroups of cigarette smokers are also using other combustible products at disproportionate rates, they may be particularly likely to switch to exclusive use of those other products or dual use if a nicotine reduction standard only applies to cigarettes. Recent studies suggest that smokers with MHC who are randomized to very low nicotine content cigarettes do indeed reduce their cigarette smoking under controlled conditions, but concerns have been raised that these smokers may be at risk for switching to other combustible tobacco products under real-world conditions if nicotine is only reduced in cigarettes.¹⁴ Accordingly, this study sought to provide recent (2016-2017) U.S. nationally representative data on use of other combustible tobacco products (LCCs, traditional cigars, hookah) among current cigarette smokers by sociodemographic characteristics (poverty status, education, sexual orientation, race/ethnicity, mental health status).

Methods

Data were pooled from the 2016 and 2017 U.S. nationally representative Georgia State University Tobacco Center of Regulatory Science (GSU TCORS) surveys. Participants were recruited through GfK's KnowledgePanel (a probability-based web panel weighted to be representative of non-institutionalized U.S. adults), with representative oversample of cigarette smokers. Data were collected between September-October 2016 ($n=6,061$) and August-September 2017 ($n=6,033$). Demographic and geographic distributions from the most recent Current Population Surveys for 2016 and 2017 were used as benchmarks for adjustment, and included gender, age, race/ethnicity, census region, education, household income, and metropolitan area. The current study included 2,559 participants classified as current smokers (i.e., those who indicated having smoked at least 100 cigarettes in their lifetime and that they currently smoke cigarettes every day or some days). This research was approved by the Georgia State University Institutional Review Board.

Measures

Sociodemographic Variables.—Participants indicated their total annual family income, education, race/ethnicity, and sexual orientation. Poverty status was determined based on federal poverty thresholds (given family size and number of children)¹⁵ and dichotomized as below versus at or above the poverty level. Participants were also asked, “Have you been diagnosed by a doctor or other qualified medical professional with any of the following medical conditions?”, including the following MHCs: anxiety disorder, bipolar disorder,

depression, mood disorder, schizoaffective disorder, schizophrenia, and other MHC (yes/no). Respondents who indicated having been diagnosed with any of these were considered as having a MHC.

Combustible Tobacco Use.—Participants were asked whether they had used any of the following products (“even one or two puffs”) in the past 30 days: “little cigars, cigarillos, or filtered cigars (LCCs);” “traditional cigars or large (premium) cigars;” and “hookah.” Participants who indicated using any of the above were classified as engaging in “any other combustible tobacco use.”

Analyses

Weighted point estimates and 95% confidence intervals for past-30-day LCC use, traditional cigar use, hookah use, and any combustible use were obtained by poverty status, education level, sexual orientation, race/ethnicity, and mental health status. Rao-Scott χ^2 tests were conducted to examine associations between sociodemographic variables and other combustible tobacco use among cigarette smokers.

Results

Overall, 19.7% (95% CI: 17.6%, 21.9%) of current cigarette smokers reported also having used another combustible tobacco product in the past 30 days. Among cigarette smokers, 14.5% (95% CI: 12.6%, 16.3%) reported using one other combustible tobacco product, 3.5% (95% CI: 2.5%, 4.4%) reported using two other products, and 1.8% (95% CI: 1.0%, 2.6%) reported using all three products (LCCs, traditional cigars, hookah) in addition to cigarettes. In terms of multiple product combinations, the most common was LCCs and traditional cigars (3.9% [95% CI: 2.8%, 4.9%]), followed by LCCs and hookah (2.8% [95% CI: 1.7%, 3.8%]) and traditional cigars and hookah (2.2% [95% CI: 1.3%, 3.1%]). Associations between sociodemographic characteristics and past-30-day use of other combustible tobacco products among current smokers are shown in Table 1.

Any Other Combustible Tobacco Use

Cigarette smokers identifying as non-heterosexual were more likely than heterosexuals to indicate having also used other combustible products in the past 30 days (27.8% [95% CI: 20.7%, 35.0%] vs. 18.2% [95% CI: 16.0%, 20.4%]). Hispanic smokers were more likely than non-Hispanic Whites to indicate having used other combustible tobacco products (31.1% [95% CI: 23.9%, 38.3%] vs. 15.0% [95% CI: 12.9%, 17.1%]). Smokers who indicated having been diagnosed with a MHC were more likely to report other combustible tobacco use (23.8% [95% CI: 19.9%, 27.8%] vs. 17.2% [95% CI: 14.7%, 19.7%]).

LCCs

Cigarette smokers living below the poverty level were more likely to have used LCCs in the past 30 days than those living at or above the poverty level (20.3% [95% CI: 15.8%, 24.9%] vs. 12.5% [95% CI: 10.5%, 14.5%]). Black (22.4% [95% CI: 16.6%, 28.2%]) and Hispanic (19.5% [95% CI: 13.3%, 25.7%]) cigarette smokers were more likely to use LCCs compared to Whites (10.6% [95% CI: 8.8%, 12.5%]). Finally, cigarette smokers with vs. without MHC

were more likely to use LCCs (18.3% [95% CI: 14.8%, 21.9%] vs. 11.9% [95% CI: 9.7%, 14.1%]). There were not significant associations between education or sexual orientation with LCC use.

Traditional Cigars

Hispanic (9.1% [95% CI: 4.7%, 13.5%]) and non-Hispanic Other (11.4% [95% CI: 4.6%, 18.2%]) cigarette smokers were more likely to have used traditional cigars in the past 30 days compared to Whites (5.0% [95% CI: 3.7%, 6.4%]). There were no significant associations between poverty, education, sexual orientation, or MHC status with traditional cigar use.

Hookah

Hispanic (13.9% [95% CI: 8.1%, 19.6%]) and non-Hispanic Other (12.2% [95% CI: 4.3%, 20.1%]) cigarette smokers were more likely to have used hookah in the past 30 days compared to Whites (3.1% [95% CI: 1.9%, 4.3%]). Cigarette smokers identifying as non-heterosexual (11.8% [95% CI: 6.1%, 17.4%]) were more likely to use hookah than those identifying as heterosexual (5.0 [95% CI: 3.6%, 6.4%]). Cigarette smokers with versus without MHC were more likely to use hookah (8.3% [95% CI: 5.4%, 11.1%] vs. 4.5% [95% CI: 2.9%, 6.0%]). Conversely, those with high school education/GED were less likely (2.8% [95% CI: 1.2%, 4.5%]) to use hookah than those with college or more education (10.6% [95% CI: 5.3%, 15.8%]). There was not a significant association between poverty status and hookah use.

Discussion

Among U.S. current cigarette smokers in 2016-2017, those living in poverty, racial/ethnic minorities, and those with mental health conditions were particularly likely to use LCCs. Racial/ethnic minority smokers were also more likely to smoke traditional cigars. Non-heterosexual smokers, Hispanic smokers, and smokers with mental health conditions were particularly likely to use hookah. Overall, these patterns are consistent with previous reports indicating higher use of combustible tobacco products among priority populations.⁵⁻¹⁰ However, these recent data highlighting product use specifically among current cigarette smokers are especially important given the changing U.S. tobacco regulatory landscape. For example, certain sociodemographic groups (who already experience severe tobacco-related health disparities) could be at greater risk for switching to other combustible products if the FDA's proposed nicotine reduction standard only applies to combustible cigarettes. In order to reduce the likelihood of exacerbated tobacco-related disparities, the FDA should consider applying the nicotine reduction standard to other combustible products.

Priority populations of smokers may use other combustible products for a variety of reasons ranging from societal (e.g., tobacco marketing and policies) to interpersonal/contextual (e.g., social relationships and norms) to intrapersonal factors (e.g., stress).² Tobacco companies have historically targeted marketing efforts toward low-SES¹⁶ and LGBT¹⁷ populations, as well as those with mental health conditions.¹⁸ Additionally, LCC advertising is particularly prevalent in Black communities.¹⁹ A recent study found that the most popular YouTube

videos promoting LCCs featured young Black males,²⁰ and qualitative research has documented that young adult Black LCC users perceived these products as healthier than cigarettes and widely used in their communities.²¹ Similarly, in a 2014 U.S. national probability sample, most LCC users (who were more likely to have low-SES and to be Black or Hispanic compared to non-users) did not perceive themselves as addicted to the products.²² Anti-tobacco communication and marketing campaigns, with a focus on priority populations, are needed to correct public misperceptions about various combustible products.²

Low-SES, racial/ethnic minority, and LGBT populations often face significant day-to-day stressors (e.g., financial strain, stigma and discrimination) that create risk for tobacco use and difficulty quitting.² These populations also have lower access to resources for coping with such stressors and assisting them with tobacco cessation (e.g., low-SES adults tend to have lower social support resources and lower access to quality healthcare²). In addition to tobacco regulatory policy efforts, there is a need for clinical interventions to directly address specific stressors contributing to tobacco use in these populations.

The current results prompt two primary calls to action. First, tobacco regulatory policy efforts, including nicotine reduction standards, should consider potential effects on priority populations. The FDA should consider expanding nicotine reduction standards to combustible products other than cigarettes, given that the populations who bear the greatest burden of tobacco are especially likely to also use other combustible products and might be at risk for supplementing or replacing their cigarette smoking with those products if the standard only applies to cigarettes. Second, there is an urgent need to increase the availability and accessibility of evidence-based, culturally sensitive tobacco cessation interventions that address multiple types of tobacco in priority populations.

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Highlights

- Use of other combustible tobacco products among smoker subgroups was examined.
- Racial/ethnic minority and low-income smokers were more likely to use LCCs.
- Smokers with mental health conditions (MHC) were also more likely to use LCCs.
- Racial/ethnic minority smokers were more likely to smoke traditional cigars.
- Non-heterosexuals, Hispanics, and those with MHC were more likely to use hookah.

Table 1. Past 30 Day Non-Cigarette Combustible Tobacco Use among Current Cigarette Smokers by Sociodemographic Characteristics

Sociodemographic Characteristics	Any Other Combustible Use (Past 30 Days)	Past 30 Day LCC Use	Past 30 Day Traditional Cigar Use	Past 30 Day Hookah Use
<i>Poverty Level</i>		**		
Below the Poverty Level	23.1 (18.4, 27.8)	20.3 (15.8, 24.9)	6.8 (4.0, 9.5)	7.6 (4.5, 10.8)
At or Above the Poverty Level	18.7 (16.3, 21.1)	12.5 (10.5, 14.5)	6.5 (5.1, 8.0)	5.4 (3.8, 7.0)
<i>Education Level</i>				**
Less than High School	21.2 (15.6, 26.7)	17.8 (12.5, 23.1)	7.2 (3.7, 10.6)	7.3 (3.6, 11.0)
High School or GED	16.4 (13.2, 19.5)	13.2 (10.3, 16.1)	4.5 (2.6, 6.4)	2.8 (1.2, 4.5)
Some College	21.5 (18.0, 25.1)	14.9 (11.9, 17.8)	7.3 (5.1, 9.5)	6.8 (4.2, 9.3)
College Degree+	23.1 (17.3, 28.8)	10.1 (6.5, 13.6)	10.3 (6.6, 13.9)	10.6 (5.3, 15.8)
<i>Sexual Orientation</i>	**			**
Non-Heterosexual	27.8 (20.7, 35.0)	18.6 (12.5, 24.8)	9.8 (5.1, 14.5)	11.8 (6.1, 17.4)
Heterosexual	18.2 (16.0, 20.4)	13.3 (11.4, 15.3)	6.1 (4.8, 7.5)	5.0 (3.6, 6.4)
<i>Race/Ethnicity</i>	***	***	*	***
Hispanic	31.1 (23.9, 38.3)	19.5 (13.3, 25.7)	9.1 (4.7, 13.5)	13.9 (8.1, 19.6)
NH, Black	25.5 (19.6, 31.5)	22.4 (16.6, 28.2)	7.7 (4.3, 11.0)	5.9 (2.7, 9.2)
NH, Other	22.2 (12.8, 31.5)	16.3 (7.9, 24.6)	11.4 (4.6, 18.2)	12.2 (4.3, 20.1)
NH, White	15.0 (12.9, 17.1)	10.6 (8.8, 12.5)	5.0 (3.7, 6.4)	3.1 (1.9, 4.3)
<i>Mental Health Condition</i>	**	**		*
At least 1 MHC	23.8 (19.9, 27.8)	18.3 (14.8, 21.9)	8.0 (5.4, 10.5)	8.3 (5.4, 11.1)
No MHC	17.2 (14.7, 19.7)	11.9 (9.7, 14.1)	5.4 (4.0, 6.8)	4.5 (2.9, 6.0)

LCC = little cigars, cigarillos, or filtered cigars; NH = non-Hispanic; MHC = mental health condition.

Asterisks indicate significant associations between sociodemographic characteristics and past-30-day use of other combustible tobacco products among cigarette smokers, as determined by Rao-Scott χ^2 tests.

* $p < 0.05$;

** $p < 0.01$;

*** $p < .001$.