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Acculturation-related predictors of very light smoking among Latinos in California and nationwide

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Abstract

Background—The prevalence of light smoking has increased among Latinos. The purpose of this study was to identify demographic and acculturation-related factors associated with very light smoking, defined as smoking 1-5 cigarettes per day (CPD), among Latinos in California and nationwide.

Methods—Latino smokers in the 2007-2008 National Health and Nutrition Examination Survey (NHANES) or the 2009 California Health Interview Survey (CHIS) were analyzed. Logistic regression assessed factors associated with very light smoking.

Results—Among NHANES smokers, those born in Mexico or who lived fewer years in the U.S. were more likely to be very light smokers than 6+ CPD smokers. Among CHIS smokers, those born in Mexico, in another Spanish speaking country, or who spent smaller percentages of their life in the U.S. were more likely to be very light smokers.

Discussion—Findings from this study can be used to design tobacco control media campaigns that include very light smokers.

Keywords

Smoking; Hispanic Americans; Acculturation; Population Characteristics

Background

In the U.S., cigarette smoking is the most preventable cause of death (1-2). Among the major racial and ethnic groups, Latino adults have a lower prevalence of smoking (14.5%) compared to non-Latino Whites (22.1%) and non-Latino Blacks (21.3%) (3). However, rates of smoking across Latino national origins in the U.S. are not homogenous. The prevalence of smoking among Latino women is half that of Latino men (3) and higher acculturated Latino women are more likely to smoke (4-13). The highest and lowest rates of smoking are among Puerto Ricans and Central Americans, respectively (14).

The average number of cigarettes smoked per day (CPD) by Latinos has fluctuated over time. Between 1978-1990 the prevalence of smoking <15 CPD among Latino smokers was stable and below 60%. However, the prevalence increased between 1990 and 1995 ranging from 64% to 71%, respectively (15). Among the major racial/ethnic groups nationally Latinos have the highest odds of very light daily smoking, defined as smoking 1-5 CPD on average every day, compared to non-Latino Whites (16). On average, U.S. Latinos smoke 6.7 CPD compared to 14.9 CPD for non-Latino White smokers and 9.3 CPD for non-Latino Black smokers (17). Seventy percent of Latino smokers in California are either very light or non-daily smokers (18). Debate has revolved around the number of CPD in which smokers become addicted to tobacco (19-20) and the cut point of 5 CPD is often discussed.

Review of previous research has largely focused on 20 CPD daily smokers and linked higher levels of acculturation to smoking prevalence among Latinos (13, 21). However, limited data exist on the prevalence of very light smoking and its relationship with acculturation level (22). Additionally, health effects of light smoking and current U.S. Latino population growth highlight the importance of studying this new smoking pattern (23-24). This study is the first to characterize and identify demographic and acculturation-related factors associated with very light smoking in large representative samples of Latinos. Nationwide data from the National Health and Nutrition Examination Survey (NHANES) and statewide data in California from the California Health Interview Survey (CHIS) were analyzed to complement each other's deficiencies in variables assessed and rates of participation.

Methods

Participant Data

This study included data from adult Latino smokers who participated in the 2007-2008 NHANES and the 2009 CHIS (25-26). Adults who were at least 20 years of age in the NHANES or 18 years of age in the CHIS were identified as adult participants. The NHANES employed a stratified multistage probability sampling design to assess the health and nutritional status of the U.S. population. All eligible individuals in the households provided consent for participation together. Participant interviews were conducted with 10149 adults in their own home and supplemental health data were collected in mobile examination centers (MEC). Of these, 3517 Latinos completed the home interview. Further details regarding survey operations and informed consent can be found on the NHANES website (27).

The CHIS is a statewide random-digit-dial telephone survey of landline and cell-phone-only households conducted every two years to assess the health and health care needs of Californians. In 2009, 47614 adults were surveyed. Of these, 8307 Latinos from 9 national origins completed the interview. Documentation describing the sample design and data collection methods can be found on the CHIS website (26). The most recent complete data sets were analyzed when this investigation began in 2012.

Demographic Characteristics and Acculturation-Related Factors

Both the NHANES and CHIS assessed the following demographic characteristics: gender, date of birth, marital status, educational attainment, and family poverty level. Additionally, CHIS established level of urbanization based upon zip code (28). Acculturation-related factors assessed by the NHANES included country of birth (U.S., Mexico, other Spanish speaking country), ethnicity (Mexican, other Latino), years lived in the U.S. (<5 years, 5-9 years, 10-14 years, 15 years), and language spoken at home (English, Spanish, both Spanish and English combined). In addition to the variables above, CHIS included Latino national origin (Mexican, Central American, Puerto Rican, South American, other Latino, 2+ Latino national origins), percent of life lived in the U.S. (<20%, 21-40%, 41-60%, 61-80%, 81%), language spoken with friends and language preference of TV shows, radio shows, and newspapers (only English, only other language, both English and other language combined), and proficiency in English (not at all, not well, well and very well combined).

Smoking-Related Characteristics and Very Light Smoking

Current cigarette smokers were identified as participants who reported smoking at least 100 cigarettes in their lifetime and now smoked every day or some days. Current smokers were then classified as either very light smokers, defined as participants who smoked 1-5 CPD on average during the past 30 days, or as participants who smoked 6+ CPD on average. NHANES also asked smokers the age they started smoking regularly and the number of days smoked in the past 30 days. Among those who completed the supplemental MEC interview, use of tobacco (cigarettes, pipes, cigars, chewing tobacco, or snuff) or nicotine (patch, gum, or other nicotine product) products in the last 5 days and time after waking to smoke were ascertained. Instead of the additional NHANES smoking questions, CHIS asked smokers the number of years they had smoked regularly.

Statistical Analysis

Analyses were restricted to Latinos of North, Central, or South American origin for comparison of immigration characteristics. Means, medians, and standard errors were calculated for age, age started smoking regularly, days smoked in the past 30 days, and years smoked regularly. Frequencies and percentages were calculated for all other variables. Bivariate statistical significance was evaluated using one-way analysis of variance F-tests and chi-square tests. Logistic regression models assessed factors associated with very light smoking separately for NHANES and CHIS smokers.

Survey data analysis procedures were utilized due to the sampling designs of the NHANES and CHIS. Stratum, cluster, and weight adjustments were made in analyses of NHANES data. CHIS analyses were weighted to account for sample selection probabilities, undercoverage, nonresponse bias, and variance estimation. For this analysis, directed acyclic graphs and Wald tests were used to determine potential covariates and assess their significance, respectively. Potential covariates included age, gender, marital status, educational attainment, and family poverty level. A sequence of models with potential covariates was specified and the Akaike information criterion was used to select models with the best fit (29-30). All analyses were conducted using Statistical Analysis Software, Version 9.2 (SAS Institute Inc., Cary, North Carolina).

This study used public use data that did not involve human subjects; therefore, it was not reviewed by the UC Davis Institutional Review Board (IRB). IRB review and approval of the NHANES and CHIS can be found on their respective websites (26-27).

Results

The mean ages of NHANES and CHIS smokers were similar: 37.5 years and 38.3 years, respectively (Tables I and II). In both surveys, similar proportions of men and women were married or living with a partner. Sixty percent of CHIS respondents and 45% of NHANES had completed high school or above and in CHIS the proportion of women with high school or greater education was significantly higher than that of men ($p<0.05$). Seventy-five percent of NHANES smokers and 60% of CHIS smokers lived below 200% of the family poverty level. Residence in a rural area did not differ by gender among CHIS smokers (data not shown).

NHANES classified smokers as Mexican origin (58%) or other Latino (42%) (Table I). Eighty-one percent of CHIS smokers were of Mexican origin with 9% Central American and 3% 2+ Latino national origins (Table II). In both surveys, over 50% of women were born in the U.S. compared to 33% of men in NHANES ($p<0.001$) and 41% in CHIS ($p<0.001$). Additionally, NHANES women were more likely than men to speak English at home ($p<0.05$). Among CHIS smokers, a larger proportion of women spent 81% of their life in the U.S. ($p<0.001$). No differences in years lived in the U.S. were seen by gender in either survey, although 48% of NHANES and 67% of CHIS smokers lived in the U.S. for 15 years.

Smoking Behavior and Associations by Smoking Level

The prevalence of very light smoking was 57% for NHANES and 62% for CHIS smokers (Table III). In NHANES, 54% of very light smokers reported smoking every day while 91% of 6+ CPD smokers did so ($p<0.001$). Thirty-one percent of CHIS very light smokers reported smoking every day compared to 85% of 6+ CPD smokers ($p<0.001$). The age at which NHANES very light smokers started smoking regularly (18.4 years) did not differ from that of 6+ CPD smokers (16.7 years). CHIS very light smokers smoked for an average of 10.3 years compared to 19.4 years among 6+ CPD smokers ($p<0.001$).

Additional smoking behavior data collected by NHANES identified further differences between very light and 6+ CPD smokers. Compared to 6+ CPD smokers, very light smokers reported smoking fewer days in the past 30 days ($p<0.001$) and waiting more time after waking to smoke ($p<0.001$) (Table III). Eighty-eight percent of very light smokers used tobacco or nicotine products in the last 5 days ($p<0.05$) compared to 98% of 6+ CPD smokers and 48% of very light smokers reported smoking their last cigarette today compared to 80% of 6+ CPD smokers ($p<0.01$).

Logistic Regression Modeling

In both surveys, demographic factors including age, gender, marital status, educational attainment, and family poverty level were neither associated with nor predictors of very light

smoking (Appendix Tables I and II). Level of urbanization was not associated with very light smoking among CHIS participants (data not shown).

In models adjusted for age, gender, marital status, and educational attainment, Mexico-born smokers in the NHANES were almost three times more likely to be very light smokers than U.S.-born smokers (adjusted odds ratio [aOR]=2.95; 95% confidence interval [CI]=1.72,5.07) (Table IV). In CHIS, Mexico-born (aOR=3.05; 95% CI=1.59,5.85) and those born in another Spanish speaking country (aOR=3.69; 95% CI=1.31,10.34) were more likely to be very light smokers than U.S.-born smokers. By national origin, only Puerto Rican smokers differed from Mexican smokers by smoking level; being less likely to smoke very lightly (aOR=0.23; 95% CI=0.07,0.80).

With 15 years as the reference, NHANES smokers living in the U.S. for 5-9 years reported significant higher odds of very light smoking (Table IV). No other category of years in the U.S. was significant in the NHANES. Among CHIS respondents, years lived in the U.S. and very light smoking were not associated (Appendix Table II). CHIS assessment of the percent of life lived in the U.S. found that those who lived 21-40% and 61-80% of their life in the U.S. had over a two and a half times greater odds of very light smoking than those who lived 81% of their life in the U.S. (Table IV). NHANES smokers who spoke only Spanish (aOR=3.76; 95% CI=1.59,8.90) or both Spanish and English (aOR=2.63; 95% CI=1.48,4.67) at home were significantly more likely than those who spoke only English at home to be very light smokers. In the CHIS, speaking only Spanish and speaking both Spanish and English language at home showed higher odds of very light smoking compared to only English spoken at home, but the differences were not statistically significant. Likewise, other factors assessed in CHIS including language spoken with friends, language preference for TV, radio, and newspaper, and proficiency in English were not associated with very light smoking (Appendix Table II).

Discussion

This study is the first to characterize and evaluate demographic and acculturation-related factors associated with very light smoking among Latinos using national and statewide representative data. A consistent finding in the NHANES and CHIS data was the moderately high prevalence of very light smoking among current smokers. A recent study of Latino farm workers in California reported a 61% prevalence of very light smoking (31). They also observed that very light smokers were more likely to be current smokers and 6+ CPD smokers were more likely to be former smokers. However, analysis of 2001 and 2003 CHIS data by Zhu and colleagues found the prevalence of very light daily smoking among Latinos to be 22% and 16%, respectively, and of very light non-daily smoking to be 85% and 80%, respectively (18). Another characteristic common to very light smokers in both surveys was non-daily smoking. This finding was further supported by analyses of NHANES data which found that very light smokers smoked fewer days in the past month, were less likely to use tobacco or nicotine products in the past 5 days, and were less likely than 6+ CPD smokers to smoke their last cigarette today.

Very light and non-daily smokers are a growing proportion of U.S. cigarette smokers. Significant increases in the proportion of daily smokers who smoked 1-9 CPD have been observed between 2005 and 2011 (32). More broadly, the proportion of current smokers that do not smoke daily has increased since 1996 (33-34). Light and non-daily smoking have adverse health consequences, including cardiovascular disease, cancer, respiratory diseases, impaired reproductive function, and all-cause mortality (23). Additionally, research in the past decade has found increasing evidence of nicotine addiction among very light and non-daily smokers (35-56). Research has also linked non-daily smoking with alcohol use disorders (57-61).

Understanding that very light smokers in this study were non-daily smokers may explain the very light smoking prevalence. The prevalence of very light smoking in this study falls within the prevalences of daily and non-daily very light smoking observed by Zhu and colleagues (18). Zhu et al also studied changes in smoking behavior of very light daily smokers using longitudinal data from the California Tobacco Survey and found that only 36% of daily very light smokers remained very light smokers after 20 months (62). Additionally, 21% of very light daily smokers increased their cigarette consumption to 6+ CPD daily smokers over the 20 month period. Although analyses in this study were cross-sectional, findings by Zhu et al provides a potential framework to interpret the number of years smoked regularly. Similar to previous observations among Latino farm workers in California, very light smokers in the CHIS smoked for almost half as many years as 6+ CPD smokers (31). Noting that the mean age at which NHANES very light and 6+ CPD smokers started smoking didn't differ significantly, findings by Zhu et al may imply that over time very light smokers would adopt the smoking behavior of 6+ CPD smokers and as such would report having smoked for more years than very light smokers. However, these findings require longitudinal data to confirm suggestions among cross-sectional surveys.

In NHANES and CHIS data, smokers born in Mexico (or another Spanish speaking country in the CHIS) were more likely than those born in the U.S. to be very light smokers. Having not been previously reported as predictors of very light smoking, these results are novel. Research by Pérez-Stable and colleagues reported that foreign-born Latino smokers were less likely to smoke 20 CPD than U.S.-born smokers (14). Factors reflective of less time in the U.S. were inconsistently associated with very light smoking. NHANES smokers with 5-9 years of U.S. residency and those who spoke some amount of Spanish at home were more likely to be very light smokers. Among CHIS smokers however, years of U.S. residency and language spoken at home were not associated with very light smoking although smokers who lived 21-40% or 61-80% of their life in the U.S. were more likely to be very light smokers. Previous research⁴⁻¹³ has observed associations between higher levels of acculturation, as measured by time in the U.S. and language preference, and increased smoking prevalence. Though inconsistent, these results suggest that among Latinos 1) acculturation to American society may play a role in the level of cigarette smoking and 2) over time the number of CPD may increase. However, longitudinal studies are needed to substantiate these results suggested by cross-sectional data.

Approximately 40% of NHANES and CHIS smokers were women. Previous knowledge regarding acculturation and smoking prevalence is relevant to very light smoking as Latino

women with higher levels of acculturation have a higher prevalence of smoking (4-13). As a measure of acculturation, language preference in the NHANES showed less acculturated smokers were more likely to be very light smokers than 6+ CPD smokers. In the CHIS, odds ratios of language preference were in the same direction but non-significant. The results observed in CHIS data may be due to its sampling method. Latinos who don't speak English or don't have a telephone are less likely to participate or be recruited, respectively. Furthermore, years lived in the U.S. and percent of life in the U.S. may not be capturing potentially more important factors such as age at immigration to the U.S. or pre-immigration health behavior (63-65).

Characteristics and factors associated with very light smoking among Latino smokers have not been well studied, although some attention has been given to smoking 10 CPD in other ethnic groups in the U.S. Reitzel and colleagues found associations between demographic characteristics, tobacco dependence, withdrawal, and cessation and very light smoking among Spanish-speaking Latinos in a randomized clinical trial (22). Among Blacks, factors in late adolescence such as perceived discrimination, peer smoking, youth maladaptive characteristics, less parental education, and parental smoking were associated with smoking 10 CPD in young adulthood (66). Among Asians, smoking 9 CPD has been associated with being female, highly educated, not Korean (compared to Chinese), and being a bilingual speaker with English proficiency (67).

Strengths of the present study arise from how the NHANES and CHIS complement each other. First, the NHANES is a large representative national survey while the CHIS is a large representative survey of the country's most populous state. Second, smoking behavior was more thoroughly assessed in the NHANES than in the CHIS, but analyses could be conducted among nine Latino national origin groups in the CHIS compared to only two in the NHANES. Third, the overall household screened and interviewed rate for the CHIS was 19.7%, whereas the NHANES overall interviewed and examined rates were 78.4% and 75.4%, respectively. The present study also faced limitations inherent to the NHANES and CHIS. CHIS is a random-digit-dial telephone survey and may differentially exclude recent immigrants who may not have a telephone or who may feel uncomfortable providing personal information via telephone. Other limitations of this study include its inability to assess migration-related factors such as age at immigration to the U.S. and pre-immigration health behavior. Both surveys were cross-sectional and therefore unable to determine temporal order or assess change over time. Consequently, recommendations for future research include the use of longitudinal data to determine if very light smokers increase their number of CPD over time. Future research also needs to investigate explanations for acculturation-related predictors of smoking level among foreign-born Latinos.

Findings from this study can be used to design culturally-specific tobacco control campaigns targeted to Latinos with a high likelihood of very light smoking. For example, the adverse health effects of light smoking may need to be targeted. Diverse approaches to reduce smoking in the population are possible, as has been successfully accomplished by other anti-tobacco media marketing campaigns (68). These might include encouraging state and local governments with large Latino populations to increase cigarette taxes and enforce bans on the sale of single cigarettes. Smoking cessation programs should consider integrating

acculturation-related factors and implementing said programs in locations such as community centers, consulates general, and other organizations frequented by large proportions of Latinos. Ultimately, the goal is to reduce the cultural factors that facilitate smoking among the Latino population.

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Appendix Table I

Additional Crude Odds Ratios and 95% Confidence Intervals for Very Light^a Smoking among NHANES Current Smokers

Factor	Very Light ^a (n = 158), No. (%) or Mean (SE)	6+ CPD (n = 128), No. (%) or Mean (SE)	Crude OR (95% CI)
Mean age (years)	36.4 (1.01)	38.9 (1.29)	0.99 (0.97, 1.00)
Gender			
Male	89 (61)	83 (69)	Reference
Female	69 (39)	45 (31)	1.40 (0.93, 2.10)
Marital Status			
Married/living with partner	90 (59)	80 (63)	0.86 (0.58, 1.26)
Never married/divorced/separated/widowed	68 (41)	48 (37)	Reference
Highest grade completed in school			
Less than 12 th grade	91 (57)	71 (52)	Reference
High school graduate or above	67 (43)	57 (48)	0.80 (0.44, 1.44)

CI, confidence interval; CPD, cigarettes per day; NHANES, National Health and Nutrition Examination Survey; OR, odds ratio; SE, standard error.

^aVery light smokers were defined as those who smoked 1-5 CPD.

Appendix Table II

Additional Adjusted Odds Ratios and 95% Confidence Intervals for Very Light^a Smoking among CHIS Current Smokers

Factor	Very Light ^a (n = 501), No. (%) or Mean (SE)	6+ CPD (n = 351), No. (%) or Mean (SE)	Crude OR (95% CI)	Adj. OR (95% CI) ^b
Mean age (years)	36.3 (1.03)	41.6 (1.45)**	0.97 (0.96, 1.00)	-- --
Gender				
Male	316 (78)	216 (75)	Reference	-- --

Factor	Very Light ^a (n = 501), No. (%) or Mean (SE)	6+ CPD (n = 351), No. (%) or Mean (SE)	Crude OR (95% CI)	Adj. OR (95% CI) ^b
Female	185 (22)	135 (25)	0.88 (0.54, 1.41)	-- --
Marital Status				
Married/living with partner	250 (57)	178 (49)	1.38 (0.80, 2.36)	-- --
Never married/divorced/separated/widowed	251 (43)	173 (51)	Reference	-- --
Highest grade completed in school				
Less than 12 th grade	182 (40)	142 (41)	Reference	-- --
High school graduate or above	319 (60)	209 (59)	1.07 (0.66, 1.74)	-- --
Years lived in the U.S.				
<5	18 (3)	5 (5)*	1.06 (0.37, 2.99)	0.91 (0.28, 2.95)
5-9	32 (10)	12 (14)	1.15 (0.49, 2.70)	0.91 (0.37, 2.24)
10-14	48 (23)	10 (7)	5.62 (1.34, 23.63)	4.30 (0.98, 18.78)
15	201 (64)	126 (75)	Reference	
Language spoken with friends ^c				
Only other language	178 (37)	95 (34)	1.69 (1.00, 2.87)	2.03 (0.99, 4.17)
Both English and other language	154 (37)	91 (39)	1.46 (0.81, 2.64)	1.58 (0.83, 2.97)
Only English	82 (27)	55 (27)	Reference	Reference
Language of TV, radio, and newspapers ^c				
Only other language	114 (21)	73 (27)	1.15 (0.69, 1.93)	1.26 (0.69, 2.30)
Both English and other language	173 (45)	91 (38)	1.82 (1.05, 3.13)	1.81 (1.00, 3.27)
Only English	127 (34)	77 (35)	Reference	Reference
Proficiency in English ^c				
Not at all	54 (8)	40 (11)	0.85 (0.45, 1.59)	0.94 (0.41, 2.14)
Not well	125 (25)	66 (33)	0.86 (0.50, 1.48)	0.88 (0.49, 1.59)
Very well/well	235 (68)	135 (56)	Reference	Reference

CHIS, California Health Interview Survey; CI, confidence interval; CPD, cigarettes per day; OR, odds ratio; SE, standard error.

^aVery light smokers were defined as those who smoked 1-5 CPD.

^bAdjusted for age, gender, marital status, and educational attainment.

^cExcluded participants who reported only speaking English at home.

* $p < 0.05$;

** $p < 0.01$, statistical significance by smoking level.

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Table I
Demographic and Acculturation-Related Characteristics of Latino Current^a Smokers
from 2007-2008 NHANES

Characteristic	Total (n = 291), No. (%) or Mean (SE)	Men (n = 175), No. (%) or Mean (SE)	Women (n = 116), No. (%) or Mean (SE)
Mean age (years)	37.5 (0.80)	36.8 (0.78)	38.6 (1.13)
Married/living with partner	173 (61)	114 (64)	59 (55)
Highest grade completed in school			
Less than 12 th grade	166 (55)	101 (57)	65 (52)
High school graduate or above	125 (45)	74 (43)	51 (48)
Family poverty level			
<199%	218 (75)	126 (72)	92 (79)
200%	73 (25)	49 (28)	24 (21)
Country of birth			
U.S.	115 (41)	51 (33)	64 (57)***
Mexico	97 (34)	75 (43)	22 (18)
Other Spanish speaking country	79 (25)	49 (24)	30 (25)
Race/ethnicity			
Mexican	169 (58)	108 (63)	61 (49)**
Other Latino	112 (42)	67 (37)	55 (51)
Years lived in the U.S.			
<5	29 (20)	21 (20)	8 (17)
5-9	34 (22)	26 (23)	8 (19)
10-14	13 (10)	11 (11)	2 (7)
15	86 (48)	58 (46)	28 (57)
Language spoken at home			
Spanish	101 (32)	75 (39)	26 (20)*
Both Spanish and English	139 (49)	74 (45)	65 (56)
English	51 (19)	26 (16)	25 (24)

NHANES = National Health and Nutrition Examination Survey; SE = standard error.

^aCurrent smokers were defined as ever smoking at least 100 cigarettes and smoking every day or some days.

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$, statistical significance by gender.

Table II
Demographic and Acculturation-Related Characteristics of Latino Current^a Smokers
from 2009 CHIS

Characteristic	Total (n = 852), No. (%) or Mean (SE)	Men (n = 532), No. (%) or Mean (SE)	Women (n = 320), No. (%) or Mean (SE)
Mean age (years)	38.3 (0.84)	37.8 (0.93)	40.1 (2.00)
Married/living with partner	428 (54)	293 (54)	135 (53)
Highest grade completed in school			
Less than 12 th grade	324 (40)	223 (44)	101 (29)*
High school graduate or above	528 (60)	309 (56)	219 (71)
Family poverty level			
<199%	530 (60)	334 (61)	196 (55)
200%	322 (40)	198 (39)	124 (45)
Country of birth			
U.S.	400 (47)	211 (41)	189 (66)***
Mexico	396 (45)	282 (50)	114 ((29)
Other Spanish speaking country	56 (8)	39 (8)	17 (6)
Latino national origin			
Mexican	717 (81)	455 (80)	262 (84)*
Central American	51 (9)	35 (10)	16 (5)
Puerto Rican	12 (1)	4 (1)	8 (2)
South American	20 (4)	14 (5)	6 (2)
Other Latino	17 (2)	9 (2)	8 (2)
2+ Latino types	35 (3)	15 (2)	20 (6)
Years lived in the U.S.			
<5	23 (4)	17 (3)	6 (5)
5-9	44 (11)	32 (11)	12 (11)
10-14	58 (18)	42 (18)	16 (19)
15	327 (67)	230 (67)	97 (66)
Language spoken at home			
Spanish	192 (18)	134 (19)	58 (17)
Both Spanish and English	446 (59)	297 (60)	149 (56)
English	197 (22)	92 (21)	105 (27)
Percent life in the U.S.			
<20%	40 (5)	26 (5)	14 (5)***
21-40%	103 (10)	73 (11)	30 (7)
41-60%	170 (25)	120 (28)	50 (13)
61-80%	90 (8)	70 (8)	20 (6)
81%	449 (53)	243 (47)	206 (70)
Proficiency in English			
Not at all	94 (9)	56 (8)	38 (11)
Not well	191 (27)	142 ((29)	49 (20)

Characteristic	Total (n = 852), No. (%) or Mean (SE)	Men (n = 532), No. (%) or Mean (SE)	Women (n = 320), No. (%) or Mean (SE)
Very well/well	370 (64)	242 (63)	128 (69)

CHIS, California Health Interview Survey; SE, standard error.

^a Current smokers were defined as ever smoking at least 100 cigarettes and smoking every day or some days.

* $p < 0.05$;

*** $p < 0.001$, statistical significance by gender.

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Table III
Smoking Behavior Among Very Light^a and 6+ CPD Current Smokers

Behavior	2007-2008 NHANES			2009 CHIS		
	Total (n = 286), No. (%) or Mean (SE)	Very Light ^a (n = 158), No. (%) or Mean (SE)	6+ CPD (n = 128), No. (%) or Mean (SE)	Total (n = 852), No. (%) or Mean (SE)	Very Light ^a (n = 501), No. (%) or Mean (SE)	6+ CPD (n = 351), No. (%) or Mean (SE)
Mean age started smoking (years)	17.6 (0.45)	18.4 (0.45)	16.7 (0.60)	---	---	---
Mean years smoked (years)	---	---	---	13.7 (0.73)	10.3 (0.85)	19.4 (1.36)***
In the past 30 days,						
Days smoked	22.3 (0.67)	18.6 (0.78)	27.7 (0.58)***	---	---	---
In the last 5 days,						
Used tobacco/nicotine	230 (92)	119 (88)	111 (98)*	---	---	---
Last smoked cigarettes today	148 (63)	58 (48)	90 (80)**	---	---	---
Smoke every day or some days						
Every day	206 (70)	87 (54)	119 (91)***	479 (51)	173 (31)	306 (85)***
Some days	80 (30)	71 (46)	9 (9)	373 (49)	328 (69)	45 (15)
Time after waking to smoke						
5 minutes	37 (19)	7 (10)	30 (26)***	---	---	---
6 to 30 minutes	43 (20)	14 (16)	29 (23)	---	---	---
30 minutes to 1 hour	44 (21)	15 (17)	29 (24)	---	---	---
> 1 hour	75 (40)	45 (57)	30 (28)	---	---	---

CHIS, California Health Interview Survey; CPD, cigarettes per day; NHANES, National Health and Nutrition Examination Survey; SE, standard error.

^aVery light smokers were defined as those who smoked 1-5 CPD.

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$, statistical significance by smoking level.

Table IV
Adjusted Odds Ratios and 95% Confidence Intervals for Very Light^a Smoking among Current Smokers

Factor	Very Light ^a , No. (%) or Mean (SE)	6+ CPD, No. (%) or Mean (SE)	Crude OR (95% CI)	Adj. OR (95% CI) ^b
National Health and Nutrition Examination Survey (Very Light^a, n = 158; 6+ CPD, n = 128)				
Country of birth				
U.S.	56 (36)	57 (47) [*]	Reference	Reference
Mexico	63 (42)	32 (24)	2.28 (1.26, 4.12)	2.95 (1.72, 5.07)
Other country ^c	39 (22)	39 (29)	1.00 (0.55, 1.83)	1.20 (0.65, 2.24)
Race/ethnicity				
Mexican	95 (61)	72 (55)	Reference	Reference
Other Latino	63 (39)	56 (45)	0.78 (0.51, 1.18)	0.74 (0.45, 1.23)
Years lived in U.S.				
<5	21 (24)	8 (13)	3.03 (0.86, 10.71)	3.20 (0.89, 11.52)
5-9	22 (24)	11 (17)	2.46 (1.13, 5.36)	2.58 (1.23, 5.40)
10-14	10 (12)	3 (7)	2.95 (0.78, 11.15)	3.23 (0.91, 11.53)
15	44 (40)	41 (63)	Reference	Reference
Language at home				
Spanish	58 (37)	41 (27) ^{**}	2.96 (1.28, 6.83)	3.76 (1.74, 8.10)
Both languages	81 (51)	56 (47)	2.32 (1.24, 4.36)	2.63 (1.47, 4.70)
English	19 (12)	31 (26)	Reference	Reference
California Health Interview Survey (Very Light^a, n = 501; 6+ CPD, n = 351)				
Country of birth				
U.S.	202 (40)	198 (58) [*]	Reference	Reference
Mexico	264 (51)	132 (37)	2.00 (1.14, 3.52)	3.05 (1.59, 5.85)
Other country ^c	35 (9)	21 (5)	2.68 (0.99, 7.25)	3.69 (1.31, 10.34)
Latino nat'l origin				
Mexican	424 (79)	293 (83)	Reference	Reference
Central American	31 (9)	20 (8)	1.27 (0.64, 2.53)	1.09 (0.52, 2.28)
Puerto Rican	5 (1)	7 (3)	0.25 (0.08, 0.79)	0.23 (0.07, 0.80)
South American	13 (5)	7 (2)	2.33 (0.28, 19.41)	2.31 (0.26, 20.82)
Other Latino	6 (1)	11 (2)	0.61 (0.08, 4.38)	0.47 (0.04, 6.15)
2+ Latino types	22 (4)	13 (2)	2.45 (0.92, 6.51)	2.85 (0.90, 9.02)
Percent life in U.S.				
<20%	31 (4)	9 (5)	1.04 (0.42, 2.57)	1.07 (0.39, 2.92)
21-40%	76 (13)	27 (6)	2.71 (1.27, 5.76)	2.84 (1.20, 6.75)
41-60%	104 (27)	66 (20)	1.74 (0.86, 3.54)	2.09 (0.97, 4.51)
61-80%	55 (8)	35 (7)	1.60 (0.81, 3.16)	2.59 (1.13, 5.93)
81%	235 (47)	214 (61)	Reference	Reference
Language at home				

Factor	Very Light ^a , No. (%) or Mean (SE)	6+ CPD, No. (%) or Mean (SE)	Crude OR (95% CI)	Adj. OR (95% CI) ^b
Spanish	118 (18)	74 (18)*	1.58 (0.75, 3.34)	1.82 (0.69, 4.75)
Both languages	281 (65)	165 (51)	1.98 (0.97, 4.05)	2.10 (0.93, 4.71)
English	87 (17)	110 (31)	Reference	Reference

CI, confidence interval; CPD, cigarettes per day; nat'l, national; OR, odds ratio; SE, standard error.

^aVery light smokers were defined as those who smoked 1-5 CPD.

^bAdjusted for age, gender, marital status, and educational attainment (see Appendix Tables I and II).

^cOther Spanish speaking country

* $p < 0.05$;

** $p < 0.01$, statistical significance by smoking level.