
Acculturation and Smoking Patterns Among Hispanics

A Review

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Objective: To conduct a systematic review of published studies investigating the association of acculturation and smoking patterns among Hispanic men and women in the United States.

Methods: Online bibliographic databases were searched from 1985 to 2003 using three key search terms. The methodology and findings of all retrieved articles were critically evaluated. Data were extracted from each article regarding study population, study methods, exposure assessment, outcomes measured, acculturation measures used, and results.

Results: The literature search identified 78 articles from MEDLINE, PubMed, and PsychINFO databases; of these, 11 studies met the inclusion criteria. Seven regional studies based in the western United States and four nationwide studies were included in the review. Seven studies used formal acculturation scales, three used language spoken, and one used language spoken and country of birth to indicate acculturation status. Nine studies showed a positive association between acculturation and smoking among women, and one study involving men showed a negative association.

Conclusions: The findings suggest that the association of acculturation and smoking is gender-specific. In this instance, increased smoking prevalence with increased acculturation is consistently observed among Hispanic women but not among men. As Hispanic women acculturate, their cigarette smoking may increase because their behavior becomes more strongly influenced by the norms and practices of the dominant group than among men. Immigrant- and gender-specific public health interventions need to be designed to combat the increase in smoking rates among Hispanics in the United States.

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Introduction

Cigarette smoking is the leading cause of preventable death in the United States and produces substantial health-related economic costs to society.¹ From 1995 to 1999, >440,000 people in the United States died from smoking-related causes each year. Among adults, most smoking deaths were from lung cancer (124,813), ischemic heart disease (81,976), and chronic airway obstruction (64,735).¹ Estimates show that smoking caused over \$150 billion in annual health-related economic losses from 1995 to 1999, including \$81.9 billion in mortality-related productivity and \$75.5 billion in excess medical expenditures in 1998.¹

National and regional surveys have shown that Hispanics have lower smoking rates than non-Hispanic whites. Data from the 2001 National Health Interview Survey (NHIS) show that the overall prevalence of cigarette smoking was significantly lower for Hispanics

(16.7%, standard deviation [SD]=1.2) than for non-Hispanic whites (24.0%, SD=0.6).² The percentage of Hispanic men who currently smoked (21.6%, SD=1.9) was lower than the percentage among non-Hispanic white men (25.4%, SD=1.0). However, a wider gap was seen when comparing Hispanic and non-Hispanic white women. The percentage of Hispanic women who currently smoked (11.9%, SD=1.3) was nearly half of the percentage among non-Hispanic white women (22.8%, SD=0.9).²

Acculturation to mainstream U.S. society is a complex, multidimensional phenomenon that has a crucial but poorly understood role in many health behaviors, including smoking.³ The term “acculturation” refers to changes in values, attitudes, and behaviors experienced by individuals of an ethnic group as a result of continuous interaction with people of a different ethnic group.^{4–6} This acculturation model predicts that smoking patterns of Hispanics would reflect the extent to which they have adopted the smoking norms and practices of the larger society. This suggests that Hispanic smoking rates will eventually equal those of non-Hispanic whites with increasing levels of acculturation. With >35 million Hispanics living in the United States (40% are foreign-born), the effect of accultura-

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Table 1. Review of studies on smoking and acculturation

Study authors(year) ^{ref}	Site	Study population	Sample size
Acevedo (2000) ⁸	Colorado	Pregnant women	331
Cantero (1999) ⁹	Los Angeles	Women aged 46–92	573
Coonrod (1999) ¹⁰	Arizona	Women aged 18–65	76
Coreil (1991) ¹¹	Nationwide	Men and women aged 20–74	3464
Haynes (1990) ¹²	Nationwide	Men and women aged 20–74	3464
Marin (1989) ¹³	California	Men and women aged 15–64	1669
Markides (1987) ¹⁴	Texas	Men and women aged 18–80	1125
Palinkas (1993) ¹⁵	California	Men and women aged ≥18	3164
Perez-Stable (2001) ¹⁶	Nationwide	Men and women aged ≥18	8882
Samet (1992) ¹⁷	New Mexico	Men and women aged ≥18	1072
Sundquist (1999) ¹⁸	Nationwide	Men and women aged 25–64	2791

tion on smoking is clearly a public health concern.⁷ Again, the concept of acculturation is a complex phenomenon that is not fully understood. However, formal scales have been developed and proxy measures used in an attempt to better understand its association with health outcomes and health behaviors.

The objectives of this paper are to (1) review published studies investigating the association of acculturation on smoking patterns among Hispanic men and women in the United States, and (2) examine the acculturation measures used in these studies.

Methods

This literature review consisted of studies that examined acculturation and health behaviors of Hispanics in the United States. Studies under review were initially identified using MEDLINE, PubMed, and PsychINFO database search engines. The three key search terms were “smoking”; “acculturation” or “immigration”; and “Hispanic” or “Mexican-American” or “Latino/a.” The searches were limited from 1985 to 2003, but included all journals in the databases. This lower limit was chosen to include articles using data from the Hispanic Health and Nutrition Examination Survey (HHANES) 1982–1984, an important study of Hispanic health in the United States. This search strategy identified 78 articles that provided data on smoking and acculturation/immigration among Hispanics in the United States. These articles were examined, and final inclusion into the review was determined by (1) English language reference, (2) use of an adult study population, and (3) examination of smoking rates across acculturation groups using measures based on a validated scale, language preference, and country of birth or time (years) living in the United States. A large percentage of the excluded references did not satisfy the second or third criterion.

Results

A total of 26,611 men and women were included in the 11 selected studies with sample sizes ranging from 76 to 8882. Three studies analyzed women only, and the remaining eight studies analyzed men and women (Table 1). The respondents were predominantly of

Mexican origin, with a small proportion coming from Puerto Rico, Cuba, Central America, and South America. Approximately 70% of the respondents were drawn from the general U.S. population, and the remainder were from western U.S. states including Arizona, California, Colorado, New Mexico, and Texas. All of the studies were cross-sectional in design; eight utilized in-person interviews, two used telephone interviews, and one study used a self-administered survey. All studies were administered in English or Spanish based on the participants’ preference. Seven studies employed formal acculturation scales,^{19–28} three used language spoken, and one used language spoken and country of birth to indicate acculturation status. The studies using formal acculturation scales reported excellent internal reliability with Cronbach’s α values ranging from 0.75 to 0.96.

Smoking Rates by Study Location

Current smoking rates ranged from 24.5% to 45.8% in the eight studies involving men, and 11.5% to 26.1% in the 11 studies involving women (Table 2). The prevalence ratios showed that among Hispanics, smoking rates in men were approximately twice as high as rates in women in most studies (Table 2). Among men and women, similar ranges of smoking rates and prevalence ratios were found in studies using nationwide samples and populations in the western United States.

Smoking Rates by Acculturation Measures

Proxy measures for acculturation. The association between acculturation and current smoking rates was examined to address the primary objective of the review. Four studies used proxy measures for acculturation, including three that used language spoken and one that used country of birth and language spoken. All of these studies analyzed women, and three analyzed men and women. A positive association was found between acculturation and smoking among women in three of these four studies (Table 3). English language use was associated with higher rates of smoking than

Table 2. Current smoking rates in Hispanics by study location and gender

Study authors (year) ^{ref}	Current smoking rate (%)		Prevalence ratio ^a
	Men	Women	
Western states			
Acevedo (2000) ⁸	—	13.0	—
Cantero (1999) ⁹	—	16.4	—
Coonrod (1999) ¹⁰	—	17.8	—
Marin (1989) ¹³	32.4	16.8	1.93
Markides (1987) ¹⁴	45.8	22.9	2.00
Palinkas (1993) ¹⁵	24.5	11.5	2.13
Samet (1992) ¹⁷	29.6	26.1	1.13
Nationwide			
Coreil (1991) ¹¹	43.4	24.8	1.75
Haynes (1990) ¹²	40.0	25.0	1.60
Perez Stable (2001) ¹⁶	25.0	12.1	2.07
Sundquist (1999) ¹⁸	31.1	15.7	1.98

^aMen prevalence/women prevalence.

Spanish language use. Specifically, English-speaking Hispanic women had current smoking rates of over four and two times higher than Spanish-speaking Hispanic women in studies by Acevedo et al.⁸ and Palinkas et al.,¹⁵ respectively. In the study by Sundquist and Winkleby,¹⁸ both Spanish- and English-speaking U.S.-born Hispanic women had a higher age- and education-adjusted smoking prevalence than the Mexican-born women. However, among men, no studies using a proxy measure for acculturation showed an association between language preference and smoking.

Acculturation scales. Seven studies involved women and used formal scales to assess acculturation, whereas five studies involved men (and women) and used a formal acculturation scale.^{9–14,16} When smoking rates and analytical model results were examined, six of the seven studies involving women showed a positive association between acculturation and smoking (Table 3). An increase in acculturation was consistently associated

with higher current smoking rates. Specifically, studies by Cantero et al.,⁹ Haynes et al.,¹² Marin et al.,¹³ and Perez-Stable et al.¹⁶ found ranges of current smoking rates (from low to high acculturation) of 11.0% to 25.1%, 19.0% to 28.0%, 13.6% to 22.6%, and 10.3% to 15.5% among Hispanic women, respectively. Coonrod et al.¹⁰ found a current smoking prevalence ratio of 3.7 comparing U.S.-oriented and Mexico-oriented Hispanic women. Finally, Coreil et al.¹¹ used logistic regression to find a significant positive association between acculturation and current smoking status across all age groups of women.

Only one study involving men showed a significant association between acculturation and smoking. Marin et al.¹³ found a negative association between acculturation and smoking in which more-acculturated men had a lower current age-adjusted smoking rate than less-acculturated men (26.7% vs 37.5%).

Discussion

This review found a consistent positive association between acculturation and smoking among Hispanic women but not men, indicating a differential association of acculturation and current smoking status by gender. Specifically, 9 of the 11 studies involving women reported a significant positive association between acculturation and current smoking status. In these studies, more acculturated women were more likely to be current smokers. In contrast, only one of the eight studies involving men found a significant association between acculturation and current smoking status, and this relationship was negative; an increase in acculturation was associated with a lower prevalence of current smoking.

The low smoking rates of women in Mexico may help explain the presence of an association between acculturation and smoking among Hispanic women in the United States. The second and third editions of Mexi-

Table 3. Association of acculturation and smoking and acculturation measures used

Study authors (year) ^{ref}	Association of acculturation and smoking		Acculturation measure(s)
	Men	Women	
Acevedo (2000) ⁸	—	Positive	Language spoken
Cantero (1999) ⁹	—	Positive	11-item acculturation scale, ^{19–24} years living in United States
Coonrod (1999) ¹⁰	—	Positive	General acculturation index, ²⁵ birthplace, years living in United States
Coreil (1991) ¹¹	None	Positive	8-item acculturation scale ¹⁹
Haynes (1990) ¹²	None	Positive	8-item acculturation scale ²⁶
Marin (1989) ¹³	Negative	Positive	5-item acculturation scale ²⁷
Markides (1987) ¹⁴	None	None	Ethnicity of friends, language, and traditional values scales ²⁸
Palinkas (1993) ¹⁵	None	Positive	Language spoken
Perez-Stable (2001) ¹⁶	None	Positive	5-item acculturation scale, ²⁷ birthplace
Samet (1992) ¹⁷	None	None	Language spoken
Sundquist (1999) ¹⁸	None	Positive	Birthplace and language spoken

co's National Survey of Addictions (ENA-93 and ENA-98) found female smoking rates of 16.3% and 18.4% in Mexico, respectively.^{29,30} These are lower than the rates reported among non-Hispanic white women and more acculturated Hispanic women found in this review. Authors from two studies in this review suggest that the association between acculturation and female Hispanics may simply reflect the current social norms for smoking in the United States.^{12,13} As Hispanic women acculturate, their cigarette smoking rates increase because their behavior becomes more strongly influenced by the norms and practices of the dominant group; therefore, their smoking rates will become closer to those of the U.S. non-Hispanic white population.

The specific reason why Hispanic women are more susceptible than Hispanic men is unknown; however, researchers have provided sociological and psychological theories to help explain this observation. Cigarette smoking may be a way for a Hispanic woman to establish her independence in American society. Cigarette smoking may also symbolize the acquisition of greater equality of status in society associated with changing gender roles and employment opportunities. Also, the abandonment of Hispanic social pressures, which traditionally helped prevent cigarette smoking among women but not men, may also contribute to the observed differences by gender.^{31,32} Finally, differential exposure to acculturative stress by gender may also explain the association between acculturation and smoking among women but not among men.³³

The high smoking rates of men in Mexico may explain the absence of an association between acculturation and smoking among Hispanic men in the United States. The second and third editions of Mexico's National Survey of Addictions (ENA-93 and ENA-98) found male smoking rates of 42.9% and 51.2%, respectively. These rates are much higher than the overall smoking prevalence of non-Hispanic white men in the United States (24.0%),² but similar to rates reported in a few of the studies under review. According to the idea that immigrants' smoking rates will equal those of the dominant group, male Hispanic smoking rates should decrease from their higher levels in Mexico to the level of non-Hispanic whites in the United States. Only one study showed this negative relationship, and two studies showed a negative relationship between acculturation and smoking that was not statistically significant.^{16,18}

Results from this review were evident across acculturation measures used. The positive relationship between acculturation and smoking among women was present in studies that used formal acculturation scales as well as in studies that used proxy measures. Six of the seven studies that used formal acculturation scales and three of the four studies that utilized country of birth and/or language spoken as proxies reported this trend. The seven studies that did not

find a significant association between acculturation and current smoking status among men used formal acculturation scales as well as country of birth and/or language spoken as proxy measures. The results found were also consistent across studies that presented prevalence values only, adjusted prevalence values (age and/or education adjusted), and multivariate logistic regression results. Although only two studies used the same acculturation scale, systematic differences between the scales would not explain the differential association between acculturation and smoking by gender because the same study instrument was used on men and women. Also, the use of the various scales in different populations in the western United States and nationwide demonstrates that the observed association between acculturation and smoking was externally valid.

The trends discovered in this review, however, cannot be generalized to the entire Hispanic population throughout the United States. All seven of the regional studies included Hispanics who were predominantly or entirely Mexican American. These studies were based in western U.S. states such as Colorado, California, Texas, New Mexico, and Arizona. Also, three of the four nationwide studies used Mexican-American subsamples for their analyses instead of the entire Hispanic sample. Therefore, it may only be appropriate to generalize these results to Mexican Americans. The large sample sizes, sophisticated sample schemes of the nationwide studies such as the HHANES and NHANES, and strong internal validity of the study populations allow the results to be adequately generalized to the Mexican-American population.

Regardless of the acculturation measures used in these studies, a potential source of bias exists. Seven studies in this review used formal scales to assess acculturation, and six of these studies used primarily language-based acculturation scales. The language-based scales (including the Acculturation Rating Scale for Mexican Americans, ARSMA-I) measure acculturation linearly with Mexican culture at one extreme and American culture at the other. Thus, acculturation is defined as a linear movement in one direction of the continuum.¹⁹ This definition assumes that strengthening of one ethnic tie requires weakening of the other. These measures do not account for those biculturals who score high in both cultures. Two-dimensional models should be used which stress that acculturation is a process in which the relation to the culture of origin and the new culture can be considered simultaneously. ARSMA-II was developed to address these concerns, but was not used in any of the studies in the review.³⁴

Four studies used proxy measures for acculturation, such as nativity, length of U.S. residence, language preference, and generation status.^{8,14,17,18} These stud-

ies make similar linear assumptions as seen in the language-based acculturation scales. Many public health studies use proxy measures to represent the complicated acculturation process. These measures are particularly convenient because they are often found in secondary data sources such as vital statistics records and national databases. However, these measures are limited in their ability to adequately assess an individual's level of acculturation, and these limitations have not been sufficiently evaluated.

Another potential source of bias shared by all studies in the review was the self-reporting of cigarette use. Cigarette use has been falsely reported and underreported among New Mexico Hispanics and among a subsample of the Mexican-American population in HHANES.^{35,36} Thus, the smoking prevalence reported in these studies may be underestimates. An analysis of Mexican-American smokers in HHANES indicated that $\geq 20.4\%$ of men and $\geq 24.7\%$ of women who reported smoking less than ten cigarettes per day may have underreported their actual consumption. However, we are unable to confirm this underreporting, or to compare it to inaccurate reporting among non-Hispanics. We do not believe that inaccuracies in reporting smoking prevalence would invalidate the basic conclusions of this review.

The findings from this review suggest that some of the processes of acculturation are gender-specific. Specifically, gender modified the effect of acculturation on smoking behavior among Hispanics. Again, as Hispanic women acculturate, their cigarette smoking rates increase because their behavior becomes more strongly influenced by the dominant group; therefore, their smoking rates will become closer to those of the U.S. non-Hispanic white population. Smoking-cessation and -prevention programs should be customized to address the needs of specific Hispanic subpopulations. Female Hispanic immigrants are a group particularly susceptible to smoking initiation upon arrival in the United States. Public health interventions need to account for the unique acculturation experience of Hispanics entering the United States. In particular, gender-specific and immigrant-specific approaches are necessary to halt the increase in smoking among Hispanics before it begins.

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