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Cigar Smoking Among U.S. Students

Reported Use After Adding Brands to Survey Items

Catherine G. Corey, MSPH, Shanta R. Dube, PhD, MPH, Bridget K. Ambrose, PhD, MPH, Brian A. King, PhD, MPH, Benjamin J. Apelberg, PhD, MHS, Corinne G. Husten, MD, MPH

Background: Among U.S. youth overall, cigars are the most commonly used tobacco product after cigarettes. However, youth who identify their products by brand names, not general terms like “cigar,” may underreport use.

Purpose: To examine changes in reported cigar (cigar, cigarillo, or little cigar) smoking among students following inclusion of cigar brand examples on the National Youth Tobacco Survey (NYTS).

Methods: Data from the 2011 and 2012 NYTS and National Survey on Drug Use and Health (NSDUH) were analyzed in 2013 to estimate ever and current cigar smoking, overall and by race/ethnicity. The 2012 NYTS included cigar brand examples (Black and Mild, Swisher Sweets, Dutch Masters, White Owl, Phillies Blunt) in the survey instructions and ever use question, but the 2011 NYTS and 2011 and 2012 NSDUH did not.

Results: NYTS ever cigar smoking was higher in 2012 (27.8%) than 2011 (19.5%) among black students overall. Current cigar smoking was 60%–70% higher among black females and students aged ≥ 17 years, in 2012 than 2011. For black females, current cigar smoking (11.5%) was two times greater than that of white females (4.3%) in 2012, whereas the prevalence among these subgroups was comparable in 2011. Similar changes were not observed among these subgroups in the 2011–2012 NSDUH.

Conclusions: This study highlights the high burden of cigar use among U.S. youth and suggests that NYTS ascertainment of cigar smoking may have improved by including brands. Disparities in cigar smoking need to be addressed to prevent and reduce all youth tobacco use.

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Introduction

Among U.S. adolescents and young adults, cigars are the most widely used tobacco product after cigarettes.^{1–3} Although cigarette smoking among young people has declined since the late 1990s, declines in cigar smoking appear to have stalled since 2005.¹ In 2011, more than 1.2 billion cigar units (i.e., single cigars, or packs of two or more) were sold in U.S. convenience

stores, with Black and Mild (owned by Altria Group); Swisher Sweets (Swisher International Group); White Owl (Scandinavian Tobacco Group); Dutch Masters (Imperial Tobacco Group); and Phillies (Imperial Tobacco Group) brands leading sales.^{4–6}

Cigar smoke contains many of the same harmful constituents found in cigarette smoke and poses significant health risks to users.^{7,8} The risks of oral cancer, lung cancer, cardiovascular disease, and chronic lung disease are elevated in cigar smokers compared to never smokers.^{7,9–12} Generally, the health risks of cigar smoking are related to frequency of use and extent of smoke inhalation.⁷ Even among cigar smokers who report not inhaling cigar smoke, the risks of dying from oral, pharyngeal, laryngeal, and esophageal cancers are elevated.⁷

The cigar market is diverse, encompassing traditional, large hand-rolled cigars, or “stogies,” and, more recently, cheap machine-made little cigars, cigarillos, and large

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cigars. Machine-made cigars vary with respect to shapes, sizes, tips, filters, and packaging.⁴ Many of these products contain fruit, chocolate, alcohol, or other characterizing flavors, and may be taxed less than cigarettes, which can increase their appeal to young people.^{4,13–19}

Information is limited on exposure to cigar marketing among young people. In one study, little cigar/cigarillo availability and exterior store advertising were greater and prices for one popular brand, Black and Mild, were lower, at retail outlets in neighborhoods with higher proportions of African American and young adult residents.¹³ A study of predominately low-income urban African American young adults reported that approximately 40% had seen cigarillo ads in bars or clubs and 60% had seen cigarillo ads in stores.²⁰

In focus groups of African American young people, inexpensive cigar varieties such as Black and Mild were typically only referred to by brand name,^{21,22} whereas the term *cigar* was associated with older adults using traditional stogies.^{21,23} Owing to differences in knowledge or commonly used expressions (i.e., slang or colloquial terms), those who refer only to brand names may not report their cigar use in surveys using general terms such as *cigar*, *cigarillo*, or *little cigar*.^{21–29}

A limited number of state and local school-based surveys have assessed the impact of including cigar brand examples.^{27–29} Terchek et al.²⁷ analyzed cigar use prevalence in six Midwestern U.S. high schools using data from the Youth Risk Behavior Survey in 2002 with a general cigar question and again in 2004 after a brand example, Black and Mild, was added to the question. They found that reported current cigar use increased 60% overall and nearly doubled among black and female students from 2002 to 2004 with the brand example, whereas national cigar prevalence based on the general cigar question was unchanged.²⁷

A follow-up split sample study by Trapl and colleagues²⁸ among 20 high schools participating in the Cuyahoga County Youth Risk Behavior Survey found that urban black students who responded to a survey with cigar brand examples were approximately 1.5–2 times more likely to report cigar use compared to their counterparts who took a survey with no brand examples; in the same study, no differences were observed among urban whites.

Nasim et al.²⁹ examined responses to a cigar question using general cigar terms and a separate question on Black and Mild use among 3,000 students participating in the Virginia Youth Tobacco Survey. Sixty percent of students who reported using Black and Milds did not report general cigar use. Students who were black or older were each more likely to misreport cigar use compared with white and younger students.²⁹

In 2012, the National Youth Tobacco Survey (NYTS) included examples of popular cigar brands for the first time (Black and Mild, Swisher Sweets, Dutch Masters, White Owl, or Phillies Blunts) in order to improve ascertainment of cigar use. The purpose of this study is to examine changes in the reported prevalence of cigar smoking among U.S. middle and high school students prior to (2011) and after (2012) brand examples were included in the NYTS. To contextualize changes in NYTS cigar smoking, comparisons were made to estimates from the 2011 and 2012 National Survey on Drug Use and Health (NSDUH), which did not include brand examples on similar measures in either year.

Methods

Data Sources

The NYTS is an ongoing, school-based survey focusing on tobacco-related measures, initiated by the CDC in 1999 and conducted jointly with the U.S. Food and Drug Administration (FDA) since 2012.³⁰ NYTS uses a stratified, three-stage cluster sample design to produce cross-sectional, nationally representative estimates of U.S. middle school (Grades 6–8) and high school (Grades 9–12) students. The sampling frame includes public, Catholic, and other private and charter school students enrolled in regular middle and high schools in the 50 states and District of Columbia.

Participating students complete a self-administered paper questionnaire in the classroom. In 2011, a total of 178 (83.2%) invited schools participated and 18,866 (87.4%) surveys were completed, yielding a response rate of 72.7%; in 2012, there were 24,658 completed interviews yielding a response rate of 73.6%. The CDC's IRB approved the NYTS data collection protocol.

The NSDUH is an annual cross-sectional household survey that provides data on the prevalence and correlates of tobacco, alcohol, and illegal drug use among non-institutionalized U.S. civilians aged ≥ 12 years.³¹ NSDUH is conducted by the Substance Abuse and Mental Health Services Administration and uses a state-based design with a multiple-stage probability sample within the 50 states and District of Columbia. Selection probabilities were designed to yield approximately equally distributed samples of persons aged 12–17 years, 18–25 years, and ≥ 26 years.

Participants complete the survey at home using computer-assisted interviewing methods. Weighted overall response rates were 74.4% and 73.0% in 2011 and 2012, respectively. Analyses were conducted using the NSDUH public use files, which included 58,397 persons in 2011 and 55,268 in 2012. Data were restricted to adolescents aged 12–19 years, which consisted of 24,250 respondents in 2011 and 22,091 in 2012.³²

Measures

In the NYTS, students were asked about ever and current cigar, cigarillo, and little cigar (hereafter referred to as “cigar”) smoking. In 2012, the instructions for the cigar section and

Table 1. Weighted demographic characteristics of 2011 and 2012 National Youth Tobacco Survey samples, % (95% CI)

	Sex		Age group (years)				School type	
	Male	Female	9–14	15–16	≥17	Middle school (Grades 6–8)	High school (Grades 9–12)	
2011								
Overall ^a	51.0 (50.0, 52.0)	49.0 (48.0, 50.0)	48.0 (42.7, 53.4)	30.3 (27.1, 33.6)	21.7 (19.4, 24.3)	43.3 (37.5, 49.3)	56.7 (50.7, 62.5)	
White, non-Hispanic	51.0 (49.8, 52.3)	49.0 (47.7, 50.2)	46.4 (39.2, 53.8)	30.7 (26.5, 35.4)	22.8 (19.6, 26.4)	41.6 (33.9, 49.8)	58.4 (50.2, 66.1)	
Black, non-Hispanic	50.9 (49.0, 52.8)	49.1 (47.2, 51.0)	45.7 (40.9, 50.6)	31.7 (28.8, 34.8)	22.5 (19.9, 25.4)	41.7 (35.9, 47.7)	58.3 (52.3, 64.1)	
Hispanic	50.9 (48.9, 52.8)	49.1 (47.2, 51.1)	50.7 (43.5, 57.8)	29.6 (25.0, 34.6)	19.8 (16.7, 23.2)	45.5 (37.6, 53.7)	54.5 (46.3, 62.4)	
2012								
Overall ^a	51.1 (50.3, 51.9)	48.9 (48.1, 49.7)	48.5 (44.4, 52.5)	29.2 (26.8, 31.8)	22.3 (20.4, 24.4)	43.9 (39.4, 48.4)	56.1 (51.6, 60.6)	
White, non-Hispanic	50.8 (49.7, 52.0)	49.2 (48.0, 50.3)	46.8 (41.8, 51.8)	30.4 (27.1, 33.9)	22.8 (20.5, 25.3)	42.2 (36.8, 47.8)	57.8 (52.2, 63.2)	
Black, non-Hispanic	51.1 (49.4, 52.9)	48.9 (47.1, 50.6)	47.1 (35.9, 58.2)	28.7 (22.9, 35.3)	24.2 (18.9, 30.6)	42.6 (30.4, 55.8)	57.4 (44.2, 69.6)	
Hispanic	50.9 (49.0, 52.8)	49.1 (47.2, 51.0)	50.6 (45.0, 56.1)	27.9 (24.6, 31.4)	21.5 (18.6, 24.8)	45.8 (39.6, 52.1)	54.2 (47.9, 60.4)	

^aOverall includes non-Hispanic: white, black/African American, Asian, American Indian/Alaskan Native, Native Hawaiian/Other Pacific Islander, multi-race, and Hispanic race/ethnicities.

questions pertaining to curiosity about cigars listed brand examples. Ever use was assessed by the question *Have you ever tried smoking cigars, cigarillos or little cigars, such as Black and Milds, Swisher Sweets, Dutch Masters, White Owl, or Phillie Blunts, even one or two puffs?* The 2011 question was worded identically; however, the survey omitted the brand examples.

In 2011 and 2012, current use was assessed by the question *During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars?* Response options included 0 days, 1 or 2 days, 3 to 5 days, 6 to 9 days, 10 to 19 days, 20 to 29 days, and all 30 days. Those who reported using cigars on at least 1 day in the past 30 days were classified as current cigar smokers.

In the 2011 and 2012 NSDUH, the cigar use module began with the following statement: *The next questions are about smoking cigars. By cigars we mean any kind, including big cigars, cigarillos, and even little cigars that look like cigarettes.* Ever use was assessed by the question *Have you ever smoked part or all of any type of cigar?* Current use was assessed by the question *During the past 30 days, have you smoked part or all of any type of cigar?*

Cigar smoking prevalence was estimated for the overall sample and by select demographic characteristics, including sex (male or female); race/ethnicity (Hispanic, non-Hispanic white, non-Hispanic black); and school level (middle school enrolled in Grades 6–8 and high school enrolled in Grades 9–12). For the NYTS, estimates were generated by age group (9–14 years, 15–16 years, and ≥19 years); exact age was not available for those aged ≥19 years. For the NSDUH, the following age groups were used: 12–14 years, 15–16 years, and 17–19 years.

Data Analysis

Data analyses were conducted in 2013 using SAS-callable SUDAAN, version 11 (RTI International, Research Triangle Park NC). Each data set was analyzed with the appropriate survey weights that account for initial section probabilities and non-response patterns and were post-stratified to match sampling frame characteristics. For 2011 and 2012, prevalence and corresponding 95% CIs for ever and current cigar smoking were estimated by sex, age group, race/ethnicity, and school level.

Table 2. Prevalence of ever cigar smoking by demographic characteristics, 2011 and 2012 National Youth Tobacco Survey, % (95% CI)

	Sex					Age group (years)			School type	
	Overall	Male	Female	9–14	15–16	≥ 17	Middle school (Grades 6–8)	High school (Grades 9–12)		
2011										
Overall ^a	20.1 (18.3, 22.0)	24.9 (22.8, 27.1)	15.2 (13.5, 17.1)	9.6 (8.6, 10.9)	24.8 (22.2, 27.5)	36.6 (33.8, 39.5)	9.3 (8.3, 10.5)	28.3 (26.1, 30.5)		
White, non-Hispanic	20.1 (17.5, 23.0)	25.8 (22.8, 29.0)	14.4 (11.9, 17.3)	7.1 (6.0, 8.4)	24.3 (21.0, 27.9)	40.9 (37.5, 44.4)	6.8 (5.8, 7.9)	29.6 (27.0, 32.4)		
Black, non-Hispanic	19.5 (16.7, 22.6)	22.7 (18.9, 26.9)	15.5 (12.9, 18.6)	12.9 (10.2, 16.2)	22.8 (18.9, 27.2)	27.3 (23.2, 31.9)	11.8 (9.3, 14.9)	24.4 (20.9, 28.2)		
Hispanic	22.6 (20.9, 24.4)	26.4 (23.7, 29.3)	18.8 (17.0, 20.7)	14.5 (13.2, 15.9)	28.8 (25.7, 32.1)	34.0 (28.7, 39.8)	14.7 (13.1, 16.4)	29.2 (26.0, 32.7)		
2012										
Overall ^a	21.2 (19.5, 22.9)	25.2 (23.3, 27.2)	17.1 (15.3, 19.0)	8.4 (7.4, 9.5)	28.0 (25.4, 30.7)	40.1 (37.6, 42.7)	8.1 (6.9, 9.4)	31.3 (29.2, 33.5)		
White, non-Hispanic	19.7 (17.9, 21.7)	24.8 (22.5, 27.2)	14.6 (12.8, 16.6)	5.9 (5.0, 6.9)	24.4 (21.3, 27.9)	41.9 (39.2, 44.6)	5.5 (4.5, 6.6)	30.1 (27.4, 32.9)		
Black, non-Hispanic	27.8 (23.7, 32.4)	27.9 (22.7, 33.9)	27.7 (23.3, 32.6)	12.6 (9.6, 16.5)	38.7 (32.3, 45.5)	44.3 (39.2, 49.6)	12.2 (8.6, 16.9)	39.4 (34.6, 44.4)		
Hispanic	23.1 (20.8, 25.5)	27.1 (24.1, 30.4)	19.0 (16.7, 21.5)	12.2 (10.3, 14.5)	31.3 (27.7, 35.0)	38.3 (32.7, 44.2)	12.3 (10.3, 14.6)	32.0 (28.9, 35.2)		

Note: Boldface indicates statistically significant difference between 2011 and corresponding 2012 estimate ($p < 0.05$).

^aOverall includes non-Hispanic: white, black/African American, Asian, American Indian/Alaskan Native, Native Hawaiian/Other Pacific Islander, multi-race, and Hispanic race/ethnicities.

For each survey, *t*-tests were used to assess whether differences in prevalence between subgroups were statistically significant, using an alpha level of $p=0.05$. The relative percentage change was calculated as 2011 cigar prevalence subtracted from 2012 cigar prevalence, divided by 2011 cigar prevalence. Analyses were conducted for students overall and by race/ethnicity (non-Hispanic whites, non-Hispanics blacks, and Hispanics) given that in previous studies, black students were more likely to report cigar use when brand examples were given.^{27–29}

Results

The weighted demographic characteristics of the NYTS 2011 and 2012 samples are presented in Table 1. No differences in the sample characteristics were detected between 2011 and 2012 in the NYTS. No differences were detected between 2011 and 2012 in the NSDUH (Appendix A).

In the NYTS, 21.2% of students in 2012 reported ever smoking cigars; prevalence was greater among non-Hispanic blacks (27.8%) and Hispanics (23.1%) than non-Hispanic whites (19.7%) (Table 2). In 2012, among non-Hispanic blacks only, ever cigar smoking prevalence was comparable among male (27.9%) and female (27.7%) students, whereas for non-Hispanic whites and Hispanics, prevalence was greater among male than female students.

The prevalence of ever cigar smoking was higher in 2012 than 2011 among non-Hispanic black students overall (27.8% vs 19.5%) and among female students (27.7% vs 15.5%); high school students (39.4% vs 24.4%); and those aged 15–16 years (38.7% vs 22.8%) or ≥ 17 years (44.3% vs 27.3%). The comparable 2011 and 2012 NSDUH estimates of cigar ever smoking prevalence are reported in Appendix B.

Figure 1 summarizes the relative percentage change in ever cigar prevalence from 2011 to 2012 among subgroups of non-Hispanic black adolescent NYTS and NSDUH respondents. In the NYTS,

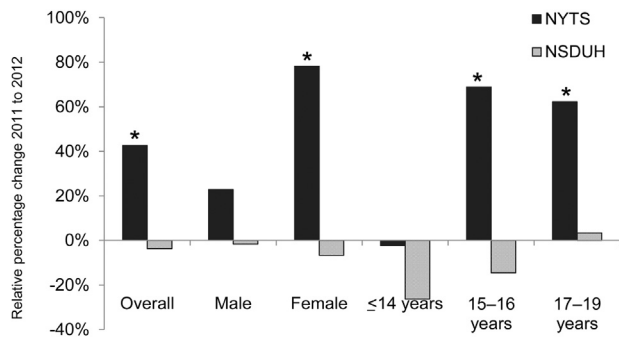


Figure 1. Relative percentage change in ever cigar smoking prevalence, non-Hispanic black adolescents, 2011 and 2012 NYTS and NSDUH

NSDUH, National Survey on Drug Use and Health; NYTS, National Youth Tobacco Survey

Note: *Denotes that 2012 point estimate is significantly different from 2011 estimate ($p < 0.05$). The relative percentage change was calculated as the 2011 cigar prevalence subtracted from the 2012 cigar prevalence divided by the 2011 cigar prevalence.

Age group ≤ 14 includes ages 9–14 years for NYTS and ages 12–14 years for NSDUH. Age group 17–19 years includes ages ≥ 17 years for NYTS and ages 17–19 years for NSDUH.

among non-Hispanic black adolescents overall, the relative percentage change in ever cigar smoking from 2011 to 2012 was 43%. Among non-Hispanic black female students and students aged ≥ 15 years, the relative percentage change in ever cigar use was even greater (approximately 79% and 65%, respectively). In contrast, among NSDUH respondents, no significant changes in ever cigar use were detected from 2011 to 2012 among these subgroups.

In NYTS, 8.4% of students in 2012 reported currently smoking cigars (Table 3). Prevalence was greater among non-Hispanic blacks (11.7%) and Hispanics (9.1%) than among non-Hispanic whites (7.6%). In 2012, among non-Hispanic blacks, current cigar smoking prevalence was comparable among male (11.9%) and female (11.5%) students, whereas among non-Hispanic whites and Hispanics prevalence was greater among males than females.

In 2012, current cigar smoking among non-Hispanic black female students was more than double that of non-Hispanic white female students (4.3%). Prevalence among non-Hispanic black high school students overall was higher in 2012 (16.6%) than 2011 (11.5%). Prevalence of current cigar smoking was also higher in 2012 than 2011 among non-Hispanic black female students (11.5% vs 6.7%) and students aged ≥ 17 years (19.8% vs 12.4%). Differences in cigar prevalence between the oldest and youngest non-Hispanic black students were more than twice as large in 2012 as in 2011. The comparable 2011 and 2012 NSDUH estimates of current cigar smoking are reported in Appendix C.

Figure 2 summarizes the relative percentage change in current cigar use from 2011 to 2012 among subgroups of non-Hispanic black adolescent NYTS and NSDUH respondents. In the NYTS, among female students and students aged ≥ 17 years, the relative percentage change in current cigar use from 2011 to 2012 was 72% and 60%, respectively. In contrast, among NSDUH respondents, no significant changes in current cigar use were detected from 2011 to 2012 among these subgroups.

Discussion

This study highlights the high burden of cigar use among U.S. youth and suggests that cigar smoking may have been previously underreported among some adolescent subgroups. In 2012, an estimated 5.6 million middle and high school students had ever smoked cigars and 2.2 million were current cigar smokers according to NYTS data. In 2012, substantial racial and ethnic disparities in cigar smoking prevalence were observed, especially among non-Hispanic black female students whose cigar prevalence (11.5%) was more than double that of non-Hispanic white female students (4.3%).

Compared with 2011, the relative percentage change in prevalence of current cigar smoking among non-Hispanic black female and older students was 60%–70% higher in the 2012 NYTS, a survey year that included cigar brand examples. These results are consistent with a limited number of previous studies^{27–29} that have suggested that adding brand examples to general survey questions on cigar use may increase reporting among some students that may otherwise not identify as “cigar,” “cigarillo,” or “little cigar” smokers.

It is possible that the inclusion of cigar brand examples may prompt adolescents who use the specific brands for blunting (i.e., removing the cigar tobacco filler from the cigar wrapper and replacing it with marijuana) to report cigar use. Previous studies of cigar use that did not use brand examples have reported that only one third of past month blunt users reported past month cigar use.³³ Additional research is needed to understand the relationship between self-reported cigar use and blunt use in the context of tobacco monitoring.^{33,34}

To contextualize the changes in cigar use reported among some NYTS subgroups with and without brand examples, the patterns seen in the NYTS were compared to those seen in the NSDUH data. In 2011, in both the NYTS and NSDUH, male respondents and older adolescents tended to have greater cigar prevalence than female

Table 3. Prevalence of current cigar smoking by demographic characteristics, 2011 and 2012 National Youth Tobacco Survey, % (95% CI)

	Sex			Age group (years)				School type		
	Overall	Male	Female	9–14	15–16	≥ 17	Middle school (Grades 6–8)	High school (Grades 9–12)		
2011										
Overall ^a	8.1 (7.2, 9.0)	10.7 (9.6, 11.9)	5.3 (4.5, 6.2)	3.7 (3.1, 4.4)	9.8 (8.6, 11.2)	15.5 (13.9, 17.2)	3.5 (2.8, 4.2)	11.6 (10.5, 12.8)		
White, non-Hispanic	7.7 (6.5, 9.1)	10.8 (9.3, 12.6)	4.5 (3.5, 5.7)	2.2 (1.6, 2.9)	9.3 (7.8, 11.0)	16.7 (14.6, 19.2)	2.1 (1.6, 2.8)	11.7 (10.3, 13.3)		
Black, non-Hispanic	9.2 (7.7, 11.0)	11.0 (8.7, 13.9)	6.7 (5.3, 8.4)	6.2 (4.7, 8.1)	11.5 (8.9, 14.9)	12.4 (10.1, 15.0)	5.6 (4.2, 7.4)	11.5 (9.6, 13.6)		
Hispanic	9.0 (8.1, 10.0)	10.6 (9.4, 11.9)	7.2 (6.1, 8.5)	6.3 (5.3, 7.5)	10.2 (8.4, 12.2)	13.9 (11.5, 16.7)	6.1 (4.9, 7.4)	11.3 (9.8, 13.1)		
2012										
Overall ^a	8.4 (7.6, 9.2)	10.8 (9.8, 12.0)	5.8 (5.1, 6.8)	3.0 (2.6, 3.6)	10.7 (9.4, 12.3)	16.9 (15.3, 18.6)	2.8 (2.4, 3.4)	12.6 (11.4, 13.9)		
White, non-Hispanic	7.6 (6.7, 8.6)	10.8 (9.4, 12.4)	4.3 (3.5, 5.3)	1.8 (1.3, 2.3)	9.1 (7.3, 11.2)	17.5 (15.6, 19.6)	1.5 (1.1, 2.1)	11.9 (10.5, 13.6)		
Black, non-Hispanic	11.7 (9.7, 14.0)	11.9 (9.5, 14.8)	11.5 (9.3, 14.1)	4.8 (3.5, 6.5)	16.0 (12.8, 19.7)	19.8 (16.9, 23.0)	5.1 (3.7, 6.8)	16.6 (14.1, 19.4)		
Hispanic	9.1 (7.9, 10.6)	11.4 (9.7, 13.3)	6.8 (5.6, 8.3)	5.3 (4.0, 6.9)	11.5 (9.7, 13.5)	15.3 (12.4, 18.8)	4.9 (3.8, 6.4)	12.4 (10.6, 14.4)		

Note: Boldface indicates statistically significant difference between 2011 and corresponding 2012 estimate ($p < 0.05$).

^aOverall includes non-Hispanic: white, black/African American, Asian, American Indian/Alaskan Native, Native Hawaiian/Other Pacific Islander, multi-race, and Hispanic race/ethnicities.

respondents and younger adolescents, respectively. With the addition of brand examples in the 2012 NYTS, the relative percentage change in ever cigar use was 43% higher among non-Hispanic blacks overall, 79% higher among female students, and roughly 65% higher among students aged ≥ 15 years compared with the 2011 NYTS, whereas no significant changes were observed in the same subgroups in the NSDUH data without brand examples.

Similarly, in the 2012 NYTS, the relative percentage change in current cigar use was 72% higher among non-Hispanic black female students and 60% higher among students aged ≥ 17 years compared with the 2011 NYTS, whereas no changes were observed in the same subgroups in the NSDUH. It is important to note that methodologic differences, including sample design, survey mode, age distribution of respondents, and question wording, may limit the use of NSDUH data as a direct comparator to NYTS data.

Nonetheless, the results of this analysis, in conjunction with previous studies, suggest that applying more comprehensive measures of cigar smoking to national, state, and local tobacco use surveys can better capture smoking among all youth, some of whom may not report this use in the absence of cigar brand examples. These studies also suggest that the burden of cigar smoking among adolescents may be greater than previously thought owing to underreporting on national health surveys. Programs targeting cigar smoking prevention and cessation could address the marketing and advertising practices of the tobacco industry^{13,20,25} as well as issues of low perceived health risks of cigar products^{20,22,23,25} and the potential for addiction when using these products.

This study is subject to certain limitations. Given that a split sample experiment with and without brand examples was not implemented for the NYTS, any actual temporal shifts in cigar use cannot be disentangled from the impacts of

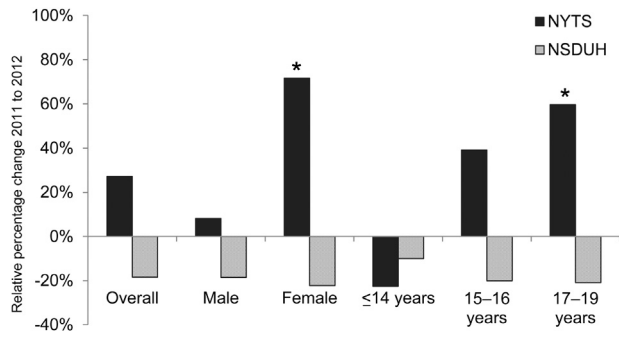


Figure 2. Relative percentage change in current cigar smoking prevalence, non-Hispanic black adolescents, 2011 and 2012 NYTS and NSDUH

NSDUH, National Survey on Drug Use and Health; NYTS, National Youth Tobacco Survey

Note: *Denotes that 2012 point estimate is significantly different from 2011 estimate ($p < 0.05$). The relative percentage change was calculated as the 2011 cigar prevalence subtracted from the 2012 cigar prevalence divided by the 2011 cigar prevalence.

Age group ≤ 14 includes ages 9–14 years for NYTS and ages 12–14 years for NSDUH. Age group 17–19 years includes ages ≥ 17 years for NYTS and ages 17–19 years for NSDUH.

including cigar brand examples. In the 2012 NYTS, the respondent instructions and ever cigar use and curiosity measures all referenced brand examples. Although the current cigar smoking measure did not explicitly contain brands, the preceding questions likely prepared students to consider mass-market products when responding to current cigar smoking. Although the included brands are popular among young people,⁴ students using other cigar brands may not have recognized the provided examples and therefore not reported cigar use.

Second, the NYTS did not collect data separately by cigar type (e.g., little cigar, cigarillo, large cigar) or attributes (e.g., size, shape, filters, flavors, and packaging); thus, it cannot be ascertained whether smokers of certain cigar types were more likely to report use in 2012 than in 2011. Ascertaining cigar type is challenging, and electronic approaches to data collection that incorporate product images and physical descriptors can aid respondents in identifying the cigar types used.³⁵ Third, data were collected from students enrolled in traditional middle or high schools, and thus may not be representative of all U.S. youth, including those not enrolled in school. Finally, methodologic differences exist between the NYTS and NSDUH that may limit the direct comparability of estimates between surveys.

Conclusions

The inclusion of brand examples in the 2012 NYTS appears to have improved measurement of cigar use and identified disparities in cigar use among some subgroups. These find-

ings demonstrate that the burden of cigar use among U.S. students is high and suggest that cigar use may have been previously underreported when only general cigar terms were used. These results underscore the importance of implementing evidence-based population-level strategies that can prevent and reduce tobacco use and tobacco-related disparities.

Efforts at the national, state, and local levels to protect youth from the harm of cigar use could include increased education regarding the harm of all tobacco products, product standards to limit the appeal or addictiveness of tobacco products, increases in tobacco product pricing, restrictions on marketing and promotions that reach youth, and reductions in the availability of tobacco products for purchase by youth.

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Appendix

Supplementary data

Supplementary data associated with this article can be found at <http://dx.doi.org/10.1016/j.amepre.2014.05.004>.