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Importance of Generational Status in Examining Access to and Utilization of Health Care Services by Mexican American Children

Anthony E. Burgos, MD, MPH*; Karen E. Schetzina, MD, MPH†; L. Beth Dixon, PhD, MPH§; and Fernando S. Mendoza, MD, MPH*

ABSTRACT. *Objectives.* To describe the sociodemographic differences among Mexican American children (first, second, and third generation), non-Hispanic black children, and non-Hispanic white children; to compare the health status and health care needs of Mexican American children (first, second, and third generation) with those of non-Hispanic black children and non-Hispanic white children; and to determine whether first-generation Mexican American children have poorer health care access and utilization than do non-Hispanic white children, after controlling for health insurance status and socioeconomic status.

Methods. The Third National Health and Nutrition Examination Survey was used to create a sample of 4372 Mexican American children (divided into 3 generational groups), 4138 non-Hispanic black children, and 4594 non-Hispanic white children, 2 months to 16 years of age. We compared parent/caregiver reports of health status and needs (perceived health of the child and reported illnesses), health care access (usual source of health care and specific provider), and health care utilization (contact with a physician within the past year, use of prescription medications, physician visit because of earache/infection, and hearing and vision screenings) for different subgroups within the sample.

Results. More than two thirds of first-generation Mexican American children were poor and uninsured and had parents with low educational attainment. More than one fourth of first-generation children were perceived as having poor or fair health, despite experiencing similar or better rates of illnesses, compared with other children. Almost one half of first-generation Mexican American children had not seen a doctor in the past year, compared with one fourth or less for other groups. Health care needs among first-generation Mexican American children were lower, on the basis of reported illnesses, but perceived health status was worse than for all other groups. After controlling for health insurance coverage and socioeconomic status, first-generation Mexican American children and non-Hispanic black children were less likely than non-Hispanic white children to have a usual source of care, to have a specific provider, or to have seen or talked with a physician in the past year.

Conclusions. Of the 3 groups of children, Mexican American children had the least health care access and utilization, even after controlling for socioeconomic status and health insurance status. Our findings showed that Mexican American children had much lower levels of access and utilization than previously reported for Hispanic children on the whole. As a subgroup, first-generation Mexican American children fared substantially worse than second- or third-generation children. The discrepancy between poor perceived health status and lower rates of reported illnesses in the first-generation group leads to questions regarding generalized application of the "epidemiologic paradox." Given the overall growth of the Hispanic population in the United States and the relative growth of individual immigrant subgroups, the identification of subgroups in need is essential for the development of effective research and policy. Furthermore, taking generational status into account is likely to be revealing with respect to disparities in access to and utilization of pediatric services. *Pediatrics* 2005;115:e322–e330. URL: www.pediatrics.org/cgi/doi/10.1542/peds.2004-1353; *Mexican American, immigrant, access, utilization, disparities.*

ABBREVIATION. NHANES, National Health and Nutrition Examination Survey.

Children living in the United States who are Latino, including Mexicans, Puerto Ricans, Cubans, and South Americans, are continually recognized as an underserved and high-risk population, compared with non-Latino white children. However, identification and discussion of health disparities that characterize this heterogeneous group of children are difficult because the Latino child health data are infrequently analyzed according to pertinent subgroups.¹ Furthermore, studies rarely incorporate information about the length of time immigrant families have been in the United States, which can be associated with social and economic risk factors that also affect health.^{2,3} The limited availability of subgroup- and generation-specific data has inhibited our ability to identify the highest-risk groups of Latino children and to describe and understand the factors that contribute to their increased risk.

Although the growth in the Latino population in the United States can be attributed to all subgroups, Mexican-born immigrants constitute the largest and fastest growing group of immigrants.⁴ Several studies have addressed access to and utilization of health care services by Latino adults and children in the

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United States, but few have addressed these issues specifically for Mexican American children. Those analyses revealed that Mexican ethnicity was an independent risk factor for being uninsured and that Mexican American children had fewer physician visits in 1 year, compared with other Latino subgroups. However, data for immigrant or first-generation Mexican American children are lacking.⁵⁻¹⁰

The Third National Health and Nutrition Examination Survey (NHANES III),¹¹ which was conducted from 1988 to 1994 by the National Center for Health Statistics of the Centers for Disease Control and Prevention, offers the opportunity to examine differences in health care needs, access, and utilization for Mexican American, non-Hispanic black, and non-Hispanic white children. Moreover, the NHANES III is one of the few datasets that oversampled Mexican American children and provides information on generational status (immigrant/first generation, second generation, or third generation). Although "Latino" is more widely accepted as a descriptor for this population, we use the NHANES descriptor "Hispanic" in this article, to maintain clarity regarding the variables being discussed.

In this study, we had 3 goals, (1) to describe the sociodemographic differences among Mexican American children (first, second, and third generation), non-Hispanic black children, and non-Hispanic white children; (2) to compare health status and health care needs of Mexican American children (first, second, and third generation) with those of non-Hispanic black children and non-Hispanic white children; and (3) to examine whether first-generation Mexican American children have poorer health care access and utilization than do non-Hispanic white children, after controlling for health insurance status and socioeconomic status. We hypothesized that first-generation Mexican American children had worse health status and greater health care needs, as well as poorer health care access and utilization, than did non-Hispanic white children.

METHODS

Study Sample

NHANES III constitutes a cross-sectional representative sample of the US civilian noninstitutionalized population ≥ 2 months of age living in households. The survey was conducted at 89 locations in two 3-year phases. The survey used stratified, multistage, probability sampling. Weights indicating the probability of being sampled were assigned to each respondent. Mexican Americans, non-Hispanic blacks, children < 5 years of age, and adults > 60 years of age were oversampled, to provide more reliable estimates for these groups. Household interviews with a responsible adult, usually the head of household, provided information about family characteristics and about each sample person, including identification of race/ethnicity and generational status. All household interview procedures, including interviews with English- and Spanish-speaking respondents, were pretested, and revisions and adjustments were made as necessary to ensure the success of the main study.

All children 2 months to 16 years of age with interview information were included. Our analysis sample was composed of 13 114 children, including 519 first-generation Mexican Americans, 2257 second-generation Mexican Americans, 1606 third-generation Mexican Americans, 4138 non-Hispanic blacks, and 4594 non-Hispanic whites. Among Mexican American children, the first-generation group included children born in Mexico with at least 1 parent born in Mexico or another non-US country. The

second-generation group included children born in the United States with at least 1 parent born in Mexico or another non-US country. The third-generation group included children born in the United States with both parents also born in the United States.

Dependent Variables

Data Source

All variables for the children were drawn from items on the family questionnaire and household questionnaire included in NHANES III; answers to these items were reported by the parent or caregiver.

Health Status and Health Care Needs

Health status and health care need were assessed with 5 items. These items addressed current perceived health of the child (dichotomized as poor/fair or good/very good/excellent); illnesses during the past 12 months, including cold or flu (yes/no) and pneumonia (yes/no); and earache/ear infection at any time in the past (yes/no; if yes, the number of past earaches/infections was coded as 1, 2, or ≥ 3).

Health Care Access

Health care access was assessed with 2 items, ie, usual source of care (yes/no) and usual specific provider (yes/no). Information on usual specific provider was available only for children who had a usual source of care.

Health Care Utilization

Health care utilization was assessed with 4 items. The primary item was time since last spoke to or visited a physician, categorized as < 1 year, 1 year or < 2 years, 2 years or < 5 years, or > 5 years or never. Secondary items included use of prescription medication in the past month, seen by a physician during earache/infection (if answered yes to having had an earache/infection), and time since last hearing and vision screens; these items were dichotomous. Hearing and vision screens were included as indicators of the use of preventive care. Children 4 to 5 years of ages were categorized regarding whether they had ever undergone hearing and vision screening. Children 6 to 11 years of age and 12 to 16 years of age were categorized regarding whether they had undergone hearing and vision screening within the past 2 years.

Independent Variables

The primary independent variable was reported race/ethnicity and generational status, defined as first-generation Mexican American, second-generation Mexican American, third-generation Mexican American, non-Hispanic black, or non-Hispanic white. Other independent variables included 6 sociodemographic variables that are known to affect health care access and utilization. The poverty income ratio was defined as the ratio of reported household income to the poverty threshold in the calendar year in which the participants were interviewed and was categorized as < 1.0 , 1.01 to 1.30, 1.31 to 1.85, or > 1.85 . The gender/marital status of the head of household was dichotomized as single female or otherwise. Head of household educational level was categorized as < 9 years, 9 to 12 years, or > 12 years. Residence location was dichotomized as urban (county population of ≥ 1 million) or rural (county population of < 1 million). The primary language spoken in the home was categorized as Spanish, English, or bilingual. The type of health insurance was categorized as private, public (Medicaid or Champus), or uninsured.

Statistical Analyses

The NHANES III data were weighted to account for the unequal probabilities of selection resulting from the survey cluster design, oversampling of certain groups, and item nonresponse. Prevalence estimates and stepwise logistic regression analyses were performed with sample weights with SUDAAN, version 8.0 (Research Triangle Institute, Research Triangle Park, NC), a software program for analysis of data from complex sample surveys.¹² The 5 groups of children were compared with respect to sociodemographic variables and the health status, health care need, access, and utilization variables with χ^2 tests.

TABLE 1. Sample Size, Demographics Features, and Health Care Need for Mexican American, Non-Hispanic Black, and Non-Hispanic White Children 2 Months to 16 Years of Age, NHANES III, United States, 1988–1994

Variables	First-Generation Mexican American (N = 519)	Second-Generation Mexican American (N = 2257)	Third-Generation Mexican American (N = 1606)	Black Non-Hispanic (N = 4138)	White Non-Hispanic (N = 4594)	P Value
Demographic features						
Mean age, y	10.2	7.3	8.2	8.3	8.5	<.001
Household income to poverty ratio, %						
<1.0	75.6	53.8	33.4	46.5	14.3	<.001
1.01–1.30	7.8	14.4	11.9	9.6	6.2	<.001
1.31–1.85	8.2	14.5	13.1	14.4	13.6	<.001
>1.85	8.3	17.4	41.6	29.5	65.8	<.001
Head of household single female, %	10.4	19.2	20.8	48.9	12.7	<.001
Head of household educational level, %						
<9 y	73.8	53.9	15.3	8.8	4.9	<.001
9–11 y	8.2	18.0	20.4	22.9	10.5	<.001
≥12 y	18.0	28.1	64.3	68.3	84.7	<.001
Head of household employed, %	70.2	70.5	78.4	66.6	88.1	<.001
Residence location, %						
Urban	67.2	64.3	55.0	53.8	44.0	.052
Rural	32.8	35.7	45.0	46.2	56.0	.052
Primary language spoken, %						
English	3.1	17.7	78.3	98.6	99.4	<.001
Spanish	93.8	71.8	7.7	1.1	0.5	<.001
Bilingual	3.1	10.5	14.0	0.3	0.1	<.001
Type of insurance, %						
Public insurance	16.0	35.8	25.8	34.4	10.0	<.001
Private insurance	19.8	38.9	58.4	55.6	82.5	<.001
Uninsured	64.2	25.4	15.9	10.0	7.5	<.001
Health status						
Perceived health, poor to fair, %	27.2	17.5	6.5	6.4	2.4	<.001
Health care need						
Cold or flu in past 12 mo, %	81.7	83.8	85.3	78.1	85.3	<.001
Pneumonia in past 12 mo, %	1.7	2.3	2.7	2.5	2.6	.950
Ever had an earache/infection, %	35.1	54.5	67.1	53.7	75.1	<.001
No. of earaches/infections, %*						
1	42.7	29.3	22.9	31.5	15.1	<.001
2	20.4	20.9	19.5	25.0	15.0	<.001
≥3	36.9	49.8	57.6	43.6	70.0	<.001

Sample sizes for each variable may differ slightly because of missing values. P values were obtained with χ^2 tests. The data source was the National Center for Health Statistics (Hyattsville, MD).
*Number of earaches/infections reported as percentage of those who ever had an earache/infection.

To determine whether first-generation Mexican American children were at increased risk for poor health care access and utilization independent of socioeconomic status and health insurance status, we conducted multivariate logistic regression analyses for 2 health care access items (usual source of care and usual specific provider) and 1 health care utilization item (visit to a physician in the past year). Independent variables included race/ethnicity and generational status, age, gender, single female head of household, head of household educational level, urban residence location, and health insurance status. Household poverty index was withheld from the models to avoid colinearity with other indicators of socioeconomic status.

Stepwise logistic regression analyses began with no variables in the model. The variable that contributed the most to the regression, as determined by the Wald statistic, and was significant at the $<.15$ level was added. After each new variable was added, any variable that no longer met the criteria for significance was removed. The stepwise process ended when none of the unselected variables met the entry criteria.¹³

RESULTS

Group Differences

Sociodemographic Variables

As seen in Table 1, all 3 generations of Mexican American children were more likely to live in poverty than were non-Hispanic white children. The first-generation Mexican American children were most severely affected, with three fourths living in households with incomes below the poverty level, compared with one half of non-Hispanic black children and one sixth of non-Hispanic white children. Among Mexican American children, however, many of the heads of households were employed. First- and second-generation Mexican American heads of households had similar levels of employment, and both were higher than the level for non-Hispanic black households. First-generation Mexican American children were the least likely to be in households headed by a single female adult, but this value doubled for the second- and third-generation groups and the value was highest for non-Hispanic blacks, with 1 in 2 households being headed by a single female adult.

Mexican American households had lower educational levels, compared with both non-Hispanic blacks and whites, and first-generation Mexican Americans had the lowest levels, with three fourths reporting less than a ninth grade education. First-generation Mexican American children were more likely to reside in urban areas, and the percentages were lower for second- and third-generation children. First-generation Mexican American children were more likely to live in households where Spanish was spoken as the primary language. Third-generation Mexican American children were more likely to live in households where English was spoken as the primary language.

Two thirds of the first-generation Mexican American children in our sample were uninsured. This number was lower for second- and third-generation children, but the third-generation children were still twice as likely to be uninsured as non-Hispanic white children. All 3 generations of Mexican American children were more likely to be covered by public insurance than were non-Hispanic white children. Disproportionately fewer insured first- and second-generation Mexican American children were

covered by private health insurance, compared with other groups.

Health Status and Health Care Needs

As seen in Table 1, greater percentages of first- and second-generation Mexican American children were perceived to be in fair or poor health, compared with all other groups. The percentage of third-generation Mexican American children perceived to be in fair or poor health was comparable to that of non-Hispanic black children. The percentage of first-generation Mexican American children with reported cold or flu in the past 12 months was lower than values for all other groups except non-Hispanic blacks. The percentage of first-generation Mexican American children with reported pneumonia in the past 12 months was lower than values for all other groups. The percentage of first-generation Mexican children reported to ever have had an earache/infection was also lower than values for all other groups.

Health Care Access

As seen in Table 2, first-generation Mexican Americans were the least likely to have a usual source of care (slightly more than one half of the group). Second- and third-generation Mexican American children had much better access, with levels similar to those of non-Hispanic black and non-Hispanic white children. Similarly, of those reporting a usual source of care, first-generation Mexican American children were least likely to have a usual specific provider. The percentages were higher for the second- and third-generation groups, but the percentage of third-generation children with a usual specific provider was lower than that for non-Hispanic white children.

Health Care Utilization

As seen in Table 2, only one half of first-generation Mexican American children had seen or talked to a physician within the past year, compared with three fourths of children in all other groups. Three fourths of all first-generation Mexican American children had not seen a physician within the past 2 years, and one tenth had not seen a physician in ≥ 5 years. Similarly, in almost every age cohort, first-generation Mexican Americans were the least likely to have used prescription medications in the past month, to have had an ear infection and been seen by a doctor, and to have undergone routine hearing and vision screening.

Prediction of Health Care Access and Utilization, Considering Socioeconomic Status and Health Insurance

Health Care Access

In the stepwise logistic regression models shown in Table 3, both first-generation Mexican American children and non-Hispanic black children were less likely to have a usual source of care than were non-Hispanic white children, after controlling for several sociodemographic variables. Younger children and children without health insurance were also less likely to have a usual source of care. Among those

TABLE 2. Health Care Access and Utilization for Mexican American, Non-Hispanic Black, and Non-Hispanic White Children 0 to 16 Years of Age, NHANES III, United States, 1988–1994

Variables	First-Generation Mexican American (N = 519)	Second-Generation Mexican American (N = 2257)	Third-Generation Mexican American (N = 1606)	Black Non-Hispanic (N = 4138)	White Non-Hispanic (N = 4594)	P Value
Total sample size	519	2257	1606	4138	4594	<.001
Access						
Report a usual source of care, %	52.2	87.5	91.8	88.7	94.1	<.001
Report a usual specific provider, %*	48.1	72.4	80.2	78.1	86.2	<.001
Utilization						
Last saw or talked to a medical doctor, %						
<1 y	53.7	77.4	78.5	76.3	81.3	<.001
≥1 y-2 y	22.5	13.5	15.0	15.8	11.9	<.001
≥2 y-5 y	11.7	5.9	5.1	5.8	5.2	<.001
≥5 y or never	12.1	3.2	1.5	2.1	1.6	<.001
Used prescription medications in the past month, %	6.6	15.7	20.2	15.0	22.3	<.001
Had earache/infection and seen by a physician, %	74.1	93.5	93.7	95.1	96.6	<.001
Age 4-5 y, %†						
Never had a vision screen	54.0	56.1	45.5	36.3	37.8	<.001
Never had a hearing screen	61.9	56.4	45.9	40.6	38.9	<.001
Age 6-11 y, %‡						
Vision screen >2 y ago/never	56.4	31.5	11.3	20.6	12.7	<.001
Hearing screen >2 y ago/never	60.2	37.0	20.3	24.7	19.5	<.001
Age 12-16 y, %‡						
Vision screen >2 y ago/never	51.7	23.6	18.4	16.6	13.6	<.001
Hearing screen >2 years ago/never	56.9	33.8	38.2	28.8	27.1	.003

Sample sizes for each variable may differ slightly because of missing values. P values were obtained with χ^2 tests. The data source was the National Center for Health Statistics (Hyattsville, MD).

* Reported as percentage of those who positively reported a usual source of care.

† Reported as percentage of those who ever had an earache/infection.

‡ Reported as percentage of the number of subjects in this age group.

TABLE 3. Odds Ratios and 95% Confidence Intervals From Stepwise Logistic Regression Models for Usual Source of Care, Usual Specific Provider, and Last Saw or Talked to Doctor <1 Year Prior for Children 0 to 16 Years of Age, NHANES III, United States, 1988–1994

Independent Variables	Odds Ratio (95% Confidence Interval)		
	Usual Source of Care	Usual Specific Provider*	Last Saw or Talked to Doctor <1 Year Prior
Child			
Race/ethnicity			
Mexican American			
First generation	0.32 (0.19–0.54)	0.25 (0.14–0.44)	0.52 (0.29–0.92)
Second generation	1.09 (0.76–1.57)	0.58 (0.38–0.86)	0.81 (0.57–1.16)
Third generation	1.03 (0.60–1.77)	0.68 (0.46–1.01)	0.83 (0.63–1.10)
Non-Hispanic black	0.55 (0.43–0.71)	0.64 (0.47–0.86)	0.68 (0.54–0.85)
Non-Hispanic white	1.00	1.00	1.00
Age	0.93 (0.91–0.95)	†	0.86 (0.84–0.87)
Gender			
Female	†	†	1.23 (1.04–1.44)
Male	†	†	1.00
Health insurance			
No	0.35 (0.23–0.52)	0.74 (0.50–1.08)	0.65 (0.46–0.94)
Yes	1.00	1.00	1.00
Household			
Years of education	1.14 (1.10–1.18)	1.07 (1.03–1.12)	1.04 (1.01–1.08)
Head of household			
Single female	†	0.76 (0.55–1.05)	1.22 (0.95–1.56)
Other	†	1.00	1.00
Residence			
Rural	†	†	0.78 (0.62–0.98)
Urban	†	†	1.00

The data source was the National Center for Health Statistics (Hyattsville, MD). Independent variables were race/ethnicity, age, gender, and health insurance status of the child and years of education and gender/marital status of the head of household. The order of listing does not necessarily correspond to the order of entry using the stepwise procedure.

* Reported as percentage of those who positively reported a usual source of care.

† Variables were entered but did not remain in the respective stepwise logistic regression model.

who had a usual source of care, both first- and second-generation Mexican American children and non-Hispanic black children were less likely to have a usual specific provider than were non-Hispanic white children. Only third-generation Mexican American children did not differ significantly from non-Hispanic white children.

Health Care Utilization

In the logistic regression model in Table 3, and similar to the results for health care access, first-generation Mexican American and non-Hispanic black children were less likely to have seen a physician in the past year than were non-Hispanic white children, after controlling for sociodemographic variables. Younger children, children without health insurance, children who resided in rural areas, and children in less-educated households were less likely to have seen or talked with a physician within the past year. Boys were less likely to have seen or talked with a physician within the past year.

DISCUSSION

Although previous studies with NHANES III data showed differences between Mexican American children and non-Hispanic white children in many different areas, categorizing Mexican American children according to generational status revealed more marked disparities in the areas of access and utilization. Hispanics are the largest group of minority children in the United States, and Mexican Americans are the largest subgroup of Hispanic immi-

grants; therefore, understanding the risk factors related to generational status is vital for clinicians, health care institutions, and policy makers.

Our analysis showed that first-generation Mexican American families had a greater risk burden with respect to poverty level, educational attainment, and language. The prevalence of these risk factors among first-generation Mexican American children was substantial. Two thirds were living in poverty, three fourths of the heads of household had less than ninth grade educations, and less than one tenth used English in the household. The prevalences of poverty and low educational level were much greater than those reported for the greater foreign-born population in the United States (16.1% and 21.9%, respectively).¹⁴ Despite a head of household employment rate equal to that for second-generation Mexican Americans and higher than that for non-Hispanic blacks, first-generation Mexican American children were at greatest risk of being uninsured. In contrast to other risk factors, first-generation families had the lowest rate of single female adult-headed households among all groups.

Immigrant children are commonly excluded from federal health insurance programs, and Hispanic children are consistently found to have the highest rates of being uninsured. Most recently, the Census Bureau reported that 24.1% of Hispanic children were uninsured, compared with 13.9% of non-Hispanic black children, 11.7% of Asian/Pacific Islander children, and 7.4% of non-Hispanic white children.¹⁵ However, studying all subgroups under the His-

panic heading eliminates country of origin as a differentiating risk factor for being uninsured. Mexican American children, who vary in their residential status, are typically grouped with Puerto Rican children, who are all US citizens, and with Cuban Americans, who may be US citizens or have refugee status. Furthermore, the lack of data according to generational status decreases these differences, with underestimation of the risk of being uninsured.

In our study, first-generation Mexican American children had the highest rate of being uninsured, ie, 64.2%, which was significantly higher than the percentage reported for Hispanics as a whole. Significant differences persisted for the second- and third-generation groups. In fact, each generational group of Mexican American children was more likely to be uninsured than either non-Hispanic white children or black children. It is also interesting to note that, among first-generation Mexican American children, there were almost equal proportions of children with private and public health insurance. This is not surprising, because 70% of the heads of household were employed. We suspect that a significantly greater proportion of first-generation children could be insured if their parents worked for employers who provided health insurance. Even when insurance is offered, however, many employed Hispanics in poor and low-income households decline coverage because of lack of affordability.¹⁶

Previous reports that immigrant children as a whole are less likely to have health insurance, less likely to have a usual source of care, and less likely to have had a doctor's visit in the past year were limited in that they did not differentiate Hispanic subgroups or generations.^{3,17} Our results confirmed that first-generation Mexican American children had much worse health care access than previously described for Hispanic children as a whole. Previous studies showed that 82% to 89% of Hispanic children had a usual source of care.^{8,18} With regard to immigrant children, one report indicated that 51% of all foreign-born children (including Latino, white, black, and Asian children) in working-poor families were uninsured and that 65% had a usual source of care. Our results are consistent with these findings but suggest that first-generation Mexican American children may also fare worse than immigrant children considered as a whole. Even when first-generation Mexican American children were insured, they had the lowest likelihood of having a regular source of care or a specific provider.

First-generation Mexican American children also demonstrated the lowest levels of utilization of health care services, as assessed by visits to a physician, use of prescription medications, and screening for hearing and vision problems. Poor health care access is a known predictor of poor health care utilization; however, the data also suggest that the first-generation group might have had decreased needs. For example, fewer reported earaches/infections in the first-generation group and lower levels of treatment for ear infections were consistent with fewer visits to a physician for earache/infection. First-generation Mexican American children also had lower

rates of reported cold or flu, pneumonia, and ear infections, which were consistent with lower rates of prescription medication use.

Better health outcomes in recent immigrant populations form the basis of what has been described as the "epidemiologic paradox." Previous studies of perinatal outcomes showed that, despite the presence of demographic and socioeconomic risk factors, foreign-born Mexican American women have low birth weight infant birth rates and infant mortality rates similar to those of white women.¹⁹ It has not been confirmed that any advantage at birth persists into early childhood, and study results are conflicting. Previous studies suggested that Mexican American mothers report low rates of asthma, coordination problems, psychologic and behavioral problems, speech problems, and mental retardation among their children, suggesting that immigrant children may fare better with regard to specific illnesses.²⁰ However, a more recent study testing this hypothesis into early childhood showed that generational status alone accounted for lower developmental scores among Mexican American children.²¹

Our findings showing lower rates of specific illnesses among first-generation Mexican American children seem to support the epidemiologic paradox, suggesting that first-generation Mexican American children had decreased health care needs with respect to the conditions reported. This might have translated into decreased utilization of health services for this group. Furthermore, our findings support the theory that Mexican American children become less healthy as they become more acculturated. Subsequent generations reported higher prevalences of the 3 illnesses tested, adding to evidence in the literature that Hispanic immigrant children have health outcomes and indicators that worsen with greater acculturation and each successive generation.¹

In light of what might be better outcomes for first-generation Mexican American children, we are faced with reconciling the fact that the same group had the highest percentage of children reported to be in fair or poor health. This finding is line with previous studies,² and there are 3 possible explanations for the discrepancy. First, poor access to care could have biased the group toward lower reporting of need. (NHANES III was based on parent or guardian reports and not clinician-diagnosed illness or clinic-based utilization figures.) Second, a language bias could have existed for the monolingual Spanish-speakers. Although the NHANES questionnaires were forward- and reverse-translated and administered by bilingual interviewers, colloquial differences could have affected how the questions were interpreted. Finally, and perhaps most importantly, recent immigrants may perceive health differently, leading to different reporting patterns. Whether perception of poor health is an indicator of undetected disease burden or a difference in the cultural view of illness is unknown and requires additional investigation.

Indeed, culture, cultural perspective, and/or cultural differences may account for a portion of the

difference attributed to generational status in this study. One of the most studied measures of acculturation, namely, language, reflected the first-generation Mexican American households in this study, with >93% being primarily Spanish-speaking. Although the definitions of acculturation varied, past studies that used language preference as a measure of acculturation showed increased use of preventive services and decreased perceived barriers to care for Hispanics who spoke English.²² Our findings are consistent with this line of thought, in that a substantially higher number of first-generation Mexican American households reported Spanish as the primary language spoken and also had lower levels of health care access and utilization, compared with the other groups. Because of colinearity of language and generational status, we did not include language in the multivariate analysis.

The language and culture of the medical office may have disproportionate effects on utilization of health care for first-generation immigrants. Hispanic parents identify language problems, long waits at the physician's office, lack of health insurance, difficulty paying medical bills, and difficulty arranging transportation as the greatest barriers to care. However, many (>10%) may not bring their children in for care if the medical staff does not understand Hispanic culture.²³ This is an important realization that points to systemic factors, as opposed to individual patient factors, as causes of racial/ethnic disparities in health care. The cultural shortcomings of clinical staff, including lack of Spanish language proficiency, lack of knowledge of Hispanic culture, and lack of Hispanic staff members, cannot be underestimated. Additional research is required to identify the specific barriers to health care access and utilization for specific population subgroups, the benefits of a culturally competent and language-friendly clinical environment, and the costs of creating and maintaining such an environment.

Our study has certain limitations. One limitation is that the NHANES data were collected >10 years ago and are cross-sectional, which may limit the applicability to today's population. However, it is the largest available collection of data on Mexican American children and one of the only datasets that allows analysis according to generation. Although the number of Mexican American immigrant children in the United States is significantly larger than a decade ago, the differences in language and culture are unchanged and the percentage of minority physicians is unchanged. The only change in national legislation has been in the form of tax incentives to employers who provide health insurance for their employees. Although the State Children's Health Insurance Program has made an impact in enrolling minority populations, the gains are likely to be lost as states operate under budget deficits and legislatures cut statewide programs designed to reach underserved populations. Recently, several states extended public insurance to nonresidents through initiatives such as California's Healthy Kids. These programs are also expected to suffer. NHANES IV, which is in progress through 2004, will allow us to replicate our analysis

and to evaluate trends. A second limitation is that all data on health care access and utilization and health status were recorded from household interviews and were not verified through primary health care sources, which introduces potential bias. A third limitation is that, in our analyses, we made no multivariate adjustment for primary language spoken at home, which has been shown to affect health care outcomes. This adjustment might have had an effect for a small subset of first-generation Mexican American households (3.1%) that spoke primarily English. Finally, the race/ethnicity groupings specified in our analysis used the categories provided in the NHANES III dataset, ie, non-Hispanic white, non-Hispanic black, and Mexican American. These categories excluded data on children coded as "other." The sample size for this group coded as other was too small for analytical use, and the category, which included other Hispanics, Asians, and Native Americans, could not be labeled accurately. Overall, our analysis is strengthened by the use of a large, nationally representative dataset with oversampled minority groups and by the unique differentiation of Mexican American children according to generational status.

Most studies in pediatric health care fail to differentiate between immigrant and nonimmigrant children, despite the fact that 1 in 5 children in the United States is an immigrant or lives in an immigrant family. Similarly, most studies of Hispanic children, including studies of immigrants, fail to differentiate the experience of individual ethnic groups according to country of origin. This lack of data leaves us with an inability to distinguish differences in health care needs, access, utilization, and costs between US- and foreign-born children, creating a significant problem in terms of health care delivery and development of public policy. More importantly, this shortcoming leaves immigrant children in the United States at a disadvantage with regard to health care.

Our study showed that Mexican American immigrant children, the largest group of immigrant children in the United States, were not obtaining adequate access to health care, despite the gainful employment of their parents. Furthermore, the group lacked continuity of care and was most likely to miss preventive care services such as hearing and vision screening. Although some of our findings supported the epidemiologic paradox, findings on parental perception of the health status of the first-generation Mexican American children did not. Understanding such differences between immigrant and nonimmigrant children in the United States is essential for improving access to and utilization of pediatric services, especially given the overall growth of the Hispanic population in the United States and the relative growth of immigrant Hispanic subgroups.

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Importance of Generational Status in Examining Access to and Utilization of Health Care Services by Mexican American Children

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