

Prevalence of Chronic Bronchitis among US Hispanics from the Hispanic Health and Nutrition Examination Survey, 1982–84

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Abstract: In the Hispanic Health and Nutrition Examination Survey (HHANES), Puerto Ricans had a higher age-adjusted prevalence of self-reported chronic bronchitis (2.9 percent, 95% CI = 2.2, 3.6) than Mexican Americans (1.7 percent, 95% CI = 1.3, 2.1) or Cubans (1.7 percent, 95% CI = 0.9, 2.5). The prevalence of chronic bronchitis was at least 2 times higher in smokers as compared to nonsmokers among Puerto Ricans and Cubans, but not for Mexican Americans. (*Am J Public Health* 1990; 80:1495–1497.)

Introduction

Chronic bronchitis is part of chronic obstructive pulmonary disease (COPD), the fifth leading cause of mortality in the US. Mortality from COPD increased 43 percent between 1979 to 1986 (22.2/100,000 to 31.8/100,000).¹ The epidemiology of chronic bronchitis has been described in numerous studies of US Whites.^{2–4} Little is known about the prevalence of chronic bronchitis among the US Hispanic population.

We present estimates of the prevalence of self-reported chronic bronchitis among the three Hispanic subgroups and the association between chronic bronchitis and measured risk factors among Hispanics based on the 1982–84 Hispanic Health and Nutrition Examination Survey (HHANES).

Methods

The HHANES was conducted by the National Center for Health Statistics from 1982 to 1984. The target population consisted of individuals ages 6 months–74 years in the three major Hispanic subgroups in selected areas of the United States: Mexican Americans in five Southwestern states (Arizona, California, Colorado, New Mexico, and Texas); Cubans in Dade County, Florida; and Puerto Ricans in the New York City area. The sample design of HHANES was a multistage, stratified, clustered sample of each of the Hispanic subgroups. Details of the HHANES have been published.⁵

In the household interview, respondents were asked two questions about chronic bronchitis: 1) "Has a doctor ever told you that you had chronic bronchitis?", 2) "Do you still

have chronic bronchitis?" Positive responses to both questions were used to define chronic bronchitis.

All statistical analyses were carried out using programs compatible with the Statistical Analysis System.⁶ Since HHANES was based on a complex survey design, sampling weights were used to estimate the prevalence of chronic bronchitis and complex samples variances were estimated by multiplying the simple random sample variance estimates by an average design effect.^{7,8} To compare the prevalence of chronic bronchitis among the three Hispanic subgroups, estimates of chronic bronchitis were age-standardized to the distribution of the 1980 population. The trend for the age-specific prevalence was analyzed using the Armitage method.⁹ The logistic regression analyses were performed using RTILOGIT program.¹⁰ Odds ratios (ORs) and 95% confidence intervals (CI) of ORs are presented.¹¹

Results

The response rates were 79.2 percent for Mexican Americans, 73.9 percent for Cuban Americans, and 80.3 percent for Puerto Ricans (Table 1). The level of nonresponse did not vary across age, race, sex, or income groups. The age distributions of the analytical sample were similar in the Mexican American and Puerto Rican samples, but the Cuban American sample was considerably older. The proportion of heavy smokers (> 20 cigarettes/day) among Puerto Rican and Cuban smokers was much higher than among Mexican American smokers (Table 1).

The age-adjusted prevalence of self-reported chronic bronchitis was 1.7 percent (95% CI: 1.3, 2.1) for Mexican Americans; 1.7 percent (95% CI: 0.9, 2.5) for Cuban Americans; and 2.9 percent (95% CI: 2.2, 3.6) for Puerto Ricans (Table 2); prevalence increased slightly with age in both males and females among Mexican Americans ($p < 0.001$). Failure to find a clear increase in prevalence with age among Cuban Americans and Puerto Ricans may be due to the smaller sample size of these groups.

To assess the role of measured risk factors of self-reported chronic bronchitis, logistic models were fitted using age, sex, smoking, and poverty status (Table 3). Former smokers were excluded from the analysis because of small numbers. In the model for Puerto Ricans, age (OR = 1.03, 95% CI = 1.01, 1.05), sex (OR = 2.69, 95% CI = 1.38, 5.26), and cigarette smoking (OR = 2.72, 95% CI = 1.57, 4.71) were significant risk factors for chronic bronchitis. However, only smoking (OR = 2.75, 95% CI = 1.14, 6.62) for Cuban Americans and age (OR = 1.03, 95% CI = 1.01, 1.05) for Mexican Americans were significantly associated with chronic bronchitis.

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TABLE 1—Description of the Samples

Survey period	Mexican Americans	Cuban Americans	Puerto Ricans
	July 1982–November 1983	January–April 1984	May–December 1984
Number of sample persons selected	6,868	1,874	2,748
Response rate (%)	79.2	73.9	80.3
Age Groups (%)			
12–34 yrs	60.1	37.9	56.8
35–54 yrs	26.1	34.8	28.0
55–74 yrs	13.8	27.3	15.2
Sex			
(%) Male	46.7	46.2	41.5
(%) Female	53.3	53.8	58.5
Cigarette smoking (%)			
Current smokers	27.2	26.3	29.8
Former smokers	14.8	17.4	12.6
Never smokers	58.0	56.3	57.6
% of heavy smokers (>20 cig./day)	23.8	58.3	50.0
Poverty income ratio (%)			
Below poverty (<1)	31.3	20.7	48.0
At/Above poverty (≥1)	68.7	79.3	52.0

TABLE 2—Age-specific Prevalence (%) of Chronic Bronchitis among Hispanic subgroups

	Males/Age (years)			Females/Age (years)			Total **
	12–34	35–54	55–74	12–34	35–54	55–74	
<i>Mexican Americans</i>							
Number	1,578	624	336	1,688	798	416	5,440
Prevalence	0.9	1.5	3.6	0.9	2.5	3.1	1.7
95% CI	0.7, 1.1	0.4, 2.7	1.8, 5.4	0, 1.8	1.4, 3.7	0.8, 5.4	1.3, 2.1
<i>Cuban Americans</i>							
Number	256	221	162	268	260	217	1,384
Prevalence	*	3.5	2.3	1.5	2.7	1.8	1.7
95% CI	*	0.3, 6.7	0, 5.3	0, 3.3	0.2, 5.2	0, 4.8	0.9, 2.5
<i>Puerto Ricans</i>							
Number	552	229	135	701	389	201	2,207
Prevalence	1.1	2.0	2.5	2.7	5.0	4.9	2.9
95% CI	0.2, 2.0	0, 4.1	0, 7.3	1.3, 4.1	2.5, 7.5	1.9, 7.9	2.2, 3.6

CI: Confidence interval.
 *No reported chronic bronchitis.
 **Age-adjusted prevalence.

Discussion

The high age-adjusted prevalence of chronic bronchitis among Puerto Ricans may have been due to the higher proportion of heavy cigarette smokers among Puerto Ricans and/or the high exposure to air pollution in New York City. Females had consistently higher age-adjusted prevalences of chronic bronchitis than males: in Puerto Ricans, 3.8 percent for males, 1.6 percent for females; in Mexican Americans, 1.8 percent for females, 1.6 percent for males; in Cuban Americans, 1.9 percent for females, 1.4 percent for males. A recent study on 2,111 Hispanics in New Mexico reported that the prevalence of chronic bronchitis among females was 4.3 percent as compared to 2.9 percent for males.¹² In the 1978 National Health Interview Survey, the prevalence of chronic bronchitis was higher in females (3.7 percent) than in males (2.9 percent).¹³ A possible explanation for the female predominance might be that females visit clinics more often and are therefore aware of this diagnosis.¹⁴ In contrast, some studies reported that the risk of chronic bronchitis was more than three-fold greater for men than women.¹⁵

The failure to find an association between smoking and chronic bronchitis in Mexican Americans may be due to the high proportion of light smokers. Other studies have shown cigarette smoking to be one of the most important risk factors

for chronic bronchitis.^{16,17} A recent study¹⁸ found that heavy smokers had a six-fold increase in chronic bronchitis as

TABLE 3—Estimates of Odds Ratios with 95% Confidence Intervals of Risk Factors for Chronic Bronchitis^a

	Odds Ratio	95% Confidence Interval
<i>Mexican Americans</i>		
Sex	1.09	0.66, 1.82
Age	1.03	1.01, 1.05
Smoking	1.04	0.61, 1.77
Poverty	0.84	0.50, 1.39
<i>Cuban Americans</i>		
Sex	1.28	0.53, 3.10
Age	1.02	1.00, 1.04
Smoking	2.75	1.14, 6.62
Poverty	0.61	0.24, 1.57
<i>Puerto Ricans</i>		
Sex	2.69	1.38, 5.26
Age	1.03	1.01, 1.05
Smoking	2.72	1.57, 4.71
Poverty	0.57	0.33, 0.99

Sex (1 = female, 0 = male), Age (continuous)
 Smoking (1 = smokers, 0 = nonsmokers), Poverty (1 = below, 0 = at/above)
 a) Past smokers excluded.

compared to nonsmokers. Other important risk factors of chronic bronchitis, not measured in HHANES, include occupational exposures,¹⁹⁻²¹ airborne irritant gases,^{22,23} viral or bacterial infection,^{4,24} and familial aggregation.²⁵

The American Thoracic Society's definition of chronic bronchitis requires a history of three months of cough and phlegm or sputum for more than two consecutive years.²⁶ This information was not collected during HHANES. The use of diagnosed cases only will underestimate the prevalence of chronic bronchitis. Other potential biases which may occur cannot be estimated in the data set but must be kept in mind when interpreting the results of this study.

In conclusion, our results show that chronic bronchitis was more prevalent in Puerto Ricans than Cuban Americans or Mexican Americans. Cigarette smoking was an important risk factor for chronic bronchitis among Puerto Ricans and Cuban Americans. Thus, smoking prevention and smoking cessation programs in the Hispanic population would help reduce the risk of chronic bronchitis.

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