

tors are most important in changing sexual behavior and effective ways of influencing them and to understand the reasons for condom failure. Demonstration projects and community-based and high school prevention programs related to changing unsafe sexual behaviors of all gay men, especially the young, are needed. □

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Reported Asthma among Puerto Rican, Mexican-American, and Cuban Children, 1982 through 1984

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ABSTRACT

Data from the Hispanic Health and Nutrition Examination Survey (HHANES) (1982 through 1984) and the National Health and Nutrition Examination Survey (NHANES) II (1976 through 1980) were used to examine reported physician-diagnosed asthma among 6-month-old through 11-year-old children. The highest prevalence of active asthma was reported for Puerto Ricans: 11.2% compared with 3.3% for non-Hispanic Whites, 5.9% for non-Hispanic Blacks, 2.7% for Mexican Americans, and 5.2% for Cubans. Health services utilization and severity do not appear to explain the differences between Puerto Ricans and Mexican Americans. Educational programs on asthma should consider focusing on Puerto Ricans. (*Am J Public Health*. 1993;83:580-582)

Introduction

Asthma is the leading chronic disease in childhood and is a major cause of school absence and functional limitation.^{1,2} The apparent high frequency and severity of asthma among Puerto Ricans in the continental United States and Puerto Rico is of particular concern.³⁻⁷ This paper uses data from the 1982 through 1984 Hispanic Health and Nutrition Examination Survey (HHANES) and the 1976 through 1980 second National Health and Nutrition Examination Survey (NHANES II) to compare the prevalence of asthma among various Hispanic and non-Hispanic groups.

Methods

The second National Health and Nutrition Examination Survey (NHANES II), conducted from 1976 through 1980, was a complex sample survey designed to assess the health and nutritional status of the United States civilian population aged 6 months through 74 years.⁸ Asthma data are available from the Medical History Questionnaire for 96% of the selected sample of non-Hispanic White (n = 5497) and Black children aged 6 months through 11 years (n = 1148). Two questions were asked of an adult household member (usually a parent):

Ever had asthma—"Did a doctor ever tell you that __ had asthma?"

Active asthma—"Does he or she still have asthma?"

The Hispanic Health and Nutrition Examination Survey (HHANES), conducted from 1982 to 1984, aimed to produce estimates comparable to those of NHANES II for Mexican Americans in the Southwest, Cubans in Miami, and Puerto Ricans in the New York City area.⁹ Asthma data are available from the Child Sample Person Questionnaire for 2761 (92%) of the selected sample of Mexican-American children, 291 (85%) of the Cuban children, and 914 (92%) of the Puerto Rican children aged 6 months through 11 years. The wording of the asthma questions differed slightly from that of NHANES II:

Ever had asthma—"Did a doctor ever say that __ had asthma?"

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Active asthma—"Does __ still have asthma?"

Unless noted otherwise, lifetime prevalences (percentages who had ever had asthma), point prevalences (percentages who had active asthma), arithmetic means, and variances were estimated by taking into account the complex survey design and incorporating the interview weights.¹⁰ Statistical comparisons were made by means of a two-tailed *t* test with 8 *df* and an α level of .05.

Results

Puerto Ricans had the highest lifetime and point prevalences (Table 1) of any group studied during NHANES II and HHANES ($P < .05$). Age adjustment did not make a difference. One out of every five Puerto Rican children aged 6 months through 11 years (20.1%) were reported to have ever had asthma. Puerto Ricans had a point prevalence rate of 11.2%, two to four times higher than that of any other group. Even though Cubans (2.2%) were more likely than Puerto Ricans (0.7%) or Mexican Americans (0.8%) to report a physician's diagnosis of other lung disease (not significant [NS]), combined lung disease and asthma rates for Cubans (NS) and Mexican Americans ($P < .05$) were still below the Puerto Rican asthma rates.

Because asthma prevalence, hospitalization, and mortality have increased during the past 2 decades and detailed analyses of NHANES II data have already been published,¹¹⁻¹⁴ the remainder of this paper is limited to HHANES data. Data for Cubans are not presented because only 15 Cuban children were reported to have active asthma.

Although observed differences were not found to be statistically significant, the highest point prevalences for Mexican Americans and Puerto Ricans were found among boys, school-aged children (6-through 11-year-olds), and children living in central cities. Puerto Rican children living in poverty were found to have a non-statistically higher prevalence of active asthma than other Puerto Rican children. Puerto Rican active asthma rates were still higher than active asthma rates for Mexican-American children within poverty status categories.

Age of onset of active asthma (see Figure 1) tended to be younger for Puerto Rican children than for Mexican Americans. More than 50% of the Puerto Rican children with active asthma first had

TABLE 1—Lifetime and Point Prevalence of Reported Asthma among Children Aged 6 months through 11 Years, by Race and Ethnicity

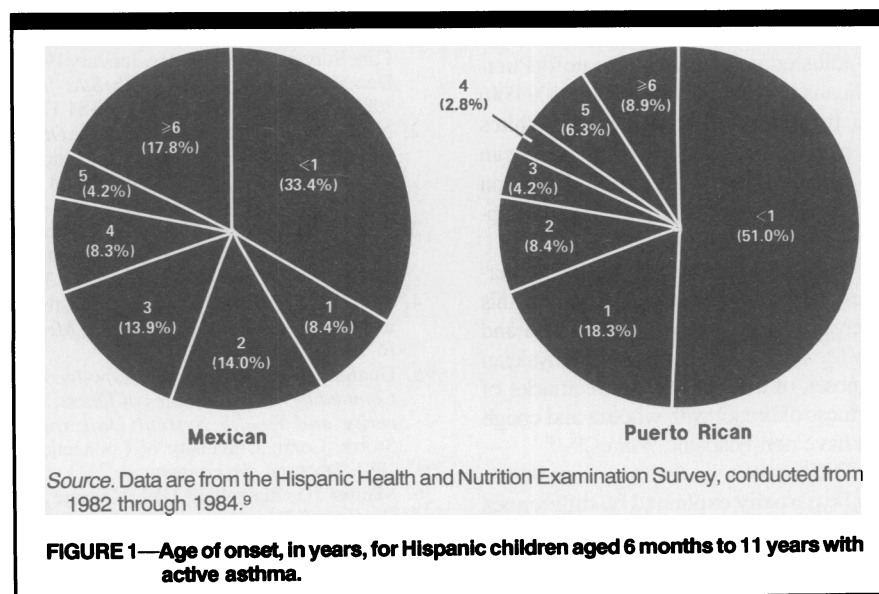
	n	Active Asthma, % (SE)	Ever Asthma, % (SE)
Non-Hispanic White ^a	4893	3.3 (0.37)	6.4 (0.60)
Non-Hispanic Black ^a	1133	5.9 (1.08)	9.1 (1.47)
Mexican-American ^b	2761	2.7 (0.43)	4.5 (0.61)
Cuban ^b	291	5.2 (1.30)	8.8 (2.17)
Puerto Rican ^b	914	11.2 (1.49)	20.1 (2.18)

^aData are from the second National Health and Nutrition Examination Survey, conducted from 1976 through 1980.⁸
^bData are from the Hispanic Health and Nutrition Examination Survey, conducted from 1982 through 1984.⁹

TABLE 2—Indicators of Asthma Severity, by Current Asthma Status and Ethnic Origin: Hispanic Health and Nutrition Examination Survey, 1982 through 1984^a

	Active Asthmatics		All Others	
	Mexican-American	Puerto Rican	Mexican-American	Puerto Rican
Used prescribed asthma medications during previous 2 weeks, %	36.2 (5.79)	35.8 (4.59)
Were functionally limited at time of interview, %	30.2 (8.04)	30.4 (6.26)	3.5 (0.49)	5.3 (1.13)
Bronchial sounds/wheezing during exam, %	6.9 (4.21)	10.6 (4.17)	0.7 (0.22)	1.1 (0.74)
Had health care visit in previous month, %	40.5 (8.15)	53.3 (6.76)	17.2 (1.01)	36.1 (2.42)
Mean no. hospital stays since birth	1.2 (0.36)	2.1 (0.36)	0.3 (0.33)	0.6 (0.08)
Mean no. school days lost in previous year ^a	10.4 (1.9)	13.8 (1.49)	4.3 (0.33)	7.3 (0.39)

Note. Estimates for asthma medications are based on unweighted exam data; estimates for bronchial sounds are based on weighted exam data; all other estimates are based on weighted interview data. Standard errors are shown in parentheses.
^aFor children aged 6 through 11 years.



asthma when they were younger than 1 year of age, compared with 33% of Mexican Americans ($P < .05$).

Differences in asthma severity and utilization of health services do not appear to explain the higher prevalence of asthma among Puerto Ricans. There was very little difference between Mexican-American and Puerto Rican active asthmatics in whether they had used prescribed asthma medications during the previous 2 weeks or in whether they were functionally limited in any way in any activities because of an impairment or health problem (Table 2). Although the difference was not statistically significant at the .05 level, Puerto Rican active asthmatics were more likely than Mexican-American asthmatics to exhibit bronchial sounds or wheezing during the HHANES physician's examination (10.6% vs 6.9%). Both active asthmatic and other 6-through 11-year-old Puerto Rican children tended to use health services more and to have missed more days of school during the previous year than did Mexican Americans (NS).

Discussion

Questionnaires remain the most readily applied method for identifying persons with asthma in epidemiologic studies.¹⁵ Because HHANES did not include pulmonary testing or questions on history of wheezing, only reports of previous physician diagnosis of asthma could be used for this analysis.

Although comparisons between NHANES II and HHANES should be treated with caution because of time trends in asthma, previous studies of asthma hospitalizations¹⁷ and mortality appear to corroborate our findings.^{6,16,17} During the period 1979 through 1981, the age-adjusted asthma mortality rate for Puerto Ricans was much higher (4 per 100 000) than the rates for non-Hispanic Whites (0.8 per 100 000) and Mexican American (0.5 per 100 000).⁶ This higher asthma mortality risk among Puerto Ricans appears to have continued.^{16,17}

Previously reported prevalence differences are similar to those reported in this paper. Mexican Americans in Arizona and New Mexico have reported fewer physician diagnoses of asthma and fewer attacks of shortness of breath with wheeze and cough than have non-Hispanic Whites.^{18,19}

Differences in asthma prevalence may be partially explained by differences in bronchial size. Pulmonary function test results in New Mexico and Arizona

suggest that Mexican Americans have larger airways than do non-Hispanic Whites.¹⁸⁻²⁰

Puerto Rican children may be at increased risk of asthma because of their greater exposure to passive smoking. Puerto Rican women of reproductive age are more likely to smoke (33.5%) than are Mexican-American women (23.2%) and Cuban women (22.6%).²¹ Children of mothers who smoke have a higher incidence of wheezing illness, especially in the first few years of life.^{22,23}

If the lower prevalence of asthma among Mexican Americans were due to their lower use of health services and subsequent underdiagnosis, we would have expected to find more severe asthma among Mexican Americans than among Puerto Ricans. Instead, the percentages of active asthmatics using prescribed asthma medications and the percentages who were functionally limited were remarkably similar between Mexican Americans and Puerto Ricans. Bronchial sounds or wheezing during the HHANES physician's examination were more common among Puerto Rican than Mexican-American active asthmatics.

Further studies are needed to investigate the reasons for the apparent higher prevalence of asthma among Puerto Ricans. □

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