

Asthma and Latino Cultures: Different Prevalence Reported Among Groups Sharing the Same Environment

ABSTRACT

Objectives. This 1999 study measured asthma prevalence among Latinos of different cultural traditions who live on the same streets and in the same buildings.

Methods. Health promoters from El Puente in North Brooklyn, New York City, surveyed 3015 people in 946 households, asking standard asthma prevalence questions.

Results. Some 46% of households identified themselves as Dominican, 42% as Puerto Rican, 6% as other Latino, and 6% as other. Reported asthma period prevalence was 5.3% (93 of 1749) among Dominicans and other Latinos, compared with 13.2% (147 of 1115) among Puerto Ricans (odds ratio=0.37; 95% confidence interval=0.28, 0.49), a difference not explained by location (cluster or building), household size, use of home remedies, educational attainment, or country where education was completed. Differences were least detectable among 13- to 24-year-olds of both sexes and sharpest among women aged 45 years and older and girls from birth to 12 years.

Conclusions. Further research on gene-environment interactions is needed among Puerto Ricans and Dominicans, but asthma's associations with low income and unhealthy environment, which more recent immigrants seem better able to withstand, should not be overlooked. (*Am J Public Health*. 2000; 90:929-935)

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It is increasingly clear that when health conditions like asthma are being discussed, the classification "Hispanic" masks wide variations among Latino groups of different cultural heritage. Fragments of evidence concerning a higher-than-expected prevalence of asthma among Puerto Ricans in New York City, comparable to and even surpassing that among African Americans, go back to the 1950s, when Puerto Ricans made up the vast majority of the city's Latino community.¹

The 1982-1984 Hispanic Health and Nutrition Examination Survey (HHANES) detected lower rates of asthma among Mexican American children (mainly in the Southwest) and Cuban American children (mainly in Florida) than among Puerto Rican children (mainly in the Northeast).^{2,3} High rates of asthma continue to be reported among Puerto Ricans in areas of the United States where Puerto Ricans are the predominant Latino group.^{4,5} Studies in parts of Puerto Rico have also described a very high prevalence of asthma.^{6,7} Among pregnant women attending an East Boston clinic, those from Central and South America showed a lower risk of asthma and persistent wheeze than non-Hispanic White women, while among the smaller number of Puerto Rican women in the study, asthma prevalence was higher.⁸ In response to a short questionnaire about asthma administered to 3374 schoolchildren aged 6 to 14 years in the city of Santo Domingo in 1984, 191 children (5.7%) reported ever having had asthma and 106 (3.1%) reported some asthma symptoms in the previous 12 months.⁹

To our knowledge, the current study is the first to compare the prevalence of asthma among Latino groups living on the same streets and in the same buildings. It identifies individuals as Puerto Rican, Dominican, or "other Latino" on the basis of responses to a household questionnaire in which the per-

son responding for the household was asked, "What is your cultural tradition?"

Williamsburg became the Latino capital of New York's borough of Brooklyn when Puerto Rican settlement expanded there in the 1940s. It was not until the 1970s that large numbers of Dominicans began moving there as well. The "Southside" of Williamsburg is an area covering about 1 square mile at the foot of the Williamsburg Bridge, which connects North Brooklyn with lower Manhattan. Land use is mixed residential and light industrial, with small factories, warehouses, and repair shops interspersed among the dwelling units.

The area is bisected by a major urban highway, the Brooklyn-Queens Expressway, and is frequently choked with traffic leading from this highway to the Williamsburg Bridge. It houses the largest bus terminal in Brooklyn and the city's only radioactive waste storage facility. There are more than 25 waste transfer stations in Williamsburg and the neighboring Greenpoint area. A nearby 17-million-gallon oil spill has gone unattended for more than a decade. Data from the Toxic Release Inventory show that toxic emissions into the air of Greenpoint and Williamsburg are 60 times greater per square mile than the average for the United States as a whole.¹⁰

The 1990 census reported a median household income in Williamsburg's Southside of approximately \$15 000. The housing stock is a combination of 6-story apartment buildings, with 25 to 35 apartments each, and

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2- to 3-story townhouses, originally private dwellings but long since divided into 1 or more apartments per floor. Some buildings are very well maintained, but others are poorly kept and in disrepair. Whatever the conditions, Puerto Ricans share them with Dominicans and a smaller percentage of other Latinos, African Americans, and others.

To the southeast of the heavily Latino area where this study was conducted resides a Hasidic Jewish community, to the southwest a predominantly African American community, and to the north a mixed population of newly arrived artists and young professionals together with an older Polish American and Italian American community.

El Puente is a community learning and development institution located in Williamsburg's Southside and in neighboring Bushwick. Founded in 1982, El Puente conducts programs in health, education, and the arts for development, democracy, healing, and other human rights. El Puente Academy for Peace and Justice, a public high school for human rights and community development, was founded in 1993. In 1995, El Puente established a partnership with CIET (Centro Internacional de Epidemiología Tropical), an international nongovernmental organization dedicated to "building the community voice into planning," to strengthen El Puente's capacity in community-based research on health and environment (see the Web site www.ciet.org). Four surveys, of gradually increasing size and scope, have been conducted; the last 2 were funded by the Childhood Asthma Initiative of the New York City Department of Health. El Puente staff and members, youth and adults, have been trained by CIET in various aspects of evidence-based planning. The present study is an outgrowth of that partnership. (For more on the CIET-El Puente partnership, see Ledogar et al.¹¹)

El Puente's Community Health and Environment program is spearheaded by youth and adult health promoters of Dominican, Puerto Rican, and other Latino heritage who currently live in the community or lived there for many years. The promoters educate the community, especially in relation to asthma, and it is they who conducted the survey on which this report is based.

The objective of this survey was to learn more about the use of home remedies for asthma among Latinos in the Southside neighborhood. Findings about home remedies will be reported at a later date.

Methods

In order to associate the use of home remedies with asthma prevalence and symp-

toms, the survey used a standard set of questions drawn from a school asthma survey of the New York Academy of Medicine and the New York City Department of Health, which in turn was based on the International Study on Asthma and Allergies in Children.¹² Each household was also asked what its cultural tradition was.

Cluster Sampling

The survey was conducted in 7 clusters or "sites." Each site is 1 or 2 city blocks containing 200 or more households. These sites are distributed fairly evenly throughout the Latino Southside and were chosen principally as strategic neighborhoods for follow-up action by health promoters.

The 7 sites lie within 4 contiguous census block groups that, except for 1 corner of 1 block group, are part of the Southside. The 1990 census reported these 4 block groups as containing 6526 households with a total population of 21 493, of whom 18 634, or 87%, were classified as "Hispanic." Taking into account the likelihood of a significant undercount in the 1990 census and population movement since that time, we estimate that the 7 clusters account for 20% to 30% of all dwelling units within the 4 block groups.

Door-to-door household surveys are one of El Puente's community organizing instruments. El Puente's experience in 3 separate surveys, which involved approaching households at different times of the day and returning on weekends, has been that people are either not home or simply do not answer the door in about half the apartments enumerated by counting doorbells.

Questionnaire

The questionnaire was in Spanish and English. The promoters took an active part in the questionnaire design and reviewed drafts at every stage, focusing on the development of questions about home remedies for asthma. They pilot-tested the questionnaire in 80 households that were not included in the final survey.

Going Door-to-Door

Household interviews were conducted over a 6-week period, mainly between 5 and 8 PM on weekdays and on 2 Saturdays from 10 AM to 4 PM. Survey teams returned at least once to every door that was not opened on the first visit. Daytime visits were also conducted on weekdays during the closing 2 weeks. The young people participated 3 evenings a week and on Saturdays. On these days, interviewers worked in teams of 1 adult and 1 or more young people. Three of the authors did some

interviewing themselves, and 1 was with the survey teams on a daily basis.

One person responded for the entire household in the survey. Nevertheless, where asthma was indicated among adults, the interviewers asked to talk directly to the person with asthma. Responses concerning asthma for those 18 years or older came directly from the person with asthma in 66% of cases, from parents or grandparents in 17% of cases, and from other family members in 8% of cases. Responses concerning asthma in children came from parents or grandparents in 88% of cases, from the young person with asthma in 4% of cases, and from other relatives in 6% of cases.

Data Entry, Cleaning, and Analysis

Five community members, trained and supervised by the authors, entered the data into an Epi Info database (Centers for Disease Control and Prevention, Atlanta, Ga) for analysis by that program; the authors then cleaned the data, directly comparing the computer data with the questionnaires for both asthma cases and noncases.

As Table 1 shows, the analysis of asthma prevalence and cultural tradition was stratified by age groups, sex, household size, health insurance status, Medicaid status (with or without either Medicaid or Child Health Plus, a New York State program ensuring free health care for children of low-income families), and membership in a household that used home remedies for any illness in the previous 12 months. For respondents 25 years and older, analyses were stratified by educational attainment and country where education was completed. Not shown in Table 1 is stratification by site, which is available on request.

Focus Groups

Persons with asthma or with family members who have asthma were invited to participate in focus groups to discuss survey results. Three focus groups were convened: 2 comprising mainly Dominicans and 1 comprising equal numbers of Puerto Ricans and Dominicans. Questions addressed, among other issues, why so many people lack medical insurance, why people with asthma are more likely to have insurance than those without asthma, and why there is more asthma reported among Puerto Ricans than among Dominicans.

Results

Basic characteristics of the study population are presented in Table 2. Average household size was 3.2; median age was 24 years. The population surveyed was 56.6% female,

TABLE 1—Difference Between Cultural Traditions in Reported Asthma Period Prevalence, Stratified by Age, Sex, Household Size, Health Insurance Status, Home Remedies Use, and Education Variables

	Dominican and Other Latino	Puerto Rican	OR	95% CI	Mantel-Haenszel OR (Crude OR)	Mantel- Haenszel 95% CI	χ^2 for Interaction (P)
Main contrast: asthma period prevalence	93/1749	147/1115	0.37	0.28, 0.49			
Age group (y) by sex							
0–12							
Female	9/258	22/134	0.18	0.1, 0.4			
Male	25/236	25/140	0.55	0.3, 1.0			
13–24							
Female	16/240	8/111	0.92	0.4, 2.3	0.36 (0.37)	0.28, 0.48	11.7 (.04)
Male	9/194	9/119	0.59	0.2, 1.6			
25+ ^a							
Female	28/482	67/363	0.27	0.2, 0.4			
Male	5/298	14/224	0.25	0.1, 0.7			
Household size							
1–3	29/563	76/535	0.33	0.2, 0.5	0.37 (0.37)	0.28, 0.50	0.6 (.4)
4+	64/1186	71/580	0.41	0.3, 0.6			
Health insurance status							
None	15/616	12/227	0.45	0.2, 1.0	0.42 (0.38)	0.32, 0.56	0.02 (.9)
Some	78/1105	134/878	0.42	0.3, 0.6			
Medicaid status							
M/CH+ ^b	57/739	86/482	0.38	0.3, 0.6	0.37 (0.37)	0.28, 0.48	0.1 (.7)
Other	36/1010	61/633	0.35	0.2, 0.5			
Home remedy household ^c							
Yes	54/982	60/505	0.43	0.3, 0.6	0.37 (0.37)	0.38, 0.49	1.2 (.3)
No	38/759	87/610	0.32	0.2, 0.5			
Education level (age 25+)							
<12	19/486	48/348	0.25	0.1, 0.5	0.25 (0.25)	0.16, 0.39	0.00 (.99)
12+	12/286	34/230	0.25	0.1, 0.5			
Where education was completed (age 25+)							
United States	7/146	45/279	0.28	0.1, 0.7	0.26 (0.24)	0.15, 0.41	0.1 (.8)
Outside United States	22/612	37/279	0.24	0.1, 0.4			

Note. CI = confidence interval; OR = odds ratio.

^aAge groups 25–44 and 45+ years were merged because there were no asthma cases among Dominican or other Latino males in the 25–44 age range.

^bMedicaid or Child Health Plus (a New York State program ensuring health care access to all children).

^cBelonging to a household in which a home remedy was used for any illness in the previous 12 months.

and female predominance was particularly skewed in the 25- to 44-year age group, which was 62% female. The response rate (percentage of households that responded to the survey among all households with which contact was established) was 85%.

Although a somewhat higher percentage of Dominican adults reported having less than a high school education, the distribution of educational attainment among Dominicans and other Latinos was strikingly similar to that among Puerto Ricans. However, 80% of Dominicans and 84% of other Latinos 25 years or older completed their education outside the United States, compared with only 48% of Puerto Ricans. The median age among Dominicans was 21, whereas among Puerto Ricans it was 27.

Location

Puerto Ricans and other Latinos were found living side by side in all 7 clusters and

in 67 of the 94 buildings surveyed. Some 88.5% of the survey population (2669 people) lived in buildings in which both Puerto Ricans and other Latinos were interviewed.

Health Insurance Status

Nearly 3 out of 10 people in the survey (874 of 2971) reported having no health insurance. Of the remainder, some 60% (1269 of 2098) had Medicaid or its equivalent. Puerto Ricans were more likely than other Latinos to have health insurance (odds ratio [OR]=2.2; 95% confidence interval [95% CI]=1.8, 2.6), whereas Mexicans, Central Americans, and South Americans were the least likely to have it. Nearly half the children of Mexican, Central American, or South American families (32 of 66), and nearly 2 out of 5 Dominican children (125 of 664), were not insured. In all, some 18% of those younger than 19 years (220 of 1193) lacked health insurance, even though they could acquire it through the New

York State Child Health Plus program. El Puento has since initiated a drive to recruit children for this program.

Asthma

Nearly 12% of the population (357 of 3015) surveyed were reported as having asthma. Of these, 96% (343 of 357) were said to have had their asthma diagnosis confirmed by a doctor. The prevalence among those ever told by a physician that they had asthma was 11.4% (343 of 3015). The period prevalence (i.e., the percentage of the survey population told by a doctor they had asthma and having experienced 1 or more asthma symptoms in the previous 12 months) was 8.3% (249 of 3015).

Asthma and Cultural Tradition

The reported asthma prevalence varied considerably by cultural tradition, as Table 1

TABLE 2—Characteristics of the Study Population, by Cultural Tradition

	Puerto Rican	Dominican	Other Latino	Other
Population (n=3015) (% of total population)	1115 (37)	1566 (52)	183 (6)	151 (5)
Households (n=946) (% of all households)	394 (42)	436 (46)	57 (6)	59 (6)
Mean household size	2.8	3.6	3.3	2.5
Age group (y) by sex (77 missing)				
0–12				
Female	134	237	21	17
Male	140	208	28	19
13–24				
Female	111	222	18	23
Male	119	177	17	15
25–44				
Female	165	268	27	27
Male	106	145	27	24
45+				
Female	196	161	23	12
Male	117	110	16	8
Health Insurance (44 missing)				
None (% of cultural group)	227 (20)	513 (33)	103 (56)	31 (21)
Medicaid or Child Health Plus (% of cultural group)	482 (43)	698 (45)	41 (22)	48 (32)
Medicare/SSI (% of cultural group)	75 (7)	60 (4)	5 (3)	3 (2)
Other (% of cultural group)	321 (29)	269 (17)	32 (17)	63 (42)
Persons from household that used home remedy in previous 12 mo (% of cultural group)	505 (45)	885 (57)	97 (53)	45 (30)
Education <12 y (n=1421 ^a)	348/578	435/675	51/97	36/71
Where education was completed (n=1407 ^a)				
United States	297	131	15	58
Outside United States	279	532	80	15

Note. SSI = supplemental security income.

^aPopulation 25 years of age or older who answered the question.

indicates. The odds ratio of 0.37 for the reported asthma period prevalence for a person whose household identified its culture as Dominican or other Latino, compared with one from a Puerto Rican household, is not explained by differences in household size, Medicaid status, use of home remedies, education, or where education was completed. Whether or not one had any health insurance accounted for a minor portion of the contrast. Sex and age differences do not confound the analysis, but they do modify it, as discussed below.

The Shared Environment

To help assess whether microenvironmental conditions could explain the difference in reported asthma period prevalence among Dominicans and other Latinos compared with Puerto Ricans, we examined the contrast for possible confounding both by cluster and by building. Stratification for possible variations among the 7 clusters could not explain the difference (Mantel-Haenszel summary OR=0.38; 95% CI=0.28, 0.50; $\chi^2=47.6$; χ^2 for evaluation of interaction=5; $P=.5$). (A breakdown of the data building by building is provided in an appendix available from the corresponding author.) If the 27 buildings in which either no Puerto Ricans or no other Latinos were surveyed are eliminated from the sample, the

odds ratio for reported asthma period prevalence among Dominicans and other Latinos compared with Puerto Ricans is 0.4 (95% CI=0.30, 0.52; 92 of 1655 vs 131 of 1014).

Reported Asthma by Age and Sex

As can be seen from Table 1 and Figure 1, the differences in reported asthma period prevalence between Dominicans and other Latinos compared with Puerto Ricans vary by age group and sex. In the 13- to 24-year age group, there is little difference, especially among young women. Among boys from birth to 12 years, the difference is not readily explained by chance but is smaller than for girls. Among girls of that age group, the odds for reported period prevalence of asthma among Dominican or other Latino girls are less than a fifth of those for Puerto Rican girls.

The reported prevalence rates for Dominican and other Latino females do not vary much by age, whereas they vary considerably among Puerto Rican females, being quite high among Puerto Rican girls and women 25 years and older and considerably lower among adolescents and younger women.

Asthma Symptoms and Severity

Questions concerning asthma symptoms were asked only of those who said they had

asthma. Among those who had been told by a doctor that they had asthma, there was little difference in the reported occurrence of these symptoms between Puerto Ricans and other Latinos, and those differences that did appear can be readily explained by chance.

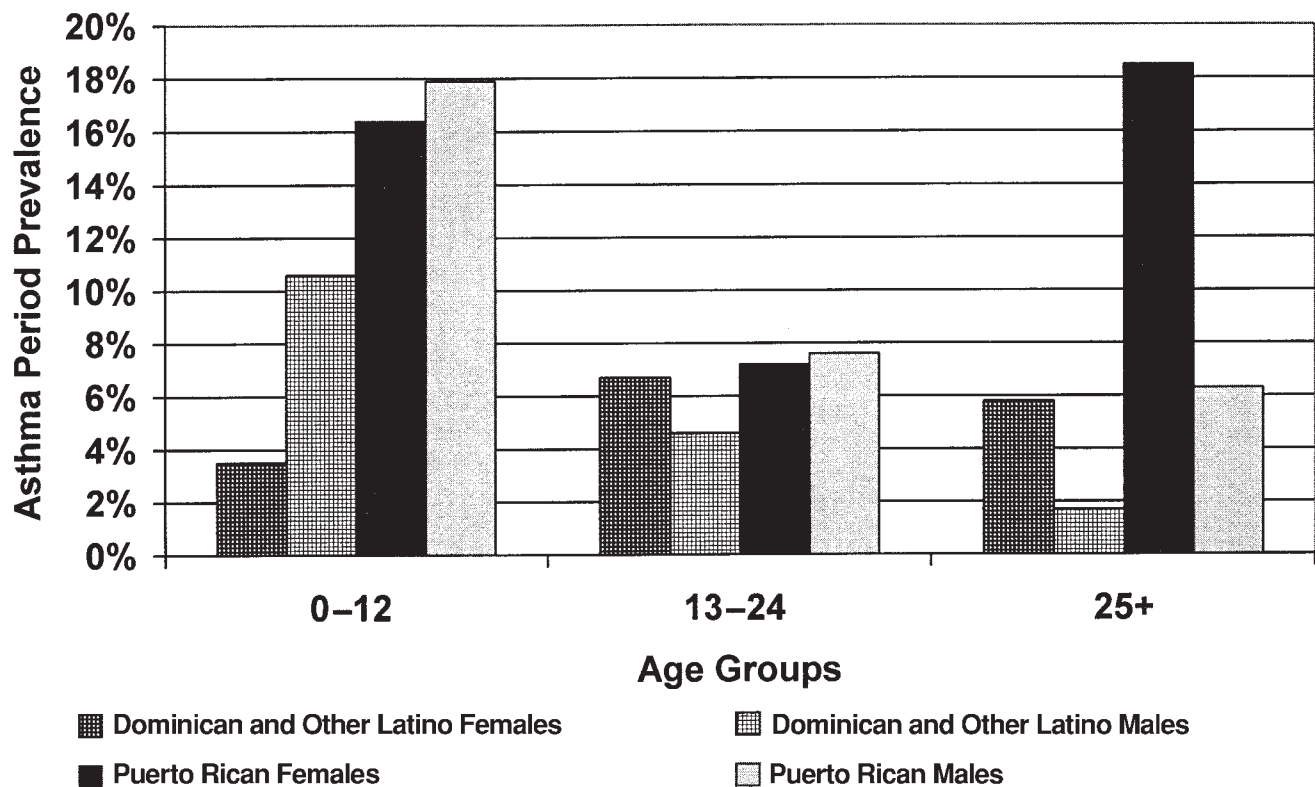
Asthma and Insurance Status

The odds that a person reported as having had asthma symptoms in the previous 12 months had some kind of health insurance, compared with all others in the sample, were 3.4 to 1 (95% CI=2.3, 5.2; 219 of 248 among those with asthma vs 1879 of 2724 among those without). The association is not explained by differences in age, sex, household size, cultural tradition, use of home remedies, education, or where education was completed.

Discussion

Limitations of the Study

It is possible that there was something systematically different about those households where either no one was home or no one would open the door, despite the interviewers' best efforts to reach them. But there is no obvious reason why those who could



Note. See Table 1 for period prevalence proportions by age group, sex, and cultural tradition.

FIGURE 1—Reported asthma period prevalence by age group, sex, and cultural tradition

not be reached should be different as regards the contrast in asthma prevalence by cultural tradition.

Especially among those 25 years and older, what was reported as asthma could have been something else, such as chronic obstructive pulmonary disease. Whatever it was, it appeared to be much more prevalent among Dominicans and other Latinos than among Puerto Ricans.

Perhaps the main limitation of the study is that, because the differences in asthma prevalence by cultural tradition were unexpected, a search for possible explanations was not part of the study design. Some study data and some of the literature shed light on possible explanations, but the answers to some questions raised by the data must be hypothetical.

Sex Differences

Figure 1 shows that the lowest asthma prevalence occurred among Dominican and other Latino girls from birth to 12 years and among Dominican and other Latino men 25 years and older. The finding that the odds

of reporting asthma for a Dominican girl were only one fifth of those for a Puerto Rican girl of the same age (nearly as high as that for Puerto Rican boys, which is unusual) is certainly one that deserves further study. Equally deserving of concern and further inquiry is the very high reported prevalence among Puerto Rican women 25 years and older.

Genetic Predisposition and Other Biological Factors

Gene-environment interactions, as stressed in a recent Journal editorial, may well play a part in asthma prevalence among Puerto Ricans.¹³ Studies point to genetically determined differences in inflammatory response among Puerto Rican children, compared with “non-Hispanic” children, with asthma—particularly differences related to the plasma protein α_1 -antitrypsin.^{14,15} It is not obvious, however, why Puerto Ricans should be very different genetically from Dominicans. Both groups have a combination of indigenous, European, and African ancestry. What seems clear is that genetic studies relating asthma to Puerto Rican ancestry would

certainly be strengthened by comparison with similar studies among Dominicans.

We consider it important to focus not only on high asthma rates among Puerto Ricans but also on the more positive phenomenon of low rates among other Latinos, and to consider asthma in its broader social, economic, cultural, and environmental contexts.

Economic and Social Context

The map of asthma hospitalization rates by zip code in New York City correlates to a remarkable degree with the map of low family income.¹⁶ Other health conditions follow similar patterns, except that these other conditions tend to be most prevalent among African Americans, somewhat less prevalent among Puerto Ricans, and least prevalent among Dominicans. From 1991 to 1997, low birthweight occurred among 6.8% of births to Dominican women, compared with 10.6% of those to Puerto Rican women and 14.8% of those to African American women.¹⁷ There are similar differences among the 3 groups as regards births to teenaged mothers and infant mortality rates. Rates for urban jurisdictions, how-

ever, should be treated with caution. The figures for New York do not cover the entire metropolitan area; these figures thus exclude more affluent Puerto Rican and African American families who have moved to suburban areas in greater proportions than Dominicans and whose health patterns may be quite different.

Lara and colleagues suggest that higher rates of single motherhood among Puerto Ricans might be affecting asthma outcomes.¹⁸ This could be true, but there may be as many single mothers among other Latinos as among Puerto Ricans in the Southside. As can be calculated from Table 2, the survey population in the 13- to 44-year age group was 55% female among Puerto Ricans and 60% among Dominicans.

The Physical Environment

Puerto Rican participants in this survey's focus groups associated their higher asthma rates with the fact that they had been living in the North Brooklyn environment longer than other Latinos. An earlier El Puente study in the same areas (unpublished data, R.J. Ledogar et al., 1998) found that individuals older than 14 years who had lived in Brooklyn 15 years or longer were more than twice as likely to report asthma period prevalence as those who had lived in the borough for a shorter time. That study did not distinguish among Latino cultural traditions, however, and it cannot be determined to what degree this may be a confounding factor in that finding.

Health Insurance and Access to Health Services

The minor confounding associated with health insurance status in Table 1 may have to do with the low rates of asthma reported among the uninsured. For obvious reasons, uninsured persons with asthma who go to the emergency room or get hospitalized for asthma are strongly encouraged to enroll in Medicaid or another insurance plan for which they qualify. The finding that more Puerto Ricans have health insurance than do other Latinos would therefore be consistent with higher rates of asthma among them. But other factors may also help to explain this association. There may be more asthma cases among the uninsured that go undiagnosed, or there could be some tendency to overdiagnose asthma among the insured.

Lara and colleagues consider lower rates of health insurance and other barriers to adequate health care as a reason for higher reported asthma prevalence among Puerto Ricans.¹⁸ Williamsburg's Southside is indeed routinely classified as medically underserved. When both language barriers and health in-

surance are taken as indicators, however, Dominicans and other Latinos have even less access than do Puerto Ricans and non-Latinos.

Greater access to mainstream US health care could possibly even help to explain higher reported asthma rates among Puerto Ricans in 2 ways. One is the possibility that greater access to perinatal care may result in increased survival among Puerto Ricans of premature infants who are more susceptible to bronchial disorders.¹⁹

Second, when Dominican participants of focus groups were asked why they thought Puerto Ricans had more asthma than they did, they expressed the belief that doctors in the area tended to diagnose every episode of respiratory distress in children as asthma and prescribe "the pump" much too readily (suggesting thereby that Puerto Ricans are more vulnerable to such practices than they are). Dominican and Puerto Rican focus group participants agreed that Puerto Ricans rely less on traditional remedies. Indeed, this study found that Puerto Rican households were less likely than other Latinos to have used a home remedy for any illness in the previous 12 months (OR=0.62; 95% CI=0.5, 0.8; 167 of 349 vs 266 of 490). However, stratification by whether the household used a home remedy for any illness during the previous 12 months did not explain the contrast in reported asthma prevalence between the cultural groups, nor did use of home remedies vary significantly by insurance status. Use of home remedies may rather be an indicator of stronger ties to an entire cultural support system.

Family, Culture, and Chronic Conditions

Mendoza and Fuentes-Afflick report that Mexican American children, despite having higher levels of poverty, lower levels of parental education, and more limited access to health care than non-Latino White children, have unexpectedly low rates of adverse perinatal results and prevalences of chronic and disabling conditions.²⁰ These authors propose a new "family-community health promotion model" that stresses the capacity of both the family and the community to support optimum health behavior among their members. The present study describes another case of an unexpectedly good health outcome among immigrant groups with strong family-community supports.

From this perspective, El Puente continues to view air pollution, poor housing conditions, and other environmental and economic hazards in North Brooklyn—just as in other low-income areas of the city that are inhabited predominantly by Latinos, Afro-Caribbean groups, and African Americans—as indeed threats to respiratory health for all

residents. Some residents, however, seem to be better protected from these threats, possibly owing in part to the traditions and support structures they have brought with them into their new environment.

If, despite their very limited access to the formal health care system, Latinos who have come to North Brooklyn more recently demonstrate greater resistance to an adverse environment, the things that protect them need to be better understood. El Puente's ongoing research program has this perspective. It includes further work on traditional remedies and on differences in asthma prevalence among young girls and older women of Dominican and Puerto Rican cultural tradition.

Community research, however, is only part of a much broader effort to build on the community's strengths and reinforce cultural assets. Community health promoters, young and old, working in mutually supportive teams and encouraging their neighbors to approach their own health from the perspective of community well-being, are an important part of this effort. Preserving and, where possible, even reviving cultural traditions should be accompanied, among children and youth especially, by the creation of new cultural contexts. These cultural contexts should connect mind, body, spirit, and community to a self-directed quest for development that is tied to, and never separate from, the struggle for environmental justice and all human rights. □

Contributors

R. J. Ledogar participated in the study design, data cleaning, and data analysis, and he drafted the paper. A. Penchaszadeh trained the promoters and participated in the study design, pilot, interviews, and data analysis; she also contributed to the writing of the paper. C. C. Iglesias Garden was principal supervisor of the fieldwork and trained the promoters; she also contributed to the study design and data cleaning. L. Garden Acosta contributed to the study design and to the writing of the paper.

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