

Articles

Latino Children's Health and the Family-Community Health Promotion Model

FERNANDO S. MENDOZA, MD, MPH, *Palo Alto, California*; and ELENA FUENTES-AFFLICK, MD, MPH, *San Francisco, California*

A majority of Latino children in the US live in poverty. However, unlike other poor children, Latino children do not seem to have a consistent association between poverty and poor health. Instead, many poor Latino children have unexpectedly good health outcomes. This has been labeled an epidemiologic paradox. This paper proposes a new model of health, the family-community health promotion model, to account for this paradox. The family-community health promotion model emphasizes the family-community milieu of the child, in contrast to traditional models of health. In addition, the family-community model expands the outcome measures from physical health to functional health status, and underscores the contribution of cultural factors to functional health outcomes. In this paper, we applied the family-community health promotion model to four health outcomes: low birth-weight, infant mortality, chronic and acute illness, and perceived health status. The implications of this model for research and policy are discussed.

(Mendoza FS, Fuentes-Afflick E. Latino children's health and the family-community health promotion model. *West J Med* 1999; 170:85-92)

In the 21st century medical breakthroughs will improve the health of children, especially those with chronic and disabling conditions. These advancements, however, may not affect all areas of children's health nor all children. While we are on the verge of implanting genes into the cells of children with cystic fibrosis, thereby dramatically changing their lives, we have made far less progress in providing quality health care to poor children with chronic illness, such as asthma, or in decreasing disability and death from accidents and violence. This discrepancy arises in part because socio-environmental factors do not usually respond to "silver bullets." They require, instead, complicated interventions over a sustained period of time to effect resolution. The number of children with health problems that respond to silver bullets, unfortunately, is small, while the large number of those affected by the detrimental effects of poverty continues to grow.

It is clear that along with new technology, the coming century will present child-health researchers and professionals with three challenges. The first will be to increase our understanding of the socioenvironmental factors influencing children's health. The second will be to develop effective, economically feasible health interventions that will have long-term effects on these socioenvi-

ronmental factors. The third, and perhaps most important challenge, will be to ensure that all children benefit from these health interventions, particularly those groups of children disproportionately affected by poverty.

In order to meet these challenges, we must understand the multiple factors that affect children's health. Biomedical research has increased our understanding of the effects of physiological disorders and environmental pathogens on biological processes within the human body. The relationship, however, between socioenvironmental factors and health remains poorly understood. Poverty is an important risk factor for poor health, and children living in poverty tend to have poorer health than those not living in poverty.¹⁻⁵ For example, Starfield found that poor children have a rate of morbidity from chronic and disabling conditions two to three times that of nonpoor children.¹ Because children living in poverty in the United States have a disproportionate, demographic tendency to be minorities, these children tend to have a worse health status than middle-class white children.⁶⁻⁹ Newacheck and colleagues, however, reported that the poorer health status of minority children results from their having less access to quality health care, and that this effect is independent of their socioeconomic status.⁹ Thus, race and ethnicity are also important covariants in the

From the Department of Pediatrics, Stanford University School of Medicine, Palo Alto, California (Dr Mendoza); Department of Pediatrics, University of California, San Francisco, California (Dr Fuentes-Afflick).

Reprint requests to Dr Fernando S. Mendoza, Division of General Pediatrics, Department of Pediatrics, Stanford University School of Medicine, 750 Welch Road, Suite 325, Palo Alto, CA 94304.

relationship between poverty and health. Yet, not all poor minority children have poor health status; some have unexpectedly high health outcomes in certain areas. Poor Latino children in particular have shown better than anticipated health results, especially in the areas of low birth weight and infant mortality.¹⁰ This disparity in the traditionally observed relationship between poverty and poor health has been termed an epidemiological paradox, in that certain poor children seem to be protected from some of the negative effects of poverty. Some aspect of the socioenvironmental milieu, it seems, may serve as a buffer against the damaging health effects of poverty, and, consequently, give these children a better health profile than one would expect.

In an effort to explain the epidemiological paradox, this paper proposes an alternative model of risk factors for adverse health outcomes. Our “family–community health promotion model” offers a new, conceptual approach to understanding the unexpectedly low rates of adverse health outcomes among some groups of poor children. We examined the usefulness of this model in explaining the current data on the prevalence of low birth weight, infant mortality, chronic illness, and perceived health status in Latino children. None of these health measures follows the traditional relationship between poverty and poor health, and therefore, each provides us with an opportunity to expand our thinking on the subject.

Traditional Model of Health

A general overview of the basic components of health models will put this new model into context. Although various models of health have been proposed in the past, the most basic models of health usually encompass three predictive variables: genetic potential for disease in the individual or population; environmental health risks, such as toxins, infectious agents, malnutrition, or stress; and high-risk behaviors, such as smoking, substance abuse, or early sexual activity, on the part of the individual or populations (Figure 1).⁴ Genetic potential is key to the model. At present, we know that a child’s genetic potential can determine a variety of risks for poor health, such as a chronic illness, reaction to infectious agents, or the probability of some types of mental illness. Whether this potential is expressed may be influenced by environmental factors, like stress or exposure to infectious agents, and high-risk behaviors, like smoking and improper diet. Thus, the traditional health model postulates that the interactions between an individual’s genetic potential for illness or health, and his or her behavioral and environmental risks are important determinants of his or her health status. If the model were extended to a population of individuals, each of these factors would have greater variability due to the multiplicity of individuals, but similar relationships would be anticipated.

In most health models, socioeconomic status, or poverty, affects health status through environmental or behavioral factors. The supposition is that families living in poverty or near-poverty may not have the economic, social, or com-

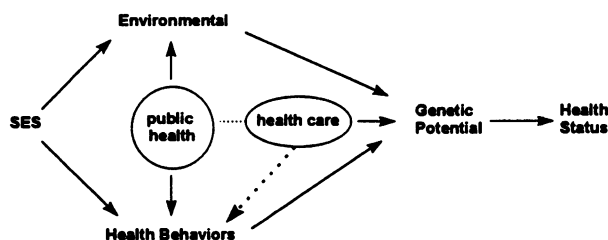


Figure 1.—Traditional health model.

munal resources needed to keep children in good health. Brooks-Gunn and Duncan suggest that poverty affects children’s well-being by influencing health and nutrition, home environment, parental interactions with children, parental mental health, and neighborhood conditions.⁵ The deficits associated with poverty may lead to inadequate diets, resulting in poor growth; inadequate housing and increased risk of exposure to lead and other toxins; overcrowding and increased risk for infectious diseases; and community violence that threatens the well-being and, often, the lives of children. Furthermore, the combined effects of these stressors may lead to hopelessness and depression among family members, possibly resulting in high-risk health behaviors and unfavorable familial or parental interactions. Overall, socioeconomic status is the primary determinant of the environmental risks in most health models and is strongly associated with high-risk health behaviors. Consequently, if poverty is part of the individual’s environment, its interaction with the genetic–behavior axis will more likely result in a poor health outcome.

Many health models also include the intervention domains of the medical and public health systems, which mediate health outcomes. The medical care system interacts with the individual patient and, occasionally, with his or her family. In contrast, the public health system interacts with the community as a whole, and occasionally with families, but less often with individuals. The distinct identities of the medical and public health care systems and the economic characteristics of each—one is privately, the other publicly managed—limit their interaction and collaboration. Therefore, it is not unusual that most health models only present the perspective of one or the other. Yet, each system plays an important role in supporting the health of the individual and the population.

The outcomes assessed in most health models generally focus on morbidity and mortality from illness or injury. Health models traditionally use morbidity rates to examine the health status of children, although they occasionally look at mortality rates. While physical examination provides most measures of morbidity, some measures attempt to address more functional morbidities, such as the ability to attend school or participate in routine play. The medical care system, however, focuses primarily on physical health, and, therefore, medically derived morbidities are more commonly measured. For example, the presence or absence of disease and the frequency of health care use are commonly used as morbidity assessments, while the

TABLE 1.—Socio-Demographic Profiles of Latino Families and Children (Current Population Reports, 1994)

Group	Percentage of Families in Poverty	Percentage of Children in Poverty	Percentage of Families Headed by a Female	Percentage of Population with High School Education	Percentage of Families without Health Insurance*
Non-Latino white	7.6	13.6	13.0	84.9	11.7
Latino	27.3	40.7	25.7	46.7	—
Mexican American	27.6	40.5	20.3	42.5	38.1
Mainland Puerto Rican	35.4	54.3	43.5	59.4	16.2
Cuban American	17.2	27.0	24.4	64.1	23.9
Central/South American	23.9	35.4	27.3	62.4	—

*Trevio et al.¹¹

function of the individual in his or her environment is, unfortunately, less commonly used. This type of assessment, however, an assessment of functional health, is the final, common pathway towards understanding “healthiness,” a concept congruent with the World Health Organization’s definition of health. If a model of health principally uses medical morbidities, the effects of mediating variables, such as family, social networks, communal resources, and sociocultural traditions, will be infrequently assessed. In contrast, public health models commonly include these medicosocial variables; their results, however, are more population-based and less individual-specific. Is there a way to combine both the medical and public-health perspective in one model of health? The family–community health promotion model expands the environment-behavior axis and extends the measures of health outcomes to encompass this broader view of health and its determinants.

The Family–Community Health Promotion Model

Recent data concerning the health status of Mexican American children reveal the limitations inherent to existing health models. Table 1 shows the demographic profiles of Latino and non-Latino white children. Mexican American children have higher levels of poverty, lower levels of parental education, and limited access to health care than non-Latino white children,^{11,12} but, as we will later show, Mexican American children have both unexpectedly low rates of adverse perinatal results and prevalences of chronic and disabling conditions that appear to be unaffected by their level of poverty. This has been termed the epidemiological paradox.

In order to define the factors associated with optimal health outcomes in Latinos, we propose a new health model, the family–community health promotion model (Figure 2). This model retains the three core predictive variables (genetic potential, environmental factors, and health behaviors), but adds several new ones. The family–community health promotion model differs from traditional models, first, by emphasizing the family–community complex, as opposed to the genetic-behavioral-environmental triad. The model stresses specifically the capacity of the family to support the optimum health behaviors of

its members, particularly its children, as well as the ability of the family’s community to support it in this endeavor. A supposition of the model is that if a family promotes beneficial health behaviors among its members, these lessons will likely be part of the family’s culture or tradition. That is to say, these behaviors are apt to be part of the family’s identity and history. While family history is a dynamic process, certain aspects of family culture are passed down from one generation to the next. These may include the ways parents nurture their children, the use of extended family members for social support during stressful times, the family’s dietary preferences, and other cherished, core family values. These are the sociocultural reference points for good and bad health behaviors and the social norms that support or deter good health.

While the family–community model still predicts that the interactions between the individual’s genetic potential for disease, his health behaviors, and his environmental conditions affect health status, it differs from traditional models, secondly, by restructuring health status into two major components, physical and psychological health. These two components contribute to the individual’s overall ability to function in day-to-day living; that is, they determine the individual’s functional health status. Functional health measures the individual’s physical and mental abilities to perform age-appropriate activities. This is a much more robust health measure than commonly used, static measures of morbidity. Moreover, the model predicts that functional health, tempered by the individual’s family–cultural milieu through psychological well-being, influences the individual’s perception of his health. Therefore, a person’s perception of his health status is determined primarily by how he functions in his normal activities, which, in turn, is colored by his cultural perception of “healthy functioning.” Thus, one would expect Latinos’ health perception to be culturally modified. Indeed, as we will note below, Latino children and their mothers are more likely to have a different view of their health than physicians.

If Latinos believe that their health is poor, they are likely to take some sort of action. This will depend on their access to health care and their perception of what is needed—more nurturing of children, support from family, folk remedies—for resolution of the health problem. Furthermore, the model implies that changes in health perception create a

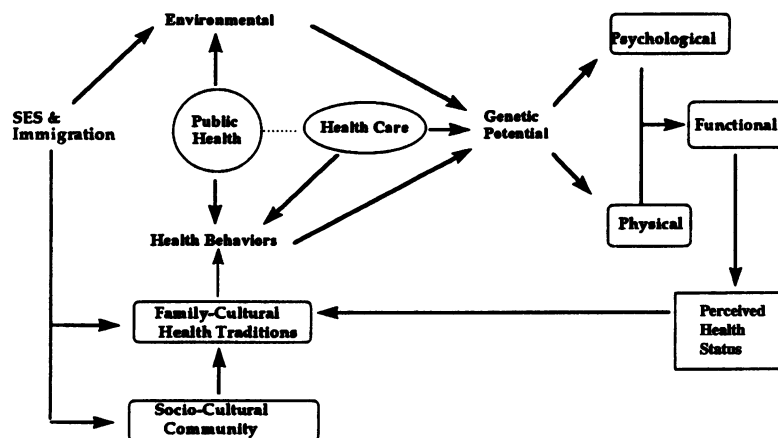


Figure 2.—Family–community health promotion model.

feedback loop to individual and familial health practices. If changes in health behaviors make the individual “feel” better, then the individual is likely to repeat these changes for the same or similar symptoms. These changes may, in this manner, become part of the family’s response to a particular set of symptoms. If the response is very successful and, thereby, used routinely, it may become part of the family’s culture, like hot liquids for colds, teas for diarrhea, or religious counseling for stressful events. While these responses are most often developed for common self-limited illnesses, they nonetheless provide the basis for responses to more serious, chronic or disabling conditions.

In this model, environmental risk is determined primarily by socioeconomic status, and by the presence or absence of poverty in particular. In addition, it includes immigration status as a determinant of environmental risk to account for the added burden immigrants bear in work and living environments incomparable to those of other poor individuals. For example, although some poor families may live in environmentally hazardous areas, immigrants may be forced, due to lower levels of social integration, to live in environments with greater risk for exposure to harmful toxins like pesticides and lead. This is clearly the case for farm workers, who are predominantly new immigrants, but even in urban areas, immigrants who are poor may need to take more risks in order to survive. It is not unusual for immigrant children and their families to live in crowded conditions—multiple families sharing one house are not uncommon—or to live and play in high-risk, violent areas. Furthermore, because of their immigrant status, whether documented or undocumented, the “safety net” for the poor may be less, if at all, available for immigrants and their children. Yet, for all their increased risk, immigrant families have their cultural milieu that appears to help them and the community ward off poor health.

The following three areas of health have been studied among Mexican American children and found paradoxical according to the traditional model. Each area of study emphasizes a different part of the model as its point of

primary focus. Low birth weight and infant mortality are related to the family’s cultural norms regarding pregnancy, maternal behaviors, and the perinatal environment. Chronic and disabling medical conditions are used to examine the genetic prevalence of these among Mexican American children and the environmental influence of poverty. Finally, perceived health status is used to examine the disparity between Latino families and physicians with respect to what each considers good health.

Low Birth Weight, Infant Mortality and Latinos

When the result of prematurity or poor growth (the child is small for its gestational age), low birth weight is associated with disabling health and developmental conditions.¹³ While recent advances in neonatal medical care have significantly decreased these negative effects, low birth weight still poses a major risk to children’s health and development. Both the prevalence of low birth weight and limited access to health care are strongly associated with poverty. Presumably because of their higher poverty rates and lower use of prenatal care, African Americans in the United States have a higher rate of low birth weight infants than non-Latino whites.^{14,15} If the same model of health is applied to Latina women, they, too, should have a high prevalence of low birth weight infants owing to their high poverty rate and low use of prenatal care. In fact, Latina women have the lowest use rate of prenatal health services than any other group of women in the United States.¹⁶ Yet, the rate of low birth weight infants among Latina women is only slightly higher than that among non-Latina white women.¹⁷ The relationship between Latino ethnicity and low birth weight infants, however, varies by Latino subgroup. Infants of Latina women of Central or South American, Cuban, and Mexican origin have similar rates of low birth weight, and these rates are similar to the rates among non-Latina white women.^{16,17} In contrast, infants of Latina women of Puerto Rican origin have a higher incidence of low birth weight compared to other Latina women and non-Latina white women. Thus, socioeconomic status alone does not

TABLE 2.—Prevalence of Chronic Medical Conditions (CMC) by Sex, Age, Poverty, and Language Usage (Percentage with CMC)*

	Mexican American	Mainland Puerto Rican	Cuban American
Total Group	3.9	6.2	2.5†
Sex			
Male	3.9	6.2‡	2.1†
Female	4.0	6.3‡	2.9†
Age			
0–5 y	2.3‡,§	7.4‡	0†
6–11 y	4.5	6.8‡	5.3†
12–18 y	4.9	5.1‡	1.8†
Poverty Status			
Poor	3.7‡	6.8‡	1.7†
Not Poor	4.1	5.4‡	2.8†
Home Language: 6m–11y			
Spanish	3.8‡	7.2†	1.0†
English	3.2‡	7.8‡	8.3†
Both	4.3†	3.9†	5.0†
Lang. Preference: 12–18y			
Spanish	1.8†	0†	0†
English	5.2†	2.6†	3.0†
Both	3.7†	6.4†	0†

*Percentages calculated from sample weights.

†Population estimate is unreliable, and therefore, estimate only reflects attributes of examined subjects.

‡Population estimate does not meet usual reliability standards and can only be used for an approximation of the true population estimates.

§Chi-square adjusted for sample weights and design effect $P < .05$ Source: Mendoza et al.¹⁷

determine the seemingly complex relationship between ethnicity and low birth weight.

The relationship between behavioral, medical, obstetrical, and health-service factors does not consistently predict rates of low birth weight among Latina women.¹⁵ While younger maternal age is associated with an increased risk of low birth weight in the general population, it is not consistently linked to low birth weight among Latina women.¹⁵ Similarly, lack of prenatal care has not been consistently associated with increased low birth weight among Latina women, although prenatal care is an important component of the public-policy interventions aimed towards reducing the incidence of other adverse birth outcomes.^{17–19} Thus, traditional risk factors do not predict low-birth-weight infants among Latinos reliably, which suggests that other factors may be involved, factors such as sociocultural and nutritional influences.^{20–25} Guendelman has reported that Mexican American women report lower consumption of tobacco, alcohol, and caffeine.²⁵ Others have reported similar findings and noted that these risk factors increase with acculturation.^{21–24} This suggests that nonacculturated women have better than expected perinatal outcomes resulting from their health habits surrounding pregnancy, habits which their families, communities, and culture appear to support.

A similar picture emerges when considering infant mortality.²⁶ While this is not a measure of chronic illness

or disability, it is worthwhile noting that the factors associated with low birth weight are also associated with infant mortality. Thus, interestingly, infant mortality, like low birth weight, is lower than expected among Latinos, particularly new immigrants.²⁶ In fact, despite high levels of poverty and low access to health care, infants born to Mexican immigrants have an infant mortality rate similar to that of non-Latino white, middle-class infants. Therefore, incidences of low birth weight and infant mortality in Latino children are significantly lower than would be predicted by a traditional model of health. According to the family–community health promotion model, a positive cultural milieu surrounding the issue of pregnancy and child-rearing would explain this discrepancy, and current data supports this conclusion.

The Prevalence of Chronic and Disabling Conditions Among Latino Children and Adolescents

The medical community has very little data on the prevalence of chronic and disabling conditions among Latino children and adolescents. The Hispanic Health and Nutrition Examination Survey (HHANES), conducted by the National Center for Health Statistics from 1982 to 1984, provided the first physician-assessed prevalences of chronic medical conditions among Mexican American, mainland Puerto Rican, and Cuban American children and adolescents.¹⁷ These findings showed that Mexican Americans and Cuban Americans had three to five percent prevalence of chronic medical conditions, as did other US children. In contrast, six percent of mainland Puerto Rican children and adolescents had chronic medical conditions (Table 2). The higher rate among Puerto Ricans resulted almost entirely from a higher rate of chronic respiratory problems, principally asthma. The prevalences of chronic medical conditions among all groups surveyed did not vary by sex, age (except for Mexican Americans), socioeconomic status, or level of acculturation, as measured by language usage (Table 2). This finding is consistent with the hypothesis assumption that for the most part genetic, rather than socioeconomic factors determine chronic illness, and that rates of chronic illness increase with age, as is seen among Mexican American children. Therefore, it appears that the prevalence of chronic medical conditions among Latino children resembles that of other US children, with the exception of asthma in Puerto Rican children. This exception suggests that Puerto Rican children may have a greater, genetic predisposition for asthma.

The HHANES also supplied information provided by respondents who reported both present and prior medical and developmental conditions (Table 3).^{27,28} These data showed that Mexican American mothers reported rates similar to or lower than US norms for asthma, coordination problems, psychological and behavioral problems, speech problems, and mental retardation. In contrast, mainland Puerto Rican mothers reported higher rates of some medical and developmental conditions than

TABLE 3.—Reported Medical Conditions of Mexican American and Mainland Puerto Rican Children Aged 5–11 Years from HHANES

Condition	Mexican American				Mainland Puerto Rican			
	Percentage with Condition		Percentage of Children		Percentage with Condition		Percentage of Children	
	Ever	Now	Treatment	Treated	Ever	Now	Treatment	Treated
Anemia	7.9	1.0	92	93	16.0	2.7	92	96
Asthma	4.9	3.1	100	93	22.0	11.5	100	98
Other lung diseases	3.8	0.8	100	98	3.0	1.0	100	98
Heart conditions	3.6	1.9	91	90	7.3	5.0	51	100
Urinary tract infections	6.0	1.3	89	98	3.3	0.6	100	100
Seizures	3.4	0.6	88	98	5.3	1.3	85	96
Poisons	1.2	0	0	100	1.9	0	0	100
Coordination problems	1.2	1.0	69	100	2.3	1.5	74	100
Psychological behavioral	1.5	1.3	37	66	5.9	5.7	74	100
Speech problems	4.2	3.5	46	40	8.6	6.7	70	81
Mental retardation	0.5	0.5	100	—	3.1	3.1	88	—

HHANES = Hispanic Health and Nutrition Examination Survey

Source: Mendoza et al.^{27,28}

Mexican American mothers. According to the reports of Puerto Rican mothers, 11.5% of their children have asthma, 5.7% have psychological and behavioral problems, 6.7% have speech problems, and 3.1% have mental retardation. Overall, Puerto Rican mothers reported greater numbers of children with medical and developmental conditions. We do not know if this data indicates an actual, increased prevalence of these conditions, or if it reflects greater knowledge on the part of these mothers about their children's conditions, thus greater access to care. This question requires further research.

Mothers also reported whether their children had obtained treatment for their conditions. In general, treatment for physical disease was obtained, while treatment for behavioral, developmental, and psychological conditions was less frequently obtained, particularly for Mexican American children.^{27,28} Compared to other groups of children, Mexican American children have less access to health care as a result of limited health insurance coverage.^{10–12} In contrast, mainland Puerto Rican children have higher rates of insurance coverage because of their citizenship status. Yet, when we examine the health of Puerto Rican children, it seems that they have higher rates of chronic and disabling conditions than either Mexican American or Cuban American children. Although Mexican American children come from families that have high poverty rates and low levels of education, they appear, from our current, limited information, to do better than expected in their health, and better compared to Puerto Rican children. At present this is documented by a lower prevalence of low birth weight, and chronic medical and developmental conditions. It remains to be seen whether these findings will persist after controls for reporting biases are examined, and further research will be required to determine what factors lead to different outcomes among Latino subgroups.

A cautionary note, however, must be given. If one examines the rates of acute illnesses, particularly of infectious diseases, all Latino children seem to fare less well. Latino children have higher rates of tuberculosis, measles, and parasites than other US children.²⁹ Furthermore, limited health care access has resulted in low immunization rates, thus to higher frequencies of childhood illness.^{10,29} Other acute illnesses, such as gastroenteritis and pneumonia, are common among Mexican American children because of their environment and frequently go untreated because of lack of health care access.²⁹ Such children are not uncommonly hospitalized for complications resulting from these acute illnesses. The combination of acute illness and lack of health care may result in significant morbidity, causing disabling conditions for Latino children. Likewise, Latino children suffer from high rates of accidents and violence.³⁰ These conditions, if not appropriately treated or prevented, can also have long-term chronic effects on these children. With a more restrictive health care system, newer surveys may find changes in the prevalences of chronic medical conditions among Latino children.

Thus, the family–community health promotion model predicts that chronic and disabling medical conditions develop out of the interaction between genetic potential and environmental and behavioral risks. Chronic medical conditions that arise primarily from a genetic predisposition, like asthma, are less affected by poverty, while those disabilities that result from exposure to environmental pathogens are clearly more common among the poor. In either case, lack of access to health care is a major, mediating factor in the health of Latino children. Consequently, although Mexican American children have rates of incidence for certain health conditions similar to those of non-Latino white children, their limited access to care makes them more likely to suffer morbidity from these conditions.

The Perceived Health Status of Latino Children

The HHANES assessed the perception of the child's and adolescent's health from the perspectives of the child (6–11 years), adolescent, mother, and survey physician. Physicians identified only 1% of all children surveyed in HHANES as in fair or poor health, while Mexican American and mainland Puerto Rican mothers identified 15% to 20% of their children and adolescents as in fair or poor health.^{27,31} Among children six years of age and older, about 10% to 19% believed they were in fair or poor health, as opposed to 5% to 10% percent of other children in the United States. When mothers' perceptions of their children's health were examined, the data showed no difference by the child's sex or age, but did show a significant difference by their poverty status and home language.²⁸ Mothers of poor and Spanish-speaking children were more likely to believe their children were in poor health.²⁷ Children with a chronic medical condition were seen as vulnerable, with 27% and 41% of Mexican American and mainland Puerto Rican children, respectively, being rated in poor health by their mothers.²⁷ Yet, the physician ratings were significantly lower, at 11.6% and 6.4%, respectively. This discrepancy suggests either that mothers are identifying in their children health problems not easily identified by physicians, or that Latina mothers and their children have a different perception of health, one that is not fully appreciated by traditional measures (physical disease findings). This clear disparity between physicians and Latina mothers and children has far reaching implications for health care use, compliance and patient satisfaction. Examining the functional health-perceived health linkage among Latinos will be essential to better understanding the health care needs of this population and to testing the usefulness of the family-community health promotion model.

Research and Policy Implications

The implications of this model for research and policy are several. First, measures of functional health are needed for Latino and non-Latino groups in order to use the model fully to predict outcomes. As the physicians' assessment of Latino children demonstrated, physical health assessments are limited. It is important to study and understand the social and cultural histories of families and communities if we are going to use their strengths effectively. Moreover, it is essential to understand better how these familial-community assets support children's development. Garcia-Coll has suggested that children from different ethnic groups have culturally-derived, developmental pathways.³² Studying these pathways would be very important to gaining a better understanding of poor, ethnic children with chronic and disabling conditions. As we examine the effect of environment on these children, we need to identify the various forms of poverty and their influence on children. We should be concerned not only about lead and pesticides, but also about the effects of chronic violence and other

stressors. Most importantly, we need to refocus policy toward helping families, rather than treating disease, and we need to see immigrants as a useful and essential resource for this country's future. The family-community health promotion model provides a better conceptual framework for developing and researching hypotheses about Latino children and families than the traditional health model. It also provides a better explanation of the existing epidemiological health paradox. As the United States becomes more ethnically diverse, we will need models of health robust enough to account for the effect of cultural milieu on health. Though this is clearly not a new idea, it is one strongly rooted in public health practices. Our current imbalance in the health care system, however, requires that we focus our attention on the true, major determinants of health for children. We hope that our model will stimulate further discussion.

REFERENCES

1. Starfield B. Childhood morbidity: comparisons, clusters, and trends. *Pediatrics* 1991; 88:519–526
2. Martorell R, Mendoza FS, Castillo R. Poverty and stature in children in linear growth retardation in less developed countries. In Waterlow JC (Ed). *Nestle Nutrition Workshop Series: 14*. New York, Nestle Ltd. Vevey/Raven Press, Ltd., 1988, pp 57–73
3. Pollitt E. Poverty and child development: relevance of research in developing countries to the United States. *Child Dev* 1994; 65:283–295
4. Wise P, Meyers A. Poverty and child health in children at risk. *Pediatr Clin North Am* 1988; 35:1169–1186
5. Brooks-Gunn J, Duncan G. The effects of poverty on children. *Future Child* 1997; 7(2):55–71
6. Givens S, Moore M. Status report on maternal and child health indicators. *Perinat Neonatal Nurs* 1995; 9:8–18
7. Simpson G, Bloom B, Cohen R, Parsons P. Access to Health Care. Part 1: Children, Vital and Health Statistics. Series 10: Data From the National Health Survey, Vol. 196, July 1997, pp 1–46
8. Singh G, Yu S. U.S. childhood mortality, 1950 through 1993: trends and socioeconomic differentials. *Am J Public Health* 1996; 86:505–512
9. Newacheck P, Hughes D, Stoddard J. Children's access to primary care: differences by race, income, and insurance status. *Pediatrics* 1996; 9:26–32
10. Mendoza FS. The health of Latino children in the United States. *Future Child* 1994; 4(3):43–72
11. Trevio F, Moyer M, Valdez R, Stroup-Benham C. Health insurance coverage and utilization of health services by Mexican Americans, mainland Puerto Ricans, and Cuban Americans. *JAMA* 1993; 269:889–893
12. Halfon N, Wood D, Valdez R, Pereyra M, Duan N. Medicaid enrollment and health services access by Latino children in inner-city Los Angeles. *JAMA* 1997; 277:636–641
13. Gortmaker S, Sappenfield W. Chronic childhood disorders: prevalence and impact. *Pediatr Clin North Am* 1984; 31:3–18
14. Kessel SS, Kelinman JC, Koontz AM, Hog CJR, Berendes HW. Racial differences in pregnancy outcomes. *Clin Perinatol* 1988; 15:745–754
15. Fuentes-Afflick E, Lurie P. Low birth weight and Latino ethnicity: examining the epidemiologic paradox. *Archiv Pediatr Adolesc Med* 1997; 151:665–74
16. Ventura SJ, Martin JA, Taffel SM, Mathews TJ, Clarke SC. Advance report of final natality statistics, 1993. *Monthly Vital Statistics Report* 1995; 44(Suppl):1–88.
17. Mendoza FS, Ventura SJ, Valdez RB, et al. Selected measures of health status for Mexican-American, mainland Puerto Rican, and Cuban-American children. *JAMA* 1991; 265:227–232
18. Balcazar H, Cole G, Hartner J. Mexican Americans' use of prenatal care and its relationship to maternal risk factors and pregnancy outcome. *Am J Prev Med* 1992; 8:1–7
19. Collins JW, Shay DK. Prevalence of low birth weight among Latino infants with United States-born and foreign-born mothers: The effect of urban poverty. *Am J Epidemiol* 1994; 139:184–192
20. Dowling PT, Fisher M. Maternal factors and low-birth-weight-infants: A comparison of blacks with Mexican-Americans. *J Fam Pract* 1987; 25:153–158.
21. Scribner R, Dwyer, JH. Acculturation and low birth weight among Latinos in the Latino HANES. *Am J Public Health* 1989; 79:1263–1267

22. Guendelman S, English PB. Effect of United States residence on birth outcomes among Mexican immigrants: an exploratory study. *Am J Epidemiol* 1995; 142(9 Suppl):530–538
23. Guendelman S, Gould JB, Hudes M, Eskenzai B. Generational differences in perinatal health among the Mexican-American population: Findings from HHANES, 1982–84. *Am J Public Health* 1990; 80(Suppl):61–65
24. Guendelman S, Abrams B. Dietary intake among Mexican-American women: Generational differences and a comparison with white non-Latino women. *Am J Public Health* 1995; 85:20–25
25. Guendelman S, Abrams B. Dietary, alcohol, and tobacco intake among Mexican-American women of childbearing age: results from HANES data. *Am J Health Promotion* 1994; 8:363–372
26. Becerra J, Hogue C, Atrash J, Perez N. Infant mortality among Hispanics: a portrait of heterogeneity. *JAMA* 1991; 265:217–221
27. Mendoza FS, Takata GS, Martorell R. Health status and health care access for mainland Puerto Rican children: results from the Hispanic health and nutrition survey. In Lambert G, Gracia-Coll C (Eds). *Puerto Rican Women and Children: Issues in Health, Growth and Development*. New York, NY: Plenum Press, 1994 p. 211
28. Mendoza FS, Martorell R, Castillo R. Health and Nutritional Status of Mexican-American Children. Final Report Grant MCJ-060518-02-1, The Maternal and Child Health Research Program, 1989
29. Sumaya, C. Major infectious diseases causing excess morbidity in the Hispanic populations, In Furino A (Ed). *Health Policy and the Hispanic*. Boulder, Colo, Westview Press, 1992, pp 76–96
30. State of Hispanic Health. Washington, DC, National Coalition of Hispanic Health and Human Services Organizations, 1992
31. Mendoza FS, Ventura SJ, Saldivar L, Baisden K, Martorell R. The health status of U.S. Latino children, In Furino A (Ed). *Health Policy and the Hispanic*. Boulder, Colo, Westview Press, 1992, pp 76–96
32. Garcia-Coll C. Developmental outcome of minority infants: A process-oriented look into our beginnings. *Child Dev* 1990; 61:270–289