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Tobacco use disparities by racial/ethnic groups: California compared to the United States

Kari-Lyn K. Sakuma PhD MPH [a,*], Jamie Quibol Felicitas-Perkins MPH [b], Lyzette Blanco MPH [b], Pebbles Fagan PhD MPH [c], Eliseo J. Pérez-Stable MD [d,1], Kim Pulvers PhD MPH [e], Devan Romero DrPH MS [e], Dennis R. Trinidad PhD MPH [f]

[a] Oregon State University, College of Public Health and Human Sciences, School of Social and Behavioral Health Sciences, Corvallis, OR, United States
[b] Claremont Graduate University, School of Community and Global Health, Claremont, CA, United States
[c] University of Hawaii, Cancer Center, Honolulu, HI, United States
[d] Division of General Internal Medicine, Department of Medicine, Medical Effectiveness Research Center for Diverse Populations, University of California, San Francisco, United States
[e] California State University San Marcos, San Marcos, CA, United States
[f] University of California, San Diego, United States

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ABSTRACT

Racial/ethnic disparities in cigarette use and cessation persist. This study compared cigarette consumption and former smoking trends in California (CA) with the rest of the United States (US) by racial/ethnic categories of non-Hispanic White, Black, Hispanic/Latino, and Asian/Pacific Islander groups. Data were analyzed from the 1992 to 2011 Tobacco Use Supplement to the Current Population Survey. Consumption levels across decades were examined and adjusted logistic regression models were fit to compare across CA and US.

Results indicated steady declines in ever smoking prevalence for all groups with much lower magnitudes of change among US Blacks and Whites compared to their CA counterparts. After controlling for age, gender, and education, CA had significantly fewer heavy smokers (OR = 0.45, 95% CI:0.38–0.54), more light and intermittent smokers (LITS; OR = 1.68, 95%CI: 1.45–1.93), and a greater proportion of former smokers (OR = 1.35, 95%CI: 1.24–1.48) than the rest of US. Data were stratified by race/ethnicity and the patterns shown were mostly consistent with CA performing statistically better than their US counterparts with the exception of Black LITS and Asian/Pacific Islander former smokers. California's success in reducing tobacco use disparities may serve as a prime example of tobacco control policy for the country. CA and the US will need to continue to address tobacco use and cessation in the context of the growing diversity of the population.

1. Introduction

Racial/ethnic minority populations suffer disproportionately from tobacco-related morbidity and mortality compared to non-Hispanic Whites (Whites) (American Lung Association, 2010; US Department of Health and Human Services, 1998, 2000, 2004; Xu, Murphy, Kochanek, & Bastian, 2016). African Americans smoke fewer cigarettes (Haiman et al., 2006) and are more likely to be non-daily smokers than Whites (Trinidad et al., 2009), yet they have an elevated risk of lung cancer (Centers for Disease Control and Prevention, 2008; Fagan, Moolchan, Lawrence, Fernander, & Ponder, 2007; Haiman et al., 2006; Howe, Lake, Schymura, & Edwards, 2009). Hispanics/Latinos also smoke fewer cigarettes and are more likely to be non-daily smokers; however lung cancer is the leading cause of cancer death among Hispanic/Latino men and second leading cause among Hispanic/Latina women (American Cancer Society, 2012; Siegel, Naishadham, & Jemal, 2012). Disparities for smoking cessation are also apparent. African Americans had greater intentions to quit smoking compared to Whites (49.3% vs. 40.9%, respectively), but fewer African American adult ever smokers actually quit compared to Whites (44.1% vs. 57.1%, respectively) (US Department of Health and Human Services, 2014).

The state of California has been widely recognized for having the longest running and most effective comprehensive tobacco control program in the US. The California Tobacco Control Program (CTCP) has demonstrated significant reductions in overall smoking initiation (Messer et al., 2007; Pierce, Messer, White, Cowling, & Thomas, 2011; Pierce, White, & Gilpin, 2005), cigarette consumption (Al-Delaimy, White, Gilmer, Zhu, & Pierce, 2008; Gilpin, Messer, White, & Pierce, 2006; Pierce, White, & Messer, 2009), and associated reductions in

* Corresponding author at: College of Public Health and Human Sciences, School of Social and Behavioral Health Sciences, Oregon State University, 412 Waldo Hall, Corvallis, OR 97331-6406, United States.
E-mail address: karilyn.sakuma@oregonstate.edu (K.-L.K. Sakuma).
[1] Currently at the Office of the Director, National Institute of Minority Health and Health Disparities, National Institutes of Health.

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Table 1a
Demographic characteristics and smoking behaviors, CALIFORNIA by race/ethnicity, by decade.

	Non-Hispanic White						Black					
	1990s		2000s		2010s		1990s		2000s		2010s	
	Unweighted $N = 24{,}067$		Unweighted $N = 19{,}469$		Unweighted $N = 6682$		Unweighted $N = 2377$		Unweighted $N = 2296$		Unweighted $N = 779$	
	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Age (years)												
18–24	10.5	(10.1–10.9)	10.9	(10.7–11.1)	10.5	(9.3–11.7)	11.4	(10.6–12.1)	14.2	(13.6–14.8)	14.3	(11.5–17.1)
25–44	41.3	(41.0–41.7)	35.4	(35.1–35.7)	31.3	(30.0–32.5)	49.9	(48.6–51.3)	42.5	(41.8–43.2)	38.5	(35.7–41.4)
45–64	29.4	(29.1–29.7)	35.5	(35.2–35.7)	38.0	(36.8–39.2)	26.8	(25.5–28.1)	30.9	(30.2–31.5)	34.5	(32.0–37.1)
65+	18.8	(18.6–19.1)	18.2	(17.9–18.6)	20.3	(19.1–21.4)	11.9	(11.0–12.8)	12.4	(11.9–12.9)	12.6	(10.1–15.1)
Sex												
Men	49.3	(48.7–49.9)	49.5	(49.3–49.6)	49.3	(48.6–50.0)	45.1	(42.6–47.6)	46.6	(46.2–47.1)	46.9	(44.8–49.0)
Women	50.7	(50.1–51.3)	50.5	(50.4–50.7)	50.7	(50.0–51.4)	54.9	(52.4–57.4)	53.4	(52.9–53.8)	53.1	(51.0–55.2)
Education												
Less than high school	8.8	(8.0.6–9.0)	6.6	(6.5–6.8)	5.0	(4.3–5.6)	15.2	(14.6–15.9)	12.3	(11.8–12.9)	10.5	(8.0–12.9)
High school grad	26.0	(25.7–26.2)	22.1	(21.8–22.3)	20.1	(18.7–21.4)	29.3	(28.6–30.1)	25.0	(24.3–25.7)	26.4	(23.2–29.5)
Some college	34.3	(34.1–34.6)	35.2	(34.9–35.5)	33.5	(31.8–35.2)	36.7	(35.9–37.4)	41.4	(40.6–42.2)	39.0	(35.4–42.7)
College grad	30.9	(30.6–31.3)	36.1	(35.7–36.5)	41.5	(39.6–43.3)	18.8	(18.0–19.6)	21.3	(20.5–22.0)	24.1	(20.9–27.3)
Cigarette smoking levels												
Never	51.3	(51.0–51.6)	58.8	(58.5–59.1)	64.9	(63.6–66.1)	57.2	(56.5–57.9)	67.6	(66.9–68.3)	74.5	(71.0–78.1)
Ever	48.7	(48.4–49.0)	41.2	(40.9–41.5)	35.1	(33.9–36.4)	42.8	(42.1–43.5)	32.4	(31.7–33.1)	25.5	(21.9–29.0)
Current	20.3	(20.0–20.5)	15.7	(15.5–15.9)	12.1	(11.2–13.1)	24.1	(23.5–24.8)	17.6	(17.0–18.2)	12.1	(9.7–14.6)
Former	28.4	(28.2–28.7)	25.3	(25.1–25.5)	22.6	(21.6–23.6)	18.7	(18.1–19.3)	14.7	(14.1–15.2)	13.0	(10.5–15.5)
LITS: occasional + daily, ≤5 cpd	5.1	(5.0–5.2)	5	(4.9–5.1)	4.3	(3.6–4.9)	8.4	(8.0–8.9)	7.4	(7.0–7.9)	6.1	(4.5–7.7)
Moderate: daily, 6–19 cpd	5.9	(5.8–6.1)	5.3	(5.2–5.4)	4.8	(4.2–5.5)	9.5	(9.1–9.9)	6.3	(5.9–6.7)	5.1	(3.3–6.9)
Heavy: daily,20 ≤ cpd	9.1	(9.9–9.2)	5.4	(5.2–5.5)	2.9	(2.4–3.3)	5.8	(5.4–6.2)	3.3	(2.9–3.6)	0.8	(0.1–1.4)

Note: CI = confidence interval; cpd = cigarettes per day; All consumption variables in this table are calculated with overall ethnic subpopulation as the denominator.

cardiovascular and cancer morbidity and mortality rates (Lightwood & Glantz, 2013; Max, Sung, Shi, & Stark, 2015). As a result, California reaped an overall savings of $134 billion in healthcare expenditures for the state (Lightwood & Glantz, 2013; Max et al., 2015). As a whole, the US has also seen declines in tobacco use and savings due to reductions in health care expenditures and increases in quality of life measures (US Department of Health and Human Services, 2014). However, tobacco control programs have not been implemented uniformly and comparisons between California and the rest of the US on tobacco use disparities are limited.

Examining population levels of cigarette consumption provides important information on how various groups may be shifting their cigarette usage patterns. This information can be used to fine tune prevention and cessation programs. Recent work has established that light and intermittent smoking (LITS) has increased over time in California and that Asian American, African American, and Hispanic/Latino smokers are more likely to be LITS than heavy daily smokers (Blanco et al., 2014a, b; Pulvers et al., 2014; Sakuma et al., 2015). Among US youth, daily moderate to heavy smokers (defined as smoking ten cigarettes or more per day) appears to be decreasing, further supporting shifting trends in consumption levels (Kozlowski & Giovino, 2014). However, it is unknown how the significant patterns observed in LITS among racial/ethnic minority adult smokers in California will compare to the US. Further investigation is needed to understand the full distribution of smoking consumption levels and quitting behaviors within each racial/ethnic subgroup.

With the increase in diversity projected for the US population, California may represent the future demographic profile of the nation (US Census Bureau, 2012). Population-level smoking rates and associated morbidity and mortality may shift alongside these demographic changes in the US, potentially increasing tobacco related health disparities. Although research has examined CTCP's differential effects across racial/ethnic groups within California (Trinidad et al., 2007), understanding how consumption and quit rates have varied over time in California, a state with a strong tobacco control program, compared to the rest of the US across different racial/ethnic groups will help define and strengthen efforts to curtail the effects of tobacco on the US population.

2. Methods

2.1. Data source

This study used cross-sectional data collected from the 1992–2011 Tobacco Use Supplement (TUS) to the Current Population Survey (CPS) to estimate cigarette smoking prevalence and frequency across racial/ethnic groups in California and the rest of the US. The CPS, administered by the US Census Bureau, uses a multistage probability sample design to collect monthly national and state data from approximately 60,000 households on labor force characteristics among the civilian, non-institutionalized US population age 15 and older (US Census Bureau, 2006). The TUS, conducted in conjunction with the CPS every three years, collects data on tobacco use and related attitudes and practices among CPS participants. The present study used data from 1992/1993, 1995/1996, 1998/1999, 2001/2002, 2003, 2006/2007, and 2010/2011 surveys. The TUS-CPS has a self-response rate range from 62% (2006–2007) to 72% (1992–1993) (National Cancer Institute, 2015). Analyses were restricted to those who were 18 years or older, were self-responders and not proxy responders (typically family members), and those who completed the interview in person rather than by telephone.

2.2. Measures

2.2.1. Demographic characteristics

Demographic measures include age group (18–34 years, 35–49 years, 50–64 years, and 65 years or older), gender, level of education (less than high school, high school graduate with diploma or equivalent, some college, and college graduate), and race/ethnicity. We used the US