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ABSTRACT

This study analyzed data on general health and functional status of Mexican-American and Puerto Rican children in the United States. Data came from the Hispanic Health and Nutrition Examination Survey, a database that contains parental reports of neonatal characteristics, chronic-developmental conditions, and functional limitations, and physician reports of diagnoses. Results indicated that Mexican-American and Puerto Rican families tended to be similar in ages and years of education of head of households, maternal and paternal ages at children's birth, and family size. Puerto Rican children were more likely to live in urban settings in low income female-headed families, compared to Mexican-Americans. For children under 5 years of age, chronic-developmental conditions and functional limitations were not markedly different between the two groups. It was estimated that 9.4 percent of Puerto Rican children and 8.3 percent of Mexican American children under the age of 5 have a developmental concern. From the ages of 5 to 11, Puerto Rican children exhibited substantially more chronic-developmental conditions and functional limitations than did Mexican-Americans. Significant differences in developmental and health conditions between the groups argue against discussion of Latino children as a homogenous group. Results in general highlight a need for family-centered policies. (Contains 43 references.) (PB)

Carolina Institute for Child and Family Policy

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EMILY ARCIA
LYNETTE KEYES
JAMES J. GALLAGHER
MAHA CHABHAR

The University of North Carolina
at Chapel Hill

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EMILY ARCIA
LYNETTE KEYES
JAMES J. GALLAGHER
MAHA CHABHAR

CAROLINA POLICY STUDIES PROGRAM
University of North Carolina at Chapel Hill
NationsBank Plaza, Suite 300

(919) 962-7374

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EXECUTIVE SUMMARY

Early intervention systems should be cognizant of the need for services among ethnic minorities. First, legislation stipulates that ethnic minorities must be served in a culturally competent manner. Second, ethnic minorities are becoming a larger proportion of the population than they have ever been. Third, because of greater prevalence of poverty ethnic minorities may be at greater need than the general population. Lastly, whereas their more affluent peers from the ethnic majority may opt for private services, the public sector is the only option available for many ethnic minority families.

Method. In this study, we focused on one ethnic minority group, Latino children. To address the need for information that can provide insight on the status of Latino children, we analyzed data on the general health and functional status of the two largest populations of Latino children in mainland United States: Mexican-Americans and Puerto Ricans. We based our estimates of the children's status on data from the Hispanic Health and Nutrition Examination Survey (H-HANES), a nationwide survey on probability Latino samples conducted by the National Center for Health Statistics. The database contains parental reports of neonatal characteristics, chronic-developmental conditions, and functional limitations, and physician report of diagnoses.

Results. Mexican-American and Puerto Rican families tended to be similar in ages and years of education of the head of household, maternal and paternal ages at children's birth and family size. Puerto Rican children tended be more urban than Mexican-Americans, live in families with low income, and live in female-headed families.

On the basis of estimates for children up to age 11, Puerto Rican children had substantially poorer status than Mexican-American children on all measures of interest. They had higher rates of low birthweight (9.4% vs. 6.0%), use of neonatal intensive care (17.2% vs. 8.9%), congenital problems (5.1% vs. 4.7%), chronic-developmental conditions (11.3% vs. 7.0%), functional limitations (13.4% vs. 8.0%), and medical diagnoses (6.9% vs. 3.0%).

For children under 5 years of age, chronic-developmental conditions (4.6% and 4.6%) and functional limitations (6.1% and 4.4%) were not markedly different between the Puerto Rican and Mexican-American children respectively. However, from 5 to 11 years of age, the Puerto Rican and Mexican-American children differed substantially in their rates of chronic-developmental conditions (17.3% and 9.1%) and functional limitations (19.9% and 11.1%).

By combining parent reports of chronic-developmental conditions and/or functional limitations, 9.4% of Puerto Rican children and 8.3% of Mexican American children under the age of 5 were estimated to have a developmental concern. These groups represent pools of children from which the Mexican-American and Puerto Rican client populations will be drawn. The actual number of children referred for services will depend on the severity of the conditions, and on parental and professional awareness.

Discussion. Although comparison to other published estimates is limited by differences in methodologies across studies, we suggest that the status of Mexican-American children was roughly comparable to the general population (not to white Euro-Americans), but that Puerto Rican children had more limitations and disabilities than average. The difference in status between Mexican-American and Puerto Rican children merits further study.

We consider our estimates to be conservative because H-HANES: 1) did not survey homeless individuals, 2) AIDS has increased substantially since H-HANES was conducted, and 3) because developmental disabilities may be under identified by mothers with low education.

Policy Implications. The results of this study highlight the need for family-centered policies. The results indicate that caution should be taken against the convention of grouping all Spanish speakers under one rubric without recognizing important differences between groups. Most importantly, our results indicate that **not all groups should be equally represented in the client population. There are groups with a higher prevalence of need, and families from those groups should make up a relatively larger proportion of the families served.** The results, probable consequences, and policy implications are summarized in the table that follows.

SUMMARY OF RESULTS, PROBABLE CONSEQUENCES AND POLICY IMPLICATIONS

RESULTS	PROBABLE CONSEQUENCES	POLICY IMPLICATIONS
High prevalence of families with low income and low levels of education	Under-identification of children in need Under-utilization by those in need	Targeted and emphatic public awareness and child find efforts Flexible services that are culturally responsive
High prevalence of female-headed families among Puerto Ricans	Under-utilization due to practical contraints	Services that provide logistic support
Differences in status indicators across populations	Diverse percentage of children in need of services by population Differences by population in the type of level of services needed	Equity service goals Service goals monitored by population relative to their needs Acceptance of "over-representation" of a population among families served
Minimal addition to estimates from physician examinations	Good identification by parents when questions are specific	Public awareness campaigns that use specific examples
Higher percentage of children with negative status in the 5-11 from the under-5 group	Existing conditions are being identified by school systems New problems are identified as a result of academic demands	Re-examination of the desirability of providing services only to children with severe disabilities
High rate of low birthweight and use of neonatal intensive care among a population that has a high rate of negative child status; especially by 5 to 11 years	Potentially high need for early intervention services	Increased use of child find in neonatal intensive care Examination of low birthweight rates as an indicator of population need

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Introduction

Information on the percentage of children likely to require early intervention services is crucial to policy and program development. However, few reliable estimates are available (Council for Exceptional Children, 1989; Newacheck, Budetti, McManus, 1984). To address the need for information on the likely demand for early intervention services, we analyzed data on the status of Latino children, one of the largest ethnic minorities in the nation.

We examined the general health and functional status of the two largest populations of Latino children in mainland United States: Mexican-Americans and Puerto Ricans. We based our estimates of the children's status on parental reports of neonatal characteristics, chronic-developmental conditions, and functional limitations, and on the basis of physician report of the prevalence of diagnoses of disease.

Significance of the Needs of Ethnic Minorities to the Early Intervention Systems

There are four basic reasons why early intervention systems should be cognizant of the need for services among minorities. First, the federal law stipulates that minorities must be served, that services must be culturally competent, and that these must be available within local areas (See Sections 1471 (a,5), and 1478 (7) of Individuals with Disabilities Education Act, 1991).

Second, minorities are quickly becoming a larger proportion of the population than they have ever been. In some areas of the country the number of young ethnic "minority" children represent the majority of the child population. In 18 states ethnic minority children represent at least 30% of the young child population and in 7 of these states, minorities represent at least 40% of the young child population (Arcia, Keyes, Gallagher, Herrick, in press).

Third, the quality of life of ethnic minorities tends to be lower than that of the general population, and consequently, their needs are greater than those of the general population. Lastly, whereas a large number of the more affluent ethnic majority may seek services in the private sector, the lower family income of minorities means that for many families the only recourse to services is the public sector.

Quality of Life of Latino Children

In general, children from ethnic minorities live in families with lower income, have parents with lower education, and are more likely to lack health insurance and preventive health services than children from the ethnic majority (Arcia, et al., in press; Butler, Winter, Singer & Wenger, 1985; Center for the Study of Social Policy, 1992; Egbuonu & Starfield, 1982; Ginzberg, 1991). Some of the discrepancies between ethnic groups are striking. For example, in 1991, for children under 5 years of age, 24% of ethnic majority, but 60% of Latino children lived in families with very low income (Arcia, et al. in press). Also, whereas 10% of the mothers of ethnic majority children did not have a high school education, the rate was 50% for mothers of Latino children (Arcia, et al., in press).

For children of all ages, Latino children have been reported to be three times as likely as ethnic majority children to not have a regular source of health care (Butler, et al., 1985). They are also less likely than majority children to have health insurance. Between 1987 and 1991, whereas 18.1% of ethnic majority children did not have health insurance, the rate was 34.7% for Latino children (Center for the Study of Social Policy, 1992).

General Health and Functional Status of Latino Children

Low socioeconomic status has long been associated with increased mortality and morbidity (Egbuonu & Starfield, 1982; Miller, 1966; Werner, Simonian, Bierman & French, 1967). And, given the lower than average educational achievement, occupational status, family income (U.S. Department of Commerce, 1988), and health insurance coverage (Treviño, Moyer, Valdez & Stroup-Benham, 1991) of Latino children, the expectation is that they will have higher than average mortality and morbidity.

Higher morbidity in turn can lead to greater than average prevalence of disabilities and to increased need for early intervention services. Unfortunately, there are only a couple of epidemiological studies that provide insight on the general health status, on functional limitations, or on the prevalence of disabilities among young Latino children (Florida Department of Education, 1991; Mendoza, Ventura, Valdez, Burciaga, et al., 1991; Zill & Schoenborn, 1988). Of particular relevance to this study are the results of a study by Mendoza and associates (1991). They used physician-identified conditions from the Hispanic Health and Nutrition Examination Survey (H-HANES) to report on the prevalence of medical conditions for children 6-months-old to 18 years of age among Mexican-Americans and mainland Puerto Ricans. The researchers found that the Puerto Rican children had a significantly higher prevalence of medical conditions than the Mexican-American children. The Mexican-American children were less likely than the Puerto Rican children to have consulted a physician for their medical conditions. In addition, the prevalence of medical conditions among this population increased significantly with age.

In order to provide early intervention services equitably, that is, in terms of actual need, information on the prevalence of needs of various ethnic groups becomes essential. In this study we undertook analysis of H-HANES data to document the prevalence of parent-identified functional limitations and chronic-developmental conditions, and of physician-identified health and developmental problems among Mexican-American and Puerto Rican children in the mainland United States. We focused on developmentally-related conditions of children. We used information on the children aged 6-months to 5-years of age, and in order to improve the stability of our population estimates, also used data on the children 6-months to 11-years of age.

METHOD

Source of Data: Hispanic Health and Nutrition Examination Survey

This study consisted of secondary analyses of data from the H-HANES. This nationwide survey was conducted by the National Center for Health Statistics on probability samples of non-institutionalized Latino populations 6-months to 74 years-of-age (U.S. Department of Health and Human Services, 1985). Data were collected from July 1982 to December 1984 on approximately 16,000 Latino persons from the three following groups: Mexican-Americans in the Southwest (Texas, Colorado, New Mexico, Arizona and California), Puerto Ricans in the New York area (New York, Connecticut, and New Jersey) and Cuban-Americans in Florida. Data were available in machine readable form from the National Center for Health Statistics. We used the data on Mexican-Americans and Puerto Ricans, but did not use the data on Cuban-Americans because the size of that sample was too small to generate reliable estimates.

Data Collection Techniques and Content

Household questionnaires Each selected household was screened to ascertain Hispanic ethnicity and to select sample persons. Participating families were administered a family questionnaire that collected information on demographic characteristics, Medicare and health insurance coverage, participation in income assistance programs, housing characteristics and income.

Data on selected children 6-months to 11-years-of-age were collected with a child sample questionnaire that was administered in the home in the family's language of choice. Data were collected on 2781 Mexican-American and on 953 Puerto Rican children in the target age range. Respondents were generally the sample child's mother (93 4% of Mexican-American and 89.7% of Puerto Rican children in our sample). The questionnaire included sections on birth characteristics, congenital and other chronic conditions, functional impairment, school attendance, health care needs and services utilization, vision, and hearing.

Data collected in the mobile examination center. Almost all survey participants underwent a standardized examination by a physician in a mobile examination center set up specifically for data collection. In the age range of interest to this study, 6-months to 11-years, 91.2% of the Mexican-American and 87.6% of the Puerto Rican children underwent the physician examination.

On the basis of examinations physicians recorded diagnoses of any medical condition that was non-transient. Conditions were coded if they were potentially life threatening, caused a loss of functioning or limitation of activity for the previous three months or longer or if they were on a potentially downward course. Diagnoses were recorded with the codes (ICD) established by the International Classification of Diseases (United States Department of Education & Welfare, 1979). For more detailed information on the operation of H-HANES see U.S. Department of Health and Human Services, 1985.

Questionnaire Data Used in Analysis

For the purposes of this study we used questionnaire information on two general areas: family sociodemographics, and child health status (See Table 1 for a listing of the major child status variables).

Child Health Status

Child health status derived from parental report included information on: birthweight, use of neonatal intensive care, congenital problems, chronic-developmental problems, and functional limitations.

Specified congenital problems. The survey asked respondents if the sample child was born with any physical or mental problem or defect. Respondents who answered in the affirmative were asked if the problem involved the heart, eyes, ears, mouth or throat, stomach or intestines, kidneys or urinary system, muscles, bones or joints, or the brain or nervous system. We derived a summary variable that tallied the number of congenital problems that were specified for each child.

Chronic-developmental conditions Information on the sample children's current health or developmental status was collected by asking respondents if a physician or other relevant professional had ever said that the child had any one of 14 problems. If the response was affirmative, then respondents were asked how old the sample child was when the condition was first noted, whether or not the child still had a problem at the time of the interview, and whether or not the child had received treatment for the condition. For the purposes of our analyses, we selected information on the 8 conditions that we considered to be related to developmental and functional status. These were: learning\developmental problems due to vision, mental retardation, coordination problems, muscle weakness or paralysis, heart condition, convulsions, speech problems, and psychological or behavioral problems. For all children we derived a summary variable that tallied the number of chronic, developmentally related conditions reported by the respondent.

Functional limitations. For children under 5-years-of-age, respondents were asked if the sample child could "take part at all in the usual kinds of play activities done by most (children/babies) his or her age." If the response was affirmative, the respondent was asked if the child was limited in the kind or amount of play activities because of an impairment or health problem. If the response to this question was negative, the respondent was asked if the child was "limited in any way."

Respondents for children 5-years-of-age or older were asked: (a) if the sample child had a limitation that prevented school attendance, (b) if the child attended a special school or special classes, (c) if the child needed to attend a special school or classes, (d) if the child was limited in school attendance, and (e) if the child was limited "in any way."

All respondents were asked if the sample children had trouble with vision even when wearing glasses or contact lenses. They were also asked if the sample children had trouble hearing. Choices for this question were: (a) no trouble hearing, (b) a little trouble hearing, (c) a lot of trouble hearing, and (d) deaf.

We created a summary variable that classified whether or not sample children had (a) no limitation, (b) a mild limitation, or (c) a moderate to severe limitation. We classified children under 5 as having a mild limitation if they were limited in the amount of play activities, and/or had a little trouble hearing, and/or had trouble with their vision. We classified children as having a moderate to severe limitation if they could not take part at all in the usual kinds of play activities done by children their age.

We classified children older than 5 as having a mild limitation if they were reported to be limited "in any way" and/ or had a little trouble hearing, and/or had trouble with their vision. We classified children as having a moderate to severe

Table 1

Child Status Variables and Definitions

Variable	**Definition**
Birthweight	Weight in grams
Use of Neonatal Intensive Care	Classification into: 0 - no stay in neonatal intensive care unit 1 - less than one week 2 - more than a week
Specified Congenital Problems	Sum of parent report of problems at birth involving the: • heart • eyes • ears • mouth or throat • stomach or intestines • kidneys or urinary system • muscles • bones or joints • brain or nervous system
Chronic-Developmental Conditions	Sum of parent report of chronic problems that had been identified by a physician or professional involving: • vision • mental retardation • coordination problems • muscle weakness or paralysis • heart condition • convulsions • speech problems • psychological or behavioral problems
Functional Limitations	Classification into: 0 - no limitation 1 - a mild limitation: • limited "in some way" and/or • having a little trouble hearing and/or • trouble with vision. 2 - moderate to severe limitation: • had a lot of trouble hearing or were deaf and/or • were not able to take part at all in normal activities and/or • were not able to attend school and/or • were limited in attendance and/or • had to attend special classes or schools
Physician Diagnosis	Classification on the basis of International Classification of Diseases codes: 0 - no diagnoses 1 - primarily medical* 2 - developmentally related*

Note. *See tables 3 and 4

limitation if they had one or more of the following: (a) a lot of trouble hearing or were deaf, (b) were not able to attend school, (c) were limited in attendance, or (d) needed to attend special classes or schools.

Physician's Data Used in Analysis

Developmentally Related or Primarily Medical Diagnoses

We used ICD codes reported by physicians to classify children into one of three groups. The first consisted of children without any physician-identified medical problems. The second consisted of children with developmentally related diagnoses that were problems of developmental or functional significance. The third group consisted of children with a condition that was primarily medical (ie. not highly likely to be associated with a developmental delay).

Classification of diagnoses. We classified diagnoses into developmentally-related or of primarily-medical significance on the basis of the "established" conditions and, "biological" or "environmental" risk factors that make children eligible for early intervention in the states in which the study population resides. State sponsored early intervention systems must serve children with conditions that they classify as "established." Children with "biological" or "environmental" risk factors are served at the discretion of the service system. However, in all states additional factors enter into the decision of whether or not a child is eligible for services. These additional factors include parental concerns, professional recommendations, and the number and severity of the risk factors (For further detail see Harbin & Maxwell, 1991).

To determine which diagnoses were considered of developmental significance in the target states, we reviewed each state's written policies on the conditions that determined eligibility for intervention and matched the conditions to ICD codes. It must be noted that state policies were not written in terms of ICD codes or in the language of ICD; therefore we do not claim an exact match between states' descriptions and ICD codes. State policies identified conditions in very general terms such as "congenital abnormalities, syndromes or anomalies." Although in some cases the policies also provided specific examples ("such as spina bifida"), most policies also specified that eligible conditions were not limited to the examples that were specified.

Table 2 contains the state eligibility criteria that are relevant to ICD codes for the 9 states where the study population resides. With the exception of "parental substance abuse and abuse or neglect," environmental risk factors were not relevant to ICD codes. State criteria, listed on the left hand side of the table, are organized under ICD general areas that are presented as sub-headings in bold. The center column has the codes that correspond to the general area and the code or codes that correspond to the state criteria. The states that include each criterion are identified on the right-hand side of the table. Because state policies were stated in general terms, and because almost all states had qualifiers, there may be children with conditions that fall within a listed range of codes for a given state who would not be eligible for services. Similarly, there may be children with conditions that are not

Table 2

State Identified Eligibility Criteria and Matching ICD Code

State Criteria	ICD Code	States								
		AZ	CA	CO	CT	FL	NJ	NM	NY	TX
I. Neoplasms	**140-239**									
Central nervous system malignancy	191-192		*					*		
II. Metabolic disorders	**270-279**									
Metabolic disorders	270-279	*	β	*		*	*			*
Inborns errors in metabolism	277		*				*			*
III. Mental Disorders	**290-319**									
Severe attachment /psych. disorders	300-319	*				*	*			
Exposure to narcotics, cocaine and other drugs	304-305		β					β		*
Developmental delay	315-319	*	*	*	*	*	*	*	*	*
IV. Nervous System and Sense Organs	**320-389**									
CNS lesion, abnormality, infection or trauma	320-349		β*		*	*				
Cerebral palsy	343	*								
Sensory disorders/impairments	350-389	*	*	*	*	*	*			*
Chronic otitis media	381-382							β		
V. Circulatory System	**390-459**									
Intraventricular hemorrhage	431	*								
Intracranial hemorrhage	432							*		
VI. Congenital Malformations/ Abnormalities	**740-759**									
Congenital abnormalities/syndromes/ malformations/anomalies/conditions	740-759		*β	*	*	*		*		*
Spina bifida/myelomeningocele	741	*	*							
Microcephalus	742.1						*	*		*
Hydrocephalus/congenital hydrocephalus	742.3	*				*				
Macrocephaly	742.4							*		
Chromosomal anomalies/genetic disorders or syndromes/ single gene defects	758-759	*	*β	*	*	*	*	*		*
Downs syndrome/Trisomy 21	758.0						*	*		*
Cornelia de Lange	758.89							*		

Table 2 (cont'd)

State Criteria	ICD Code	States								
		AZ	CA	CO	CT	FL	NJ	NM	NY	TX
VII. Conditions in the Perinatal Period	**760-779**									
Maternal AIDS	760.2							*		
Prenatal exposure to teratogens	760.7		β					β		*
Fetal alcohol syndrome	760.71						*	*		*
Significantly small for gestational (<3%ile)	764		β							
Low birthweight: less than 1000 grams				*		*				
less than 1500 grams	765		β					β		
Premature less than 32 weeks	765.1		β					β		
Severe respiratory distress with ventilator assistance	769-770		β					*		
Congenital infections/infectious diseases	771		*	*		*				
Congenital herpes	771.2		β							
Asphyxia	768							*		
Hyperbilirubinemia requiring exchange transfusion	774		β							
Seizure disorders/neonatal seizures	779						*	*		*
Positive neonatal toxicology screen or symptomatic neonatal drug withdrawal	779.5		β							
VIII. Symptoms Signs and Ill-defined Conditions	**780-799**									
Failure to thrive/non-organic failure to thrive	783.4	*				*	*			*
IX. Injury and Poisoning	**800-999**									
Head and spinal cord trauma/head trauma with residual neurological deficit/brain injury	800-804 850-854 950-957		*							
Severe (or not) toxic exposure/lead poisoning	980-989		*				*			
Parental substance abuse and abuse or neglect	995.5							†		

Note

* Established condition
β Biological risk factor
† Environmental risk factor

TABLE 3

Developmentally-Related Diagnoses (ICD) in the Study Samples

ICD	DESCRIPTION
277.8	other specified disorder of metabolism
286.0	congenital factor VIII disorder (coagulation defects)
299.0	infantile autism
318.1	severe mental retardation
319	mental retardation
331.4	obstructive hydrocephalus
343.9	infantile cerebral palsy
345.0	generalized convulsive epilepsy
345.9	epilepsy, unspecified
345.1	generalized convulsive epilepsy
737.3	kyphoscoliosis & scoliosis
741.9	spina bifida without hydrocephalus
742.3	congenital hydrocephalus
743.3	congenital cataract & lens anomaly
745.0	common truncus (cardiac septal defect)
745.2	Tetralogy of Fallot
745.4	ventricular septal defect
745.9	defect of septal closure, unspecified
747.0	patent ductus arteriosus (congenital anomaly of circulatory system)
750.3	tracheoesophageal fistula
747.0	other congenital anomalies of circulatory system
749.0	cleft palate
754.3	congenital dislocation of hip
758.0	Down's Syndrome
780.3	convulsions
784.5	speech problem
871.3	avulsion of eye

listed who would be eligible in a given state. Nonetheless, Table 2 provides a summary of conditions that will generally make children eligible in the target states. It also illustrates the basis for our classification of diseases as developmentally-related and as primarily-medical.

Tables 3 and 4 contain the conditions we used in the study samples to classify children's diagnoses. We classified children with one or more of the diagnoses listed in Table 3 as having a developmentally-related condition. We classified children with one or more diagnoses not listed in Table 3, (those in Table 4) as having a primarily-medical condition.

DATA ANALYSIS

According to recommended procedures for estimation of the H-HANES data (Gonzalez, Ezzati, Lago & Waksberg, 1985; Kovar & Johnson, 1986), we generated population estimates with descriptive statistics that incorporated sample weights and estimated standard errors with SUDAAN (Shah, Barnwell, Hunt, & Lavange, 1991), a statistical program especially designed for analysis of sample survey data. All results presented in the section that follows are estimates of the population parameters at the time that H-HANES was conducted. Very few of the variables of interest change significantly in a few years' time. Nonetheless, we do address the impact of changes over time in the section on policy implications.

RESULTS

Sociodemographic Characteristics of the Two Populations

Table 5 contains estimated means, standard errors and medians of key sociodemographic characteristics of the families of Mexican-American and Puerto Rican children under the age of 11. Estimated mean and median ages and years of education of the head of households and mean and medians of maternal and paternal ages at children's birth were roughly comparable for the two populations.

The estimated mean ages of the head of household were 34.14 for Mexican-Americans (mdn. = 32) and 34.83 for Puerto Ricans (mdn. = 32). The estimated mean and median years of education for the head of households were 9.24 (mdn. = 10) years for Mexican-Americans and 10.04 (mdn. = 10) years for Puerto Ricans.

The estimated mean maternal ages at children's birth were 24.44, and 24.24 respectively for Mexican-Americans and Puerto Ricans. Estimated mean paternal age at children's birth were 27.16 and 27.32 years for the Mexican-Americans and Puerto Ricans respectively.

Estimated mean family sizes were slightly larger for Mexican-Americans (5.08 people) than for Puerto Ricans (4.67 people). But, as measured by the poverty index in which 1.0 is equal to the poverty line for a specific size family, Puerto Ricans had a lower relative income. Their estimated mean poverty index was 1.23 (mdn. = 0.77) versus 1.60 (mdn. = 1.26) for Mexican-Americans.

TABLE 4

Primarily-Medical Diagnoses (ICD) in the Study Samples

ICD	DESCRIPTION
10.9	primary tuberculosis, unspecified
78.0	molluscum contagiosum
111.9	dermatomycosis, unspecified
228.0	hemangioma lymphangioma
240.9	goiter, unspecified
250.0	diabetes, without mention of complications
250.4	diabetes with renal manifestations
278.0	obesity
285.9	anemia, unspecified
378.9	disorder of eye movement, unspecified
380.1	infective otitis externa
381.0	acute nonsuppurative otitis media
381.4	nonsuppurative otitis media
382.0	acute suppurative otitis media
424.1	aortic valve disorder
424.0	mitral valve disorders
424.3	pulmonary valve disorders
427.9	cardiac dysrhythmia
465.9	acute upper respiratory infection
486.0	pneumonia
493.0	extrinsic asthma
493.9	asthma unspecified
599.0	urinary tract infection, site not specified
682.6	cellulitis and abscess, leg
704.0	alopecia
745.4	ventricular septal defect
754.4	congenital genu recurvatum and bowing of long bone of leg
782.3	edema
785.2	functional cardiac murmur
785.6	enlargement of lymph nodes
791.5	glycosuria
796.2	elevated blood pressure, without diagnosis of hypertension

TABLE 5

Sociodemographic Characteristics of Mexican-American and Puerto Rican

Families with Children Under 11 Years of Age

Characteristic	Mexican-American	Puerto Rican
	Mean ± SE (Mdn.)	Mean ± SE (Mdn.)
Age of head of household	34.14 ± .24 (32)	34.83 ± .71 (32)
Years of education for the head of household	9.24 ± .26 (10)	10.04 ± .20 (10)
Maternal age at child's birth	24.44 ± .27 (23)	24.24 ± .29 (23)
Paternal age at child's birth	27.16 ± .30 (26)	27.32 ± .22 (26)
Family size	5.08 ± .06 (5)	4.67 ± .12 (4)
Poverty index	1.60 ± .04 (1.26)	1.23 ± .09 (.77)

Table 6 contains the estimated percentages of key household characteristics for the three populations. Considerably more Puerto Rican (56.1%) than Mexican-American (18.6%) children lived in female-headed households. The Puerto Rican child population was also substantially more urban. Whereas an estimated 63.0% of Puerto Rican children lived in cities with more than 500,000 inhabitants, only an estimated 22.3% of Mexican-American children lived in comparable size cities. In addition, 23.4% of Mexican-Americans, but 4.2% of Puerto Ricans lived in cities with less than 25,000 inhabitants. Overall, Puerto Ricans were more likely than Mexican-Americans to be urban, live in families with low income, and live in female-headed families.

STATUS OF MEXICAN-AMERICAN CHILDREN

Parent-Identified Problems

Neonatal characteristics of Mexican-Americans: Birthweight, use of intensive care and congenital problems. We estimated that 1.7% of the Mexican-American children had birthweights less than 2,000 grams, 4.3% had birthweights between 2,000 and 2,500 grams, 87.5% had birthweights between 2,500 and 4,495 grams, and 2.7% had birthweights above 4,495 grams. Thus, 6.0% of Mexican-American children were estimated to have had low birthweights (under 2,500 grams) (See Table 7).

TABLE 6

Key Household Characteristics of the Mexican-American and Puerto Rican

Families with Children Under 11 Years of Age

Characteristic	Mexican-American		Puerto Rican	
	%	± SE	%	± SE
Children in female-headed households	18.6	± 1.57	56.1	± 2.32
Percent children in cities with over 500,000 inhabitants	22.3	± 4.15	63.0	± 11.41
Percent children in cities with less than 25,000 inhabitants	23.4	± 3.72	4.2	± 4.00

An estimated total of 8.9% of the Mexican-American children required overnight stay at an intensive care neonatal unit. This figure includes 5.1% who stayed less than 1 week and 3.8% who stayed more than 1 week (See Table 7).

Also on the basis of respondents' reports, we estimated the prevalence of Mexican-American children born with one or more congenital problems. An estimated 7.5% of children under 11 years of age had one or more physical or mental problem or defect at birth. We estimated that 4.7% of children under 11 had one or more specified congenital problems. As one would expect if parental recall were accurate, the percentage reported for children up to age 5 (4.8%) was comparable to that of children ages 5 to 11 (4.6%). The most frequently specified problems were reported to have been associated with the heart (1.6%).

Status of Mexican-American children: Chronic-developmental conditions and functional limitations. Our results indicate that 4.6% of children up to 5 years of age, 9.1% of 5-to-11-year-old, and 7.0% of children up to 11 years of age (See Table 8) had one or more chronic-developmental conditions. One condition was present in 5.8% of Mexican-American children up to age 11 and we estimated more than one condition in approximately 1.2% of the population. Overall, for children up to 11 years of age, speech problems were the most prevalent chronic-

TABLE 7

Neonatal Status of the Population of Mexican-American and Puerto Rican Children

	Mexican-American		Puerto Rican	
	% ± SE	% ± SE	% ± SE	% ± SE
Birthweight*				
less than 2,000 gms.	1.7 ± .19		2.4 ± .81	
between 2,000 and 2,500 gms.	4.3 ± .28		7.0 ± .97	
between 2,500 and 4,495 gms.	87.5 ± .66		87.7 ±1.19	
above 4,495 gms.	2.7 ± .22		1.2 ± .32	
total low birthweight		6.0 ± .46		9.4 ± .97
Use of neonatal intensive care*				
none	91.0 ± .71		82.5 ±1.35	
less than 1 week	5.1 ± .63		8.6 ± .62	
more than 1 week	3.8 ± .25		8.6 ±1.08	
total		8.9 ± .72		17.3 ±1.3
Congenital problems				
unspecified	2.8 ± .43		5.8 ± .92	
specified	4.7 ± .51		5.1 ± .69	
total		7.5 ± .54		10.9 ±1.30

Note. *Birthweights and use of intensive care could not be estimated in 3.8% and .2% of the Mexican American population and in 1.7% and .2% of the Puerto Rican population respectively because of non-report in the sample.

developmental problem (2.8%), followed by vision and heart problems (1.6% and 1.5%).

We estimated functional limitations in 4.4% of Mexican-American children under 5 years, 11.1% of 5-to-11-year-old, and 8.0% of children under 11 years of age (See Table 8). As one would expect, the percentage of children with chronic-developmental conditions or functional limitations was higher in the older age group than in the younger age group. Overall, on the basis of our classification, 5.7% of the children were estimated to have a mild limitation and 2.3% were estimated to have a moderate to severe limitation (See the Methods section above).

Overlap between indicators derived from parent report. The overlap between various problems that describe Mexican-American children's status is an indicator of the severity and persistence of the conditions that determine that status. An estimated 27.9% of Mexican-American children who had had low birthweight (less than 2,500 grams) had at least one other problem; a concurrent specified congenital problem, a chronic-developmental condition, or a functional limitation. Also, 21.4% of children who had had a specified congenital condition were also reported to have a functional limitation.

The overlap between chronic-developmental conditions and functional limitations is roughly comparable whichever one of the two one selects as the indicator. An estimated 24.8% of children with a functional limitation also had a chronic-developmental condition and conversely, 28% of children with a chronic-developmental condition were estimated to have a functional limitation.

The overall percentage of children reported by parents to have either a chronic-developmental condition or a functional limitation represents an indicator of the pool of children from which the client population for early intervention will likely be derived. Overall, 8.3% of children under 5 years, 17% of children 5 to 11 years, and 13% of children under 11 years were estimated to have either of the two problems (See Table 8).

Physician-Identified Diagnoses of Mexican-American Children

On the basis of the physician examinations and diagnoses we estimated that 3% of Mexican-American children under 11 years of age had at least one medical condition considered by a physician as potentially or currently life threatening; or causing loss of functioning or limitation of activity for the previous three months or longer; or on a potential downward course. According to the classification scheme described in the Methods section, 60% of the diagnoses (1.8% of total) were primarily of medical concern and not directly related to developmental status, and 40% (1.2% of total) were developmentally related (See Table 8).

As has already been reported elsewhere (Mendoza, et al., 1991) the data showed a trend for a higher incidence of diagnoses as children got older. These estimates suggested that physician-recognized conditions existed in 2.2% of the population of Mexican-American children under 5 years of age and in 3.6% of children from 5 to 11 years of age.

TABLE 8

ESTIMATED PERCENT OF MEXICAN-AMERICAN AND PUERTO RICAN CHILDREN WITH PARENT-IDENTIFIED AND PHYSICIAN IDENTIFIED PROBLEMS

	Mexican-American		Puerto Rican	
	Subtotal ± SE	Total ± SE	Subtotal ± SE	Total ± SE
Chronic-developmental conditions				
Less than 5 years old		4.6 ± .92		4.6 ±1.07
Five to 11 years old		9.1 ± .93		17.3 ±2.26
Six-months to 11 years old		7.0 ± .75		11.3 ±1.32
one condition	5.8 ± 55		7.9 ±1.28	
two or more conditions	1.2 ± .26		3.4 ± .73	
Functional limitations				
Less than 5 years old		4.4 ± .41		6.1 ±1.13
Five to 11 years old		11.1 ±1.35		19.9 ±1.16
Six-months to 11 years old		8.0 ± .87		13.4 ± .90
mild	5.7 ± .73		6.8 ±1.12	
moderate to severe	2.3 ± .27		6.7 ± .84	
Medical diagnoses				
Six-months to 11 years old		3.0 ± .67		6.9 ± .94
primarily medical concern	1.8 ± .52		*	
developmental concern	1.2 ± .25		*	
Parent report of a developmental problem				
Less than 5 years old		8.3 ± .92		9.4 ±1.46
Five to 11 years old		17.0 ±1.38		28.6 ±1.65
Six-months to 11 years old		13.0 ±1.03		19.6 ±1.09
Parent or physician report of developmental problem				
Less than 5 years old		8.6 ± .82		*
Five to 11 years old		17.5 ±1.46		*
Six-months to 11 years		13.4 ±1.05		*

Note. * Sample size was too small to provide a reliable estimate.

Mexican-American Children with Parent-Identified and Physician-Identified Problems

Compiling parent and physician reports, we estimated that 8.6% of children up to age 5, 17.5% of 5 to-11-year-old, and 13.4% of children up to age 11 had a chronic health problem. It is noteworthy that physician examination added minimally (.6%, .5%, .4%) at each age grouping to the estimate on the basis of parental report.

STATUS OF PUERTO RICAN CHILDREN

Parent-Identified Problems

Neonatal characteristics of Puerto Rican children: Birthweight, use of intensive care, and congenital problems An estimated 9.4% of Puerto Rican children weighed less than 2,500 grams at birth. Also, 8.6% of the children had an overnight stay in an intensive care unit of less than 1 week, and an additional 8.6% stayed in an intensive care unit for more than a week. We estimated that 10.9% of the Puerto Rican children had one or more congenital problem and 5.1% of the children had one or more specific congenital problem (See Table 7).

Puerto Rican children's status: Chronic-developmental conditions and functional limitations. We estimated that 4.6% of Puerto Rican children under 5 years of age and 17.3% of Puerto Rican children 5 to 11 years of age had a chronic-developmental condition. Overall, 7.9% of the children had one condition and 3.4% had two or more conditions (See Table 8).

Functional limitations were estimated in 6.1% of children under 5 and in 19.9% of 5 to 11 year-old Puerto Rican children. Approximately half of the children (6.8%) had a mild functional limitation and the other half (6.7%) had a moderate to severe functional limitation (See Table 8).

As with the Mexican-American population, there is a substantial but not complete overlap between children reported to have a functional limitation and those reported to have a chronic developmental condition. Of the Puerto Rican children with functional limitations, 38.2% also had one or more chronic-developmental condition and conversely, of the children with one or more chronic-developmental conditions 45.5% had at least one limitation. Overall 9.4% of children under 5 years, 28.6% of children 5 to 11 years and 19.6% of children to age 11 had a parental report of a negative health or functional condition.

Physician-Identified Diagnoses

On the basis of the results of physician examinations and diagnoses, an estimated 6.9% of Puerto Rican children under age 11 had one or more diagnoses of a medical problem. Because of the small sample size, we could not make reliable classification of diagnoses into medical and developmental conditions (See Table 8).

DISCUSSION

We have examined various indicators of the functional and developmental status of Mexican-American and Puerto Rican children to gain insight on the rate of children who have a high probability of requiring early intervention services. On the basis of parental report, we estimated that 8.3% and 9.4% of Mexican-American and Puerto Rican children under 5 years of age have a condition of developmental concern or a functional limitation. These groups represent pools of children from which the Mexican-American and Puerto Rican client populations will be drawn. The actual number of children referred for services will depend on the severity of children's conditions or delay, on the awareness of parents and of professionals who have contact with the children, and on the restrictiveness of states' eligibility criteria.

COMPARISON OF THE STATUS OF MEXICAN-AMERICAN AND PUERTO RICAN CHILDREN

Puerto Rican children had substantially poorer status than Mexican-American children on all measures of interest (See Tables 7 and 8). They had higher rates of low birthweight, use of neonatal intensive care, congenital problems, chronic-developmental conditions, functional limitations, and physician diagnoses.

We interpret these differences to be real differences between the two populations rather than artifacts of reporting because high rates among Puerto Ricans are consistent across parent and physician reports. Also, parent report of low birthweight is comparable to reports of low birthweight based on data from birth certificates (Mendoza, et al., 1991). Whereas we estimated low birthweight rates of 6.0 and 9.4 for Mexican-Americans and Puerto Ricans respectively, data from 1987 birth certificates (Mendoza, et al., 1991) indicated rates of 5.7 and 9.3 respectively.

Moreover, morbidity among Puerto Rican children than among Mexican-American children is also substantiated by the pattern of chronic-developmental conditions noted by parents. The parent-identified conditions significant to developmental status included: mental retardation, coordination problems, muscle weakness or paralysis, learning problems due to vision, heart problems, convulsions, speech problems, and psychological or behavioral problems. For all parent-identified conditions the sample rates among Puerto Ricans were higher than among Mexican-Americans. However, the rates were closest between the Mexican-American and Puerto Rican children in the more physiological conditions such as coordination and vision problems, and most discrepant in the developmental conditions of mental retardation and psychological and behavioral problems. Relative to the sizes of the sample, psychological and behavioral problems were 4.33 times more prevalent and mental retardation was 3.88 times more frequent among Puerto Rican children than among Mexican-American children. It is precisely the less medical, more psychological problems that have long been noted to be related to socioeconomic status (Miller, 1966).

Given the substantial differences in health status between Mexican-American and Puerto Rican children, the two groups may be thought of as Latino because of commonalities in language and cultural background. But, it is obvious that the two groups are distinct in reference to the proportion of children with negative developmental or functional status and the proportion of children who may be in need of services.

COMPARISON OF THE STATUS OF MEXICAN-AMERICAN AND PUERTO RICAN CHILDREN TO CHILDREN FROM THE GENERAL POPULATION

With the exception of low birthweight, which has well established and easily measured levels, comparison of the Mexican-American children and Puerto Rican children to the general population is limited because definitions of status indicators differ across studies. Nonetheless, some comparisons of our results to others' reports of similar indicators of the general population are possible.

Low Birthweight

The rate of low birth weights among ethnic majority white was 5.7% in both 1980 and in 1989 (Center for the Study of Social Policy, 1992). This rate is comparable to the rate of low birth weights we estimated for the Mexican-American children (6.0%), but substantially lower than the rate we estimated for the Puerto Rican children (9.4%). The Puerto Rican children, who had rates of low birthweights substantially larger than the Mexican-American children also had substantially poorer health and functional status. Our results support the use of low birthweight rates as general indicators of the health status of populations. Low birthweight is related to the socioeconomic conditions of the community that women live in such that it reflects the health status of women and consequently that of their children (Warner, 1991).

Use of Neonatal Intensive Care

In the general population approximately 6% of infants have been reported to require at least overnight stay in a neonatal intensive care unit (Budetti, McManus, Barrand, & Heinen, 1981). However, care must be taken in making comparisons because utilization varies widely, is closely associated to its availability, and may be on the increase as neonatal intensive care units become more available.

It is possible that the higher rate of neonatal intensive care use among Puerto Rican children (17.2%) than among Mexican-American children (8.9%) is partly explained by greater availability of facilities in the more urban New York, New Jersey area than in the more rural Southwest. Nonetheless, the difference between the two study populations and the difference between the Puerto Rican rate and the general population rate is substantial. Given the other indicators of the Puerto Rican population, our estimate suggests use above what may be explained by increased availability.

Functional Limitations

Estimates of functional limitations of children under 17 years of age from the National Health Interview Survey suggest that approximately 3.85% of children in the general population have a functional limitation (Newacheck, et al., 1984). Severe limitation as defined by an inability to conduct the child's major activity has been estimated at .16% and an additional 1.88% of children have been estimated to be limited in the kind or amount of their major activity (Newacheck, Halfon, Budetti, 1986). These two classifications, representing 2.04% of children, are defined in a way that is roughly comparable to this study's classification of moderate to severe limitation that resulted in 2.3% of Mexican-American and 6.7% of Puerto Rican children classified as limited. Thus, the estimated percentage for Mexican-Americans is comparable, but the estimate for Puerto Rican children is considerably higher than previous estimates for the general population. It must be pointed out, however that prevalence of activity limitations has been found to increase with age (Newacheck, et al., 1986) and the studies by Newacheck and associates (1986) reported estimates for children up to 17 years of age whereas our estimates are for children up to 11 years of age. Thus, our estimates may be biased downward and would undoubtedly be higher if based on children up to age 17.

The rate of functional limitations among Puerto Rican children may be indicative of their socioeconomic characteristics. In addition to increases with age, prevalence of functional limitations in the general population is also highest among families with low income and with low education (Kovar, 1982). Whereas 3.85% of children nationally have been estimated to be limited in activity, 5.2% of children in low income families, 5.1% of children in mother-only families and 4.1% of children in families in which the head of household had a low education have been estimated to have a functional limitation (Kovar, 1982).

As with other indicators we urge caution interpreting comparisons because survey questions, ages of children, and definitions of functional limitations are not identical across surveys and across studies.

Chronic-Developmental Conditions

Our estimates of chronic developmental conditions of 7% and 11.3% respectively among Mexican-American and Puerto Rican children are difficult to compare to estimates for the general population. The latter have ranged from 5 to 30% (Gortmaker & Sappenfield, 1984; Haggerty, 1983; Ireys, 1981). Estimates in the higher range include psychological, behavioral, and learning problems. Our estimate focused on chronic conditions of developmental significance, but did not include the adolescent years, a period in which psychological and behavioral problems are most prevalent.

IMPLICATIONS AND LIMITATIONS

The status indicators of Mexican-American children did not appear to be drastically different from those of the general population. This finding is noteworthy in light of the low income that is typical of Mexican-Americans. What protects this population? Lack of smoking among childbearing women and relatively good nutritional habits have been suggested to explain the high rate of normal birthweights (Ginzbert, 1991). In addition, the high rate of two parent families and extended families may provide mothers and children with support that is reflected in better developmental outcomes. Children in single parent homes are at increased risk of negative health, behavior problems, and poor academic performance (Dawson, 1991; Kovar, 1982). The status of Puerto Rican children may be partly explained by the high rate of these children who live in single parent families (United States Department of Commerce, 1988). However, further study is needed to explain the children's status. Puerto Ricans are more recent immigrants than Mexican

Americans. A cultural misfit between them and the larger culture may place this group at a disadvantage (For some excellent examples, see Harry, 1992).

There are three significant limitations of this study, all of which may result in underestimation of rates. First, H-HANES does not include information on families who are homeless. Because racial and ethnic minorities have been reported to be over-represented among the homeless, the exclusion of homeless families may result in underestimation of the percentage of children with negative status indicators. Their exclusion is also of importance because children in homeless shelters have been found to be in substantially poorer health than children in the general population and in poorer health than other children living under the poverty level (Miller & Lin, 1988).

Second, social and economic changes over time may affect children's status. Ethnic minorities are particularly affected by increases in unemployment and underemployment rates. Also, even though the prevalence of most conditions that qualify children for early intervention services are relatively stable, current increases in the prevalence of AIDS may translate into significant increases in the number of children eligible for early intervention. Latino children are five to seven times as likely as ethnic majority children to contract HIV (Centers for Disease Control, 1991; 1992). Therefore, to the extent that HIV positive children are eligible for services, the proportion of ethnic minority children in need of special services may be increased by increases in AIDS cases.

Last, our results may underestimate the percent of children with a condition of developmental concern or a functional limitation because these include 3 subgroups: a) children with low prevalence congenital defects whose conditions are noted at birth, b) children with established state-eligible conditions; in medical terms, a chronic illness, and c) children with developmental delay or behavioral deviance of unidentified etiology. The latter subgroup of children, particularly those under 5, are typically under-identified by mothers with low education and may also be under-identified by physicians (Palfrey, Singer, Walker & Butler, 1987). The number of children in this subgroup might be substantial. For example, Brinker and associates (Brinker, Frazier, Lancelot, Norman, 1989) screened 579 presumed normal infants and toddlers from inner city community health clinics and found 20% to have a suspected delay. Deficits may not be noted until the elementary school years. Indeed, we estimated a two- and three-fold increase with increase in age range, in the percentage of Mexican-American and Puerto-Rican children respectively who have a parental report of a developmental problem. The difference between the reports for the two age ranges, those under 5 and those 5 to 11 years, may represent true increases in disability, but are also likely to be attributable to pre-existing conditions that were identified by the children's school.

Given the three limitations described above, the results of this study may underestimate the size of the pool of children from which the client population will be derived. Thus, we consider our estimates to be conservative. The implications for the health sector are clear. There are a substantial number of Latino children with conditions that can be addressed by early intervention or preschool special services. Practitioners need to be cognizant of the services available in their state and be ready to refer families who may stand to benefit.

POLICY IMPLICATIONS AND RECOMMENDATIONS

Our results indicate six findings that are of significance to policies for early intervention systems. The findings are as follows: (a) both populations had low income and relatively low education; (b) there was a high percentage of Puerto Rican children in female-headed families; (c) the status indicators of the children differed substantially across populations; (d) physical examinations by physicians added minimally to parental report; (e) there was a substantial increase in the percentage of children with negative health status in the 5-to-11 age group from the 6-months-to-5 age group; (f) there was a relatively high use of neonatal intensive care use among Puerto Rican children.

POLICY IMPLICATIONS

Income and Education

The low income and relatively low education of both populations suggest that Mexican-American and Puerto Rican families, like other low income families, may under-identify children in need of services. The literature suggests that not only are children with high prevalence conditions likely to be under-identified, but children with low prevalence conditions may also be overlooked. Palfrey and associates (1987) reported that 24% of children with low-prevalence, high severity disorders remained undiagnosed after age 3. Few developmental disabilities were picked up before school entry. Palfrey et al. suggested that in families with low income, even infants with low incidence, multiple handicaps may not be identified by 3 years of age.

Given the sociodemographic characteristics of the two populations and their cultural difference from the mainstream, strong and culturally appropriate public awareness and child find efforts will be crucial as early intervention systems try to reach marginal populations. A significant proportion of Mexican-Americans in the Southwest seek health services in Mexico because cost is lower than in the U.S. (Warner, 1991). However, early intervention services are relatively unavailable in Mexico. Thus, the responsibility will fall on state systems to inform the public and find the families who can benefit from the services. The systems must reach across cultural differences and will quite possibly have to re-orient some families' patterns of service utilization.

In addition to acquainting families with the availability of services, the benefits of these must be apparent for families to follow-through with assessment and participation. In the previously cited study by Brinker and associates (1989) of 105 children from community health clinics suspected of developmental delay, only 7 attended scheduled appointments. For an excellent description of the realities of maintaining the participation of low income families in early intervention services, see Brinker, Frazier & Baxter (1992).

Female-Headed Families

Research and common knowledge tells us that maternal overwork and decreased family income rather than family structure are the causes of negative child outcomes in families headed by a single female (Furstenberg, Brooks-Gunn & Chase-Lansdale, 1989; Garfinkle & McLanahan, 1986). Therefore, for single-headed families, it is particularly important that services include instrumental support that can facilitate mothers' caregiving roles and their use of services. Logistical support and reinforcement has been endorsed by mothers in early intervention services (Saylor, Elksnin, Farah & Pope, 1990) and have been found to be successful in maintaining involvement of inner city families (Brinker, Frazier, & Baxter, 1992).

Varying Child Status by Population

From our analysis it is obvious that the two populations studied are quite different from each other. When determining policies, designing programs, and providing services, it is well worth remembering that although populations may share a language or have similar income characteristics, the number of children in need of services may differ substantially across groups. Therefore, the implications for state systems are that decisionmakers, program planners and service providers need to plan for and expect diversity in spite of apparent similitude.

In addition, the differences in the percentage of children with negative developmental or functional status across the two populations that we examined suggests that the proportion of children who receive early intervention services may legitimately differ across various populations. Over-representation of children from a specific ethnic or geographical population may not represent disparate levels of services, bias in admission, or inequities. Instead, differing levels of services may reflect disparate needs of the populations. State early intervention services should be vigilant that over-representation does not occur among the more affluent populations because these are the ones that are likely to have the lowest level of need.

Focus on Chronic Conditions and Functional Limitations

Physician diagnosis added only minimally to parental report of chronic conditions and functional limitations. This finding suggests that parents accurately identify children in need of services if they are asked about the presence of specific conditions and specific limitation. Parents might not realize that services are available, needed, or beneficial, but they can identify problems if questions are focused. In turn, this finding suggests that public awareness programs might be able to effectively increase parental awareness of their children's needs by having public announcements that focus on very specific conditions and limitations.

Increase in Negative Status with School Entry

The increase in the percentage of children with negative health status in the 5-to-11 age group from the 6-months-to-5 age group suggests that existing conditions may not be identified or may not result until school entry. The increase is due to children with speech, learning and behavior problems and relatively mild delays (high prevalence conditions). Although the current focus of most states is to provide services for children with more severe handicaps (Harbin & Maxwell, 1991), states should consider the cost-benefit of also targeting the more prevalent, but potentially more remediable conditions that are highlighted at school entry.

Neonatal Intensive Care

The high rate of use of neonatal intensive care among Puerto Rican children suggests that these units are a logical point of contact to inform families and professionals of the availability and purpose of early intervention services.

We have also seen that the rate of low birthweight in a population appears to be a good indicator of the status of the children in that population. Because birthweight data can be acquired with relative ease from birth certificates, birthweights of ethnic or geographical sub-populations may be used by planners and decisionmakers as indicators of relative need.

POLICY RECOMMENDATIONS

Following is a list of recommendations and suggestions for early intervention systems that arise from the results of this study. They are also summarized in Table 9.

Public Awareness and Child Find

Considerable effort should be spent on public awareness and child find efforts. Child find efforts can be strongest among populations with the highest indicators of need. These efforts should be culturally appropriate by being in both English and Spanish, by portraying people from diverse cultural backgrounds, and by having wording that is typical of the sub-populations of interest. Among others, an important point of contact with families and relevant professionals are neonatal intensive care units.

Public awareness may be most effective in reaching ethnic minority populations if specific skills or abilities are highlighted. In a policy study for the Delaware Health and Social Services Research Incorporated (1992) recommended this strategy. We think that it is particularly appropriate for ethnic minorities. They suggested "call to action" advertisements such as, "Your child is 9 months old and doesn't sit up. Should you be concerned? Call 1-800-...."

Personnel Preparation

Preparation of paraprofessionals and professionals from ethnic minority groups should be a priority. Because some ethnic minorities are likely to be over-represented, the first step in improving the cultural appropriateness of services is to incorporate personnel from these ethnic groups.

Service Delivery

Logistical support and reinforcement may be necessary to maintain the involvement of families with low income and with few sources of support. The concerns of families with low income are numerous and having support such as transportation, child care for siblings while professionals and parents meet, and help with everyday concerns can make the difference between participation and non-participation.

TABLE 9

SUMMARY OF RESULTS, PROBABLE CONSEQUENCES AND POLICY IMPLICATIONS

RESULTS	PROBABLE CONSEQUENCES	POLICY IMPLICATIONS
High prevalence of families with low income and low levels of education	Under-identification of children in need Under-utilization by those in need	Targeted and emphatic public awareness and child find efforts Flexible services that are culturally responsive
High prevalence of female-headed families among Puerto Ricans	Under-utilization due to practical constraints	Services that provide logistic support
Differences in status indicators across populations	Diverse percentage of children in need of services by population Differences by population in the type or level of services needed	Equity service goals Service goals monitored by population relative to their needs Acceptance of "over-representation" of a population among families served
Minimal addition to estimates from physician examination	Good identification by parents when questions are specific	Public awareness campaigns that use specific examples
Higher percentage of children with negative status in the 5-11 from the under - 5 age group	Existing conditions are being identified by school systems New problems are identified as a result of academic demands	Re-examination of the desirability of providing services only to children with severe disabilities
High rate of low birthweight and use of neonatal intensive care among a population that has a high rate of negative child status; especially by 5 to 11 years	Potentially high need for early intervention services	Increased use of child find in neonatal intensive care Examination of low birthweight rates as an indicator of population need

Service systems should consider the cost-benefit of providing services to children with relatively milder delays, but highly prevalent conditions. Currently some states require as much as 2 standard deviations of delay for children to be eligible for services (Harbin & Maxwell, 1991). The conditions of children with milder delays may be more remediable and secondary disabilities may be more preventable than those of children with more severe delays.

Service goals should aim to serve populations equitably. Proportional representation of populations may seriously under-serve some families.

Data Systems

Data systems that include variables on ethnicity allow monitoring of service delivery by population. Client characteristics can be compared to state demographics and the relative needs of sub-populations to assess the extent to which the sub-populations are being reached. For more detail see Arcia & Gallagher (1992).

SUMMARY

The results of this study highlight the need for family centered policies (See Table 9). The results should be a serious caution against the convention of grouping all Spanish speakers under the rubric of Latino or Hispanic without recognition of important differences between sub-groups. Indeed, we can only stress again (Arcia & Gallagher, 1992; Arcia, Serling, Gallagher, 1992) the need to prepare professionals and paraprofessionals from the ethnic groups of the client populations. Although one may strive for and achieve cultural sensitivity, true cultural competence may only be possible with intimate first-hand knowledge.

Most importantly, our results indicate that parity service goals would seriously underserve populations. Groups should not be equally represented in the client population. There are groups who have a higher prevalence of need, and families from those groups should make up a relatively larger proportion of the families served.

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Frank Porter Graham
Child Development Center
CB No. 8040, 300 NCNB Plaza
Chapel Hill, NC 27599