

LATINO OUTLOOK: Good Health, Uncertain Prognosis

William A. Vega

School of Public Health, University of California, Berkeley, California 94720

Hortensia Amaro

School of Public Health, Boston University, Boston, Massachusetts 02118-2389

KEY WORDS: health care in minority populations, sociodemographics, reproductive health, nutrition, morbidity and mortality patterns

INTRODUCTION

This article presents a profile of the health status of Hispanic (Latino) populations in the United States. The review is issue oriented and identifies those factors that have a continuing influence on Hispanic health. Heterogeneity is perhaps the most salient characteristic that defines Hispanic populations of the United States. Hispanic populations include native born, migrant, and immigrant peoples with distinctive national origins and regional settlement patterns (85). This multi-generational migratory and social adjustment process has produced important cultural variations within and among the respective Hispanic ethnic groups. Moreover, the demographic structure of Hispanic populations is also varied and complex (7). These historical, demographic, and sociocultural features shape the health and disease experience of Hispanics. Logically, respective Hispanic ethnic groups can be expected to vary in health status and to have differing needs for health services.

This review provides a demographic comparison of Hispanic ethnic groups in the United States, an assessment of health status for the largest Hispanic groups, a brief summary of services utilization issues, and a discussion of health promotion and disease prevention. Framing the overall presentation is a controversial issue that deserves careful consideration. Historically, the absence of comprehensive epidemiologic information on Hispanic morbidity

and mortality resulted in lumping Hispanics into a larger social category of "minorities." Presumably, since Hispanics were exposed to similar underclass social conditions as other minorities, especially African Americans, generalizations derived from minority health profiles could be extended to cover Hispanics as well. However, the advent of dedicated studies on Hispanic health has demonstrated that some Hispanic groups diverge very significantly from the classic minority morbidity or mortality profiles. The reasons for these differences are not well understood. However, a number of researchers and Hispanic health advocates have concluded that Hispanics have a more favorable health profile than would be expected from their socioeconomic and minority status, and attribute this to sociocultural characteristics of Hispanics that operate as protective factors, or to selective immigration patterns (47). Are Hispanics a super-healthy population with differing health promotion and services needs? One goal of this review is to provide a critical summary of information pertinent to this complex question.

DEMOGRAPHIC COMPOSITION OF HISPANIC ETHNIC GROUPS

There are approximately 21 million Hispanics in the United States according to the 1990 census (110), with an additional 3.5 million in Puerto Rico. Between 1980 and 1990, the Hispanic population increased by 53%, a rate of growth eight times higher than that of the white non-Hispanic population (112). It has been estimated that by the year 2020 Hispanics will constitute the largest minority group in the United States. The rapid rate of increase is attributable to two facts: a continuing large influx of documented and undocumented immigrants and high cumulative fertility among the largest Hispanic ethnic group—Mexican Americans.

The age-sex profile of the U.S. Hispanic population based on the 1990 census (111) demonstrates two outstanding features. First, a larger proportion of Hispanics than white non-Hispanics is under 30 years of age. Second, the large number of 20–29 year old males produces an asymmetry in gender by age with young adult males actually outnumbering females until age 40. This reflects, in part, the increased immigration from Mexico and Central America during the 1980s and the results of the Immigration Reform and Control Act of 1986, which granted legal residence to approximately 2.5 million formerly undocumented individuals. About 71.0% of Hispanics in the United States are native born, with 29% being immigrants, and about two of three Hispanics speak Spanish at home (90).

Sociodemographic differences between Hispanic ethnic groups are apparent in the 1990 census data. Mexican-origin Hispanics constitute the largest subgroup, 64.0%, and are the youngest with a median age of 24.1 years,

and have the lowest education and income levels (median income = \$12,527 for males and \$8,874 for females). Only 44.1% of Mexican Americans have completed high school, and 69.6% of all Hispanics earning below poverty are Mexican origin. The most striking contrast is with Cuban-origin Hispanics. With a median age of 39.1, they are significantly older than either the Hispanic or non-Hispanic populations. Fully 14% of Cuban-origin Hispanics are 65 years of age or older, as contrasted with only 4.9% for the total Hispanic population. Cubans are also twice as likely to be college educated as the total Hispanic population, 20.2% compared to 9.2%, and Cubans are much less likely to have incomes (median = \$19,336 for males and \$12,880 for females) below the poverty level (15.2%). Puerto Ricans are a comparison group of considerable interest because they are US citizens and have never been immigrants. Nevertheless, their demographic characteristics most closely resemble Mexican Americans although they are more likely to have completed high school (55.5%) and to have a higher median income (median = \$18,222 for males and \$12,812 for females). However, a larger proportion of Puerto Ricans (33.0%) than Mexican Americans (28.4%) is living below the poverty line. The aggregated Central and South American origin group is older (median age = 28.0 years), better educated (58.5% high school graduates), and slightly less likely to live below poverty (18.5%) than the total Hispanic population. As a source of comparison, the following demographic profile of white non-Hispanics is provided: median age = 33.5 years; 79.6% are high school graduates; median income = \$22,081 (males) and \$11,885 (females); 11.6% live below the poverty level.

The variation in female-headed households among Hispanic ethnic groups is profound, with 38.9% of Puerto Rican households contrasting with 19.6% of Mexican and 18.9% of Cuban-origin households being female-headed. Hispanic families are larger than non-Hispanic families, with Mexican-origin families being the largest and Cubans being the smallest.

Unemployment among Hispanics is generally 40–60% higher than among white non-Hispanics and somewhat lower overall than among African Americans. Cubans have the lowest unemployment rate, 6.4%, whereas Puerto Rican and Mexican American levels are almost twice as high, 10.3% and 10.7%, respectively. Hispanic employment is concentrated in lower status occupations such as service workers/laborers, and least likely to be found among professionals and managers. About 73.5% of Hispanic men and 40.2% of Hispanic women, as compared with 51.4% of non-Hispanic men and 24.6% of non-Hispanic women, were employed in service, production and laborer occupations according to the 1990 Census.

Although Hispanics are in the process of becoming a national population, their regional distribution reflects historical migration and immigration patterns. Southwestern Hispanics are predominantly of Mexican origin; in

the Northeast, Puerto Ricans are more numerous; and in South Florida, Cubans are the largest subgroup. However, immigration from the Caribbean Basin area, especially the Dominican Republic, Colombia, Guatemala, El Salvador, Honduras, and Nicaragua, has sharply increased the numbers of people immigrating from this region in the past decade into Miami, New York, Chicago, Washington D.C., Los Angeles, Houston, and other major urban centers of the United States. About nine of ten Hispanics live in urban areas, but there are proportionately and numerically more Mexican Americans than other Hispanics in rural areas, in part because of the farm-labor component of the Mexican-origin subgroup.

Gleaning the implications of this demographic profile of Hispanics is difficult because it is not a static population. Immigration from Latin America continues and the numbers of individuals from different sending nations, as well as their ultimate destinations, cannot be predicted with precision. It is very obvious that the past decade has decreased the educational level of foreign-born Hispanics, and by extension, their earning potential as well. Previous research has shown a consistent inverse relationship between socioeconomic status and morbidity or mortality in societies throughout the world (102). Therefore, the potential impact of low economic mobility on health among Hispanics is a serious concern. Continuing problems with communicable diseases among immigrant populations are to be expected. The disproportionate number of young males in the Hispanic population portends public health problems such as accidental death, alcohol and drug abuse, serious psychiatric disorders, sexually transmitted diseases, and increasing suicide rates. The high cumulative fertility of certain Hispanic ethnic groups has implications for reproductive health and nutrition, and the increasing size of the Hispanic population over 65 suggests that health issues associated with later life will receive increasing attention.

From a public health perspective, the most vexing issue is the marginal socioeconomic and educational position of the US Hispanic population. There are disturbing signs of increasing intergenerational poverty, reinforced by structural problems such as poor labor market conditions and a debilitated educational infrastructure. The critical question is whether, at this historical juncture, sufficient opportunity for social and economic mobility will be available to offset Hispanic population growth, and whether Hispanic cultural strengths can operate to mitigate the negative impact of structural factors on health and on the environments where Hispanics must live.

Mortality and Morbidity Indicators of Hispanic Populations

To reiterate, the health status of Hispanics arguably presents a paradox in public health (53, 77, 95, 123) because they have a health profile that is as good or better than that of white non-Hispanics (26, 47). The evidence

to support this position is ambiguous, and so are the potential implications. Generally, the data suggest that Puerto Ricans in the continental United States have a more jeopardized health status than Mexican Americans. In turn, Mexican Americans have a more jeopardized health status than Cuban Americans. Further, variations in health status among Hispanics necessitate that health data be disaggregated by Hispanic group. Therefore, data on Hispanics as an aggregate group do not represent an accurate picture of the health status of all Hispanic ethnic groups and loose generalizations can lead to erroneous conclusions and faulty public health strategies.

Limitations of Existing Data

Before discussing the issues identified above, it is important to note some severe limitations of available data. The 1985 Secretary's Task Force on Black and Minority Health Report (114) was filled with apologies regarding the lack of Hispanic health data. Almost 10 years later, the Healthy People 2000 Report was not able to propose Hispanic-specific initiatives for the majority of measurable objectives due to the continued lack of baseline data. The failure of US health data systems to provide information on mortality and morbidity trends for Hispanic populations was noted in a 1992 report by the General Accounting Office (38). Health, United States, 1991, which provides systematic analysis of health data by race, provides extremely limited health data by Hispanic ethnicity. The most useful data on Hispanics have come from a one time cross-sectional study, the Hispanic Health and Nutrition Examination Survey, which is now ten years old. Improvement in the nation's health data systems has been slow and limited.

Most national health data systems do not provide adequate data on the health of Hispanics because (a) they do not collect appropriate and accurate data on Hispanic ethnicity; (b) they do not sample sufficiently large numbers of Hispanics; or (c) they fail to tabulate and report data separately for Hispanics. Moreover, the Council of Scientific Affairs of the American Medical Association concluded that: "Accurate estimates of Hispanic death rates are impossible to determine because, until 1988, the national model death certificates did not contain Hispanic identifiers. Although some states incorporated Hispanic origin on their death certificates, such reporting was not uniform and lacks precision" (25).

The most recent mortality statistics (73) present two additional limitations. First, 1990 mortality data that are based on Hispanic-origin population from 46 States and the District of Columbia, exclude Hispanics from New York City because more than 10% of death certificates had inadequate data for ethnicity (73). Although the exclusion of New York City does not seriously affect the data's coverage of the Mexican American population (99% covered), the Cuban American population (92% covered)

or the Other Hispanic population (81% covered), the Puerto Rican population (58% covered) is grossly underrepresented. Further, since about half of the deaths attributed to Puerto Ricans are accounted for by New York City, the mortality rates for Hispanics overall and for Puerto Ricans in particular are underestimated (73). This is likely to introduce an underestimation of specific causes of death that are disproportionately found in the New York City Puerto Rican population (e.g. infant mortality, HIV/AIDS, tuberculosis). A second limitation of currently available death statistics is that, for Hispanics, they only provide absolute numbers of deaths and the ranking of the causes of death. Due to inadequate denominator data from the census (74), detailed cause-specific death rates for Hispanic subgroups have not been calculated for Hispanics since 1979–81. Death rates for 1987–89 have been calculated for selected causes of death and overall death rates for Hispanics (72).

In the following sections we present data on mortality and morbidity among Hispanics. When available, data are presented for the major Hispanic groups (i.e. Mexican Americans, Puerto Ricans, and Cubans). It has become increasingly important to also understand the health status and health care needs of other Hispanic populations (e.g. Central and South Americans) who represent a growing sector of the Hispanic population in the United States. These data are provided when available, but these groups are often not considered in the presentation of health data.

MORTALITY

Three commonly used mortality indicators are overall death rates, disease-specific death rates, and leading causes of death. For each of these, data are first presented for Hispanics overall; whenever data are available on specific Hispanic groups, such data are presented.

Death Rates for Hispanics

The most recently available overall death rates for Hispanics reflect 1988 deaths from 26 states and the District of Columbia (72). These data have been published only for Hispanics as a whole and do not provide Hispanic group breakdowns. Although these data provide relatively good coverage for the overall Hispanic population (82%), they provide poor coverage of the Cuban population (32%) (72, 74). Among 15–24-year olds (34, 72), the death rate for Hispanics (113 per 100,000) is greater than that for White non-Hispanics (95 per 100,000), but lower than for non-Hispanic Blacks (145 per 100,000). Similarly, among 25–44-year olds, the death rate for Hispanics (185 per 100,000), is greater than that for non-Hispanics (149 per 100,000) and lower than for non-Hispanic Blacks (367 per 100,000).

In the youngest age group (1–14 years), Hispanics have rates similar to white non-Hispanics (30 per 100,000). However, in the older age groups (45–65 and 65 years and older), Hispanics (609 per 100,000 and 3,482 per 100,000, respectively) have much lower death rates than white non-Hispanics (790 per 100,000 and 5106 per 100,000, respectively).

Death Rates for Specific Hispanic Groups

Mortality statistics that group all Hispanics together mask important differences in health conditions that affect specific groups. The most recent available data on overall death rates by Hispanic group come from 15 reporting States between 1979 and 1981, which included 45 percent of the Hispanic population (61). However, the accuracy of these data might also differ among the various Hispanic groups. The average annual age-adjusted death rates for Hispanic groups reflect significant within group variability. They are highest among Puerto Ricans (512.4 per 100,000) compared to other Hispanic groups (Mexican = 489.4; Cuban = 345.2; Other Hispanic = 341.3). Even among Puerto Ricans, however, the rate is lower than that for white non-Hispanics (529.5) and much lower than the rate for non-Hispanic Blacks (795.6).

Disease-Specific Mortality Rates

Data on specific causes of death for Hispanics as a group indicate that of 38 major categories representing 72 selected causes of death in 1979–80, Hispanics have higher rates for 20 major categories: tuberculosis, meningococcal infection, septicemia, viral hepatitis, syphilis, all other infectious and parasitic diseases, diabetes mellitus, nutritional deficiencies, meningitis, pneumonia and influenza, chronic liver disease and cirrhosis, cholelithiasis and other disorders of gallbladder, nephritis, nephrotic syndrome and nephrosis, complications of pregnancy-childbirth and the puerperium, certain conditions originating in the perinatal period, all other diseases, accidents and adverse effects, homicide and legal intervention and all other external causes (61). More recent data from 1987–89 (72), which provide information on Hispanic death rates for four major causes of death, show continued increasing rates among Hispanics that surpass the rate for white non-Hispanics for deaths due to accidents and adverse effects (especially among 15–44 year olds) and for homicide and suicide after age 14. Diseases of the heart and malignant neoplasms, the two leading causes of death by far, among Hispanics between 1987–89 continue to be much lower than for white non-Hispanics (72).

When disease-specific death rates are separated out by Hispanic group, it becomes clear that the above causes of death vary in importance across Hispanic groups (see Table 1). The average annual age-adjusted death rates

Table 1 Average annual age-adjusted death rates

Cause of Death	Hispanic				Non-Hispanic
	Mexican	Puerto Rican	Cuban	Other Hispanic	White
All causes	489.4	512.4	345.2	341.3	795.6
Shigellosis and amebiasis	0.1	—	—	—	0.0
Certain other intestinal infections	0.1	0.0	—	0.1	0.2
Tuberculosis	1.5	1.1	0.4	0.5	0.4
Whooping cough	—	—	—	0.0	—
Streptococcal sore throat, scarlatina, and erysipelas	0.0	—	—	—	0.0
Meningococcal infection	0.1	0.3	—	0.2	0.1
Septicemia	4.1	1.8	1.1	1.7	2.1
Acute poliomyelitis	—	—	—	—	0.0
Measles	—	—	—	—	0.0
Viral hepatitis	0.3	0.5	1.0	0.3	0.3
Syphilis	0.1	—	—	—	0.0
All other infectious and parasitic diseases	1.9	1.0	0.0	0.9	1.1
Malignant neoplasms	84.4	86.4	81.6	65.8	123.6
Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature	1.3	1.9	0.9	1.0	1.7
Diabetes mellitus	18.6	16.8	6.1	7.7	8.8
Nutritional deficiencies	0.6	0.1	—	0.3	0.4
Anemias	0.6	0.6	—	0.7	0.7
Meningitis	0.5	0.5	0.0	0.4	0.4
Major cardiovascular diseases	186.9	202.6	141.1	130.8	240.6
Acute bronchitis and bronchiolitis	0.1	0.1	—	0.0	0.1
Pneumonia and influenza	11.4	18.1	7.5	9.0	11.3
Chronic obstructive pulmonary diseases and allied conditions	6.6	11.9	5.5	6.4	15.7
Ulcer of stomach and duodenum	1.1	1.6	1.0	1.3	1.6
Appendicitis	0.1	0.0	—	0.0	0.2
Hernia of abdominal cavity and intestinal obstruction without mention of hernia	1.4	0.5	0.6	0.7	1.2
Chronic liver disease and cirrhosis	14.7	34.2	9.2	12.8	9.4
Cholelithiasis and other disorders of gallbladder	1.6	0.7	0.2	0.8	0.7
Nephritis, nephrotic syndrome, and nephrosis	0.1	0.0	—	0.0	0.2
Infections of kidney	0.6	0.5	—	0.5	0.6
Hyperplasia of prostate	0.1	0.2	—	0.1	0.2
Complications of pregnancy, childbirth, and the puerperium	0.2	0.3	0.0	0.0	0.1
Congenital anomalies	5.0	5.0	1.6	5.0	5.4

Certain conditions originating in the
perinatal period

All other diseases-residual	32.7	31.6	14.2	22.2	28.9
Accidents and adverse effects	46.9	25.5	19.5	27.9	36.8
Suicide	8.2	9.2	12.4	6.9	11.3
Homicide and legal intervention	24.7	35.3	20.9	18.8	5.2
All other external causes	1.1	6.4	3.0	2.9	1.6

for 1979–81 indicate that Puerto Ricans have the highest overall age-adjusted death rates among Hispanic groups, and Cubans and Other Hispanics have the lowest rates.

Data on infant mortality also demonstrate the pattern of higher death rates among Puerto Ricans (10.2) who have a higher infant mortality rate than Mexican Americans (7.7), Cubans (7.6), and white non-Hispanics (7.4) (73). Data from 1983–85, which did not exclude Puerto Ricans in New York City, showed a higher infant mortality rate among Puerto Ricans (12.3), which represents a 41% excess neonatal mortality and a 29% excess post-neonatal mortality compared to the rates for children of white non-Hispanic mothers (72). The reliability of these estimates for Mexican Americans has also been questioned due to under-reporting in the US-Mexico border region.

Leading Causes of Death

There are also important differences between Hispanics and white non-Hispanics in the leading causes of death. The ten leading causes of death among Hispanics are: diseases of the heart, malignant neoplasms, accidents and adverse effects, cerebrovascular diseases, homicide and legal intervention, diabetes mellitus, pneumonia and influenza, HIV infection, chronic liver disease and cirrhosis, and certain conditions generating in the perinatal period. Data from deaths in 1989 indicate that among Hispanics homicide and legal intervention, HIV infection, and certain conditions in the perinatal period rank in the ten leading causes of death, whereas among white non-Hispanics, these three categories are not found among the ten leading causes of death (71). Conversely, white non-Hispanics have three leading causes of death not found among the ten leading causes for Hispanics: chronic obstructive pulmonary disease and allied conditions, suicide, and atherosclerosis. Some of these differences are attributable to age differences between these groups. However, the following leading causes of death consistently rank higher among Hispanics within the same age categories: homicide and legal intervention (15–64 years of age), and HIV infection (1–64 years of age) (71). Among Hispanics aged 45 years and over, chronic

liver disease also ranks higher than among white non-Hispanics. The 1990 data indicate that HIV changed from the 6th to the 8th leading cause of death, although this is surely an artifact of the exclusion of deaths from New York City.

Morbidity Among Hispanics

Indicators of health status, such as the incidence of chronic conditions and infectious diseases, other measures of illness such as bed-disability days, and health behaviors also vary across Hispanic groups.

Table 2 presents a summary of research studies documenting excess morbidity related to certain chronic conditions among Hispanics. Studies summarized in Table 2 show that much of the data on morbidity among Hispanics has been obtained in community-specific studies, many of which focus on Mexican Americans in San Antonio, Texas, or California, and on Puerto Ricans in New York City or Connecticut. The Hispanic Health and Nutrition Examination survey conducted between 1982–1984 is the only study that systematically provides data on all of the major Hispanic groups (Mexican Americans, Puerto Ricans, and Cuban Americans). In some cases, studies have compared data for Puerto Ricans living on the island. However, as shown in Table 2, there are few studies that provide such comparisons.

Table 2 shows diseases and conditions for Hispanic groups relative to non-Hispanic whites. For example, while the rates of diabetes among Cubans are similar to those of white non-Hispanics, Mexican Americans and Puerto Ricans have rates two to three times higher (35). Diabetes in Mexican Americans is also associated with a rate of complications, especially end-stage renal disease and retinopathy, that is six times higher than among white non-Hispanics (99). Higher prevalence of factors related to diabetes, such as obesity, proteinuria, and glucose intolerance, have also been documented among Mexican Americans and Puerto Ricans (35, 45, 78, 81, 100).

Rates of cardiovascular disease and related factors such as cholesterol levels among Hispanics have been reported to be similar or lower than among white non-Hispanics while other factors such as diabetes and obesity show higher rates in Hispanics (27). Some studies have reported that high blood pressure is more prevalent among Mexican Americans and Cubans than among white non-Hispanics (16, 31). However, other research indicates that Hispanics have similar or lower levels of high blood pressure compared to white non-Hispanics (65, 98). Most studies have consistently shown, however, that Hispanics have higher rates of untreated or unrecognized cases of high blood pressure (16, 27, 31, 65, 98).

Data from state cancer registries generally indicate lower overall rates of cancer among Hispanics, although for some cancers some Hispanic groups

have higher rates. For example, studies of Hispanics in Connecticut and New York City (primarily Puerto Ricans) (83, 124) and California (majority Mexican Americans) (66) have documented increased incidence of stomach cancer in these groups, whereas data from Hispanics in Dade County, Florida (primarily Cubans) show lower rates than among white non-Hispanics (105). Disproportionately high cervical cancer rates (two times higher relative risk) have been found among Hispanic women in Connecticut, New York and California compared to white non-Hispanics (66, 83, 124). There is also evidence of increased rates of: gallbladder cancer among Hispanics in California (66) and male and female Hispanics in Dade County, Florida (105); cancer of the buccal cavity and pharynx among Hispanic men in New York City (124); cancer of the larynx and thyroid among Hispanic men and women in Dade County, Florida (105); cancer of the esophagus for Hispanic men and women, and cancer of the oral cavity among Hispanic men in Connecticut (83). There are higher rates of cancer of the liver and leukemia among Hispanic men than white non-Hispanics men in New York City and Connecticut (83, 124).

Infectious diseases disproportionately affect Hispanics (101). Increased rates of immunizable diseases, such as measles, rubella, congenital rubella, tetanus and pertussis, have been documented among Hispanics living in the Southwestern US and in the Northeast (101). Higher rates of bacterial gastrointestinal diseases, parasites, and other tropic-endemic diseases have been found among Hispanics living primarily in the Southwest and among Hispanic farmworkers in other geographic regions compared to white non-Hispanics (101).

The incidence of tuberculosis is two times higher among Hispanics (18.3 per 100,000) compared to white non-Hispanics (9.1 per 100,000) (115). The higher rates of tuberculosis have been documented among Hispanics living in New York City and in the Southwest (101). The rates (per 100,000) of primary and secondary syphilis are five times greater among Hispanic women (10.7) and men (22.8), compared to white non-Hispanics (1.8 and 2.9, respectively) (28). Other sexually transmitted diseases such as congenital syphilis, chancroid, chlamydia, and gonococcus have been demonstrated to affect Hispanics disproportionately and to be on the increase in this population. The increase in syphilis in Hispanics has been especially striking (24% increase) compared to that in Hispanic men (7% increase) and the minimal increase observed in white non-Hispanics (101).

The cumulative incidence rate for adults diagnosed with AIDS is 3.3 times higher among Hispanics; Puerto Ricans largely account for AIDS cases among Hispanics. They are seven times more likely than non-Hispanic whites to be diagnosed with AIDS (93, 94). Rates of AIDS cases among Hispanics in the Southwest are at levels similar to those in the white

Table 2 Summary of reported evidence of excess morbidity among Hispanic populations as compared to non-Hispanic whites (NHW)

Disease	Evidence	Geographic Area/Year of Data/Hispanic Group	Reference
CANCER	overall rates	Lower overall incidence rates for Hispanics (RR = .88)	Dade County, FL, 1982–83 Hispanic (67% Cuban) 105
		Standardized incidence rates (SIR) for all invasive cancers higher for men (SIR = 1.16) and lower for women (SIR = .77) compared to NHW and higher than for Hispanics in Puerto Rico (males: SIR = 1.99; females: SIR = 1.39)	Connecticut, 1980–86 Puerto-Rican born CT, residents and residents of Puerto Rico 83
		Incidence lower (320/100,000) than for NHW (392) and higher than for those in Puerto Rico (245) for men and women	New York City, 1982–85 Hispanic (60% PR) 124
	lung	Lower risk RR = .88	Dade County, FL, 1982–83 Hispanic (67% Cuban) 105
		SIR significantly reduced for females (SIR = .57) but not for males (SIR = .94)	Connecticut, 1980–86 (see above) 83
		Incidence rates for males and females lower than (51.5 vs. 73.2) and higher for NHW than for residents of Puerto Rico (22.9)	New York City, 1982–85 Hispanic (60% PR) 124
stomach		Increased incidence: SIR = 2.65 females, SIR = 2.91 males	Connecticut, 1980–86 (see above) 83
		Increased incidence: RR = 2.1 females, RR = 2.2 males	California, 1991 Mexican American 66

reproductive system	Highest incidence rates per 100,000 in Puerto Rico (11.3/24.4), followed by Hispanics in NYC (10.3/18.7) and NHW (7/13.4) (female/male)	New York City, 1982–85 Hispanic (60% PR)	124
	Lower risk: RR = .61	Dade County, FL, 1982–83 Hispanic (67% Cuban)	105
	Cervical cancer: higher incidence (SIR = 1.81; RR = 2.3) or rates (2.5 times) found in four regions	Studies in Florida, Connecticut, New York City, California, 1980s M-A, PR, C-A	66, 83, 105, 124
	Anglos get pap smears and mammograms more often	US, 1987–88 California, 1989 Hispanic (majority Puerto Rican)	15, 30
	Lower rate incidence in other reproductive organs: *breast cancer	New York City, 1982–85 Connecticut 1980–86 Hispanic (PR)	83, 124
	*corpus uteri and ovary	New York City, 1982–85 Connecticut 1980–86 Hispanic (PR)	83, 124
gall bladder	*testicular (RR = .17)	Florida, 1982–83 Hispanic (67% Cuban)	105
	Increased incidence for females: RR = 4.9	California, 1991 Mexican American	66
	Increased incidence among men and women (RR = 5.45)	Dade County, FL, 1982–83 Hispanic (67% Cuban)	105

Table 2 (Continued)

Disease	Evidence	Geographic Area/Year of Data/Hispanic Group	Reference
buccal cavity and pharynx	Higher rates than for NHW among males (23 vs 14.3)	New York City, 1982–85 Hispanic (60% PR)	124
oral cavity, larynx, thyroid and esophagus	Higher rates in larynx (RR = 1.58) and thyroid (RR = 3.12)	Dade County, FL, 1982–83 Hispanic (67% Cuban)	105
	Higher SIR* of esophageal cancer for males (RR = 2.76) and females, and of oral cavity for males (RR = 2.29)	Connecticut, 1980–86 Puerto-Rican born CT residents	83
	Lower rate of esophageal cancer	Dade County, FL, 1982–83 Hispanic (67% Cuban)	105
liver	Twice as prevalent for males	New York City, 1982–85 Hispanic (60% PR)	124
other sites	Higher rates of leukemia among males	Connecticut, 1980–86 (See above)	83
	Lower rates or relative risk in following sites: skin (melanoma), rectum, kidney, pancreas, colon, Kaposi's Sarcoma	Studies in California, New York City, Florida, Connecticut, 1980–86 M-A, PR, C-A	66, 83, 105, 124
CARDIO-VASCULAR DISEASE (including coronary artery disease)	Mortality declining more slowly among Hispanics than overall decline	Meta-analysis M-A, PR, C-A ⁺	16
	Slightly lower age-adjusted prevalence rates of Rose angina for Mexican American women	Samples from 3 areas of USA, 1982–84 M-A, PR, C-A	53a
	Lower cardiovascular mortality for Mexican American men; no ethnic difference for women	San Antonio, 1979–88 Mexican American	64

risk factors cholesterol	Women had lower HDL cholesterol and higher triglycerides than NHW; no difference for total cholesterol or LDL; similar pattern for men but not significant	Florida Cuban	52a
hypertension	More prevalent, and higher rates of untreated or unrecognized cases	Meta-analysis M-A, PR, C-A	16
	Acculturation and age are stronger predictors of hypertension than poverty among older Mexican Americans	Samples from 3 areas of USA, 1982-84 M-A, PR, C-A	32
CHILDREN's ILLNESSES ASTHMA	Similar prevalence compared to NHW children; possibly higher morbidity related to poverty and limited insurance and health coverage	San Antonio, 1988-89 Mexican American	126
BIRTH OUT- COMES	Similar low birth weight (LBW) prevalence as compared to NHW (6.2% and 5.6%) with greater risk for Puerto Ricans (9.3%)	US sample and samples from 3 areas of USA, 1987 and 1982-84 M-A, PR, C-A	63
	Higher prevalence LBW babies among US-born Puerto Rican, Mexican and Cuban women than among foreign or island born women in all age groups	US sample and samples from 3 areas of USA, 1987 and 1982-84 M-A, PR, C-A	63
	Premature births more common among 3 Hispanic groups than among NHW women: highest for Puerto Ricans	US sample and samples from 3 areas of USA, 1987 and 1982-84 M-A, PR, C-A	63
CHRONIC MEDICAL CONDITIONS (CMC)	Puerto Rican children at greater risk for CMC than Mexican- or Cuban-American or NHW children	US sample and samples from 3 areas of USA, 1987 and 1982-84 M-A, PR, C-A	63
DIABETES	Rates of NIDDM* 3 times higher	San Antonio, 1979-82 Mexican American	45

Table 2 (Continued)

Disease	Evidence	Geographic Area/Year of Data/Hispanic Group	Reference
	Mexican American diabetics have higher levels of glycemia and clinical proteinuria (OR = 2.82)	San Antonio, 1979–82 Mexican American	45
	Prevalence 2–3 times greater for Puerto Ricans and Mexican-Americans	Sample 3 areas of USA, 1982–84 M-A, PR, C-A ⁺	35, 46
	Prevalence increases initially among migrant populations as they “modernize”; may then decline again for men and maybe women	San Antonio. 1989 Mexican-American	100
	Higher acculturation and, among women, higher SES associated with linear decline in obesity & diabetes	San Antonio, 1979–82 Mexican-American	49
related factors	Relative disparity for ESRD: 17% of diabetics and 22% of those seeking care for ESRD	Colorado, 1982–89 Hispanics in CO	21
end-stage renal disease (ESRD)	Increase in age-adjusted incidence rate (1982–89): Hispanics 770%, Blacks 440%, NHW 190%	Colorado, 1982–89 Hispanics in CO	21

obesity/ overweight	Higher prevalence; among Hispanics, highest for Mexican American; higher among women and low SES	Texas and US sample, 1982–84 Mexican American and other Hispanics	78
	Prevalence of obesity 31–34% for men and 38–42% for women among Hispanics	Sample 3 areas of, USA, 1982–84 M-A, PR, C-A ⁺	81
	Body Mass Index (BMI) decreased for women as SES increased; high acculturation related to decrease in BMI	Texas, 1979–82 Mexican American	49, 100
glucose intolerance	Higher prevalence particularly among Mexican Americans and Puerto Ricans	Sample 3 areas of USA, 1982–84 M-A, PR, C-A ⁺	35
	Higher prevalence of hyperinsulemia among nondiabetic Mexican Americans relative to nondiabetic NHWs	San Antonio, 1982–84 Mexican American	100

* NIDDM = non insulin-dependent diabetes mellitus

⁺ M-A: Mexican American; PR: Puerto Rican; C-A: Cuban-American

non-Hispanic population; rates for Hispanics in Florida fall between the two (18, 101). AIDS cases are especially disproportionately increased among Hispanic children (23% of pediatric AIDS cases) and women (20% of cases in women). Rates of HIV infection are also higher among Hispanics, especially in the Northeast, as demonstrated by higher rates of HIV antibody among US military service applicants, active duty military personnel, women attending family planning clinics, adolescents entering the Job Corps program, and blood donors (19, 20).

Rates of depression symptomatology and lifetime history of depression have been reported to be higher among Puerto Ricans when compared to rates obtained for the general population and for other Hispanic groups (67). Data on bed-disability days and activity limitation suggest that Puerto Rican children under 17 years of age have over two times the number of bed-disability days (43) and 50 percent more Puerto Rican children have some type of activity limitation due to an illness (6.2), compared to non-Hispanics whites (5.1; 4.0) or Black children (4.7; 3.7) (113).

Risk Behaviors

Certain behaviors or risk factors associated with negative health outcomes and impaired psychosocial development are also more prevalent among Hispanics compared to non-Hispanics. For example, pregnancy among girls age 17 and younger is more prevalent among Hispanics (158 per 1000) than white non-Hispanics (71.1 per 1000) and close to that of Blacks (186 per 1000) (121). Relatively little is known about family planning among Hispanic women. It remains inconclusive whether Hispanic women initiate intercourse at an older age and engage in sexual intercourse less often than other women. Paradoxically, relatively low rates of sexual intercourse among Mexican American teenage girls coincide with high fertility rates as a result of relatively low rates of use of contraceptives and low rates of abortion. Factors related to contraception decisions are not well understood, but Hispanic women may simply have more desire to have children than women in other ethnic groups. Similarly, little is known about sexual behavior among Hispanic women. In all of these areas considerably more comparative research is needed. Hispanic women (Mexican American = 39%; Puerto Rican = 37%; Cuban = 34%) are also more likely to be overweight than white non-Hispanics women (27%) (25, 78, 81).

Use of marijuana and cocaine varies greatly by Hispanic group and is more common among Puerto Ricans of both genders compared to women and men in other Hispanic groups (1). Puerto Rican women (30.3%) also have higher age-adjusted smoking rates than Mexican American (23.8%) and Cuban (24.4%) women (48).

In summary, the health status of Hispanics, as reflected in morbidity and

mortality patterns, differs greatly among Hispanic subgroups. While patterns vary for specific diseases, Puerto Ricans in the continental US demonstrate a more unfavorable health profile than Mexican Americans. Although more sparse, the mortality and morbidity data on Cubans indicate that they are generally in better health than other Hispanics. The relatively low death rate among Mexican Americans, who share many of the economic disadvantages of Puerto Ricans and Blacks, has presented a public health paradox. This pattern runs counter to the well-documented gradient effect of socioeconomic status on health (53, 77, 95, 123).

Health Status and Acculturation

There is evidence that the health habits and health status of Hispanic immigrants deteriorate with length of stay in the United States, as well as in succeeding generations, due to increased acculturation. The process of acculturation and the type of cultural contact experienced in migration among Hispanics is stressful because of the disruption of attachments to supportive networks, and the concomitant tasks of adapting to the economic and social systems in the host culture (86, 118). The work of Vega and colleagues (120) has provided evidence that the social support provided by networks of family and friends among immigrant Mexican women plays a critical role in adaptation to life in this country. The Hispanic migrant is also likely to experience discrimination, prejudice, and exclusion that frustrates expectations of improved social and economic status with increased adoption of the dominant culture's values. At the same time, the immigrant/migrant is faced with incorporating into his/her identity, a newly acquired "minority status". Berry (10) describes responses to these conditions and notes the vulnerability of the individual who, in the process of adaptation, abandons all or major parts of her/his cultural values and identification and assimilates into the dominant society. This assimilation may include the abandonment of culturally tied health beliefs and the loss of culturally tied resources and social support networks, which may place her/him at risk (52).

Other evidence indicates that some forms of cultural "adaptation" or acculturation are harmful to the health of Hispanics. The following health indicators worsen with increased acculturation: rates of infant mortality (8), low birth weight (8, 44, 63), overall cancer rates (30, 83, 124), high blood pressure (32), and adolescent pregnancy (121).

Certain behaviors also increase with acculturation. These include: decreased fiber consumption (30); decreased breast feeding (25); increased use of cigarettes (48); increased alcohol consumption—especially in younger women (14, 39, 58, 60, 76) and driving under the influence of alcohol (22); and increased use of illicit drugs (1, 75, 80, 82, 86, 92). Some studies

have also documented that depressive symptomatology increases with acculturation (13, 42, 52, 67, 79, 96), although the relationship between depression and acculturation remains controversial (86).

The relationship between acculturation and risky behaviors or jeopardized health is often striking. For example, the rate of adolescent pregnancy is twice as high among Hispanics born in the U.S. compared to those born outside the continental U.S. (121). Furthermore, the rate of low birth weight infants born to second-generation Mexican American women is almost two times higher than that among comparable first-generation women (44). Use of illicit drugs increases with acculturation (1, 75, 80, 82, 92, 117). Data from the Hispanic HANES indicate that marijuana use is eight times higher among Mexican Americans and five times greater among Puerto Ricans who are highly acculturated compared to those who are not acculturated, even after socio-demographic factors are controlled (1). Also, use of cocaine is associated with acculturation among Mexican Americans and Puerto Ricans (1). Moreover, drug use and acculturation conflicts are related to increased suicide attempts among Hispanic adolescents (116). Use of cigarettes among Mexican American women is significantly lower among those with low levels of acculturation (19%) compared to those with high levels of acculturation (28%) (48).

There are, however, some exceptions to the trend toward worsening health and health habits with acculturation. Dietary habits (intake of total calories and fat), for example, improve with acculturation (30, 99). Body mass index (27), diabetes, and obesity (49, 100) also decrease with increased socioeconomic status and acculturation.

The acculturation process involves adaptation not only at the individual level, but also at the level of family and community. Szapocznik and colleagues (80, 92, 103) have described the effects of acculturation and its differential impact in generations within the family. Their work has demonstrated that gender and age mediate the experience of adaptation to a new culture. The effects of acculturation on the social character and group dynamics within communities and accompanying negative effects on health have been documented in other immigrant populations, such as the studies of the Roseto community (29). The Roseto Effect points to the need to understand the impact that community structure and organization have on the acculturative process and the health of Hispanics.

Research is needed to address a series of profound questions. First, we must understand the selective factors that operate in the migration process and how these shape immigrants' health status and risk behaviors. We also need to understand the nature of social networks, social support systems, and the organization and cohesion of the varied communities where Hispanics live and work (84, 86, 120). Finally, research is needed to better understand

Hispanic immigrants' experience of discrimination and its impact on social, environmental, and behavioral health risks.

HEALTH SERVICES UTILIZATION ISSUES

Key questions remain about Hispanic health services utilization patterns: Do Hispanics underutilize health services? If they do, which Hispanics are underutilizing and why? A cursory review of the literature on services utilization clearly suggests that Hispanics, as a composite population, use almost all forms of health care at a rate below that of white non-Hispanics. However, these differences are clearly attributable to the utilization behavior of Mexican Americans (11, 51, 55, 107), who have lower mortality rates for the leading chronic diseases.

Factors held responsible for Hispanic health use behaviors include: selective migration (12, 13); personal (47), cultural (23, 24, 37, 48, 51, 56, 88, 89, 97, 104, 108, 109, 122), and social characteristics (54); and structural barriers (9, 43, 91, 106). Although cultural beliefs affect the use of health services, very little empirical evidence supports the assertion that indigenous beliefs, cultural practices, or use of healers are offsetting use of orthodox medical providers in any significant way (3, 17). Similarly, no consistent relationship has been discerned between various indicators of acculturation and physician utilization (59).

Structural barriers to access include financial constraints and features of medical providers that deter or discourage potential or actual clients. Hispanics are less likely than other ethnic groups to have a regular medical provider or physician (9) or to have health insurance (106). The Mexican American population, with its large numbers of undocumented and seasonal workers, is much less likely to have public health insurance coverage and more likely to work for employers who do not provide private health insurance (106). In the absence of financial barriers, as among Hispanics who are eligible for medicaid, rates of use of health services are higher than for other populations (108). However, even when financial barriers are removed, provider characteristics (e.g. location, language, and cultural competence) mediate access to health services among Hispanics (3, 11, 40, 57).

Only a few (e.g. 2–5, 33) well-conceived theoretical models have been tested empirically with Hispanics to evaluate the relative contribution of explanatory factors to the use of health services. Analytical models of Hispanic services utilization need to be elaborated that supersede, and hopefully improve, traditional behavior models (2, 41, 62, 125), by including additional indicators that reflect the Hispanic cultural and social experiences (6). Another set of factors to be considered is contextual, occasioned by

differences in provider characteristics that facilitate or act as barriers to care.

The advent of publicly assisted universal health coverage for large numbers of currently uninsured Hispanics will permit a direct test of whether intrinsic ethnic group factors (e.g. the notion that Mexican Americans are "super healthy") or structural factors (e.g. the low availability of public health insurance) are responsible for low utilization among Mexican Americans, and among other Hispanic ethnic groups, as well. Furthermore, it will be possible to assess the impact of unanticipated high level Hispanic enrollment on public and private health care providers, and how these providers change procedures and clinical practices to accommodate the needs of Spanish speaking clients. Indeed, bilingualism and multicultural competency may become much more highly valued and rewarded abilities among medical professionals as a result.

PREVENTION, HEALTH PROMOTION, AND PUBLIC HEALTH POLICY FOR HISPANICS

The fact that many Hispanics have no primary care provider of choice implies irregularity of preventive screening that, in turn, reduces prophylactic immunization or early detection and effective management of disease. To correct this situation, the National Institutes of Health are funding intramural and extramural projects to increase awareness of health issues, using various communication models. These initiatives emphasize the need for regular health screening for major diseases such as cancer, AIDS, and heart disease. There is increasing emphasis on health promotion and disease prevention projects to reduce smoking, alcohol consumption, risky sexual behaviors, and illicit drug use. More recently, these NIH initiatives have included the provision of technical assistance to design and implement community-based interventions, interaction with and use of social networks, design of media messages and campaigns, and the development of informational materials appropriate for interventions in multilingual or multicultural environments. Much remains to be learned in this area, but this earnest effort is a solid beginning. Continuing experimentation and dissemination of technical information is needed so that practitioners and researchers can keep abreast of the growing complexity of the US Hispanic population and the rapid pace of knowledge development.

The economic and educational gap between Hispanics and white non-Hispanics has direct consequences for Hispanic public health status by increasing community disintegration and risky behaviors. In Hispanic communities, lack of opportunity fosters conflicts among Hispanic youth that are directly related to acculturation. Unhealthy lifestyles and gang member-

ship among urban adolescents and young adults proliferate in this environment. Regardless of improvements in access to care, medical care providers are unlikely to reduce the incidence of street violence, rising teen suicide, and sexual or physical abuse in families. Furthermore, the prevention of diseases such as AIDS depends on the primacy Hispanics assign to behavioral changes in the context of the harsh and debilitating inner city environment. Is it possible to prevent disease in communities where the basic requirements of physical survival are so burdensome, where public safety is questionable, and educational systems are in total disarray? Not in the long run, and certainly not in the short run.

The most fundamental and effective method to lower the incidence of morbidity and mortality among Hispanics may be through health promotion and prevention, but only if these activities can be linked to employment and improved economic opportunities. Prevention activities are frequently limited by their narrow scope, which restricts the number of individuals who can be reached, or are too costly to sustain. To overcome this limitation, health must become the business of the Hispanic community in direct and tangible ways. Increased training and employment opportunities as allied health professionals and as community health outreach workers are needed in Hispanic communities. Health media messages must be disseminated to communicate accurate information competently in homes, schools, community locations, and work sites. These activities could counteract among low income Hispanics the influences of alcohol and tobacco industry advertising and their high visibility financial support of Hispanic community cultural events. All intervention strategies, regardless of type, carry the burden of demonstrating that they are imparting something of local and personal value to community members. And these tactics must be implemented creatively, drawing on the aesthetic and spiritual qualities of Hispanic families and communities (47).

Despite a low prevalence for many health problems among some Hispanic groups, population growth will increase the magnitude of many common public health problems. For example, a recent epidemiologic study of perinatal substance use that used anonymous urine screening in California hospitals found that Hispanic women, who constitute about one quarter of all women in the state, had a 6.8% prevalence of alcohol-exposed infants (119). The prevalence for African American women was 11.6%, almost twice as high as Hispanic women. Nevertheless, because Hispanic women constitute a disproportionately large fraction of the birthing population, they were responsible for almost one half, as compared to one tenth for African Americans, of alcohol-exposed infants born in California in 1992. The implication of this finding is that health promotion and intervention are important public health activities within Hispanic communities, low preva-

lence rates notwithstanding. Current activities in this field are highly encouraging and, with persistence, may bring about fundamental changes in the way health is perceived and maintained among Hispanics in the United States. As Muñoz has forcefully argued, there is nothing intrinsic to Hispanic culture to suggest a lesser concern with health issues or innate resistance to interventions (68, 69).

Any *Annual Review* chapter, as well as any article cited in an *Annual Review* chapter, may be purchased from the Annual Reviews Preprints and Reprints service.
1-800-347-8007; 415-259-5017; email: arpr@class.org

Literature Cited

1. Amaro H, Whitaker R, Coffman J, Heeren T. 1990. Acculturation and marijuana and cocaine use: Finding from the HHANES 1982–84. *Am. J. Public Health* 80(Suppl.):54–60
2. Andersen R, Newman JF. 1973. Societal and individual determinants of medical care utilization in the United States. *Milbank Mem. Fund Q.* 51:95–124
3. Andersen RM. 1968. *A Behavioral Model of Families' Use of Health Services*. Chicago: Univ. Chicago Press
4. Andersen RM, Giachello AL, Aday LA. 1986. Access of Hispanics to health care and cuts in services: A state-of-the-art overview. *Public Health Rep.* 101:238–52
5. Andersen RM, Zelman, Lewis S, Giachello AL, Aday LA, Chiu G. 1981. Access to medical care among the Hispanic population of the Southwestern United States. *J. Health Soc. Behav.* 22:78–89
6. Angel R, Cleary PD. 1984. The effects of social structure and culture on reported health. *Soc. Sci. Q.* 65: 814–28
7. Bean FD, Tienda M. 1987. *The Hispanic Population of the United States*. New York: Sage Found. 456 pp.
8. Becerra J, Hogue C, Atrash H, Perez N. 1991. Infant mortality among Hispanics. *J. Am. Med. Assoc.* 265:217–21
9. Berkanovic E, Telesky C. 1985. Mexican-American, Black-American and White-American differences in reporting illnesses, disability and physician visits for illness. *Soc. Sci. Med.* 20: 567–77
10. Berry JW. 1980. Acculturation as varieties of adaptation. In *Acculturation: Theory, Models and Some New Findings*, ed. AM Padilla, pp. 9–25. Boulder, CO: Westview Press
11. Brown JP. 1992. Oral health of Hispanics: Epidemiology and risk factors. See Ref. 36a, pp. 132–43
12. Burnam MA, Hough RL, Escobar JJ, Karno M, Timbers DM, et al. 1987. Six-months prevalence of specific psychiatric disorders among Mexican Americans and non-Hispanic whites in Los Angeles. *Arch. Gen. Psychiatry* 44:687–94
13. Burnam M, Hough R, Karno M, Escobar J, Telles C. 1987. Acculturation and lifetime prevalence of psychiatric disorders among Mexican Americans in Los Angeles. *J. Health Soc. Behav.* 28:89–102
14. Caetano R. 1987. Acculturation and drinking patterns among U.S. Hispanics. *Br. J. Addict.* 82:789–99
15. Caplan LS, Wells BL, Haynes S. 1992. Breast cancer screening among older racial/ethnic minorities and whites: Barriers to early detection. *J. Gerontol.* 47:101–10
16. Caralis PV. 1990. Hypertension in the Hispanic-American population. *Am. J. Med.* 88(Suppl. 3B):3B–9S
17. Casas MM, Keefe SM, eds. 1978. *Family and Mental health in the Mexican American Community*. Los Angeles: Spanish Speaking Ment. Health Res. Cent.
18. Castro KG, Valdiserri RO, Curran JW. 1992. Perspectives on HIV/AIDS epidemiology and prevention from the 8th Int. Conf. AIDS. *Am. J. Public Health* 82:1465–70
19. Centers for Disease Control. 1987. Trends in immunodeficiency virus infection among civilian applicants for

- military service—United States: Oct. 1985–Dec. 1986. *Morbid. Mortal. Wkly. Rep.* 36:273–76
20. Centers for Disease Control. 1988. Prevalence of human immunodeficiency virus antibody in US active-duty military personnel, April 1988. *Morbid. Mortal. Wkly. Rep.* 37:461–63
 21. Centers for Disease Control. 1992. Incidence of treatment of end stage renal disease attributable to diabetes mellitus, by race/ethnicity—Colorado: 1982–89. *Morbid. Mortal. Wkly. Rep.* 41(44):845–48
 22. Cherpitel CJ. 1992. Acculturation, alcohol consumption, and casualties among United States Hispanics in the emergency room. *Int. J. Addict.* 27: 1067–77
 23. Chesney AP, Chavira JA, Hall RP, Gary HE. 1982. Barriers to medical care of Mexican-Americans: The role of social class, acculturation and social isolation. *Med. Care* 20:883–91
 24. Clark M. 1959. *Health in the Mexican-American Culture*. Berkeley: Univ. Calif. Press. 253 pp.
 25. Counc. Sci. Aff. 1991. Hispanic health in the United States. *J. Am. Med. Assoc.* 265:248–52
 26. Delgado M. 1990. Hispanic adolescents and substance abuse: Implications for research, treatment and prevention. In *Ethnic Issues in Adolescent Mental Health*, ed. AR Stiffman, LE Davis, pp. 303–20. Newbury Park, CA: Sage Found.
 27. Derenowski J. 1990. Coronary artery disease in Hispanics. *J. Cardiovasc. Nurs.* 4:13–21
 28. Div. STD/HIV Prev. 1991. Sexually transmitted disease surveillance, 1990. US DHHS. Atlanta: CDC
 29. Egolf B, Lasker J, Wolf S, Potvin L. 1992. The Roseto effect: A 50-Year comparison of mortality rates. *Am. J. Public Health* 82:1089–92
 30. Elder JP, Castro FG, deMoor C, Mayer J, Candelaria J, et al. 1991. Differences in cancer risk-related behaviors in Latino and Anglo adults. *Medicine* 20: 751–63
 31. Espino DV, Burge SK, Moreno CA. 1991. The prevalence of selected chronic diseases among the Mexican-American elderly: Data from the 1982–1984 Hispanic Health and Nutrition Examination Survey. *J. Am. Board Fam. Pract.* 4:217–22
 32. Espino DV, Maldonado D. 1990. Hypertension and acculturation in elderly Mexican Americans: Results from 1982–84 Hispanic HANES. *J. Gerontol.* 45:M209–13
 33. Estrada AL, Trevino FM, Ray LA. 1990. Health care utilization barriers among Mexican Americans: Evidence from HHANES 1982–84. *Am. J. Public Health* 80(Suppl.):27–31
 34. Fingerhut LA, Makuc DM. 1992. Mortality among minority populations in the United States. *Am. J. Public Health* 82:1168–70
 35. Flegal MK, Ezzatti TM, Harris MI, Haynes SG, Juarez RZ, et al. 1991. Prevalence of diabetes in Mexican Americans, Cubans, and Puerto Ricans from the Hispanic Health and Nutrition Examination Survey, 1982–1984. *Diabetes Care* 14(Suppl. 3):628–38
 36. Fox SA, Stein JA. 1991. The effect of physician-patient communication on mammography utilization by different ethnic groups. *Med. Care* 29:1065–83
 - 36a. Furino A, ed. 1992. *Health Policy and the Hispanic*. Boulder, CO: Westview Press. 240 pp.
 37. Garrison V. 1975. Espiritismo: Implications for provisions of mental health services to Puerto Rican populations. In *Folktherapy*, ed. H Hodges, C Hudson. Miami: Univ. Miami Press
 38. Gen. Account. Off. 1992. *Hispanic Access to Health Care: Significant Gaps Exist*. Washington, DC: US GPO
 39. Gilbert M. 1989. Alcohol consumption pattern in immigrant and later generation Mexican American women. *Hisp. J. Behav. Sci.* 9:299–313
 40. Ginzberg E. 1991. Access to health care for Hispanics. *J. Am. Med. Assoc.* 265:238–41
 41. Goldsmith HF, Jackson DJ, Hough RL. 1988. Process model of seeking mental health services: Proposed framework for organizing the research literature on help-seeking. *NIMH, Ment. Health Serv. Syst. Rep., Ser. BN: Needs Assessment: Its Future*, No. 8: 49–64
 42. Griffith J. 1983. Relationship between acculturation and psychological impairment in adult Mexican Americans. *Hisp. J. Behav. Sci.* 5:431–59
 43. Guendelman S, Schwalbe J. 1986. Medical care utilization by Hispanic children: How does it differ from Black and White peers? *Med. Care* 24(10): 925–37
 44. Guendelman SS, Gould J, Hudes M, Eskenazi B. 1990. Generational difference in perinatal health among the Mexican American population: Findings from HHANES, 1982–84. *Am. J. Public Health* 80:61–65

45. Haffner SM, Mitchell BD, Pugh JA, Stern MP, Kozlowski MK, Hazuda HP, et al. 1989. Proteinuria in Mexican Americans and Non-Hispanic whites with non-insulin dependent diabetes mellitus. *J. Am. Med. Assoc.* 263:530-36
46. Harris MI. 1991. Epidemiological correlates of NIDDM in Hispanics, whites, and blacks in the US population. *Diabetes Care* 14(Suppl. 3):639-48
47. Hayes-Bautista D. 1992. Latino health indicators and the underclass model: from paradox to new policy models. See Ref. 36a, pp. 32-47
48. Haynes SG, Harvey C, Montes H, Nicken H, Cohen BH. 1990. Patterns of cigarette smoking among Hispanics in the United States: Results from the HHANES 1982-1984. *Am. J. Public Health* 80(Suppl.):47-53
49. Hazuda HP, Haffner SP, Stern MP, Eifler CW. 1988. Effects of acculturation and SES on obesity and diabetes in Mexican Americans: The San Antonio Heart Study. *Am. J. Epidemiol.* 128:1289-301
50. Higginbotham JC, Trevino FM, Ray LA. 1990. Utilization of curanderos by Mexican Americans: Prevalence and predictors. Findings from HHANES 1982-84. *Am. J. Public Health* 80(Suppl.):32-35
51. Hough RL, Landsverk J, Karno M, et al. 1987. Utilization of health and mental health services by Los Angeles Mexican Americans and non-Hispanic Whites. *Arch. Gen. Psychiatry* 44:702-9
52. Kaplan M, Marks G. 1990. Adverse effects of acculturation: Psychological distress among Mexican American young adults. *Soc. Sci. Med.* 31(12):1313-19
- 52a. Kato PM, Soto R, Goldberg RB, Sosenko JM. 1991. Comparison of the lipid profiles of Cubans and other Hispanics with non-Hispanics. *Arch. Int. Med.* 151:1613-16
53. Kehr BH, Wollin CM. 1979. Impact of income maintenance on low birth-weight. *J. Hum. Resour.* 12:434-62
- 53a. LaCroix AZ, Haynes SG, Savage DD, Havlik RJ. 1989. Rose questionnaire angina among US Black, white and Mexican American women and men. *Am. J. Epidemiol.* 131:423-33
54. Lewin-Epstein N. 1991. Determinants of regular source of health care in black, Mexican, Puerto Rican, and non-Hispanic white populations. *Med. Care* 29:543-57
55. Lopez, S. 1981. Mexican-American usage of mental health facilities: Underutilization reconsidered. In *Explorations in Chicano Psychology*, ed. A. Baron Jr, pp. 139-64. New York: Praeger
56. Madsen W. 1964. Value conflicts in folk psychiatry in South Texas. In *Magic, Faith and Healing*, ed. A. Kiev, pp. 420-40. New York: Free Press
57. Marin G, Marin BV, Padilla AM. 1982. Aspectos atribucionales de la utilización de servicios de salud. *Inter-am. J. Psychol.* 16:78-89
58. Markides KS, Levin JS, Ray LA. 1985. Determinants of physician utilization among Mexican Americans: A three generations study. *Med. Care* 23:226-46
59. Markides KS, Ray L, Stroup-Benham C, Trevino F. 1990. Acculturation and alcohol consumption in the Mexican American population of the Southwestern United States: Findings from the HHANES, 1982-84. *Am. J. Public Health* 80(Suppl.):42-46
60. Marks G, Garcia M, Solis J. 1990. Health risk behaviors of Hispanics in the United States: Findings from HHANES, 1982-84. *Am. J. Public Health* 80(Suppl.):20-26
61. Maurer JD, Rosenberg HM, Keemer JB. 1990. Deaths of Hispanic origin, 15 reporting States, 1979-1981. Natl. Cent. Health Stat. *Vital Health Stat.* 20(18):5-16
62. Mechanic D. 1979. Correlates of physician utilization: Why do major multivariate studies of physician utilization find trivial psychosocial and organizational effects? *J. Health Soc. Behav.* 20:387-96
63. Mendoza F, Ventura S, Valdez B, Castillo R, Saldivar L, et al. 1991. Selected measures of health status for Mexican-American, mainland Puerto Rican, and Cuban American children. *J. Am. Med. Assoc.* 265:227-32
64. Mitchell BD, Hazuda HP, Haffner SM, Patterson JK, Stein MP. 1991. Myocardial infarction in Mexican-Americans and non-Hispanic whites: The San Antonio Heart Study. *Circulation* 83:45-51
65. Mitchell BD, Stern MP, Haffner SM, Hazuda HP, Patterson JK. 1990. Risk factors for cardiovascular mortality in Mexican Americans and non-Hispanic whites: The San Antonio Heart Study. *Am. J. Epidemiol.* 131:423-33
66. Moran EM. 1992. Epidemiological fac-

- tors of cancer in California. *J. Environ. Pathol. Toxicol. Oncol.* 11:303-7
67. Mosciski E, Locke B, Rae D, Boyd, JH. 1989. Depressive symptoms among Mexican Americans: The Hispanic Health and Nutrition Examination Survey. *Am. J. Epidemiol.* 130:348-60
 68. Muñoz RF. 1980. A strategy for the prevention of psychological problems in Latinos: Emphasizing accessibility and effectiveness. In *Hispanic Natural Support Systems: Mental Health Promotion Perspectives*, ed. R Valle, W Vega, pp. 85-96
 69. Muñoz RF, Ying YW, Armas R, Chan F, Gurza R. 1986. The San Francisco depression prevention research project: A randomized trial with medical outpatients. In *Depression Prevention: Research Directions*, ed. RF Muñoz, pp. 199-216. Washington: Hemisphere Publ. Corp. 301 pp.
 70. Natl. Cent. Health Stat. 1991. *Advance Report of Final Mortality Statistics, 1988*. Mon. Vital Stat. Rep. 39(4), (Suppl. Health US)
 71. Natl. Cent. Health Stat. 1992. *Advance Report of Final Mortality Statistics, 1989*. Mon. Vital Stat. Rep. 80 (8) (Suppl. 2)
 72. Natl. Cent. Health Stat. 1992. *Health, United States, 1991*. Hyattsville, Maryland: PHS
 73. Natl. Cent. Health Stat. 1993. *Advance Report of Final Mortality Statistics, 1990*. Mon. Vital Stat. Rep. 40(7) (Suppl.)
 74. Natl. Cent. Health Stat. 1993. *Personal communication with Lois Fingerhut*, May 12, 1993
 75. Natl. Inst. Drug Abuse. 1987. *Use of selected drugs among Hispanics: Mexican Americans, Puerto Ricans, and Cuban Americans. Findings from the HHANES*. Washington DC: US DHHS
 76. Neff J. 1986. Alcohol consumption and psychological distress among U.S. Anglos, Hispanics, and Blacks. *Alcohol Alcoholism* 21:111-19
 77. Nelson M. 1992. Socioeconomic status and childhood mortality in North Carolina. *Am. J. Public Health* 82:1133-36
 78. Nichaman MZ, Garcia G. 1991. Obesity in Hispanic Americans. *Diabetes Care* 14(Suppl. 3):691-94
 79. Padilla E, Olmedo E, Loya F. 1982. Acculturation and the MMPI performance of Chicano and Anglo college students. *Hisp. J. Behav. Sci.* 4:451-66
 80. Page B. 1980. The children of exile: Relationships between the acculturation process and drug use among Cuban American youth. *Youth Soc.* 11:431-47
 81. Pawson IG, Martorell R, Mendoza FE. 1991. Prevalence of overweight and obesity in U.S. Hispanic populations. *Am. J. Clin. Nutr.* 53:1522S-28S
 82. Perez R, Padilla AM, Ramirez A, Ramirez R, Rodriguez M. 1980. Correlates and changes over time in drug and alcohol use within a barrio population. *Am. J. Commun. Psychol.* 6:621-36
 83. Polednak AP. 1992. Cancer incidence in the Puerto Rican-born population of Connecticut. *Cancer* 70:1172-76
 84. Portes A, Bach RL. 1985. *Latin Journey: Cuban and Mexican Immigrants in the United States*. Berkeley: Univ. Calif. Press. 387 pp.
 85. Portes A, Rumbaut RG. 1990. *Immigrant America: A Portrait*. Berkeley: Univ. Calif. Press. 300 pp.
 86. Rogler L, Cortes, D, Malagady R. 1991. Acculturation and mental health status among Hispanics. *Am. Psychol.* 46:585-97
 87. Rubel A. 1960. Concepts of disease in Mexican-American culture. *Am. Anthropol.* 62:795-814
 88. Ruiz P, Langrod J. 1976. The role of folk healers in community mental health services. *Commun. Ment. Health J.* 12:392-404
 89. Sandoval MC. 1979. Santeria as a mental health care system: An historical overview. *Soc. Sci. Med.* 13B:137-51
 90. Schick FL, Schick R. 1991. *Statistical Handbook on U.S. Hispanics*. New York: Oryx Press. 255 pp.
 91. Schur CL, Bernstein AB, Berk ML. 1987. The importance of distinguishing Hispanic subpopulations in the use of medical care. *Med. Care* 25:627-41
 92. Scopetta MA, King OE, Szapocznik J. 1977. Relationship of acculturation, incidence of drug abuse, and effective treatment for Cuban Americans. *Natl. Inst. Drug Abuse. Fin. Rep. Res. Contract No. 271-75-4136*. Bethesda, MD
 93. Selik RM, Castro KG, Papaionnou M. 1988. Racial/ethnic differences in the risk of AIDS in the United States. *Am. J. Public Health* 78:1539-45
 94. Selik RM, Castro KG, Papaionnou M, Ruehler JW. 1989. Birthplace and the risk of AIDS among Hispanics in the United States. *Am. J. Public Health* 79:836-39
 95. Smith GD, Egger M. 1992. Socioeconomic differences in mortality in Britain and the United States. *Am. J. Public Health* 82:1079-81
 96. Sorenson S, Golding J. 1988. Suicide ideation and attempts in Hispanics and

- non-Hispanic whites: Demographic and psychiatric disorder issues. *Suicide Life-Threat.* 18:205-18
97. Stein SA, Fox SA, Maturata PJ. 1991. The influence of ethnicity, socioeconomic status, and psychological barriers on use of mammography. *J. Health Soc. Behav.* 32:101-13
 98. Stern MP, Gaskell SP, Allen CR, Garza V, Gonzalez JL, Waldrop RH. 1982. Cardiovascular risk factors in Mexican Americans in Laredo, Texas: II. Prevalence and control of hypertension. *Am. J. Epidemiol.* 113:556-62
 99. Stern MP, Haffner SM. 1992. Type II diabetes in Mexican Americans: A public health challenge. See Ref. 36a, pp. 57-75
 100. Stern MP, Knapp JA, Hazuda HP, Haffner SM, Patterson JK, Mitchell BD. 1991. Genetic and environmental determinants of type II diabetes in Mexican Americans. *Diabetes Care* 14(Suppl. 3):649-54
 101. Sumaya LV. 1991. Major infectious diseases causing excess morbidity in the Hispanic population. *Arch. Intern. Med.* 151:1513-20
 102. Syme LS, Berkman LF. 1976. Social class, susceptibility and sickness. *Am. J. Epidemiol.* 104:1-8
 103. Szapocznik J, Kurtines W. 1988. Acculturation, biculturalism and adjustment among Cuban Americans. In *Acculturation Theory, Model and Some New Findings*, ed. AM Padilla, pp. 139-59. Boulder, CO: Westview Press
 104. Torrey EF. 1972. The irrelevancy of traditional mental health services for urban Mexican-Americans. In *On the Urban Scene*, ed. M Levitt, B Rubenstein, pp. 19-36. Detroit: Wayne State Univ. Press
 105. Trapido EJ, McCoy CB, Strickman-Stein N, Engel S, Zaveritnik JJ, Comerford M. 1990. Epidemiology of cancer among Hispanic males: The experience in Florida. *Cancer* 65:657-62
 106. Trevino FM, Moyer ME, Valdez RB, Stroup-Benham CA. 1992. Health insurance coverage and utilization of health services by Mexican Americans, Puerto Ricans, and Cuban Americans. See Ref. 36a, pp. 158-70
 107. Trevino RM, Moss AJ. 1984. Health indicators for Hispanic, Black and White Americans. *Vital Health Stat., Ser. 10, No. 148. Natl. Cent. Health Stat.* Hyattsville, MD
 108. Trotter RT II. 1981. Remedios caseros: Mexican American home remedies and community health problems. *Soc. Sci. Med.* 15B:107-14
 109. Trotter RT II, Chavira JA. 1981. *Curanderismo: Mexican American Folk Healing*. Athens: Univ. Georgia Press. 204 pp.
 110. US Bur. Census, Curr. Popul. Rep. Ser. P-20, No. 449. 1991. *The Hispanic Population In the United States: March 1990*. Washington, DC: US GPO
 111. US Bur. Census. 1991. *General, Social and Economic Data*. US Summary Table 152, PC80-1, no. 1
 112. US Bur. Census. 1991. *Race and Hispanic Origin, 1990*. Census Profile No. 2. Washington, DC: US Dep. Commer.
 113. US Dep. Health Hum. Serv. 1985. *Rep. Sec. Task Force on Black and Minority Health*, Vol. II. Crosscutting Issues in Minority Health. Washington, DC: US GPO
 115. US Dep. Health Hum. Serv. 1986. *Rep. Sec. Task Force Black and Minority Health*. Vol. 8: Hispanic Health Issues. Washington, DC: US GPO
 114. US Dep. Health Hum. Serv. 1990. *Healthy People 2000: Natl. Health Promotion and Disease Prevention Objectives*. Washington, DC: US GPO
 116. Vega WA, Gil A, Warheit G, Apospori E, Zimmerman R. 1993. The relationship of drug use to suicide ideation and attempts among African American, Hispanic, and White Non-Hispanic male adolescents. *Suicide Life-Threat. Behav.* 23:110-19
 117. Vega WA, Gil AG, Zimmerman RS. 1993. Patterns of drug use among Cuban-American, African-American, and white non-Hispanic boys. *Am. J. Public Health* 83:257-59
 118. Vega WA, Hough RL, Miranda MR. 1985. Modeling cross-cultural research in Hispanic mental health. In *Stress and Hispanic Mental Health: Relating Research to Service Delivery*, ed. WA Vega, MR Miranda, pp. 1-29. DHHS Publ. No. (ADM) 85-1410. 289 pp.
 119. Vega WA, Kolody B, Hwang J, Noble A. 1993. Prevalence and magnitude of perinatal substance exposures in California. *New England J. Med.* 329:850-54
 120. Vega WA, Kolody B, Valle R, Weir J. 1991. Social networks, social support, and their relationship to depression among immigrant Mexican women. *Hum. Organ.* 50:154-62
 121. Ventura SJ, Tappel S.M. 1985 Child-bearing characteristics of the US and foreign-born Hispanic mothers. *Public Health Rep.* 100:647-52

122. Wells IB, Hough RL, Golding JM, Burnam MA, Karno M. 1987. Which Mexican Americans underutilize health services? *Am. J Psychiatry* 144:918-22
123. Wilkinson RG. 1990. Income distribution and mortality: A "natural" experiment. *Sociol. Health Illness* 12:1082-84
124. Wolfgang PE, Semeiks PA, Burnett WS. 1991. Cancer incidence in New York City Hispanics, 1982-1985. *Ethn. Dis.* 1:263-72
125. Wolinsky FD. 1978. Assessing the effects of predisposing, enabling and illness-morbidity characteristics on health service utilization. *J. Health Soc. Behav.* 19:384-96
126. Wood PR, Hidalgo HA, Prihoda TJ, Kromer ME. 1993. Hispanic children with asthma: Morbidity. *Pediatrics* 265: 227-32