Social and Behavioral Correlates of Cigarette Smoking among Mid-Atlantic Latino Primary Care Patients

Lisa Sanderson Cox,[1] Shibao Feng,[2] Janet Cañar,[3] Maureen McGlinchey Ford,[2] and Kenneth P. Tercyak[2]

[1]Department of Preventive Medicine and Public Health, University of Kansas School of Medicine, Kansas City, Kansas; [2]Lombardi Comprehensive Cancer Center, Cancer Control Program, Georgetown University Medical Center, and [3]Spanish Catholic Center, Washington, District of Columbia

Abstract

Tobacco use is the leading preventable cause of death for the U.S. Hispanic population. The goal of this study was to identify social and behavioral correlates of smoking behavior among urban, multiethnic Latino primary care patients seen in community clinics. Spanish-language interviews were completed with 141 current smokers and 158 former and nonsmokers. Twenty countries of origin were represented. Eighty-three percent of participants were from Central or South America and 71% spoke primarily Spanish. Current smokers were more likely than nonsmokers or former smokers to originate from South America (38% versus 26%) and to be single (63% versus 42%). Current smokers also were more likely to use alcohol on a regular basis (59% versus 31%) and to experience daily symptoms of depression (29% versus 19%). Logistic regression analysis suggested a moderating effect of depression on the relationship between alcohol use and smoking, such that current users of alcohol who reported depression were more likely to smoke (82%) than were current users of alcohol who did not report depression (56%). As both social and behavioral factors were uniquely associated with smoking, country of origin, marital status, and comorbid alcohol use and depression should be considered in designing and implementing tobacco control interventions targeted to this community. (Cancer Epidemiol Biomarkers Prev 2005;14(8):1976–80)

Introduction

Smoking is the leading preventable cause of death for the Hispanic population in the United States (1, 2) and accounts for at least 30% of all cancer deaths (3). Of Hispanic adults in the United States, 23% of males and 11% of females are current smokers (4). Within the general population, multiple sociodemographic (2), psychological, and behavioral factors (5-7) have been found to be associated with smoking behavior.

Whereas there is a growing literature exploring Latino smoking, few studies have evaluated psychosocial correlates of tobacco use in this special population. Important relationships between gender and acculturation (8) and education (9) have been identified for tobacco use among Latinos. In addition, one study found higher levels of depressive symptoms among Latino current smokers compared with former and never smokers (10).

The majority of published data on Latino smoking focuses on Hispanics of Mexican descent (8-14). In contrast, the Latino population in the Mid-Atlantic United States largely consists of recent immigrants from Central and South America. There are few studies in this distinctive subpopulation (15-17), and none of these have examined psychological and behavioral correlates of smoking in this special group. To fill this gap, this case-control study describes and evaluates social and behavioral correlates of cigarette smoking among Central and South American Hispanic Americans from the mid-Atlantic region. It was hypothesized that relative to nonsmokers, current smokers would evidence greater depression symptoms, more frequent alcohol use, and greater acculturation.

Materials and Methods

Setting. This study was conducted within the Latin American Cancer Research Coalition, a National Cancer Institute–funded academic-community-primary care partnership focused on improving cancer outcomes among Hispanics in the metro Washington DC region. Primary care was selected as the site for this study given recent public health guidelines underscoring the important role of primary care in tobacco control for members of special populations, including racial and ethnic minorities (18).

The Spanish Catholic Center (SCC) of greater Washington DC is a community-based health and social service organization providing assistance to low-income, uninsured, and limited English proficient immigrants. The SCC operates three medical outpatient clinics, all delivering preventive and primary health care to underserved adults. Ninety percent of SCC patients are members of the Latino community and ~80% have limited English proficiency.

Participants. This study was approved for human subjects by the Georgetown University Medical Center Institutional Review Board and by the medical director of the SCC. Self-identifying Latino, Hispanic, or Mestizo (herein referred to as ''Latino'') male and female adult (age 18 years and older) users of the SCC medical, dental, and ancillary service clinics were eligible to serve as participants in this study. Preliminary data collected from 762 SCC patients suggested that the point-prevalence of cigarette smoking was 17% among males and 14% among females. Although this finding did not replicate the vast gender disparity in Latino smoking prevalence seen in national data, this data was consistent with higher smoking rates in Latino men compared with

Received 3/20/05; revised 5/21/05; accepted 5/31/05.

Grant support: NIH/National Cancer Institute grant CA086114. Dr. Cox conducted this research while affiliated with the Lombardi Comprehensive Cancer Center, Cancer Control Program at Georgetown University.

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Requests for reprints: Lisa S. Cox, Department of Preventive Medicine and Public Health, University of Kansas School of Medicine, MS 1008, 3901 Rainbow Boulevard, Kansas City, KS 66160. Phone: 913-588-2643; Fax: 913-588-2780. E-mail: LCox@kumc.edu

doi:10.1158/1055-9965.EPI-05-0141

women (4). Accordingly, advertising and recruitment were conducted in phases with the goals of enrolling roughly equal numbers of males and females. Furthermore, smokers were oversampled to yield similar number of cases (smokers) and controls (nonsmokers).

Procedures. English and Spanish language posters and flyers describing the study were placed throughout the SCC clinic sites and were visible on appointment check-in; additional study recruit materials were distributed at SCC community health fairs. Interested individuals were asked to contact study personnel housed at the SCC clinic sites. Those who expressed interest in participating were screened by a bilingual research staff member to confirm their study eligibility and obtain written informed consent (in either English or Spanish). Following consent, participants were asked to select their preferred language for completing a 20-minute interview. Two hundred ninety-four interviews (98%) were completed in Spanish and five were completed in English. Participants received a $10 gift certificate to a local grocery store and health education brochures to acknowledge their time and effort. Interviews began in 2003 and were completed in May 2004.

Measures

Demographics. Assessment of sociodemographic data included age, gender, race/ethnicity, country of origin, marital status, and education.

Smoking Status. Lifetime tobacco use of <100 cigarettes was used to define ''nonsmokers.'' For those who reported ever using more than 100 cigarettes, we assessed the self-reported current smoking status using 7-day point prevalence smoking abstinence (19). Participants were considered ''current smokers'' if they self-reported using tobacco (even a puff) in the 7 days before the interview. ''Former smokers'' reported having quit smoking and having no use of tobacco (not even a puff) during the past 7 days.

Symptoms of Depression. The two-item Patient Health Questionnaire-2 (20) was used as a screening measure for current symptoms of depression. The Patient Health Questionnaire-2 inquires about the frequency of depressed mood (''feeling down, depressed, hopeless'') and anhedonia (''little interest or pleasure in doing things'') over the past 2 weeks, scoring as 0 (''not at all'') to 3 (''nearly every day''). The total depression score is a sum of the two items. This measure has strong construct and criteria validity. The clinical recommendation for use of this measure is a cutoff of 3 (sensitivity of 83% and specificity of 92% for major depression; ref. 20). We chose to use a more conservative cutoff of 4 to indicate participants who endorsed symptoms of both depressed mood and anhedonia on most days. In our sample, individuals scoring at least a 4 on the Patient Health Questionnaire-2 fell at or above the 80th percentile. The correlation of these two items was $r = 0.59$.

Alcohol Use. Participants reported consumption of alcoholic beverages (yes/no) and frequency of alcohol consumption (annually, monthly, weekly, daily). For the purposes of this report, participants who reported at least monthly alcohol consumption were classified as ''current users.'' Participants who reported no alcohol consumption or annual alcohol use were classified as ''noncurrent users.'' We did not measure the amount of current alcohol use.

Short Acculturation Scale for Hispanics—Language Factor. The language scale from the Short Acculturation Scale for Hispanics (21) was used to measure acculturation. The scale consists of four items assessing language preference (English, Spanish, or a mixture of both) when reading and speaking, thinking, at home, and with friends. A five-point Likert scale is used and responses (possible range 1-5) are averaged. Scores < 3 are categorized as ''low'' in acculturation; scores ≥ 3 are considered ''highly acculturated'' (22). The language factor shows excellent reliability ($\alpha = 0.92$) and validity as a brief measure of acculturation (21). Within the current sample, the four language items showed adequate reliability (Cronbach coefficient $\alpha = 0.77$).

Statistical Analysis. The first step in the data analysis plan was to examine the univariate characteristics of each variable (mean, SD, median). Next, bivariate analyses (χ^2 tests, t tests) were done with each of the background/controlling and independent variables to establish their association with the dependent variable of interest (current cigarette smoking). Independent variables with significant ($P < 0.05$) or nearly significant ($P < 0.10$) associations were then retained in a multivariate model of smoking behavior. All analyses were done using SAS statistical software version 9.0.

Table 1. Participant characteristics

	Total (n = 299)	Current smokers (n = 141)	Nonsmokers/former smokers (n = 158)
Age, mean ± SD	38.4 ± 12.8	37.6 ± 12.5	39.1 ± 13.1
Gender, n (%)			
Female	104 (35)	48 (34)	56 (35)
Male	195 (65)	93 (66)	102 (65)
Country of origin, n (%)			
Central and North America	204 (68)	87 (62)	117 (74)
South America	95 (32)	54 (38)	41 (26)
Education, n (%)			
<High school	121 (40)	54 (38)	67 (42)
≥High school	178 (60)	87 (62)	91 (58)
Employment, n (%)			
<Full-time	167 (56)	74 (52)	93 (59)
Full-time	131 (44)	67 (48)	64 (41)
Marital status, n (%)			
Single	156 (52)	89 (63)	67 (42)
Married	143 (48)	52 (37)	91 (58)
Spanish-English language use, mean ± SD	1.9 ± 0.7	1.8 ± 0.7	1.9 ± 0.7
Alcohol, n (%)			
Noncurrent use	167 (56)	58 (41)	109 (69)
Current use	132 (44)	83 (59)	49 (31)
Depression, n (%)			
No	228 (76)	100 (71)	128 (81)
Yes	71 (24)	41 (29)	30 (19)

Results

Descriptive characteristics are presented in Table 1. Participants in this study were, on average, 38.4 years old (range 18-77 years); 65% were male, 71% spoke primarily Spanish, 44% reported current alcohol use, and 24% reported daily symptoms of depression.

Twenty countries of origin were represented within the sample. Ninety-eight percent of participants originated from outside the United States. Representation included the Caribbean (5%; Dominican Republic, Puerto Rico, and Cuba), Mexico (9%), Central America (52%; El Salvador, Guatemala, Honduras, Nicaragua, and Costa Rica), and South America (32%; Peru, Bolivia, Ecuador, Columbia, Venezuela, Chile, Argentina, Brazil, Paraguay, and Uruguay). The greatest proportion of participants came from El Salvador (35%) and Peru (10%).

With respect to smoking status, 47% of the sample were current smokers and 53% of the sample reported themselves to be nonsmokers or former smokers. Thus, the identification procedure was reasonably successful at enrolling roughly equivalent numbers of smokers and nonsmokers into the study.

Smokers were significantly more likely than nonsmokers or former smokers to originate from South America (38% versus 26%, χ^2 [1] = 5.24, $P = 0.02$), to be single (63% versus 42%, χ^2 [1] = 12.81, $P = 0.0003$), to use alcohol on a regular basis (59% versus 31%, χ^2 [1] = 23.40, $P < 0.0001$), and to experience daily symptoms of depression (29% versus 19%, χ^2 [1] = 4.19, $P = 0.04$).

Logistic regression analysis identified variables affecting the likelihood of current smoking (dependent variable). The model controlled for subject gender was tested in steps, and sought to identify the main effects of country of origin and marital status on Step 1, alcohol use on Step 2, depression on Step 3, and the interaction between alcohol use and depression on Step 4. The results of the multivariate analysis are displayed in Table 2. The main effects of country of origin, marital status, and alcohol were significant independent predictors of smoking status ($P < 0.05$). Depression did not have a main effect after other variables were controlled. However, the adjusted results did suggest a moderating effect of depression on the relationship between alcohol use and smoking, such that current users of alcohol who were depressed were more likely to smoke (82%) than were current users of alcohol who were not depressed (56%); χ^2 [1] = 4.17, $P < 0.05$ (Fig. 1).

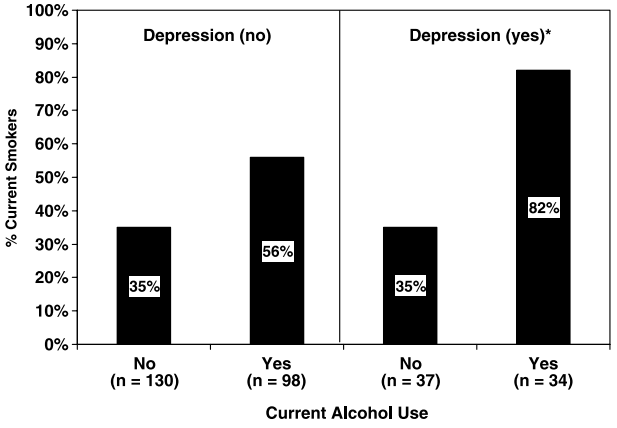

Figure 1. Interaction effect of depression and alcohol on smoking. *Depression (yes)**, participants who reported current symptoms of depression, with a score ≥ 4 on the Patient Health Questionnaire-2 indicating depressed mood and anhedonia on most days over the past 2 weeks.

Discussion

The current study evaluated tobacco use and related social and behavioral factors among a group of urban, poor, immigrant, multiethnic Hispanic Americans. Primary care clinics serving predominantly Spanish-speaking patients within the Latino community in the greater Washington DC provided access to this group of smokers and nonsmokers. Current alcohol use and self-reported symptoms of depression, unmarried status, and South American origin were associated with current tobacco use.

The overall rate of current alcohol use in this study is similar to national data of ~60% of Hispanic adults reporting no alcohol use in past 30 days (23). Data from non-Hispanic whites show a high comorbidity of alcohol and nicotine dependence, and history of alcohol dependence is associated with poorer smoking cessation treatment outcomes (24-26). Indeed, smokers trying to quit report alcohol use as a common cause of smoking relapse. Moreover, heavy drinking (five or more drinks on one occasion) is a considerable health risk among Latino men (27), although differences in drinking patterns may be influenced, in part, by country of origin (28). Findings from our Latino sample show that current smokers are more likely to use alcohol than nonsmokers. However, little research has focused on comorbidity of alcohol and nicotine dependence within Latino populations. Our results suggest that clinical providers and public health proponents must consider the coexisting risks of alcohol and tobacco use, and alcohol use must be addressed within nicotine dependence treatment. Furthermore, additional research is needed to enhance our understanding of this relationship in the context of Latino tobacco use initiation, maintenance, treatment, and relapse prevention.

One in four Latinos in our sample reported daily symptoms of depression. Compared with non-Hispanic whites, Latinos report higher rates of depressive symptoms (29, 30). Other studies have found higher rates of depressive symptoms among smokers compared with nonsmokers within primarily non-Hispanic white samples (5, 31, 32). Pérez-Stable et al. (10) reported similar findings within a predominantly Mexican-American sample: smokers had an odds ratio of 1.7 for significant symptoms of depression compared with former and never smokers. Self-medication models of nicotine dependence propose the rewarding properties of nicotine may be especially reinforcing for individuals prone to negative effect or depression (33-35).

Within the current sample, reported depression moderated the association between alcohol and tobacco use, suggesting that depression may be a risk factor for smoking among Latino smokers who use alcohol. The degree to which clinical or

Table 2. Multivariate model of current smoking

Step	Predictor	OR (95% CI)	*P*
1	Country of origin		
	Central and North America*	1.00	
	South America	1.77 (1.07, 2.94)	0.03
	Marital status		
	Married*	1.00	
	Single	2.33 (1.45, 3.73)	<0.01
2	Alcohol		
	Noncurrent use*	1.00	
	Current use	2.94 (1.79, 4.83)	<0.01
3	Depression		
	No*	1.00	
	Yes	1.50 (0.84, 2.69)	0.17
4	Alcohol × depression	3.43 (1.02, 12.77)	0.05

NOTE: OR, odds ratio; 95% CI, 95% confidence interval.
*Indicates reference group.

nonclinical levels of depression affect tobacco use, development of nicotine dependence, and treatment outcomes among Latino alcohol users and nonusers merits closer attention. Although Latinos receive less professional care for depression and use fewer mental health services than do non-Hispanic whites (29, 36), primary care providers may be a valuable resource for recognizing and treating depression within this group (37, 38). Concurrent assessment of depression and alcohol use within the context of tobacco control efforts and treatment interventions may prove central to enhancing abstinence outcomes among smokers at highest risk for dependence and relapse.

In the present study, current smokers were approximately half as likely to be married as nonsmokers and former smokers. Age and gender do not account for this difference. This result is in contrast to findings within a smoking prevalence study conducted by Shankar et al. (15) among 1,458 Salvadorean immigrants. Within that study, marital status was not associated with smoking status. Reasons for the discrepancy of these findings are unclear. Social norms, spousal support and smoking behavior, and health concerns for family may play important roles in tobacco use initiation, smoking behavior change, and motivation for stopping smoking. The role of these factors in maintaining and influencing change in smoking behavior deserves additional attention, particularly within the Latino community where regard and concern for family (*familisma*) are core cultural values. For example, *familisma* can be emphasized in educating smokers on the negative effects of environmental tobacco smoke on the family, and may play a role in promoting abstinence by motivating family members to seek tobacco treatment (39).

Study participants included individuals from 20 countries of origin. Within this sample, individuals originating from South America were more likely to smoke than those from North and Central America. Pérez-Stable et al. (17) evaluated a multiethnic sample of Latinos and also found lower smoking prevalence among individuals of Central American origin. Because we have limited knowledge of social factors related to smoking behavior among Hispanic Americans, country of origin is assessed in an attempt to identify potential cultural differences within this heterogeneous population. Whereas regional difference may emerge, interpretation of such findings is complicated by the fact that smoking prevalence varies greatly between countries within larger regions (e.g., in comparing smoking prevalence across Central American countries or across South American countries). Indeed, risk and protective factors related to specific country of origin may provide a more meaningful evaluation. A strength of the present study is the ability to recruit and gather data from a diverse group of Latinos, but we were not powered to conduct subgroup analyses by country of origin. Replication of findings across studies and continued collection of data on country of origin to facilitate future meta-analytic review may contribute to increased understanding of these factors. Such evaluation might inform community-based interventions and prevention efforts.

Findings across ethnic minority groups support a relationship between acculturation and tobacco use initiation, dependence, and treatment outcomes (2). Studies within Latino samples have supported this relationship (8, 16, 17), although findings have been mixed (9). Indeed, Marín et al. (8) found an interaction between gender and acculturation: age-adjusted smoking rates were higher among less acculturated males and among more acculturated females. This suggests that as individuals become more acculturated within the United States, their smoking patterns tend to be more similar to the general population. Two other studies including multiethnic Latinos found English preference associated with current smoking among women (16, 17). The lack of association between tobacco use and acculturation within the current investigation may be due, in part, to our sample characteristics. Because participants were almost entirely Spanish speaking and foreign born, there was a limited range of acculturation scores within this sample. Therefore, we did not have the diversity within this sample to adequately evaluate hypotheses related to acculturation and smoking behavior.

Characteristics of this sample must be acknowledged in considering the generalizability of these findings. This study included predominantly Spanish-speaking immigrants who used an urban community clinic serving low-income, uninsured individuals. Further investigation is needed in urban and rural settings among individuals without insurance who do not seek medical care, and among individuals with a higher level of socioeconomic status, with insurance, or who widely use English. Evaluation of risk and protective factors related to tobacco use, as well as access or barriers to smoking cessation interventions, among other Latino populations would be valuable. Furthermore, a larger sample size would enhance the ability to examine additional, potentially meaningful subgroup differences.

Assessment of depression and alcohol use was also limited in this study. Whereas we used a reliable and validated screening measure for depression (Patient Health Questionnaire-2; ref. 20), an alternate comprehensive measure of depressive symptoms would provide a richer set of data (40). Further, extended assessment of alcohol use would provide relevant data on binge drinking and dependence history. Based on feedback from community advisors and clinic providers, we limited our assessment of depression and alcohol use to increase acceptability and feasibility of use within the primary care setting. Similarly, we might have ideally collected additional sociodemographic data including income, age at immigration, and length of residence in the United States, as these factors have previously been evaluated in relation to tobacco use. However, providers and community advisors expressed concern about participants' level of comfort and potential for discontinuing study participation, especially among recent immigrants or individuals with undocumented status. Whereas this study produced important preliminary findings, future investigations would benefit from a comprehensive evaluation of key social and behavioral correlates of tobacco use including current and lifetime history of major depression, history of alcohol dependence, and binge drinking.

This study contributes to the literature by providing additional investigation of smoking behavior within Hispanic Americans, particularly within a multiethnic, urban, largely immigrant, Spanish-speaking sample from Central and South America. Furthermore, evidence of a significant relationship between tobacco and alcohol use and depression within this Latino sample highlights the importance of considering these factors in tobacco control efforts within this community. Additional research is needed to extend the investigation of these social and behavioral factors to identify key protective and risk factors related to tobacco use initiation, to evaluate how these factors contribute to continued tobacco use and nicotine dependence, and to explore how these factors may be most effectively addressed within treatment and relapse prevention.

Acknowledgments

We thank Drs. Jeanne Mandelblatt and Elmer Huerta for their guidance, and Michelle Goodman, Mariano J. Kanamori, Larina Mehta, Laura Pallandre, Yosselyn Rodriguez, the members of the Latin American Cancer Research Coalition, and the staff of the Spanish Catholic Center for their efforts on this project. We are also grateful to the volunteers who participated in this research.

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Cancer Epidemiol Biomarkers Prev 2005;14:1976-1980.