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Hypertension among Mexican Americans in Starr County, Texas

SYNOPSIS

THE MEXICAN-AMERICAN POPULATION in the United States has generally elevated frequencies of several chronic conditions, including non-insulin-dependent diabetes mellitus (NIDDM), gallbladder disease, and obesity. Prevalence of cardiovascular disease and hypertension is less clear. To document prevalence and risk factors of hypertension in this population, we measured blood pressure in 1004 randomly selected Mexican Americans in Starr County, Texas, ages 15 to 74. We defined hypertension as systolic blood pressure greater than or equal to 140 mmHg or diastolic pressure greater than or equal to 90 mmHg or current (within the last 48 hours) use of antihypertensive medications.

Prevalences by age and gender are elevated in this population group compared with those in the general population. In addition to age and gender, body mass and diabetes status were also predictors of hypertension.

Comparison of the Starr County results with those reported from the Third National Health and Nutrition Examination Survey (NHANES III) sampling of Mexican Americans indicates a slight increase in frequency of hypertension in Starr County, while comparison with results from San Antonio Mexican Americans indicates a marked increase in frequency in Starr County. These differences are not simple functions of measurement protocols, but are likely to be caused by differences in population structure, employment and socioeconomic status, education, and other such factors.

The Mexican American population of South Texas and elsewhere has been shown to have unequivocally elevated frequencies of several chronic conditions, including non-insulin-dependent diabetes mellitus (NIDDM), gallbladder disease, and obesity. The situation for cardiovascular disease and hypertension is less clear *(1,2)*. Here, we document the prevalence and risk factors of hypertension in a representative sample of Mexican Americans from Starr County, Texas.

Methods

Starr County is among several counties on the border between Texas and Mexico with a primarily Mexican-American population (97% so classified in

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Table 1. Age, sex, and diabetes-specific frequencies of hypertension in Starr County

Sex	Age	Normal Glucose Tolerance n	Normal Glucose Tolerance % Hypertensive	Diabetes n	Diabetes % Hypertensive
Males	18–24	27	0.0	0	n/a
	25–34	84	13.1	1	0.0
	35–44	59	33.9	4	25.0
	45–54	38	34.2	4	75.0
	55–64	27	55.6	5	40.0
	65–74	25	52.0	6	66.7
	75+	n/a	n/a	n/a	n/a
Females	18–24	82	3.7	0	n/a
	25–34	154	5.8	7	14.3
	35–44	140	7.9	11	18.2
	45–54	100	44.0	16	50.0
	55–64	89	49.4	18	72.2
	65–74	40	85.0	8	100.0
	75+	n/a	n/a	n/a	n/a

1990) *(3)*. From the three major towns in Starr County—Rio Grande City, La Grulla, and Roma-Los Saenz—we selected blocks representative of population and dwelling unit densities. We enumerated individuals in all dwelling units on selected blocks and invited one random individual between the ages of 15 to 74, inclusively, to a detailed physical evaluation that included an array of medical, laboratory, historical, and anthropometric measures.

Our protocols comprised two supine blood pressure readings taken approximately 10 minutes apart, using a random-zero sphygmomanometer. We used the means of the readings and defined hypertension as a systolic pressure ≥140 mmHg, diastolic pressure ≥90 mmHg, or current use of anti-hypertensive medications. We calculated body mass index as BMI=weight in kilograms divided by the square of height in meters and used it as an index of obesity. We defined obesity as a BMI of 30 and above, while a BMI ≥25 and <30 was defined as overweight. Diabetes was classified to be consistent with National Diabetes Data Group recommendations *(4)*. We calculated age-, sex-, diabetes-, and obesity class-specific frequencies of hypertension for comparison to other groups. Logistic regression was the tool we used to test for the significance of age, sex, and body mass in predicting hypertension status and to test for interaction among these potential predictors.

Results

A total of 1004 randomly selected individuals participated in the physical evaluation with an individual participation rate of 73.2%. Age-, sex-, and diabetes-specific frequencies of hypertension are presented in Table 1.

The increased frequency of obesity among Mexican Americans complicates comparisons of hypertension frequencies among groups. To illustrate the effects of increasing body mass on hypertension and to facilitate comparisons, we plotted age-, sex- and BMI class–specific frequencies of hypertension (shown in Table 2). Data in this table have been restricted to those who do not have diabetes.

Age, sex, and body mass each contributed significantly to predicting hypertension in this group. There was also evidence of weak interaction among these indicators.

Discussion

The data presented demonstrate a clear burden to the Mexican-American population due to hypertension. While there is an expected increased frequency with age, the pattern of increase in females is different from the pattern evident in males. As seen in Table 1, there is a general linearly increasing trend of frequency in males. By contrast, females show a dramatic increase in frequencies from age 45 and up. Prior to that, prevalence of hypertension is in the single digits. This may reflect a hormonal interaction. This pattern is seen to be consistent across BMI strata and may also be responsible for the significant interaction effects observed in the analyses to predict hypertension status.

Table 2. Age, sex, and BMI-specific frequencies of hypertension in Starr County

Sex	Age	Normal Weight (BMI <25) n	Normal Weight (BMI <25) % Hypertensive	Overweight (BMI ≥25 and <30) n	Overweight (BMI ≥25 and <30) % Hypertensive	Obese (BMI ≥30) n	Obese (BMI ≥30) % Hypertensive
Males	18–24	16	0	8	0	3	0
	25–34	23	4.4	33	12.1	28	21.4
	35–44	10	10	29	27.6	20	55
	45–54	10	10	20	40	8	50
	55–64	12	50	9	33.3	6	100
	65–74	10	50	9	55.6	6	50
	75+	n/a	n/a	n/a	n/a	n/a	n/a
Females	18–24	50	4	19	5.3	13	0
	25–34	69	2.9	52	11.5	33	3
	35–44	43	2.3	59	10.2	38	10.5
	45–54	30	36.7	32	37.5	38	55.3
	55–64	22	27.3	29	62.1	38	52.6
	65–74	9	77.8	17	76.5	14	100
	75+	n/a	n/a	n/a	n/a	n/a	n/a

Table 3. Frequency of hypertension in San Antonio and Starr County

Sex	Age	Mexican Americans	Non-Hispanic Whites	Diastolic Hypertension	Current Anti-Hypertensive Medication Use
Males	25–34	2.5	2.5	3.5	1.2
	35–44	10.0	5.7	20.6	4.8
	45–54	12.7	17.5	21.4	14.3
	55–65	17.4	22.6	31.6	18.4
Females	25–34	1.7	0.8	2.5	1.9
	35–44	5.0	6.1	5.9	4.6
	45–54	13.5	15.2	24.1	19.0
	55–65	22.6	26.6	21.9	18.4

Comparisons of the frequencies presented here with those from other studies will permit determining the differences or similarities of hypertension risk among populations. The frequencies are similar, though slightly elevated, to those reported from the Third National Health and Nutrition Examination Survey (NHANES III) sampling of Mexican Americans *(5)*. Defining diastolic hypertension as a diastolic blood pressure ≥95 mmHg or current medication use, and comparing frequencies in Starr County to those in the San Antonio Heart Study, demonstrate a marked elevation of frequency in Starr County. These data are presented in Table 3.

Included in the table are the frequencies of antihypertensive medication use for Starr County. Because the use of antihypertensive medications is similarly frequent to overall diastolic hypertension in San Antonio Mexican Americans, we conclude that the differences between populations are not simple functions of measurement techniques. It appears, therefore, that there exists heterogeneity of hypertension frequency among Mexican-American groups. This may reflect dissimilarity in the populations in terms of structure, employment and socioeconomic status, education, and the like.

References

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