Predictors of Smoking Prevalence among New York Latino Youth

ABSTRACT

Background. We examined prevalence rates and risk factors for smoking among Latino adolescents, using a multiethnic sample of sixth- and seventh-grade students (n = 3129) in 47 New York City public and parochial schools.

Methods. The students completed questionnaires; self-reported smoking data were collected by means of the "bogus pipeline" technique. The largest group of Latino students (43%) was Puerto Rican; 20% were of Dominican background, 7% were Colombian, and 7% were Ecuadorian. "Current smoking" was defined as smoking at least once per month.

Results. A series of logistic regression analyses indicated that peer influence was the strongest predictor of smoking. Family influence was important as well.

Conclusions. The results are discussed in terms of their implications for prevention. (*Am J Public Health.* 1992;82:55–58)

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Introduction

Despite a decline in the prevalence of smoking among adult White males since the Second World War, there has been a steady increase in smoking among adult White females and adult minority group members, and the same patterns have been observed among adolescents.[1] According to the US Office of Minority Health,[2] there are important but poorly understood differences in health behaviors within and among various racial and ethnic groups, and this appears to be particularly true for Latinos.[3] Marcus and Crane[4] conclude that Latino men are as likely to smoke as non-Latino men, and that the rates of smoking-related morbidity and mortality among Latino men are expected to rise in the 1990s. Similarly, Escobedo and Remington[5] report that the rate of smoking among Latino women is increasing.

Determining smoking prevalence among Latino groups has been a problem because different studies have used different samples to estimate prevalence, as well as different operational definitions of "smoking." The only data for Latino adolescents come from the Hispanic Health and Nutrition Examination Survey,[6] which used "current smoking" to explore prevalence. That survey found that approximately 1% of Mexican-American adolescents aged 12 to 14 years smoked, compared with 3.5% for Puerto Ricans. In both groups the rate of smoking was three times higher for girls than for boys.

Austin and Gilbert[7] note in a review article that the correlates of substance use (not including smoking) generally are similar for Latino and non-Latino populations, and include lower socioeconomic status, family instability, peer influence, and family influence. However, little information has been available concerning Puerto Rican youth specifically, and no information has been available concerning Dominicans, Colombians, or Ecuadorians.

In the present study, we examined correlates of adolescent smoking among New York City Latino populations attending public and Catholic schools. Previously reported predictors of smoking in White non-Latino populations were tested with the overall sample of Latino youth available in this study.

Methods

This study was part of an ongoing longitudinal investigation of smoking prevention interventions in New York City schools whose student bodies were more than 25% Latino. The intervention was implemented in the sixth and seventh grades. All sixth- and seventh-graders in English-speaking, mainstream classes in the schools participated in the study. A passive consent procedure was used, and more than 90% of the students completed the baseline survey of smoking behavior. Data for the present study were derived from the baseline survey and were collected prior to the intervention; the sample

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TABLE 1—Current Smoking[a] Prevalence among Latino Students, by Gender and Age

Age	Females n	Females %	Females 95% CI	Males n	Males %	Males 95% CI
Puerto Rican						
≤ 12 years	245	5.3	2.5–8.1	251	1.6	0–3.1
13 years	371	8.1	4.9–11.4	253	5.1	2.4–7.9
≥ 14 years	113	20.4	12.9–27.8	145	13.1	7.6–18.6
Other Latino						
≤ 12 years	465	4.1	2.3–5.9	371	1.3	0.2–2.5
13 years	331	3.6	1.6–5.6	309	4.9	2.5–7.3
≥ 14 years	99	6.1	1.3–10.8	127	7.1	2.6–11.6

Note. CI = confidence interval.
[a]"Current smoking" was defined as smoking at least once per month.

consisted of students from both experimental and control schools.

The schools eligible for inclusion in this study were Catholic and public schools in New York City whose student bodies were at least 25% Latino. Forty-seven schools in New York City participated in the intervention study; 36 were Catholic schools and 11 were public schools. The sample was evenly distributed between the two school types, with 2681 students (49%) from Catholic schools and 2820 students (51%) from public schools. Both public and Catholic schools in New York City serve lower-income, urban minority youth.

Subjects

A total of 3129 sixth- and seventh-grade students who identified themselves as Latino or Hispanic on the questionnaire participated in the study. The mean age of the students was 12.61 years (range, from 10 to 18 years). Forty-eight percent of the students were male. Of the total sample, 43% were Puerto Rican, 20% were Dominican, 7% were Colombian, and 7% were Ecuadorian. The remaining 23% of the students identified with another Latino subgroup or with more than one Latino subgroup.

Instrument

The instrument was a questionnaire consisting of 143 items concerning demographics, substance use, and psychosocial factors. It included items on self-reported smoking and the perceived social support for smoking.

Background variables. Twelve items were used to elicit basic background information concerning gender, age, family structure, and academic performance (grades). In addition, students' race was determined by a single item. If students indicated that they were Latino or Hispanic, they were asked to indicate their Latino subgroup status, which included Puerto Rican, Dominican, Colombian, Ecuadorian, and other Latino subgroups and subgroup combinations. Only those students identifying themselves as Latino or Hispanic were included in the present study.

Smoking status. A dichotomous (yes or no) item was used to assess smoking during the last month. A general 11-point scale was used to assess smoking frequency. Data from this 11-point scale were used to group students into three categories: those who had never smoked, those who smoked less than monthly (experimental smokers), and those who smoked monthly to daily (current smokers).

Perceived social influences on smoking. Social influences on smoking were assessed, including (1) smoking by significant others (friends, siblings, and parents), (2) perceived attitudes of parents and friends toward respondents' smoking, and (3) perceived prevalence of general smoking rates among peers and adults (normative expectations). Smoking by friends was measured on a 5-point scale ranging from "none" to "all/nearly all." Smoking by older siblings was measured on a 4-point scale ranging from "none" to "three or more." Smoking by parents was assessed in separate items for the respondent's father and mother ("Does your father [mother] smoke cigarettes?"; responses included "have no father/mother," "no," "used to but quit," and "yes"). The perceived attitudes of parents and friends toward the respondent's smoking were assessed, in separate items, on a 5-point scale ranging from "strongly against it" to "strongly in favor of it." The perceived prevalence of general smoking rates among peers and adults was measured, in two items ("In your opinion, how many people your age [adults] smoke cigarettes?"), on a 6-point scale ranging from "none" to "almost all."

Procedure

The survey was administered by project staff members. The students completed the questionnaire during a regular 40-minute classroom period. Teachers were not involved in the data collection activities and the students were assured that their answers would remain confidential. The students also provided a breath sample for carbon monoxide testing. Although correlations between carbon monoxide levels and self-reports of smoking behavior among students in this age group are typically too low to use as an independent validity check, this "bogus pipeline" procedure has been found to increase the veracity of self-reported smoking data.[9]

Data Analysis

The data were analyzed with SAS software.[10] First, within the major ethnic groups, males and females were compared in terms of smoking prevalence. Next, logistic regressions were used to analyze predictors of smoking status. No significant differences were found between school types; therefore, the two groups were combined.

Results

Table 1 presents the prevalence of current (at least monthly) smoking by ethnic and gender groups. Older students were generally more likely than younger students to be current smokers. In addition, Puerto Rican female students of all ages tended to have higher current smoking prevalence rates than Puerto Rican male students or other female students.

Two logistic regression analyses were carried out to compare adolescents who had never smoked (n = 2180) with adolescents who had smoked at least once (experimental smokers, n = 616), and adolescents who were current smokers (n = 99) with all others (n = 2697). Demographic and prosmoking social-influence variables were entered into the equations simultaneously. Individuals for whom any of the variables in the equation was missing were omitted from the analysis. Latino groups were compared using Puerto Ricans as the reference group. Prosmoking social-influence variables included prevalence of smoking among friends, siblings, and parents; perceived smoking prevalence among youth and

adults generally; and parents' and friends' attitudes about respondents' smoking.

Several demographic variables emerged as significant predictors of experimental smoking (Table 2). Specifically, older students and students with lower academic performance were more likely to have ever smoked.

Latino students who were Dominican, Colombian or Ecuadorian (South American), or from another Latino category were somewhat more likely to have ever smoked than were Puerto Rican students. Thus, even though Puerto Rican girls were more likely to be current smokers (see Table 1), Dominicans, Ecuadorians, and Colombians were more likely to have ever smoked by seventh grade.

Prosmoking social influences were also related to experimental smoking. The general prevalence of smoking among peers was a significant predictor of having smoked: the odds of having smoked were 55% lower for students who reported that few to none of their peers smoked than for students who reported that from more than half to all of their peers smoked.

The major predictor of experimental smoking was the proportion of friends who smoked. Students who reported that from 50% to 100% of their friends smoked were eight times more likely to have ever smoked than were students who reported having no friends who smoked. Number of siblings who smoked and maternal smoking were also predictors. Parents' and friends' attitudes toward respondents' smoking were predictors: less negative attitudes were correlated with greater odds of smoking.

Table 3 presents the significant predictors of current smoking. Although the number of students who met the criterion for current smoking was small (n = 99), the results of this exploratory analysis were largely consistent with the findings of the previous logistic regression analysis. Specifically, age and academic performance were significant predictors of current smoking. In addition, the proportion of friends who smoked was the most important predictor of current smoking, as it was for experimental smoking. Students who reported that between 50% and 100% of their friends smoked were 17 times as likely to be current smokers. Sibling and maternal smoking also increased the odds of current smoking, as they had in the case of experimental smoking, but in the case of current smoking, paternal smoking also emerged as a significant predictor. Parental attitudes again were correlated with current smoking, although friends' attitudes did not emerge as a significant predictor.

TABLE 2—Predictors of Experimental Smoking

Predictor	Odds Ratio	95% Confidence Interval
Age	1.20	1.06–1.35
Gender	.97	.79–1.20
Academic performance		
B's and C's	1.35	1.06–1.73
C's and D's	1.35	1.04–1.76
Latino group (Puerto Rican[a])		
Dominican	1.56	1.17–2.08
South American	1.81	1.32–2.50
Other Latino	1.33	1.01–1.76
Friends smoke (None[a])		
<50%	4.23	3.34–5.37
50% to 100%	8.06	5.96–10.90
Siblings smoke (None[a])		
No siblings	1.16	.90–1.48
One smokes	2.14	1.60–2.87
Two+ smoke	2.48	1.72–3.57
Mother smokes (No[a])		
Quit	1.38	1.00–1.90
Yes	1.36	1.07–1.72
Father smokes (No[a])		
Quit	.80	.58–1.12
Yes	1.14	.91–1.43
General prevalence among peers (>50% to All[a])		
50%	.97	.73–1.29
<50%	.83	.58–1.18
Few or none	.55	.42–.72
Parents' attitude (Strongly negative[a])		
Negative	1.92	1.30–2.83
Neutral or favorable	1.43	1.08–1.90
Friends' attitude (Strongly negative[a])		
Negative	2.32	1.68–3.21
Neutral or favorable	1.81	1.38–2.36

[a]Reference category.

Discussion

This study examined prevalence rates and risk factors for smoking among Latino adolescents, using a multiethnic sample of sixth- and seventh-grade students in New York City. The pattern of smoking among the different Latino subgroups in this study is fairly straightforward, and is consistent with patterns found in previous studies of non-Latino populations. Our findings suggest that age, academic performance, Latino subgroup, and social influences, including friends who smoke as well as family members who smoke, are all related to smoking status. Consistent with Austin and Gilbert's[7] review of predictors of Latino substance use (not including smoking), peer influences were the strongest predictors of smoking for Latinos in the present study.

Several factors may limit the generalizability of the present study. The first concerns the sample. Students may differ from dropouts or nonstudents. Furthermore, the students who participated in this study were those who were enrolled in English-speaking classes. Therefore, this study does not provide information concerning the population of Latino students enrolled in bilingual classes.

The results of this study have several implications for prevention. Predictors of smoking in this Latino sample are also consistent with findings for White non-Latino adolescents[11] and Black non-Latino adolescents.[12] The results suggest that in interventions with sixth- and seventh-graders *in school settings,* the differences between ethnic groups may not be as important as the overall similarities with respect to predictors of smoking. Furthermore, the interventions most likely to prevent smoking would be those that promote peer resistance skills, and the motivation to use those skills, in all groups. This does not mean that cultural differences are not important; the potential reception by the target audience might be enhanced, and the efficacy of

TABLE 3—Predictors of Current Smoking

Predictor	Odds Ratio	95% Confidence Interval
Age	1.30	1.02–1.65
Gender (female[a])	1.05	.66–1.67
Academic performance		
B's and C's	2.65	1.35–5.19
C's and D's	2.32	1.11–4.81
Latino group (Puerto Rican[a])		
Dominican	1.33	.72–2.48
South American	.54	.23–1.28
Other Latino	.66	.34–1.28
Friends smoke (None[a])		
<50%	4.87	2.24–10.60
50% to 100%	16.92	7.84–36.51
Siblings smoke (None[a])		
No siblings	1.40	.74–2.64
One smokes	2.92	1.56–5.49
Two+ smoke	3.42	1.79–6.53
Mother smokes (No[a])		
Quit	.82	.37–1.84
Yes	1.68	1.03–2.73
Father smokes (No[a])		
Quit	1.97	.95–4.08
Yes	1.70	1.02–2.83
General prevalence among peers (>50% to All[a])		
50%	1.03	.59–1.78
<50%	.60	.26–1.39
Few or none	.53	.28–1.00
Parents' attitude (Strongly negative[a])		
Negative	1.95	.90–4.22
Neutral or favorable	1.77	1.05–2.99
Friends' attitude (Strongly negative[a])		
Negative	1.04	.44–2.46
Neutral or favorable	1.80	.93–3.49

[a]Reference category.

the intervention maximized, by material sensitive to a whole range of cultural orientations. Further study is needed to explore this issue. The results of this study also suggest that smoking prevention in schools with large Latino populations might be enhanced by programs that also address family influences on student smoking.

This study extends previous knowledge of the prevalence and concurrent predictors of smoking among Latino youth. Additional research will be necessary to develop a complete model for understanding the etiology of smoking in these groups. For example, the relationship of language and acculturation to smoking is complex and requires a comprehensive examination. Other cultural factors that may play a role in the etiology of smoking in Latino youth and require additional research include community influences, microcultures, and cultural beliefs and attitudes concerning health.[13] Finally, individual psychosocial factors, such as knowledge and attitudes, were not included in this study, but these may also emerge as powerful predictors of smoking in Latino youth. □

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