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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 2008–2011. Findings are based on 6,398 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. 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

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Conflict of Interest Statement

The authors declare that there are not conflicts of interest.

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.

Keywords

Latinos; smoking cessation; acculturation; gender

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 2013.¹ 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/Latinos² and smoking-related illnesses are leading causes of death among this population group.³ 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.⁴⁻⁶

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.⁶ In 2010, fewer U.S. Hispanic/Latino smokers expressed an interest in quitting compared to non-Hispanic Blacks and non-Hispanic Whites.⁷ 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.⁸⁻¹⁰ 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.¹¹ Although the low prevalence of smoking by Hispanic/Latina women is a consistent finding,¹²⁻¹⁷ only a small number of studies have examined the relationship between gender and smoking cessation among Hispanics/Latinos.^{11,15,17,18}

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.^{10,15,17,19-24} 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.^{25,26} However, there is some evidence that acculturation has a positive association with smoking among Latina and Asian women, with the opposite pattern among men.^{17,27,28} The few studies examining the relationship of acculturation to smoking cessation yield inconsistent results.^{15,29,30} Less acculturated U.S. Hispanics/Latinos may have greater concerns about the effects of smoking on others, especially family members,³¹ as well as lower nicotine dependency and more infrequent use of nicotine replacement therapy.³²

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=6,471), Puerto Rican (n=2,728), Cuban (n=2,348), Central American (n=1,730), Dominican (n=1,460), and South American (n=1,068).

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.³³

Baseline interviews were conducted in English or Spanish from 2008–2011.³⁴ Of 39,384 individuals who met eligibility criteria, 41.7% were enrolled, representing 16,415 persons from 9,872 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.¹⁰ 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),³⁵ 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.^{33,34} 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 MULTILOG 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 according to levels of each covariate and 95% confidence intervals were calculated.³⁶ To evaluate whether characteristics differed across categories of smoking cessation, p-values corresponding to an omnibus test for differences between groups were computed. Mean values and corresponding standard errors for continuous variables, conditional on smoking cessation category, were similarly computed. Weighted least squares regressions using PROC REGRESS in SUDAAN software, with cessation status and age as independent variables, were used to estimate mean values. Interaction terms were added to explore differences in effects of nativity and acculturation by Hispanic/Latino national background group. Frequency distributions for reasons quit and cessation methods were computed without age adjustment and p-values for quit reasons were calculated based on an omnibus test comparing those who no longer smoked to those who currently smoked and reported a past quit attempt. All analyses were stratified by gender. All tests of significance were two-sided and based on a significance level of 5%, with no corrections made for multiple comparisons.

A series of gender-specific multivariable logistic regression models were constructed to identify predictors of sustained smoking cessation. Analyses were restricted to former smokers (sustained cessation) and current smokers reporting a past quit attempt of at least 6 months. The initial model included sociodemographic variables, national background, and tobacco use. Adjusted odds ratios and 95% confidence intervals were computed. Subsequently, acculturation and quit characteristic variables were added individually to separate models, each containing all of the above covariates. Because age was strongly associated with acculturation and cessation, an interaction term was then added to each model to assess effect modification by acculturation level and age (under age 40 versus 40+). Participants with missing data for any covariates were removed from all multivariable models (n=149, or 3% of 4,938). Stratified odds ratios for acculturation and corresponding 95% confidence intervals were computed.

RESULTS

A total of 6,398 participants (39% of the full sample) reported lifetime prevalence of at least 100 cigarettes; 94 individuals missing smoking or cessation data were excluded from the present analysis. Among those with a history of smoking, proportions of current smokers who never made a quit attempt, current smokers who tried to quit in the past, and former smokers were relatively equivalent by gender (Table 1). Sociodemographic patterns were similar for men and women. Older individuals were more likely to be former smokers. Individuals who were married or living with a partner were more likely to be former

smokers than those not married. Unmarried individuals were more often current smokers who never tried to quit. Smoking cessation was moderately associated with higher educational achievement. Those with at least some college included the greatest percentage of former smokers and the fewest smokers who never tried to quit. The likelihood of being a former smoker increased with income while the proportion of smokers who never tried to quit decreased as income rose.

A higher likelihood of successful quitting was found among very light smokers (< 1 cigarettes/day) and among the heaviest smokers (>20 cigarettes/day) compared to those who smoked up to a pack a day (Table 1). Men who started smoking after age 25 were much less likely to have quit than men who initiated when younger. Women and men who were daily smokers were much less likely to have tried to quit in the past compared to non-daily (intermittent) smokers. Women and men who either currently or in the past lived in households where no one else smoked were more likely to be former smokers.

Smoking cessation and quit attempts were strongly related to national background and acculturation-related factors (Table 2). Men and women exhibited somewhat different patterns by national background in the likelihood of being a former smoker; cessation by women was highest among Mexicans and, for men, among South Americans. For both men and women, the highest proportions of smokers who never tried to quit were those of Puerto Rican and Cuban background. Non-U.S. born individuals were more likely to be former smokers compared to U.S. born. The association of nativity with quitting was consistent in subgroup analyses of each national background group (data not shown). Men and women with lower language-related acculturation scores were more likely to be former smokers, with little variation in this association by national background (data not shown).

Table 3 presents reasons for quitting smoking and quit methods ever used. Approximately three-quarters of male and female former smokers quit on their own for self-motivated reasons, e.g., for better health, they no longer enjoyed smoking, or they felt like quitting. Among unsuccessful quitters, relatively fewer women than men were motivated by such reasons. Almost one-quarter of women who had a prior period of quitting but did not remain abstinent mentioned pregnancy as the reason for a previous quit attempt. While percentages were very low overall, relatively more women than men said they quit for the sake of family members. Both men and women were largely able to quit on their own without assistance. In general, there were few differences in quitting methods between former smokers and unsuccessful quitters. Only 2.0% of former smokers and 3.5% of current smokers with a previous quit attempt tried more than one quit method (data not shown). There was some variation by national background in whether any quitting method was used, with Puerto Rican men and women the most likely to have used assistance in quitting.

Predictors of sustained smoking cessation were examined in gender-specific multivariable logistic regression analyses based on former smokers and current smokers who reported ever quitting for at least six months (Table 4). Adjusting for all other variables, the following factors were associated with increased odds of being a former smoker (sustained cessation), compared to current smokers with a previous quit attempt: older age, especially 50 years and above among men and women; married or living with a partner for both genders; heavier

smoking (over a pack a day) by men and women; and, among women, quitting for self-motivated reasons. The odds of sustained cessation were reduced among men with lower incomes and men who began smoking after age 24; these characteristics were not associated with cessation among women. Unlike the bivariate findings, education and marital status were not associated with cessation. Both men and women who currently lived in a household with a smoker had lower odds of sustaining cessation. Men and women who used prescription or over the counter aids, and/or behavioral/group therapy to assist in cessation also had lower odds of sustaining cessation than those who did not use any assistance.

The multivariable analysis exhibited different patterns for men and women by national background and acculturation, and these persisted after adjusting for differences in socioeconomic status and smoking exposures (Table 4). Among men, Dominicans and South Americans were most likely to successfully quit, while among women, no group had a markedly higher likelihood of quitting. Puerto Rican and Cuban men and women were the least likely to successfully quit. Place of birth had no independent association with quitting. However, the association between acculturation and quitting was characterized by gender differences and an age interaction; women under age 40 scoring higher on the social acculturation scale had reduced odds of sustaining cessation compared to older less acculturated women.

DISCUSSION

Similar to findings from several other U.S. national surveys,^{15,30} acculturation was related to smoking cessation, particularly for women, in this national sample of Hispanics/Latinos. The likelihood of being a former smoker was significantly lower for younger, more socially acculturated women. This finding is consistent with HCHS/SOL data reported elsewhere regarding risk of smoking initiation during adolescence,³⁷ and with studies showing declines in health-promoting behaviors among U.S. Hispanics/Latinos as acculturation increases.^{20,21}

Thus, acculturation influences not only initiation of smoking for Hispanic/Latina women,^{19,20} but also cessation. Possibly, less acculturated Hispanic/Latina women find it easier to quit in light of traditional gender norms that discourage smoking by women.^{38,39} Greater acculturation may lead to decreased cessation as a reflection of the generally higher levels of smoking found among non-Hispanics/Latinos and women in the U.S. Continued smoking may reflect a coping response to stress associated with the acculturation process.^{40,41} However, as non-smoking norms become increasingly prevalent in the United States, smoking may also decrease among more acculturated Hispanics/Latinos as they adopt these changing attitudes and behaviors. Future research should focus on examining the underlying dynamics of the complex relationship between acculturation and health behaviors. In particular, a more nuanced understanding of acculturation as an influence on health requires attention to interactions with structural constraints, social contexts, and lived experiences.^{40–42}

Although national surveys indicate lower overall population prevalence of former smoking among Hispanic/Latina women compared to men,^{11,15} this study found approximately equal proportions of former smokers by gender and similar patterns of tobacco use among men

and women with a history of smoking. This finding is similar to an earlier analysis of HCHS/SOL data, which indicated that after adjustment for age, income, education, health insurance, and lifetime cigarette use, the likelihood of cessation was not associated with gender.¹⁰ In general, men and women exhibited similar patterns in the relationship of sociodemographic characteristics to smoking cessation. Differences in cessation by national background were more pronounced among men than women.

There are several noteworthy limitations to the present analysis. The HCHS/SOL study is limited to Hispanics/Latinos living in the four field sites, and results cannot be generalized to other locations nor are they representative of the overall U.S. Hispanic/Latino population. Measures of smoking behaviors are based on self-report and may be subject to bias in recall and social desirability. The measure of acculturation was limited to a single scale and, therefore, does not capture the full multidimensional and dynamic aspects of the construct. All information is cross-sectional; measures of education, income, marital status, and acculturation were obtained at the time of interview and could not be temporally linked to episodes of quitting. Measures of insurance and access to healthcare were excluded because these also reflected status only at time of interview. The analysis did not examine whether cessation was associated with the presence of a chronic disease, a possible motivating factor. Variations across field sites, and hence national background, may be influenced by differences in state and local tobacco taxes and smoking regulations.⁴³ It is worth noting that all four states represented in the study have Spanish-language smoking quit lines. While the large sample size made it possible to examine a large number of variables, as a result, some findings that achieved statistical significance had relatively modest effect sizes and may have been due to chance.

CONCLUSIONS

The findings have a number of implications for smoking cessation services. Clinicians, health educators, and public health professionals need to recognize the considerable heterogeneity in smoking behaviors among Hispanics/Latinos^{44,45} and avoid generalizations based on the overall low prevalence of smoking among Hispanics/Latinos, particularly among women. Cuban and Puerto Rican smokers of both genders may require particular assistance in quitting smoking. Cities with high concentrations of Hispanics/Latinos from these national backgrounds should develop public health efforts tailored to them. The relatively high rate of apparent relapse after pregnancy underscores the importance of developing interventions focusing on women during the perinatal period.^{46–50} The significance of family as a motivation for quitting also should be explored further when developing cessation programs for Hispanic/Latina women. Cessation efforts should target non-daily and lighter smokers, a group that is more prevalent among Hispanics/Latinos, and often overlooked.^{6,51–53}

Similar to national survey findings,⁴ there was relatively low use of tobacco cessation aids in this sample of Hispanics/Latinos. This may in part be due to income-related factors. Previous analysis of HCHS/SOL indicated that after adjustment for health insurance and other factors, use of over-the-counter cessation aids by former smokers was associated with higher income.¹⁰ The present analysis clearly indicates that many Hispanics/Latinos,

particularly women, who successfully stop smoking are self-motivated to quit and can do so on their own. There is promising evidence that U.S. Hispanics/Latinos respond well to mass media campaigns promoting quitting.⁵⁴ Clinical cessation counseling and public health efforts can build on these foundations to support Hispanic/Latino smokers in their attempts to quit smoking and remain abstinent.

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Table 1:

Sociodemographic and Tobacco Use Characteristics Associated with Smoking Cessation among Hispanics/Latinos with Lifetime Smoking of at Least 100 Cigarettes—Age-Adjusted (n=6398)^a

	Women			Men				
	Current smoker- Never tried to quit (n=644)	Current smoker - Ever tried to quit (n=841)	No longer smokes (n=1533)	Current smoker- Never tried to quit (n=816)	Current smoker - Ever tried to quit (n=864)	No longer smokes (n=1700)		
	<i>n</i> ^b	% (95% CI) ^c		<i>n</i> ^b	% (95% CI) ^c			
Overall	3018	24.6 (22.4, 27.0)	31.6 (28.8, 34.5)	43.8 (40.8, 46.9)	3380	27.4 (25.1, 29.7)	27.6 (25.5, 29.9)	45.0 (42.5, 47.5)
Age at baseline visit								
18–29	307	28.1 (22.1, 35.0)	45.1 (38.0, 52.4)	26.8 (20.3, 34.5)	446	34.4 (28.9, 40.3)	40.3 (34.6, 46.3)	25.3 (20.7, 30.6)
30–39	319	20.5 (14.9, 27.5)	41.3 (30.3, 53.3)	38.2 (29.5, 47.7)	469	27.2 (22.3, 32.8)	33.5 (27.6, 39.9)	39.3 (33.7, 45.2)
40–49	819	25.3 (21.5, 29.5)	32.6 (28.2, 37.3)	42.1 (37.5, 47.0)	852	27.6 (23.5, 32.1)	27.2 (23.4, 31.3)	45.3 (40.4, 50.2)
50–59	1035	24.0 (20.7, 27.6)	24.3 (21.3, 27.6)	51.7 (47.7, 55.7)	948	24.5 (20.4, 29.2)	21.9 (18.1, 26.2)	53.6 (48.4, 58.8)
60–75	538	20.0 (15.3, 25.6)	16.0 (11.5, 21.8)	64.0 (57.3, 70.2)	665	16.8 (13.2, 21.1)	12.4 (9.3, 16.4)	70.8 (65.6, 75.5)
Marital status								
Unmarried	1773	29.7 (26.6, 32.9)	32.0 (28.6, 35.5)	38.3 (34.9, 41.8)	1395	35.0 (31.4, 38.7)	28.2 (24.9, 31.6)	36.8 (33.1, 40.6)
Married/living with partner	1238	17.8 (14.8, 21.1)	31.2 (27.0, 35.8)	51.0 (46.3, 55.7)	1976	20.5 (17.9, 23.3)	27.2 (24.3, 30.3)	52.3 (48.9, 55.7)
Highest level education								
Less than 9th grade	611	31.8 (25.9, 38.4)	24.7 (19.8, 30.3)	43.6 (37.7, 49.6)	810	29.7 (24.9, 34.9)	23.9 (19.6, 28.8)	46.5 (41.4, 51.6)
Some high school	520	29.9 (24.1, 36.4)	33.3 (27.0, 40.2)	36.8 (30.3, 43.9)	590	29.8 (24.9, 35.2)	28.2 (22.7, 34.4)	42.0 (36.0, 48.2)
Completed high school/equivalent	710	22.5 (18.7, 26.8)	34.6 (28.7, 41.0)	42.9 (37.4, 48.7)	919	28.8 (24.8, 33.2)	31.3 (27.3, 35.7)	39.9 (35.4, 44.5)
At least some college	1172	20.7 (17.6, 24.1)	31.7 (27.9, 35.8)	47.6 (43.2, 52.1)	1052	23.3 (19.5, 27.6)	26.4 (22.8, 30.3)	50.3 (46.1, 54.5)
Household income								
< \$10,000	608	30.4 (25.4, 35.8)	29.8 (24.0, 36.2)	39.9 (33.7, 46.4)	459	34.8 (28.7, 41.4)	33.1 (26.9, 40.0)	32.1 (26.6, 38.2)
\$10,001–\$20,000	899	24.0 (20.1, 28.3)	34.2 (29.0, 39.8)	41.8 (36.6, 47.3)	990	29.1 (24.9, 33.7)	30.0 (25.8, 34.6)	40.9 (36.2, 45.7)
\$20,001–\$30,000	484	24.1 (19.0, 30.0)	28.7 (22.9, 35.4)	47.2 (40.1, 54.4)	623	20.8 (16.7, 25.6)	27.7 (22.6, 33.4)	51.5 (45.4, 57.7)
\$30,001–\$40,000	338	21.6 (15.7, 28.9)	36.7 (27.8, 46.6)	41.7 (33.6, 50.4)	480	25.4 (20.2, 31.3)	20.5 (16.4, 25.4)	54.1 (47.5, 60.6)
> \$40,000	372	16.7 (11.9, 23.1)	30.1 (21.8, 39.8)	53.2 (43.8, 62.4)	609	19.3 (14.1, 25.8)	28.0 (22.8, 33.9)	52.7 (46.5, 58.8)
Years smoking/smoked, mean (SE)	3018	25.7 (0.5)	21.5 (0.4)	14.4 (0.4)	3380	25.2 (0.3)	22.0 (0.3)	14.2 (0.3)
Lifetime pack-years, mean (SE)	2994	17.6 (0.9)	11.5 (0.6)	9.4 (0.5)	3334	19.6 (0.7)	13.9 (0.7)	11.5 (0.5)

	Women			Men		
	Current smoker - Never tried to quit (n=644)	Current smoker - Ever tried to quit (n=841)	No longer smokes (n=1533)	Current smoker - Never tried to quit (n=816)	Current smoker - Ever tried to quit (n=864)	No longer smokes (n=1700)
	<i>b</i> n	% (95% CI) ^c	<i>b</i> n	% (95% CI) ^c	<i>b</i> n	% (95% CI) ^c
Smoking intensity						
Daily	1058	54.1 (50.3, 58.0)	n/a	59.7 (56.0, 63.3)	40.3 (36.7, 44.0)	n/a
Intermittent	427	22.1 (16.5, 28.9)	n/a	29.8 (24.5, 35.7)	70.2 (64.3, 75.5)	n/a
Former	1533	n/a	100.0	n/a	n/a	100.0
Cigarettes per day (quartiles)						
1	280	13.8 (8.1, 22.4)	56.0 (47.0, 64.6)	19.1 (12.7, 27.7)	29.0 (21.3, 38.0)	52.0 (43.3, 60.6)
2-20	2497	25.7 (23.1, 28.5)	41.3 (38.0, 44.6)	28.1 (25.6, 30.7)	28.9 (26.5, 31.4)	43.0 (40.3, 45.8)
> 20	236	25.2 (17.9, 34.3)	15.8 (10.2, 23.7)	59.0 (50.0, 67.4)	16.0 (11.6, 21.5)	56.6 (49.0, 63.9)
Age began smoking						
< 18	1447	28.7 (25.3, 32.3)	30.4 (25.9, 35.4)	40.9 (36.4, 45.6)	26.7 (24.0, 29.6)	45.4 (42.1, 48.7)
18-24	1098	19.7 (16.6, 23.3)	32.4 (27.9, 37.4)	47.8 (43.4, 52.3)	27.6 (24.0, 31.6)	47.9 (43.5, 52.2)
25 or older	434	23.8 (17.7, 31.1)	35.8 (28.5, 43.8)	40.5 (34.1, 47.2)	35.8 (27.0, 47.3)	27.6 (21.0, 35.5)
Smoker in household before age 13						
No	1085	18.9 (15.8, 22.4)	31.0 (26.9, 35.4)	50.2 (45.2, 55.1)	25.7 (22.3, 29.5)	51.6 (47.9, 55.2)
Yes	1919	27.7 (24.6, 31.1)	31.9 (28.3, 35.7)	40.4 (36.6, 44.3)	28.9 (26.3, 31.6)	40.7 (37.6, 43.9)
Smoker in household since age 13						
None	867	14.8 (11.7, 18.5)	24.5 (20.2, 29.4)	60.7 (55.4, 65.8)	21.0 (17.9, 24.6)	57.0 (52.6, 61.3)
Yes, but not now	1248	21.8 (18.6, 25.5)	28.8 (25.0, 33.0)	49.3 (44.6, 54.1)	25.2 (22.0, 28.7)	47.6 (43.5, 51.9)
Yes, including currently	898	36.4 (31.5, 41.6)	40.8 (34.9, 47.0)	22.8 (19.1, 26.8)	39.7 (35.1, 44.4)	36.3 (31.8, 41.1)

^a Based on HCHS/SOL study, Chicago, Miami, Bronx, San Diego, 2008-2011

^b Subgroup n's may not add up to column totals due to missing data

^c All values are age-adjusted row percents unless otherwise stated

* P<0.05

** P<0.01

*** P<0.001

P-values based on omnibus test for any differences between groups, or test for linear trend (income only)

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Table 2:

Sociocultural Factors Associated with Smoking Cessation among Hispanics/Latinos with Lifetime Smoking of at least 100 cigarettes – Age-Adjusted (n=6398)^d

	Women			Men		
	Current smoker - never tried to quit (n=644)	Current smoker - ever tried to quit (n=841)	No longer smokes (n=1533)	Current smoker - never tried to quit (n=816)	Current smoker - ever tried to quit (n=864)	No longer smokes (n=1700)
	^b n	% (95% CI) ^c	^b n	% (95% CI) ^c	^b n	% (95% CI) ^c
Hispanic/Latino background						
Dominican	216	24.5 (17.0, 33.9)	31.5 (19.3, 46.8)	28.3 (17.9, 41.8)	146	18.3 (11.6, 27.7)
Central American	222	18.8 (12.6, 27.1)	24.5 (17.8, 32.7)	28.9 (22.4, 36.4)	309	21.2 (16.5, 26.9)
Cuban	536	33.9 (28.7, 39.5)	32.4 (28.3, 36.9)	33.7 (28.8, 38.9)	637	35.8 (31.8, 40.1)
Mexican	1017	10.4 (7.9, 13.5)	30.7 (25.6, 36.2)	58.9 (53.2, 64.4)	1293	19.7 (16.4, 23.4)
Puerto Rican	765	37.1 (31.9, 42.7)	31.6 (26.9, 36.6)	31.3 (26.4, 36.7)	660	35.3 (30.4, 40.5)
South American	156	20.8 (14.1, 29.4)	29.9 (21.8, 39.5)	49.3 (40.0, 58.7)	213	16.4 (10.6, 24.5)
Other/more than one	100	18.2 (10.6, 29.6)	41.8 (26.4, 59.1)	39.9 (25.9, 55.8)	116	16.7 (10.0, 26.5)
Nativity						
Foreign-born	2351	21.5 (19.1, 24.1)	30.7 (27.6, 34.0)	47.8 (44.2, 51.4)	2765	25.4 (23.0, 28.0)
Born within U.S. 50 states	663	33.3 (27.6, 39.5)	34.0 (28.5, 39.9)	32.7 (27.4, 38.5)	611	33.6 (28.1, 39.7)
Years in U.S. mainland ^d , mean (SE)	2341	19.4 (1.0)	19.0 (0.9)	18.3 (0.6)	2759	18.3 (0.8)
Acculturation -language subscale, mean (SE)	3014	2.27 (0.06)	2.15 (0.07)	1.99 (0.05)	3373	2.11 (0.07)
Acculturation -social subscale, mean (SE)	3014	2.22 (0.03)	2.27 (0.04)	2.21 (0.03)	3372	2.21 (0.03)

^a Based on HCHS/SOL study, Chicago, Miami, Bronx, San Diego, 2008-2011

^b Subgroup n's may not add up to column totals due to missing data

^c All values are age-adjusted row percents unless otherwise stated

^d Among foreign-born

* P<0.05

P-values based on omnibus test for any differences between groups

$P < 0.001$

$P < 0.01$
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Table 3:

Reasons Quit Smoking and Methods Used among Current Smokers Who Ever Quit for 6 Months or Longer and Former Smokers^a

	Overall			Women			Men		
	<i>b</i> n	Current smoker – ever tried to quit (n=1705)	No longer smokes (n=3233)	<i>b</i> n	Current smoker – ever tried to quit (n=841)	No longer smokes (n=1533)	<i>b</i> n	Current smoker – ever tried to quit (n=864)	No longer smokes (n=1700)
		column % ^c			column % ^c			column % ^c	
Reason quit smoking, %									
Advice of physician	282	3.9	5.0	135	4.6	4.3	147	3.3	5.5
Health reasons, self-initiated	3662	69.2	77.8	1659	56.4	75.0	2003	78.7	79.5
Pressure from others	459	10.1	9.2	208	7.9	8.6	251	11.8	9.6
Religion-related	87	0.6	2.0	49	0.3	2.4	38	0.8	1.8
For sake of family/others	71	1.5	1.8	35	3.1	2.6	36	0.3	1.3
Pregnancy-related	214	10.3	1.4	211	23.6	3.5	3	0.3	0.1
Cost/financial burden	52	0.8	1.0	25	0.6	1.4	27	1.0	0.8
Death of family member/friend	10	0.3	0.1	6	0.7	0.2	4	0.1	0.1
Illness of family member/friend	14	0.3	0.3	11	0.8	0.4	3	0.0	0.2
Institutionalized (jail/hospital/other)	27	1.7	0.0	4	0.5	0.0	23	2.6	0.1
Other/refused	43	1.3	1.3	23	1.5	1.7	20	1.1	1.0
Quit methods ever used, %^d									
None	4414	86.7	92.6	2083	84.2	92.0	2331	88.7	93.0
Prescription	298	7.7	4.0	171	8.6	5.0	127	7.0	3.3
Over the counter aid	304	7.6	4.5	169	9.8	4.1	135	6.0	4.7
Behavioral/group therapy	96	2.2	1.6	53	2.4	1.7	43	2.0	1.5
Use of any quit method, by Hispanic/Latino background, %^e									
Dominican	285	16.9	10.5	170	16.1	13.1	115	18.8	8.0
Central American	426	8.9	6.9	194	13.1	13.5	232	6.6	2.4
Cuban	803	8.2	5.9	369	6.7	5.3	434	9.3	6.3
Mexican	1970	7.4	3.0	903	11.6	3.7	1067	5.0	2.7

	Overall			Women			Men		
	<i>b</i> n	Current smoker – ever tried to quit (n=1705)	No longer smokes (n=3233)	<i>b</i> n	Current smoker –ever tried to quit (n=841)	No longer smokes (n=1533)	<i>b</i> n	Current smoker – ever tried to quit (n=864)	No longer smokes (n=1700)
Puerto Rican	970	27.8	19.5	526	30.7	18.9	444	25.4	20.1
South American	307	9.7	3.6	130	10.3	1.7	177	8.9	4.6
Other/more than one	162	14.5	12.6	76	16.3	5.2	86	12.6	16.0

^a Based on HCHS/SOL study, Chicago, Miami, Bronx, San Diego, 2008-2011

^b Subgroup n's may not add up to column totals due to missing data

^c All values are column percents

^d Categories are not mutually-exclusive

^e P-values not computed for comparisons within Hispanic/Latino background subgroups due to wide variations in group sample sizes; overall, Hispanic/Latino background was a significant predictor of using quit aids and/or therapy in both women (p<0.0001) and men (p<0.0001)

* P<0.05

** P<0.01

*** P<0.001

P-values based on omnibus test for any differences between groups

Table 4:Multivariable Analysis of Predictors of Sustained Quitting (based on those who ever quit)^{a,b}

	Women (n=2,301)		Men (n=2,485)	
	OR	95% CI	OR	95% CI
<u>Model A (all variables mutually adjusted)</u>				
Age at baseline visit				
18–29	1.00	(ref)	1.00	(ref)
30–39	1.68	(0.95, 2.96)	1.59	(1.01, 2.50)
40–49	2.09	(1.25, 3.48)	2.40	(1.57, 3.68)
50–59	3.66	(2.24, 5.95)	3.30	(2.04, 5.35)
60–75	7.57	(4.15, 13.80)	10.13	(6.15, 16.69)
Married/living with partner (ref=not)	1.65	(1.27, 2.14)	1.34	(1.00, 1.79)
Highest level education				
Less than 9th grade	1.00	(ref)	1.00	(ref)
Some high school	0.74	(0.47, 1.15)	0.87	(0.57, 1.35)
Completed high school/equivalent	0.76	(0.51, 1.15)	0.68	(0.46, 0.99)
At least some college	0.87	(0.58, 1.31)	1.05	(0.71, 1.56)
Annual household income				
Less than \$30,000	1.00	(ref)	1.00	(ref)
\$30,000 or more	0.93	(0.68, 1.27)	1.50	(1.09, 2.06)
Missing income	0.97	(0.50, 1.89)	0.67	(0.36, 1.23)
Hispanic/Latino background				
Mexican	1.00	(ref)	1.00	(ref)
Dominican	0.75	(0.40, 1.42)	2.13	(1.07, 4.25)
Central American	1.19	(0.68, 2.11)	1.30	(0.80, 2.12)
Cuban	0.57	(0.41, 0.80)	0.73	(0.50, 1.07)
Puerto Rican	0.50	(0.33, 0.75)	0.65	(0.42, 1.01)
South American	0.79	(0.43, 1.44)	3.53	(1.88, 6.64)
Other/more than 1	0.64	(0.29, 1.40)	1.23	(0.60, 2.50)
Cigarettes per day				
1	1.00	(ref)	1.00	(ref)
2–20	1.06	(0.66, 1.70)	1.09	(0.62, 1.90)
> 20	4.62	(2.17, 9.86)	3.42	(1.69, 6.95)
Began smoking age 25 or older (ref: < 25)	0.77	(0.52, 1.15)	0.38	(0.22, 0.64)
Smoker in household before age 13 (yes vs. no)	1.11	(0.80, 1.55)	0.85	(0.62, 1.17)
Smoker in household since age 13				
None	1.00	(ref)	1.00	(ref)
Yes, but not now	0.69	(0.46, 1.02)	0.82	(0.56, 1.20)
Yes, including currently	0.18	(0.11, 0.27)	0.26	(0.18, 0.38)
<u>Model B (all variables in model A + each variable below added independently)</u>				
Any quit method used (ref=no quit method used)	0.36	(0.25, 0.53)	0.44	(0.29, 0.66)
Self-initiated or health reasons (ref=all other)	0.65	(0.54, 0.79)	0.85	(0.69, 1.05)

	Women (n=2,301)		Men (n=2,485)	
	OR	95% CI	OR	95% CI
Model C (Model A variables + acculturation variables added independently + age[*] acculturation interaction)				
Nativity (U.S. mainland vs. foreign-born)				
Age 18–39	0.65	(0.40, 1.08)	0.85	(0.51, 1.42)
Age 40	0.93	(0.55, 1.60)	0.95	(0.59, 1.52)
SASH language subscale (1-point increase)				
Age 18–39	0.84	(0.65, 1.09)	0.87	(0.70, 1.09)
Age 40	1.02	(0.86, 1.21)	0.91	(0.76, 1.09)
SASH social subscale (1-point increase)				
	*			
Age 18–39	0.52	(0.33, 0.82)	0.87	(0.57, 1.31)
Age 40	1.04	(0.82, 1.33)	0.92	(0.70, 1.20)

^a – Based on HCHS/SOL study, Chicago, Miami, Bronx, San Diego, 2008–2011

^b – Odds ratios (OR) represent the odds of being a former smoker compared to current smokers who ever quit for 6 months or longer, after adjustment for other variables in the model.

* Interaction with age significant, $p=0.0045$. All other age interactions were not significant at $p<0.05$.