



Smoking cessation among U.S. Hispanic/Latino adults: Findings from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL)



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ABSTRACT

This paper examines patterns of smoking cessation among Hispanics/Latinos with particular attention to gender, acculturation, and national background. Data are from the Hispanic Community Health Study/Study of Latinos, a population-based study of 16,415 non-institutionalized Hispanics/Latinos ages 18–74 from a stratified random sample of households in Chicago, Miami, the Bronx, and San Diego. Face-to-face interviews, in English or Spanish, were conducted from 2008 to 2011. Findings are based on 6398 participants who reported smoking at least 100 cigarettes in their lifetime. Associations with smoking cessation outcomes were assessed in bivariate and multivariable analyses. Findings indicate that approximately equal proportions of men and women were former smokers. There was little difference by gender in socioeconomic characteristics associated with smoking cessation. Both men and women who lived in households with smokers were less likely to be abstinent. Multivariable analysis indicated that the likelihood of quitting varied by national background primarily among men, however, Puerto Rican and Cuban smokers of both genders were the least likely to successfully quit smoking. Among women, but not men, younger and more socially acculturated individuals had lower odds of sustaining cessation. Over 90% of female and male former smokers reported quitting on their own without cessation aids or therapy. The results suggest that many Hispanics/Latinos are self-motivated to quit and are able to do so without clinical assistance. Heterogeneity in smoking behaviors among Hispanics/Latinos should be taken into account when developing and delivering smoking cessation interventions and public health campaigns.

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Introduction

The prevalence of cigarette smoking in the United States continues to decline across race and ethnic groups. However, one out of seven U.S. Hispanics/Latinos used cigarettes in 2013 (Agaku et al., 2014a). Although smoking prevalence among Hispanics/Latinos is lower than the national average, much of the recent U.S. population growth is attributable to increasing numbers of Hispanics/Latinos (Ennis et al., 2011) and smoking-related illnesses are leading causes of death among this population group (National Center for Health Statistics, 2014). Thus, reducing tobacco use by Hispanics/Latinos is a significant public health issue. The importance of promoting smoking cessation among Hispanics/Latinos is underscored by evidence that they are less

likely than other ethnic groups to be advised to quit by health professionals or to use tobacco cessation aids (Cokkinides et al., 2008; Kruger et al., 2012; Trinidad et al., 2011).

U.S. national data from 2003 indicate that among those who ever smoked, Hispanics/Latinos were less likely to be former smokers compared to non-Hispanic Whites (Trinidad et al., 2011). In 2010, fewer U.S. Hispanic/Latino smokers expressed an interest in quitting compared to non-Hispanic Blacks and non-Hispanic Whites (Malarcher et al., 2011). Overall statistics mask variation across U.S. Hispanic/Latino subgroups in smoking prevalence, which is highest among Puerto Rican and Cuban-American men and women (Caraballo et al., 2008; Freeman and Adams, 2012; Kaplan et al., 2014). However, few national studies examine Hispanic/Latino smoking cessation by national background. One such study indicated that relatively more Puerto Rican men and women were former smokers compared to those of Cuban and Mexican background (Blanco et al., 2014). Although the low prevalence of smoking by Hispanic/Latina women is a consistent finding (Agaku et al., 2014b;

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Fagan et al., 2007; Garrett et al., 2011; Karlamangla et al., 2010; King et al., 2011; Pérez-Stable et al., 2001), only a small number of studies have examined the relationship between gender and smoking cessation among Hispanics/Latinos (Blanco et al., 2014; Karlamangla et al., 2010; Pérez-Stable et al., 2001; Haiman et al., 2006).

A well-established finding is the association of acculturation, the adoption by immigrants of values, attitudes, and behaviors of the surrounding new culture, with increased probability of smoking among Hispanics/Latinos, particularly women (Kaplan et al., 2014; Karlamangla et al., 2010; Pérez-Stable et al., 2001; Bethel and Schenker, 2005; Abraido-Lanza et al., 2005; Lara et al., 2005; Salinas and Sheffield, 2011; Wilkinson et al., 2005; Marin et al., 1989). This relationship is generally similar to that found among U.S. black and Asian immigrants, who also have lower prevalence of smoking compared with whites or those born in the U.S. (Bennett et al., 2008; Singh and Siahpush, 2002). However, there is some evidence that acculturation has a positive association with smoking among Latina and Asian women, with the opposite pattern among men (Pérez-Stable et al., 2001; Zhang and Wang, 2008; Choi et al., 2008). The few studies examining the relationship of acculturation to smoking cessation yield inconsistent results (Karlamangla et al., 2010; Castro et al., 2009; Gundersen et al., 2012). Less acculturated U.S. Hispanics/Latinos may have greater concerns about the effects of smoking on others, especially family members (Pérez-Stable et al., 1998), as well as lower nicotine dependency and more infrequent use of nicotine replacement therapy (Zinser et al., 2011).

The objective of this paper is to characterize smoking cessation in a large and diverse population-based sample of Hispanics/Latinos living in four U.S. metropolitan areas with high concentrations of Hispanics/Latinos. The focus is on examining how smoking cessation is related to sociodemographic characteristics, smoking behaviors and influences, and quit attempts, with particular attention to patterns by gender, national background, and acculturation.

Methods

Sampling design

Data are from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL), a population-based study of Hispanics/Latinos from randomly selected households in Chicago, Miami, the Bronx, and San Diego. U.S. Hispanic/Latinos are defined as persons residing in the United States who have personal or family roots in the Spanish-speaking nations of Latin America. The target population was non-institutionalized Hispanics/Latinos ages 18–74 years residing in defined geographic areas who self-identified as Hispanic/Latino and were able to travel to a local study field center. HCHS/SOL includes individuals of various national backgrounds, the largest being Mexican ($n = 6471$), Puerto Rican ($n = 2728$), Cuban ($n = 2348$), Central American ($n = 1730$), Dominican ($n = 1460$), and South American ($n = 1068$).

Participants were selected based on a stratified two-stage area probability sample of household addresses from each of the field sites. The first stage randomly selected census block groups with stratification based on Hispanic/Latino concentration and proportions of high or low level of education. The second stage randomly selected households from census block groups. Oversampling was employed to increase the likelihood of identifying Hispanic/Latino households and representation of adults older than 45 years of age, relating to the main study's interest in examining chronic diseases. In-person or telephone contacts were made to screen eligible households. Sampling design and selection is described in detail elsewhere (Lavange et al., 2010).

Baseline interviews were conducted in English or Spanish from 2008 to 2011 (Sorlie et al., 2010). Of 39,384 individuals who met eligibility criteria, 41.7% were enrolled, representing 16,415 persons from 9872 households. The study was approved by Institutional Review Boards at each field center, where all participants gave written consent.

Variables and measures

All variables are based on self-reports. Smoking status was assessed by the question "Have you ever smoked at least 100 cigarettes in your entire life?"

Participants responding "yes" were then asked if they now smoke daily, some days, or not at all (former smokers). Current daily and non-daily smokers were asked if they ever quit smoking for six months or longer and for how many years they quit. Former smokers were asked if they ever quit smoking for six months or longer before stopping completely and how many years total they quit during their previous quit attempt. Smoking cessation status was assigned based on three mutually exclusive categories: 1) current smoker and never quit for six months or longer; 2) current smoker and quit in past for six months or longer (ever tried to quit); and 3) no longer smokes (former smoker).

Tobacco use measures included age first started to smoke cigarettes regularly, number of years smoked cigarettes, and, on average, number of cigarettes per day. Lifetime pack-years were calculated based on age at smoking initiation, periods of quitting, and average lifetime cigarettes per day. Reproducibility of smoking variables was assessed in a sample of 56 individuals through repeated study visits conducted a median of 42 days apart. This analysis yielded a *kappa* of 0.93 for smoking status and intraclass correlation coefficients of 0.89 for age started smoking, 0.92 for current cigarettes per day, and 0.83 for lifetime average cigarettes per day (Kaplan et al., 2014). The *kappa* for 'ever quit smoking for six months or longer' was 0.81.

Exposure to smoking by others was measured by questions ascertaining whether the respondent lived with someone who smoked in the home before age 13 and after age 13, and number of current household members who smoke regularly in the home. Former smokers and current smokers with a previous quit attempt were asked the main reasons they quit: advice of physician; health reasons/self-initiated; pressure from others; and other reason. Because a large number of participants offered other reasons why they quit, these responses were coded and included in the analysis. Another question asked about various quit methods ever used, including: prescription gums, patches, medications; over-the-counter aids; and behavioral or group therapy.

Acculturation was measured with a modified ten-item version of the Short Acculturation Scale for Hispanics (SASH) (Marin et al., 1987), comprising two subscales. The first subscale, with six items, reflects language preferences, e.g., language usually speaks at home, and with friends. The second four-item subscale reflects socializing practices and preferences, e.g., how many close friends are Hispanic/Latino, prefers social gatherings with Hispanics/Latinos. Each subscale employs five-point Likert-type responses. Higher scores represent greater acculturation to the dominant U.S. culture. Language subscale reliability in the full sample yielded Cronbach's *alpha* of 0.92, and 0.80 for the English-language version and 0.85 for the Spanish-language version. The full sample *alpha* for the social subscale was 0.73, and 0.65 and 0.71 for the English and Spanish versions, respectively. Additional acculturation-related variables include nativity (born in the 50 U.S. states or District of Columbia vs. foreign-born, with Puerto Rican-born considered foreign-born in this analysis) and number of years living in the mainland United States. National background was assessed through the question: "Which of the following best describes your Hispanic/Latino heritage?" with possible responses including Dominican, Central American, Cuban, Mexican, Puerto Rican, South American, other, or more than one.

Statistical analysis

The analyses for the present study were restricted to respondents with a lifetime history of smoking at least 100 cigarettes. All analyses employed sampling weights to account for unequal probabilities of selection into the original sample, and included adjustments for non-response, trimming of extreme values, and calibration to the 2010 U.S. Census population according to age, sex, and Hispanic/Latino distributions in the four study sites (Lavange et al., 2010; Sorlie et al., 2010). Analyses were performed using SAS, version 9.3 (SAS Institute, Cary NC) and SUDAAN release 11.0.1 (RTI International, Research Triangle Park, NC).

The goal of the analysis was to describe factors associated with the three-category variable capturing smoking cessation attempts and success. Independent variables of interest included demographics (age, gender, marital status), socioeconomic status (income, education), smoking exposure (age at initiation, smoking intensity and presence of other smokers in the home), national background, and acculturation. Because national background was highly correlated with field site, we did not adjust for site. Because age at interview was strongly associated with smoking cessation, analyses were adjusted for age based on multinomial logistic regression models using PROC MULTLOG in SUDAAN software, with the three-level quit smoking status variable as the dependent variable and age as a continuous covariate. Conditional marginals were computed

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