



Prevalence of current large cigar versus little cigar/cigarillo smoking among U.S. adults, 2018–2019

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ABSTRACT

Cigar smoking is increasing among non-Hispanic Black adults in the U.S. However, the prevalence of large and little cigar/cigarillo (LCC) smoking varying jointly by age and race/ethnicity has not been reported. We analyzed data from the 2018–2019 Tobacco Use Supplement to the Current Population Survey (n = 134,900) to fill this knowledge gap. Participants reported the type of cigar they used most often in the past 30 days (either large cigars, little cigars, or cigarillos). We estimated the prevalence of current large cigar and LCC smoking by sociodemographic characteristics. We then examined sociodemographic correlates of large cigar and LCC smoking in comparison to non-cigar smoking using a multivariable multinomial logistic regression model, and sociodemographic correlates of LCC smoking compared to large cigar smoking using a multivariable logistic regression model. Age*race/ethnicity interaction on cigar smoking was tested. Age-stratified multivariable multinomial logistic regression and logistic regression models were used to examine associations between race/ethnicity and large cigar and LCC smoking by age, adjusting for other sociodemographic variables. Overall, 1.1% and 0.8% of U.S. adults currently smoked large cigars and LCCs, with younger adults more likely to smoke both types of cigars and non-Hispanic Black adults more likely than non-Hispanic White adults to smoke LCCs. Prevalence of currently smoking LCCs varied greatly by age and race/ethnicity, with the highest prevalence of current LCC smoking being among 18–30 year-old non-Hispanic Black adults. Cigar smoking prevention and cessation efforts should prioritize non-Hispanic Black young adults who are most at risk for cigar smoking health effects.

1. Introduction

In 2019, 3.6% of U.S. adults (8.7 million) currently smoked cigars (Cornelius et al., 2020). Higher rates of cigar smoking have been observed among young adults and minority racial/ethnic groups in comparison to their older and non-Hispanic White counterparts (Agaku et al., 2014). Cigar smoking is associated with deleterious health consequences including cancers of the lung, esophagus, and oral cavity and cardiovascular disease (Chang et al., 2015).

Cigars are a diverse class of combustible tobacco products including large premium cigars, little filtered cigars, and cigarillos (National Cancer Institute, 1998). While these cigar types differ in size and number of cigars sold per package (National Cancer Institute, 1998), prior research has shown similarities in little cigar and cigarillo (LCC) patterns of use. U.S. national data collected in 2013–2014 showed that both little cigar and cigarillo smokers tended to be younger and more likely to be

non-Hispanic Black than large cigar smokers (Corey et al., 2018). Little cigar and cigarillo smokers also had higher proportions of purchasing cigars in-person at convenience stores and gas stations, while large cigar smokers purchased cigars in smoke shops and specialty stores (Corey et al., 2018). Additionally, both little cigar and cigarillo smokers reported higher use of a regular brand and of usual flavored brands compared to large cigar smokers (Corey et al., 2018). Given the increase in prevalence of cigar smoking among non-Hispanic Black adults from 2000 (2.0%) to 2015 (3.3%) (Rostron et al., 2019) and variation in cigar use by cigar type (Corey et al., 2018), it is important to examine more recent prevalence rates of large cigar and LCC smoking and their correlates. Furthermore, despite notable associations between age and race/ethnicity with cigar smoking, no studies to date have reported the variations in large cigar vs. LCC smoking by age and racial/ethnic groups.

In the current study, we examine the prevalence of large cigar and

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LCC smoking and their sociodemographic correlates using the nationally representative 2018–2019 Tobacco Use Supplement to the Current Population Survey (TUS-CPS). Additionally, we examine the variations of these prevalence estimates by age and race/ethnicity. These findings will inform public health approaches to prevent and reduce cigar use by identifying those most at risk.

2. Methods

We analyzed data from 134,900 respondents (mean self-response rate 57.6%) from the 2018–2019 cycle of the TUS-CPS (U.S. Department of Commerce, Census Bureau, 2020), a cross-sectional, nationally representative study of civilian non-institutionalized adults ages 18 years and older from the 50 U.S. states and the District of Columbia (National Cancer Institute, 2020). The TUS-CPS includes data on tobacco use behaviors, attitudes, and policies (National Cancer Institute, 2020). We used deidentified data from self-respondents, which does not require review or approval from the Institutional Review Board per National Institutes of Health policy and 45 CFR 46.

The TUS-CPS distinguishes large cigars, little cigars, and cigarillos to respondents by describing the differences in cigar product characteristics including cigar size, usual number of cigars sold in packages, and common brands for each cigar type. If asked, respondents are also instructed that cigar smoking only includes cigar tobacco and does not include smoking cigars only with marijuana (i.e., blunts), hashish, or other substances (U.S. Department of Commerce, Census Bureau, 2020). Respondents were characterized as current cigar smokers if they reported smoking a cigar product in the past 30 days. We constructed a cigar smoking status variable using respondents' report of the type of cigar product they used most often in the past 30 days (either "regular/large cigars", "little filtered cigars", and "cigarillos"). The cigar smoking status variable had the following mutually exclusive categories: large cigar smoker, LCC smoker (including little cigars and cigarillos), and non-cigar smoker (i.e. did not smoke cigars in the past 30 days). We combined current little cigar and cigarillo smoking into a single category given the similarities in the sociodemographic characteristics of little cigar and cigarillo smokers and purchasing and use patterns of these cigar types (Corey et al., 2018). Additionally, too few respondents reported little cigar and cigarillo smoking in some racial/ethnic minority populations when stratified by age when the two products were analyzed separately. Respondents reported their age, sex, education, family income, and region and self-identified their race and ethnicity. Respondents also reported their current use ("everyday" or "some days") of other tobacco products including cigarettes (≥ 100 cigarettes in their lifetime), waterpipe or hookah pipe filled with tobacco, e-cigarettes, smokeless tobacco, and dissolvable tobacco. We created a variable to capture use of one or more of these other tobacco products (yes/no).

2.1. Statistical analyses

Data were weighted to be nationally representative. We estimated prevalence of current use of large cigars and LCCs by sociodemographic characteristics. We then examined sociodemographic correlates of current large cigar and LCC smoking, compared to non-cigar smoking, using a multivariable multinomial logistic regression model. We then tested the age*race/ethnicity interaction in the multivariable multinomial logistic regression model to examine if prevalence of large cigar and LCC smoking differ by age and race/ethnicity. A multivariable logistic regression model was also used to examine sociodemographic correlates of LCC smoking compared to large cigar smoking among cigar smokers. Lastly, we stratified the multivariable multinomial logistic regression and logistic regression models by age group to examine the association between race/ethnicity and type of cigar smoking, adjusting for other sociodemographic variables. All analyses were conducted in March 2021 using SAS version 9.4 and SUDAAN 11.0.1. and were considered statistically significant if $p < 0.05$.

3. Results

Respondents' sociodemographic characteristics are presented in Table 1. Overall, 1.1% of U.S. adults currently smoked large cigars and 0.8% currently smoked LCCs in 2018–2019. Results from the multivariable multinomial logistic regression model showed that younger (vs. 61 + years old), males (vs. females), and other tobacco user (vs. other tobacco non-users) adults were more likely to smoke large cigars, while Hispanic and non-Hispanic other race (vs. non-Hispanic White), \leq high school educated (vs. \geq some college educated) and $<$ \$50,000 family income (vs. \geq \$50,000) adults were less likely to smoke large cigars relative to not smoking cigars at all (Table 1). Meanwhile, younger (vs. 61 + years old), non-Hispanic Black (vs. non-Hispanic White), male (vs. female), $<$ \$50,000 family income (vs. \geq \$50,000), and other tobacco user (vs. other tobacco non-users) adults were more likely to smoke LCCs than not smoke any cigars. Compared to current large cigar smoking, non-Hispanic Black (vs. non-Hispanic White), \leq high school educated (vs. \geq some college educated), $<$ \$50,000 family income (vs. \geq \$50,000), and other tobacco user (vs. other tobacco non-user) adults were more likely to smoke LCCs. Although female adults were more likely than male adults to smoke LCCs over large cigars, the prevalence of female LCC and large cigar smoking were very low (0.4% and 0.2%, respectively).

We found a significant age*race/ethnicity interaction ($p < 0.01$) in the multivariable multinomial logistic regression model and performed age-stratified analyses (Table 2). Prevalence of LCC smoking was the highest among non-Hispanic Black young adults (18–30 years old; 2.7%), while there was less of a clear pattern in the prevalence of large cigar smoking. Additionally, age-stratified analyses showed that although there are no increased odds of LCC smoking among older non-Hispanic Black adults compared to older non-Hispanic White adults, younger non-Hispanic Black adults are approximately 2–5 times more likely to be LCC smokers. In several age groups, racial/ethnic minority adults were less likely than their non-Hispanic White counterparts to currently smoke large cigars. However, in comparison to their non-Hispanic White counterparts, non-Hispanic Black adults between 18 and 60 years old were more likely to currently smoke LCCs compared to not smoking any cigar product, and non-Hispanic Black adults between 18 and 50 years old were more likely to currently smoke LCCs compared to smoking large cigars.

4. Discussion

Supported by previous studies (Agaku et al., 2014; Corey et al., 2018), we found that older adults and women, regardless of race/ethnicity, have low prevalence of large cigars and LCC use. A previous study found that, among U.S. adults, 0.7%, 1.7%, and 0.9% reported smoking large cigars, cigarillos, and little cigars, respectively (Corey et al., 2018). The novel finding from this analysis is that the associations between race/ethnicity and current large cigar and LCC smoking varied by age. Younger non-Hispanic Black adults were less likely than younger non-Hispanic White adults to report current large cigar smoking but were more likely to report current LCC smoking. These findings highlight that non-Hispanic Black young adults are most at risk for LCC smoking and the health burden associated with the behavior (National Cancer Institute, 1998).

One explanation for the highest prevalence of LCC smoking among non-Hispanic Black young adults (2.7%) compared to other age and racial/ethnic groups may be industry targeting (Kostygina et al., 2016). Previous studies have shown that non-Hispanic Black adults have increased exposure to LCC marketing (Smiley et al., 2018), including price promotions (Kong et al., 2020). LCCs' affordability and availability (Kong et al., 2020) may also promote LCC smoking among non-Hispanic Black young adults because of their general price sensitivity (Garrett et al., 2016). Prior research also indicates non-Hispanic Black young adults have positive affect towards LCCs (Sterling et al., 2016), which

Table 1

Prevalence and sociodemographic correlates of current large cigar and little cigar/cigarillo smoking among U.S. adults, 2018–2019 Tobacco Use Supplement to the Current Population Survey (n = 134,900).

Sociodemographic Characteristics	Total Sample		Non-Cigar Smokers		Large Cigar Smokers		LCC Smokers		Large Cigar Smokers (vs. Non-Cigar Smokers)		LCC Smokers (vs. Non-Cigar Smokers)		LCC Smokers (vs. Large Cigar Smokers)	
	N	% ^a	N	% ^b	N	% ^b	N	% ^b	AOR	95% CI	AOR	95% CI	AOR	95% CI
Age														
18–30	19,724	22.8	19,278	97.8	258	1.2	188	1.0	1.3	1.1–1.6	1.9	1.5–2.4	1.1	0.7–1.5
31–40	22,902	17.1	22,410	97.8	312	1.4	180	0.8	1.4	1.1–1.6	1.5	1.2–2.0	0.9	0.7–1.3
41–50	20,306	15.9	19,912	98.1	232	1.1	162	0.8	1.1	0.9–1.3	1.7	1.4–2.1	1.2	0.9–1.7
51–60	23,473	16.9	22,991	97.8	284	1.3	198	0.8	1.3	1.1–1.6	1.6	1.3–1.9	1.1	0.8–1.5
61+	48,495	27.2	47,885	98.7	380	0.8	230	0.4	REF	–	–	–	–	–
Race/Ethnicity														
Hispanic	14,657	16.6	14,485	98.7	94	0.7	78	0.6	0.7	0.5–0.9	0.9	0.7–1.3	1.6	0.9–2.5
NH Black	12,778	11.8	12,452	97.1	126	1.0	200	1.9	0.9	0.7–1.2	2.9	2.3–3.5	2.9	2.1–4.0
NH Other race	9,035	8.6	8,929	99.0	61	0.6	45	0.5	0.5	0.3–0.6	0.8	0.6–1.2	1.2	0.7–2.1
NH White	98,430	63.1	96,610	98.0	1,185	1.3	635	0.6	REF	–	–	–	–	–
Sex														
Male	61,088	48.0	59,026	96.7	1,364	2.2	698	1.2	12.8	9.9–16.5	2.8	2.4–3.3	0.3	0.2–0.4
Female	73,812	52.0	73,450	99.5	102	0.2	260	0.4	REF	–	–	–	–	–
Education														
≤ high school	47,151	35.9	46,271	98.1	392	0.9	488	1.1	0.6	0.5–0.7	1.2	1.0–1.4	2.0	1.6–2.5
≥ some college	87,749	64.1	86,205	98.1	1,074	1.3	470	0.6	REF	–	–	–	–	–
Family Income														
< \$50,000	58,405	41.7	57,384	98.1	450	0.8	571	1.1	0.7	0.6–0.8	1.5	1.2–1.8	2.0	1.5–2.5
≥ \$50,000	76,495	58.3	75,092	98.1	1,016	1.3	387	0.5	REF	–	–	–	–	–
Region														
Northeast	21,483	17.5	21,100	98.2	260	1.2	123	0.6	REF	–	–	–	–	–
Midwest	27,209	20.7	26,646	97.8	343	1.4	220	0.9	1.0	0.8–1.3	1.2	0.9–1.5	1.1	0.8–1.6
South	50,370	37.9	49,408	98.0	531	1.1	431	0.9	0.9	0.7–1.1	1.1	0.9–1.4	1.1	0.8–1.6
West	35,838	23.9	35,322	98.6	332	0.9	184	0.5	0.8	0.7–1.0	0.9	0.7–1.2	1.0	0.7–1.4
Other Tobacco Use														
Other tobacco user	19,765	14.0	18,714	94.1	516	2.9	535	2.9	3.3	2.9–3.7	6.1	5.1–7.3	1.6	1.3–2.0
Other tobacco non-user	115,135	86.0	113,762	98.8	950	0.8	423	0.4	REF	–	–	–	–	–

Note: NH indicates non-Hispanic; %^a indicates weighted column percent; %^b indicates weighted row percent; bolded AOR and 95% CI indicates statistical significance.

Table 2

Prevalence and associations with current large cigar and little cigar/cigarillo smoking among U.S. adults by age and race/ethnicity, 2018–2019 Tobacco Use Supplement to the Current Population Survey (n = 134,900).

Age and Race/Ethnicity Characteristics	Total Sample		Non-Cigar Smokers		Large Cigar Smokers		LCC Smokers		Large Cigar Smokers (vs. Non-Cigar Smokers)		LCC Smokers (vs. Non-Cigar Smokers)		LCC Smokers (vs. Large Cigar Smokers)	
	N	% ^a	N	% ^b	N	% ^b	N	% ^b	AOR	95% CI	AOR	95% CI	AOR	95% CI
18–30 years														
Hispanic	3,465	5.1	3,420	98.6	24	0.8	21	0.6	0.7	0.4–1.2	1.0	0.5–2.0	1.5	0.6–3.9
NH Black	2,083	3.1	2,010	96.5	20	0.8	53	2.7	0.6	0.4–1.2	3.9	2.5–6.1	4.8	2.4–9.7
NH Other race	1,806	2.4	1,774	98.7	19	0.7	13	0.6	0.6	0.3–1.1	0.9	0.4–2.0	1.2	0.4–3.6
NH White	12,370	12.2	12,074	97.7	195	1.5	101	0.8	REF	–	–	–	–	–
31–40 years														
Hispanic	3,496	3.6	3,444	98.5	32	1.0	20	0.5	0.9	0.5–1.6	0.9	0.5–1.7	1.1	0.4–2.5
NH Black	2,187	2.1	2,104	96.0	32	1.6	51	2.4	1.5	1.0–2.4	3.9	2.5–5.8	2.8	1.5–5.2
NH Other race	1,990	1.7	1,968	99.0	17	0.7	5	0.3	0.5	0.3–1.0	0.5	0.2–1.6	0.9	0.2–3.5
NH White	15,229	9.6	14,894	97.8	231	1.6	104	0.7	REF	–	–	–	–	–
41–50 years														
Hispanic	2,800	3.0	2,774	99.0	16	0.6	10	0.4	0.6	0.3–1.0	0.9	0.4–1.9	2.2	0.7–7.4
NH Black	2,098	2.0	2,032	96.7	30	1.3	36	2.1	1.3	0.8–2.1	3.4	2.1–5.4	2.5	1.3–4.8
NH Other race	1,691	1.5	1,669	98.7	9	0.4	13	0.9	0.3	0.1–0.7	1.7	0.9–3.1	5.7	1.7–19.6
NH White	13,717	9.4	13,437	98.0	177	1.3	103	0.7	REF	–	–	–	–	–
51–60 years														
Hispanic	2,194	2.3	2,168	98.8	12	0.5	14	0.7	0.4	0.2–0.8	0.9	0.5–1.7	2.1	0.9–5.0
NH Black	2,363	2.0	2,307	97.5	22	1.0	34	1.5	0.8	0.4–1.4	1.7	1.1–2.7	2.0	1.0–4.3
NH Other race	1,376	1.2	1,362	98.9	8	0.7	6	0.4	0.5	0.2–1.2	0.5	0.2–1.4	0.4	0.1–1.1
NH White	17,540	11.4	17,154	97.6	242	1.6	144	0.8	REF	–	–	–	–	–
61+ years														
Hispanic	2,702	2.5	2,679	99.1	10	0.4	13	0.5	0.6	0.3–1.4	1.3	0.7–2.7	2.2	0.7–7.1
NH Black	4,047	2.6	3,999	98.7	22	0.6	26	0.6	0.8	0.5–1.4	1.3	0.7–2.3	1.9	0.9–4.1
NH Other race	2,172	1.7	2,156	99.6	8	0.2	8	0.2	0.3	0.1–0.7	0.5	0.2–1.3	1.5	0.4–5.2
NH White	39,574	20.4	39,051	98.6	341	1.0	184	0.4	REF	–	–	–	–	–

Note: NH indicates non-Hispanic; %^a indicates weighted column percent; %^b indicates weighted row percent; AOR indicates odds ratios adjusted for sex, education, family income, region and other tobacco use; bolded AOR and 95% CI indicates statistical significance.

may have resulted from exposure to LCC advertising (Dunn et al., 2021). This positive affect has been shown to lead to misperceptions that flavored LCCs are less addictive and less harmful than cigarettes, and to current LCC smoking (Sterling et al., 2016; Sterling et al., 2019).

Additionally, we found that other tobacco users were six times more likely to also smoke LCCs. These results are consistent with previous research that has found high dual use of cigarettes and LCCs among U.S. adults (Corey et al., 2018). Dual and polytobacco use with LCCs is associated with more frequent and deeper inhalation, increased risks for tobacco-related health effects, and may make it more difficult to quit tobacco use overall (National Cancer Institute, 1998). Strategies to prevent and reduce LCC smoking will need to consider concomitant use of other tobacco products that may impact cessation. This is especially important for prevention and cessation efforts for non-Hispanic Black young adults who have high prevalence of dual cigarette and LCC smoking (Richardson et al., 2013).

Our study has limitations. The TUS-CPS did not allow respondents to choose multiple types of cigars they smoked in the past 30 days in the survey item and did not capture frequency and intensity of cigar smoking by cigar type. Therefore, it is likely that we underestimated the prevalence of current large cigar and LCC smoking (Corey et al., 2018) and could not assess prevalence by patterns of cigar use. Additionally, the sample size for certain racial/ethnic minority groups were small (e.g., Asians, Native Americans, Native Hawaiians, and Pacific Islanders) and did not support race/ethnicity*age stratified prevalence of cigar smoking. We were unable to examine current little cigar and cigarillo smoking separately because few respondents reported the behaviors in some racial/ethnic groups when stratified by age. For example, 0.1% (n = 3) and 0.2% (n = 7) of Hispanic adults 41–50 years-old smoked little cigars and cigarillos, respectively in 2018–2019. It will be important for future studies to understand how to comprehensively assess cigar smoking behaviors using standardized measures and examine cigar smoking prevalence among additional racial/ethnic groups. Future studies also need to include larger samples of cigarillo and little cigar smokers separately to understand the potential differences in use behaviors between these products. Such findings can further identify groups at-risk for cigar smoking as well as inform appropriate intervention design to prevent the escalation of use among low frequency cigar smokers and support cessation among those who smoke cigars regularly.

Despite these limitations, this study emphasizes the crucial need to prevent LCC smoking and promote LCC smoking cessation among non-Hispanic Black young adults, and ultimately reduce overall tobacco disparities experienced by this priority group (Spears et al., 2019). Regulatory actions to restrict cigar marketing and advertising may reduce LCC smoking among non-Hispanic Black young adults. Additionally, culturally appropriate health communication messaging is sorely needed to effectively address LCC risk perceptions among non-Hispanic Black young adults (Cornacchione Ross et al., 2019; Dunn et al., 2021). Such critical public health efforts during young adulthood can maximize the benefits of cessation (Taylor et al., 2002) and prevent the escalation of tobacco use (Villanti et al., 2019).

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CRediT authorship contribution statement

Lilianna Phan: Conceptualization, Writing - original draft, Writing - review & editing. **Timothy S. McNeel:** Methodology, Software, Validation, Formal analysis, Data curation, Writing - review & editing. **Kelvin Choi:** Conceptualization, Investigation, Resources, Writing - review & editing, Visualization, Supervision, Funding acquisition.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- Agaku, I.T., King, B.A., Husten, C.G., Bunnell, R., Ambrose, B.K., Hu, S.S., Holder-Hayes, E., Day, H.R., 2014. Tobacco product use among adults—United States, 2012–2013. *Morb. Mortal. Wkly Rep.* 63, 542–547.
- Chang, C.M., Corey, C.G., Rostron, B.L., Apelberg, B.J., 2015. Systematic review of cigar smoking and all cause and smoking related mortality. *Bmc Public Health* 15, 390.
- Corey, C.G., Holder-Hayes, E., Nguyen, A.B., Delnevo, C.D., Rostron, B.L., Bansal-Travers, M., Kimmel, H.L., Koblitz, A., Lambert, E., et al., 2018. US adult cigar smoking patterns, purchasing behaviors, and reasons for use according to cigar type: findings from the Population Assessment of Tobacco and Health (PATH) Study, 2013–2014. *Nicotine Tob Res* 20:1457–66.
- Cornacchione Ross, J., Noar, S.M., Sutfin, E.L., 2019. Systematic review of health communication for non-cigarette tobacco products. *Health Commun* 34 (3), 361–369.
- Cornelius, M.E., Wang, T.W., Jamal, A., Loretan, C.G., Neff, L.J., 2020. Tobacco product use among adults—United States, 2019. *Morb. Mortal. Wkly Rep.* 69 (46), 1736–1742.
- Dunn, D.S., Johnson, A.L., Sterling, K.L., Cohn, A.M., 2021. Differences in reasons for little cigar/cigarillo use across White and Black/African American young adult users. *Addict* 118, 106884. <https://doi.org/10.1016/j.addbeh.2021.106884>.
- Garrett, B.E., Gardiner, P.S., Wright, L.T.C., Pechacek, T.F., 2016. The African American youth smoking experience: an overview. *Nicotine Tob. Res.* 18 (suppl 1), S11–S15.
- Kong, A.Y., Queen, T.L., Golden, S.D., Ribisl, K.M., 2020. Neighborhood disparities in the availability, advertising, promotion, and youth appeal of little cigars and cigarillos, United States, 2015. *Nicotine Tob Res* 22:170–77.
- Kostygina, G., Glantz, S.A., Ling, P.M., 2016. Tobacco industry use of flavours to recruit new users of little cigars and cigarillos. *Tob Control* 25, 66–74.
- National Cancer Institute, Division of Cancer Control & Population Sciences. The Tobacco Use Supplement to the Current Population Survey. Accessed March 5, 2021. <https://cancercontrol.cancer.gov/brp/ctrb/tus-cps/>.
- National Cancer Institute. Cigars: Health Effects and Trends. Tobacco Control Monograph No. 9. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute. NIH Pub. No. 98-4302, February 1998.
- Richardson, A., Rath, J., Ganz, O., Xiao, H., Vallone, D., 2013. Primary and dual users of little cigars/cigarillos and large cigars: Demographic and tobacco use profiles. *Nicotine Tob. Res.* 15 (10), 1729–1736.
- Rostron, B.L., Corey, C.G., Gindi, R.M., 2019. Cigar smoking prevalence and morbidity among US adults, 2000–2015. *Prev Med Rep* 14, 100821. <https://doi.org/10.1016/j.pmedr.2019.100821>.
- Smiley, S.L., Kintz, N., Rodriguez, Y.L., Barahona, R., Sussman, S., Cruz, T.B., Chou, C.-P., Pentz, M.A., Samet, J.M., Baezconde-Garbanati, L., 2019. Disparities in retail marketing for little cigars and cigarillos in Los Angeles, California. *Addict. Behav. Rep.* 9, 100149. <https://doi.org/10.1016/j.abrep.2018.100149>.
- Spears, C.A., Jones, D.M., Pechacek, T.F., Ashley, D.L., 2019. Use of other combustible tobacco products among priority populations of smokers: implications for US tobacco regulatory policy. *Addict. Behav.* 93, 194–197.
- Sterling, K.L., Fryer, C.S., Fagan, P., 2016. The most natural tobacco used: a qualitative investigation of young adult smokers' risk perceptions of flavored little cigars and cigarillos. *Nicotine Tob. Res.* 18 (5), 827–833.
- Sterling, K.L., Jones, D.M., Majeed, B., Nyman, A.L., Weaver, S.R., 2019. Affect predicts small cigar use in a national sample of US young adults. *Tob Regul. Sci.* 5 (3), 253–263.
- Taylor, D.H., Hasselblad, V., Henley, S.J., Thun, M.J., Sloan, F.A., 2002. Benefits of smoking cessation for longevity. *Am. J. Public Health* 92 (6), 990–996.
- U.S. Department of Commerce, Census Bureau (2020). National Cancer Institute and Food and Drug Administration co-sponsored Tobacco Use Supplement to the Current Population Survey. 2018–2019. <https://cancercontrol.cancer.gov/brp/ctrb/tus-cps/>.
- Villanti, A.C., Niaura, R.S., Abrams, D.B., Mermelstein, R., 2019. Preventing smoking progression in young adults: the concept of preescalation. *Prev. Sci.* 20 (3), 377–384.