

# The Prevalence Of Selected Chronic Diseases Among The Mexican-American Elderly: Data From The 1982–1984 Hispanic Health And Nutrition Examination Survey

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**Abstract:** Although the Mexican-American elderly represent a large and rapidly growing subgroup of the ethnic aged, national prevalence data of major chronic diseases among this population are sparse. Data based on physical examinations from three older groups of the southwestern portion of the 1982–1984 Hispanic Health and Nutrition Examination Survey (HHANES) were reviewed to determine rates of hypertension, diabetes mellitus, arthritis, and heart disease. The results show a higher prevalence of diabetes and lower prevalence of heart disease and hypertension when compared with the general population, coinciding with data from previous studies. Findings for the prevalence of arthritis varied widely from other studies, however, and proportions were lower than expected. Further research on arthritis in the Mexican-American elderly is necessary to determine whether protective mechanisms that may lead to a lower prevalence of this disease exist in this ethnic subgroup. (*J Am Board Fam Pract* 1991; 4:217-22.)

The Mexican-American elderly are numerous, and they have a rapid growth rate. In 1988, 913,250 persons, or approximately 4.7 percent of the Hispanic population, were older than 65 years. In addition, between 1983 and 1988, the elderly of this ethnic group grew at a rate of 26.6 percent, which was faster than the growth rate for the elderly population of the United States.<sup>1</sup> Approximately 53 percent (484,400) of elderly Hispanics are of Mexican descent.<sup>1</sup> Despite these great numbers, however, few national data are available on the prevalence of major chronic diseases in the Mexican-American elderly population. Major studies that have addressed the health of Mexican-American elders are considered below.

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The Hispanic National Needs Assessment study<sup>2</sup> reported a high rate of arthritis among elderly Mexican Americans, citing it as the most prevalent chronic disease in this subgroup, followed by hypertension and diabetes. Lopez-Aqueres and colleagues<sup>3</sup> supported this finding; they found that 28.3 percent of the older Hispanics in their study reported problems resulting from arthritis.

Hypertension, also perceived as a major health problem among Mexican Americans, is considered the second most prevalent disease among their elderly subgroup.<sup>2,4</sup> Other studies on both young and old Mexican Americans have shown, however, that they may have a similar or lower prevalence of high blood pressure than non-Hispanic whites of the same socioeconomic status.<sup>5,6</sup>

Hanis, et al.<sup>5</sup> studied diabetes mellitus among Mexican Americans in Starr County, Texas, and reported a higher prevalence of diabetes among all ages of Mexican Americans, including the elderly, when compared with the total population. These data supported the National Needs Assessment study, which found that diabetes was the third most prevalent disease among older Mexican Americans.<sup>2</sup> Perez-Stable and colleagues<sup>7</sup> reviewed data from the Hispanic Health and Nutrition Examination Survey (HHANES) and reported a twofold to threefold greater prevalence

of self-reported diabetes among Mexican Americans than among non-Hispanic whites.

Heart disease continues to be the leading cause of death of Mexican-born Hispanics.<sup>8</sup> Recent studies in the Mexican-American population have shown that age-adjusted heart disease rates are consistent with those of the general population; additionally, some reports have suggested there may be an ethnic advantage for Mexican Americans with regard to heart disease.<sup>9,10</sup>

Our study was designed to examine the prevalence of major chronic health concerns of elderly Mexican Americans using data from the HHANES, which is the first national survey to examine health and nutritional problems of this growing ethnic group. The HHANES was conducted by the National Center for Health Statistics using guidelines and methods that were comparable to those used for the previously conducted national Health and Nutrition Examination Survey (NHANES). The HHANES attempted to fill a data gap created by the lack of sufficient numbers of Hispanics in the NHANES. The HHANES sought to produce for the three major Hispanic subgroups estimates of health and nutritional status that could be compared with similar data obtained for the general population.<sup>11</sup>

Based on previously reported data, we hypothesized that the prevalence of arthritis and diabetes among elderly Mexicans would be greater than that of the general population and the prevalence of hypertension and cardiovascular disease would be the same in both groups. It was also expected that the prevalence of all the chronic diseases studied would increase from the younger to the older groups.

### Methods

The HHANES was conducted from July 1982 until December 1984 (2.5 years). It was designed to survey the health and nutritional status of Hispanics in the United States.<sup>11</sup> The HHANES sample design was a four-stage cluster sample selected with probabilities proportional to size. The HHANES target population was civilian, noninstitutionalized Hispanics who fit the design criteria. Eligible Hispanics aged between 45 and 74 years were oversampled to improve the reliability of estimates of their health characteristics and nutritional status.<sup>12</sup> HHANES, by design, was not a representative national survey of all

Hispanics residing in the United States but, instead, represented Hispanics living in the areas sampled. These areas included approximately 76 percent of all Hispanics residing in the United States. The southwestern portion of the HHANES-represented area, which was the sampling frame we chose to examine, included approximately 84 percent of all Mexican Americans in the United States and 97 percent of all Mexican Americans within its sample frame of five selected states. These states were California, Arizona, New Mexico, Colorado, and Texas. A detailed description of the sample design has been previously described.<sup>12</sup>

For this study, only data collected from Mexican Americans were examined. Demographic, socioeconomic, and health-related information was collected from 7462 Mexican Americans.<sup>12</sup> All participants received a complete medical examination by a medical team assembled specifically for the HHANES.

Initial analysis of the data used a design-based approach.<sup>12</sup> Corrections for sampling weights and survey design were employed in computing prevalence and standard errors. All analyses were performed using SPSS<sup>13</sup> and Super CARP<sup>14</sup> on a mainframe computer.

Three age groups were examined: group 1, 45 to 54 years; group 2, 55 to 64 years; and group 3, 65 to 74 years. Each group was examined for the presence of specific chronic disease states using the International Classification of Diseases (ICD-9)<sup>15</sup> codes. These diseases were diagnosed by the survey team's physician following a complete medical history and physical examination.

For the purposes of this study, the chronic diseases reviewed were arthritis (ICD-9 codes 714-715), hypertension (ICD-9 codes 401-405), diabetes mellitus (ICD-9 code 250), and heart disease. The category "heart disease," which paralleled that used by the National Vital Statistics system, included the specific disease entities of hypertensive heart disease (ICD-9 code 402), heart failure (ICD-9 code 428), ischemic heart disease (ICD-9 codes 410-414), rheumatic heart disorders (ICD-9 codes 390-398), and other forms of heart disease (ICD-9 codes 405-429).<sup>16</sup>

A diagnosis of diabetes mellitus was based on an extensive medical history interview, statement of health care needs, laboratory results, and the

physicians' diagnostic impression based on a physical examination.

Hypertension was diagnosed after a detailed medical history interview and physical examination. The medical history interview included questions on hypertensive treatment modalities, compliance with treatment, and health care visits for monitoring blood pressure. The physical examination included blood pressure measurements taken at two different times during the physical examination according to a standardized protocol.

A diagnosis of heart disease was determined through a medical history interview, physical examination, and laboratory results. The medical history interview included a series of questions developed by Rose<sup>17</sup> to screen for angina pectoris and myocardial infarction in selected populations. Coronary heart disease risk factors and other related information were assessed also. Laboratory studies included 12-lead and Frank-lead electrocardiograms, as well as posterior-anterior and lateral chest radiographs.

Arthritis diagnoses were based on the physicians' diagnostic impression in concert with functional deterioration caused by arthritis or functional limitation as a result of arthritis. In addition, the examining HHANES physician recorded whether the examinee had consulted a physician about this condition within the previous year.

Using chi-square analysis, the prevalence of the four chronic diseases among Mexican-American elderly was compared with the prevalence among the two younger groups of Mexican Americans to determine whether the trends observed were consistent throughout the three age groups.

To control for the effects of socioeconomic status, each age group was stratified using the HHANES poverty index. This index is a ratio: the numerator is the midpoint of the family income bracket; the denominator is the Bureau of Census poverty threshold that varies with the number of residents in the family, adult-child composition, age, month, and year. Persons in families below the poverty threshold had poverty indices of less than 1, whereas persons in families above the threshold had indices greater than or equal to 1.<sup>18</sup> Comparisons between the two groups were made with chi-square statistics.

Finally, data derived from HHANES were compared with national morbidity data from the National Health Interview Survey (NHIS) on the

four selected chronic diseases.<sup>19</sup> The methodological differences between the HHANES and NHIS studies do not allow statistical comparisons; however, juxtaposing HHANES findings against those from the general US population allowed us to determine whether our findings coincided with data from previous studies. NHIS data were collected in 1983-1985, the approximate time that the HHANES was also conducted. The NHIS was a national survey using probability sampling mechanisms similar to those of the HHANES.<sup>19</sup> Diagnoses for chronic conditions were derived from patient responses to six categorical checklists regarding medical conditions for the previous 12 months. Several impact questions, such as degree of disability, were included in the categorical checklists to reduce ambiguity of diagnosis criteria.<sup>17</sup>

### Results

Data from 1286 Mexican Americans aged 45 to 74 years were analyzed. The mean age of the group was 55.8 ( $\pm 7.9$ ) years. The majority were women (54.7 percent,  $n = 709$ ), married (74.0 percent,  $n = 957$ ), and born in the United States (59.7 percent,  $n = 767$ ). The prevalence of disease states was calculated for each age cohort (Table 1). The prevalence of all chronic disease entities measured showed an age-associated increase. There was a greater than twofold increase in diabetes between the 45- to 54-year-old group and the 55- to 64-year-old group. Hypertension and arthritis followed similar trends, whereas the age-associated rise in heart disease was not noted until the 65- to 74-year-old group.

To examine the effects of socioeconomic status on the prevalence of diseases, each age group was stratified using the HHANES poverty in-

**Table 1. Prevalence of Diseases among Mexican Americans by Age Group.\***

Disease	45-54 Years ( $n = 647$ )	55-64 Years ( $n = 434$ )	65-74 Years ( $n = 205$ )	P Value
Arthritis	0.8 (5)†	2.7 (11)	4.1 (9)	0.003
Hypertension	15.7 (90)	25.7 (101)	30.0 (60)	0.001
Diabetes	7.7 (47)	16.1 (65)	21.6 (32)	0.001
Heart disease	7.5 (34)	6.6 (26)	16.5 (30)	0.001

\*Correction for sampling weights and survey design were employed in computing prevalence.

†Number in parentheses indicates the number of persons with the disease mentioned within each cohort.

**Table 2. Prevalence of Chronic Disease Found in Elder Mexican Americans Above and Below Poverty Levels.\***

Disease	45–54 Years		55–64 Years		65–74 Years	
	Above	Below†	Above	Below†	Above	Below†
Arthritis	1.2 (5)‡	0	2.7 (7)	3.3 (4)	5.4 (5)	2.2 (2)
Hypertension	14.2 (60)	13.9 (21)	22.9 (60)	24.2 (29)	28.3 (29)	31.9 (29)
Diabetes	6.8 (29)	9.3 (14)	14.1 (37)	14.2 (17)	14.1 (17)	17.6 (16)
Heart disease	17.2 (73)	21.9 (33)	26.7 (69)	26.7 (32)	39.1 (36)	38.5 (35)

\*Corrections for sampling weights and survey design were employed in computing prevalence.

†P values were not significant.

‡Number in parentheses indicates number of persons with disease in each poverty category.

dex. There was a significant difference in per capita income between those above and those below the poverty level (\$21,212.75 versus \$2,339.99,  $P < 0.001$ ). No significant differences were noted in disease prevalence in the age groups when controlling for poverty level (Table 2).

In Table 3, the prevalence of the four chronic diseases in Mexican Americans is listed beside NHIS findings, representing the prevalence in the general population. Because NHIS data sets are reported using 45- to 64-year-old and 65- to 74-year-old groups, we combined the HHANES 45- to 54-year-old and 55- to 64-year-old groups for easy comparisons. Note in Table 3 that both the younger and older groups of Mexican Americans had higher proportions of diabetes mellitus and lower proportions of hypertension, arthritis, and heart disease when compared with the general population.

### Discussion

This study reports the prevalence of four chronic diseases—arthritis, hypertension, heart disease, and diabetes mellitus—in the Mexican-American elderly residing in the Southwestern United States.

HHANES data indicate that chronic health problems of older Mexican Americans differ dramatically from those of the general US population and from middle age to old age; specifically,

arthritis does not occur as often in this population as expected; the rate of diabetes is higher among Mexican-American elderly than among other elder Americans, and hypertension and heart disease have lower rates in Mexican Americans than in the general US population.

Our most striking and unexpected finding is the low prevalence of arthritis in this sample. In contrast, previous studies using self-reported data indicated that arthritis is, indeed, the most common disease entity among the Mexican-American elderly,<sup>20-22</sup> with prevalences varying from 13 percent to 39 percent.<sup>3,23</sup> The discrepancy may be due, in part, to comparisons between clinical diagnosis data (as in HHANES) and subject-reported data (as in all other studies of arthritis in Mexican Americans). Limitations of self-reported methods in older Mexican-American samples may include a lack of understanding as to what arthritis is.<sup>24</sup> Patients may self-categorize a variety of musculoskeletal disorders as arthritis, whereas physician observations would show a different and more precise diagnosis, and thus a lower prevalence of arthritis.

While the validity of using self-reported data as a measure of prevalence is under debate, national age-specific prevalence proportions for physician-consulted arthritic conditions are similar to self-reported data.<sup>25,26</sup> Furthermore, although no physical examination studies are available on

**Table 3. Prevalence of Chronic Disease Found in the General Population and Mexican Americans.**

Disease	45–64 Years		56–74 Years	
	Mexican American	General Population*	Mexican American	General Population*
Arthritis	1.5	27.9	4.1	45.9
Hypertension	19.7	26.4	30.0	40.8
Diabetes	10.9	5.4	21.6	9.8
Heart disease	6.0	13.6	16.5	29.0

\*General population data from National Health Interview Survey (National Center for Health Statistics, 1988).

older Mexican Americans, when compared with studies based on physician examinations of the general population in which prevalence of arthritic complaints ranged from 20 percent to 50 percent, the prevalence of arthritis in the HHANES sample is far lower.<sup>27-31</sup>

What factors could explain the disparity between arthritis prevalence in this HHANES sample and that in samples drawn from the general US population? Were the HHANES Mexican Americans more stoic than their non-Hispanic white counterparts and less likely to complain of joint pains or discomfort to the physician interviewer during the HHANES interview process? Did HHANES Mexican Americans instead ascribe pains associated with arthritis to normal aging mechanisms?

Perhaps a true difference exists in which older Mexican Americans are less predisposed to the development of osteoarthritis or rheumatoid arthritis. Such findings have been reported among African Americans, who have a lower rate of osteoarthritis of the hip by radiographic examination.<sup>32,33</sup> Alternatively, there may be a survivor effect bias in which those Mexican Americans who would have had arthritis diagnosed have died at a younger age of diseases associated with, for example, heavy physical labor. Other factors, such as acculturation, diet, or heredity, may be operating that protect against the development of arthritis in the HHANES sample.

The lack of difference in disease prevalence, when controlling for socioeconomic status, shows that poverty had no relation to the prevalence of these chronic diseases.

The lower prevalence of hypertension and heart disease and the higher prevalence of diabetes mellitus in older Mexican Americans compared with the general US population have been reported previously in younger populations.<sup>9</sup> In-depth comparisons between various ethnic subcultures are needed to understand the mechanisms that protect elderly Mexican Americans against a variety of cardiovascular disorders and predispose them to diabetes. Future studies should go beyond epidemiological comparisons and address influences, such as genetic predisposition and assimilation, that will advance our understanding of the development of chronic disease among Mexican-American elderly.

To understand the discrepancies found in arthritis prevalences, future studies should explore the prevalence of other musculoskeletal disorders that can mimic arthritis in older Mexican-American populations so that confusion associated with the diagnoses of these diseases is minimized.

Future research initiatives should also compare rates of major chronic diseases across all Hispanic subgroups in order to develop effective intervention strategies that will improve the quality of life for all Hispanic elders.

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