

Correlates of Depressive Symptomatology Among Older Community-Dwelling Mexican Americans: The Hispanic EPESE

Sandra A. Black,¹ Kyriakos S. Markides,² and Todd Q. Miller²

¹Center on Aging and Department of Internal Medicine, University of Texas Medical Branch, Galveston.

²Department of Preventive Medicine & Community Health and Center on Aging, University of Texas Medical Branch, Galveston.

Objectives. The prevalence of depressive symptoms and associated risk factors is described, using data from the Hispanic EPESE, the first large, representative study of older Mexican Americans.

Methods. Multivariate logistic regression was used to examine the association between depressive symptoms and sociodemographics, chronic health conditions, disability, and cultural factors.

Results. Using the Center for Epidemiologic Studies of Depression scale, 25.6% of the 2,823 subjects reported high symptom levels. Rates among women (31.9%) and particularly men (17.3%) were higher than has been typically reported for older Mexican Americans and older adults in general. Consistent with previous studies of older adults, gender, lack of insurance, financial strain, chronic health conditions, and disability were found to be associated with depressive symptoms. Several cultural factors were also associated with increased risk, including immigrant status, levels of acculturation and assimilation, health locus of control, and recency of immigration. An interaction between gender and immigrant status was found such that, in relation to subjects born in the United States, female immigrants were at significantly higher risk for depressive symptoms, whereas male immigrants were at lower risk.

Discussion. Our findings suggest that the increased prevalence can be attributed to higher rates of sociodemographic risk factors and functional disability, coupled with cultural factors and chronic medical conditions.

DEPRESSION, considered one of the leading mental health problems among adults, is being viewed increasingly as a biopsychosocial phenomenon (Leventhal & Tomarken, 1987). From this perspective, risk factors include social factors (such as gender, education, impoverishment, marital status, and social isolation), psychological factors (such as life stresses and bereavement), and biological factors (such as physical illness and disability), factors which have been consistently found to be associated with psychological distress, regardless of ethnicity or age (Kaebler, Moul, & Farmer, 1995). The biopsychosocial approach is particularly appropriate, however, for the study of depression among older adults. Surveys such as the Yale, Duke, and Iowa Established Populations for the Epidemiologic Study of the Elderly (EPESE) have provided ample evidence of the influence of these risk factors on mental well-being (Berkman et al., 1986; Black, Goodwin, & Markides, 1998; Blazer, Hughes, & George, 1987; O'Hara, Kohout, & Wallace, 1985). Indeed, it has been postulated that much of the increase in self-reported depressive symptoms among older adults (Newman, 1989) can be attributed to the influence of these risk factors. As Blazer and colleagues pointed out, the major risk factors for depression do not seem to differ by age, but the distribution of these factors often differs substantially across the adult age range: older adults are more likely to be women, to be impoverished, to live

alone with fewer social contacts, and to be physically ill and disabled (Blazer, Burchett, Service, & George, 1991).

Despite the general consensus regarding risk factors for depression among older adults, the rates of depression among various ethnic groups of older adults appear to differ considerably. Review of available mental health data indicates that among older community-dwelling non-Hispanic Whites and African Americans, reported rates of depressive symptoms are generally in the range from 9% to 17% (Berkman et al., 1986; Blazer, Hughes, & George, 1987; Callahan & Wolinsky, 1994; Eaton & Kessler, 1981; Murrell, Himmelfarb, & Wright, 1983; O'Hara, Kohout, & Wallace, 1985). Inconsistencies exist, however, in epidemiologic findings regarding psychological distress among older Mexican Americans. Several investigators have reported that the burden of psychological distress may be greater among this subgroup of the population than among older adults in general (Frerichs, Aneshensel, & Clark, 1981; Vernon, Roberts, & Lee, 1982). Using the Center for Epidemiologic Studies of Depression scale, the Three Generations Study of Mexican Americans reported the prevalence rate of high levels of depressive symptoms to be 20% among older adults (Mendes de Leon & Markides, 1988). Vega, Warheit, Buhl-Auth, and Meinhardt (1984) reported rates in the range of 16% to 18%. Similar rates have been reported by investigators employing other scales to mea-

sure psychological distress (Kemp, Staples, & Lopez-Aqueres, 1987; Lopez-Aqueres, Kemp, Plopper, Staples, & Brummel-Smith, 1984; Quesada, Spears, & Ramos, 1978). In contrast, other investigators have reported no elevated risk for psychological distress among older Mexican Americans. Rates of 12% to 13%, based on data from the Hispanic Health and Nutrition Examination Survey (HHANES; Garcia & Marks, 1989; Moscicki, Locke, Rae, & Boyd, 1989), for example, are more comparable to those reported for older non-Hispanic Whites and African Americans.

These inconsistencies might be the result of limitations in study methodologies, including sample sizes under 200 (Moscicki et al., 1989; Quesada et al., 1978), samples that have included very few individuals over age 65 (Frerichs et al., 1981; Vernon, Roberts, & Lee, 1982), and samples that have been limited in geographic area, such as only California (Kemp et al., 1987; Lopez-Aqueres et al., 1984; Vega et al., 1984) or Texas (Mendes de Leon & Markides, 1988), and which were not fully representative of the entire population of older Mexican Americans.

Another possible reason for these discrepancies concerns additional risk factors that may influence the psychological well-being of older Mexican Americans. Factors that could reduce the rate of depressive symptoms include not only lower rates of many chronic health conditions (e.g., stroke and hip fracture), but also the greater sense of familism, increased social support, higher rates of marriage, and greater reliance on religion evident in the Mexican American culture, in comparison to mainstream American culture (Paniagua, 1994). Conversely, cultural factors such as language, fatalism, and the stress associated with immigration and acculturation, in addition to the lack of health insurance coverage experienced by many older Mexican Americans, may act to increase the risk for depressive symptoms.

This article examines the extent of depressive symptomatology in older Mexican Americans, as well as demographic, social, cultural, and health-related correlates, using data from the Hispanic Established Populations for Epidemiologic Studies of the Elderly (Hispanic EPESE). This survey is the first large-scale population-based study that employs a representative sample of older Mexican Americans from five of the southwestern United States. It was designed to assess the physical health, mental health, and functional status of older community-dwelling Mexican Americans. In this study, we address three specific hypotheses:

1. The prevalence of depressive symptomatology reported by older Mexican Americans is substantially higher than that reported by older non-Hispanic Whites and African Americans;
2. Additional risk factors specific to the Mexican American culture are associated with greater risk for depressive symptoms among older Mexican Americans; and
3. The combination of cultural risk factors and higher rates of standard risk factors accounts for the increase in reported depressive symptoms among older Mexican Americans.

In the Southwest, approximately 525,000 Mexican Americans are age 65 years or older, representing over 5% of the entire Mexican American population and the third largest

group of minority elders in the United States (Bureau of the Census, 1990). Adding to our understanding of psychological distress in this group of older adults is important, particularly in regards to the excess risk among women and immigrants. In addition, more research regarding the extent of depression and the influences of cultural differences can lead not only to improvements in well-being and quality of life for older Mexican Americans, but for all older adults.

MATERIALS AND METHODS

Sample

The Hispanic EPESE is the latest in a series of panel surveys conducted in various portions of the United States (East Boston, New Haven, Iowa, and North Carolina) that were designed to examine the health status of older community-dwelling adults. The initial wave of the Hispanic EPESE was conducted during 1993 and 1994 in Texas, Colorado, New Mexico, Arizona, and California. Area probability sampling was employed to sample a total of 3,050 Mexican Americans aged 65 and older, a response rate of approximately 86%. In order to construct the sampling frame, all counties in the five-state area were ranked according to 1990 Census figures by number of Mexican Americans aged 65 and older. Those counties that contained 90% of all older Mexican Americans were retained. Within these listed counties, individual census tracts were then similarly ranked and those tracts that included 90% of the older Mexican Americans were listed. Three hundred primary sampling units (PSUs) were then selected with probabilities proportional to the number of older Mexican Americans. Within each of these selected PSUs, all block groups were listed and a cumulative total of households calculated. Blocks in each tract were then selected as sampling units by a random process, and a total of 175 households within each sampling unit were screened. Eligible respondents were identified based on reported age, self-identification as a Mexican American, reported birthplace (Mexico or the U.S.), and a review of the ethnic background of an individual's parents and grandparents. Further description of the survey methods can be found in Markides et al. (1996).

All interviews were conducted in person and took an average of 1 hour 45 minutes to complete. Although interviews were conducted for a total of 3,050 individuals, the analyses presented here reflect the reports of 2,823 individuals for whom complete depressive symptom data were available (complete symptom data were not available for 227 subjects for whom proxy interviews were conducted as a result of their being too ill or cognitively impaired and 13 individuals who responded to less than 17 of the depressive items). When weighted for the actual number of older Mexican Americans in the five-state area, the sample represents just under 500,000 Mexican Americans aged 65 and older.

Measures

The study involved in-home interviews conducted either in Spanish or English, depending on the respondent's preference. Questionnaire items included self-reports of so-

ciodemographic, cultural, and health-related measures. Sociodemographic measures included characteristics such as the respondent's age (as of the most recent birthday), gender, years of education, whether he or she was currently employed, current marital status, living arrangement (number of persons residing in the household), and whether he or she had a confidant (someone with whom to discuss his or her deepest problems). Subjects were categorized as bereaved if they reported that a close friend or relative had died in the year prior to interview. Respondents were also asked about health insurance coverage, including private insurance, Medicare coverage (Parts A and B), Medicaid coverage, Veterans' benefits, or if they had no coverage whatsoever. Financial strain was measured by asking respondents if they experienced a great deal, some, little, or no difficulties in paying their monthly bills.

Cultural measures included immigrant status (based on reported place of birth) and recency of immigration (five or fewer years vs more than five years), as well as levels of acculturation and assimilation, which were measured using a modified version of the Acculturation Scale developed by Hazuda, Haffner, and Stern (1988). The measure of acculturation consisted of 10 items assessing patterns of English and Spanish language use. Possible scores range from 3 to 50, with lower scores indicative of lower acculturation. The measure of assimilation consisted of 3 items assessing functional integration into mainstream society. Possible scores range from 3 to 9, with lower scores indicative of lower assimilation. Health locus of control was assessed with an item that asked respondents how much control they felt they had over the general state of their health, through their own actions. This measure was employed as an indicator of fatalism as it pertains to health.

Health-related measures included a series of items in which the respondents were asked whether they had ever been told by a doctor that they had certain chronic conditions, including cardiac problems, stroke, cancer, diabetes, gall bladder disease, hip fracture, arthritis, or incontinence. In addition, self-reported impairments in bathing, dressing, grooming, eating, transferring from bed to chair, using a toilet, and walking were measured with the Katz Activities of Daily Living scale (ADL; Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963). These items were scored dichotomously, according to whether the respondent reported needing help to perform the activity. Scores were calculated representing the number of chronic conditions and the number of ADL impairments reported by each respondent.

Psychological distress was measured with the Center for Epidemiologic Studies Depression Scale (CES-D), which was specifically designed to help identify depressive symptoms in community surveys (Radloff, 1977). The scale consists of 20 items that ask how often specific symptoms were experienced during the past week. Responses are scored on a 4-point scale, with potential total scores ranging from 0–60. A cut point of 16 or greater is typically used to distinguish symptomatology in the clinical range (Boyd, Weissman, Thompson, & Myers, 1982; Newman, 1989). Although the scale does not provide a diagnosis of actual clinical depression, it has been shown to predict both current and future clinical depression (Roberts & Vernon,

1983; Schulberg, McClelland, & Burns, 1987). The CES-D has been the most widely used survey measure of psychological distress in studies of older adults and has been found highly reliable and valid (Blazer, Hughes, & George, 1987; Himmelfarb & Murrell, 1983).

Missing values were computed for 13 individuals who had three or fewer missing CES-D values by substituting the average score of the remaining negative responses for a missing negative item score, or the average score of the remaining positive responses for a missing positive item score (Berkman et al., 1986). This method of substitution made no change in the alpha coefficient of the scale (0.90). Two measures were derived from the CES-D in this study, a continuous measure based on the overall score and a dichotomous measure of caseness (indicative of high level of depressive symptomatology) based on the cutpoint of 16 or more.

Analyses

Differences in the mean CES-D scores across independent variables were evaluated with *t*-test and analysis of variance statistics. Chi-square analysis was employed to evaluate differences in the prevalence rates of high levels of depressive symptomatology.

Once the bivariate relationships between the depressive symptom measures and social, cultural, and health-related characteristics were examined, independent variables were entered into multiple regression models. Logistic regression employing stepwise selection was used to model the dichotomous measure of high levels of depressive symptoms (Glantz & Slinker, 1990; Kleinbaum, Kupper, & Muller, 1988). Models included testing of interaction terms based on the presence of significant main effects.

All analyses incorporated weighted data that were adjusted for design effects in order to produce results that were representative of the older Mexican American population in the five-state region. Confidence intervals were computed using SUDAAN (Shah, Barnwell, Hunt, & LaVange, 1993).

RESULTS

Bivariate Results

Table 1 presents the distribution of sociodemographic, cultural, and health-related characteristics for the total sample and, separately, by gender. About 57% of the respondents were women, a lower percentage than is often reported with other older ethnic populations but which reflects the older Mexican American population. Two thirds were aged 65–74, with an average age of 72.6 years. Women were more likely to be aged 75 and older than were men. The level of education was low, with an average of just over five years of schooling; less than 11% graduated from high school. The vast majority (96.1%) was not currently employed. Over 89% of the sample reported having some type of medical insurance benefits. The older women were less likely to have insurance coverage than the older men, although the difference was significant only at the trend level. Financial strain was common, with over half of

Table 1. Social, Cultural, and Health-Related Characteristics (Weighted Percentages)

	N	(%)	Men	Women
All CES-D Respondents	2823		1176 (42.7)	1647 (42.7)
Age Group (years)				
65-74	1895	(67.6)	803 (69.1)	1092 (66.4)
75+	928	(32.4)	373 (30.9)	555 (33.6)***
Education (years)				
Fewer than 6	1748	(58.0)	1047 (88.3)	1022 (57.4)
6-11	800	(31.4)	321 (29.5)	479 (32.9)
12 or more	275	(10.7)	129 (11.7)	146 (9.7)
Employment Status				
Currently employed	95	(3.9)	42 (3.8)	53 (4.0)
Not employed	2728	(96.1)	1134 (96.2)	1594 (96.0)
Insurance Benefits				
Covered	2606	(89.3)	1092 (90.4)	1514 (88.6)
Not covered	217	(10.7)	84 (9.6)	133 (11.4)
Financial Strain				
None/a little	1150	(45.0)	486 (46.1)	632 (44.2)
Some/a great deal	1673	(55.0)	682 (53.9)	991 (55.8)
Marital Status				
Married	1573	(55.4)	878 (74.2)	695 (41.3)
Divorced/separated	220	(8.2)	77 (6.9)	143 (9.2)
Widowed	875	(31.1)	169 (14.6)	706 (43.5)
Never married	155	(5.3)	52 (4.3)	103 (6.0)***
Living Arrangement				
Alone	621	(21.8)	168 (13.8)	453 (27.8)
2+ person household	2202	(78.2)	1008 (86.2)	1194 (72.2)***
Report of Confidant				
Have confidant	2396	(82.2)	984 (80.9)	1412 (83.3)
No confidant	427	(17.8)	192 (19.1)	235 (16.7)
Bereavement Status				
Bereaved	509	(18.0)	213 (18.0)	296 (18.1)
Not bereaved	2314	(82.0)	963 (82.0)	1351 (81.9)
Immigrant Status				
Recent immigrant	47	(2.8)	18 (2.5)	29 (2.9)
Nonrecent immigrant	1132	(41.9)	483 (41.8)	649 (41.9)
U.S.-born	1644	(55.3)	675 (55.7)	969 (55.2)
Level of Acculturation				
Low acculturation	1687	(55.3)	651 (52.3)	1036 (57.7)
Moderate-high acculturation	1136	(44.7)	525 (47.7)	611 (42.3)*
Level of Assimilation				
Low assimilation	1985	(63.5)	766 (58.9)	1219 (66.9)
Moderate-high assimilation	838	(36.5)	410 (41.2)	428 (33.1)***
Health Locus of Control				
None/some	1614	(56.0)	653 (52.1)	961 (58.8)
A great deal	1209	(44.0)	523 (47.9)	686 (41.2)***
Number of Chronic Conditions*				
0-1	1392	(49.0)	661 (56.8)	731 (43.2)
2 or more	1431	(51.0)	515 (43.2)	916 (56.8)***
Functional Impairment				
Any ADL impairment	348	(12.2)	127 (11.0)	221 (13.0)
No ADL impairment	2475	(87.8)	1049 (89.0)	1426 (87.0)

* $p < .05$; *** $p < .001$; χ^2 statistics.

*Chronic conditions include having a physician's report of cardiac problems, stroke, cancer, diabetes, gall bladder disease, hip fracture, arthritis, or incontinence.

both the men and women experiencing some to a great deal of difficulty paying monthly bills.

Just over half of the respondents were currently married; older men were much more likely to be married and much less likely to be widowed than older women. About 22% lived alone, over 56% lived in two- or three-person households, and about 22% lived in households of four or more people. The older women were more likely to live alone than the older men. More than 80% of both men and women reported having a confidant, and 18% reported having had a close friend or relative die in the year prior to the interview.

Slightly more than half of the respondents had been born in the United States, 2.8% had immigrated in the past five years, and 41.9% had immigrated more than five years ago, with no significant differences between men and women. More than half (55.3%) of the respondents reported low levels of acculturation, and almost two thirds (63.5%) reported low assimilation, with older women less likely than older men to report moderate to high acculturation or assimilation. Regarding health locus of control, older women were more likely to feel they had little control over their health, whereas older men were more likely to feel they had a great deal of control.

About 22% of the sample reported having no chronic conditions, 27% reported having one condition, and 51% reported having two or more conditions. The older women were much more likely than the older men to report having two or more conditions and much less likely to report having no conditions. About 12% of the sample reported needing help with at least one ADL, with little gender variation.

The distributions of weighted CES-D scores and prevalence rates for high levels of depressive symptomatology are presented in Table 2. The distribution of CES-D scores was significantly skewed (Kolmogorov $D = 0.15$, $p < .01$), with a greater proportion of respondents scoring in the lower range. The mean CES-D score for the entire sample was 10.5 and the overall prevalence of high levels of depressive symptoms was 25.6%. As noted in the table, however, these measures varied considerably by socio-demographic, cultural, and health-related characteristics. For example, older women had significantly higher mean CES-D scores than older men (12.2 vs 8.3) and almost twice the prevalence rate (31.9% vs 17.3%). The mean CES-D scores and prevalence rates increased only slightly with age and were significantly higher among the less educated. No differences in either CES-D scores or prevalence rates were evident for employment status. However, respondents who reported no form of health insurance coverage were at significantly higher risk for high levels of depressive symptoms, as were respondents who reported financial strain.

Both scores and prevalence rates were significantly higher among those who had been married formerly (i.e., divorced, separated, or widowed) in comparison to those who were currently married or who had never married. Those who lived alone were at a slightly higher risk for high levels of depressive symptoms. Significantly lower scores and prevalence rates were reported by respondents who had a confidant, and significantly higher scores and rates were re-

Table 2. Weighted Mean CES-D Scores and Prevalence of High Depressive Symptoms^a for Social, Cultural, and Health-Related Characteristics

	Mean CES-D (95% CI)	Prevalence (95% CI)
All CES-D Respondents	10.5 (10.1,11.0)	25.6 (23.3,27.9)
Gender		
Women	12.2 (11.6,12.8)	31.9 (29.3,34.4)
Men	8.3 (7.6,9.0)***	17.3 (14.2,20.3)***
Age Group (years)		
65–74	10.1 (9.6,10.7)	24.4 (21.1,27.7)
75+	11.4 (10.6,12.2)	28.2 (24.7,31.6)
Education (years)		
Less than 6	11.1 (10.4,11.7)	28.0 (25.1,30.9)
6–11	10.4 (9.5,11.4)	24.6 (20.4,28.8)
12 or more	7.8 (6.4,9.2)***	15.2 (8.0,21.5)***
Employment Status		
Currently employed	10.0 (7.6,12.5)	15.7 (5.0,26.4)
Not employed	10.6 (10.1,11.0)	26.0 (24.0,28.0)
Insurance Benefits		
Covered	10.3 (9.8,10.7)	24.3 (22.2,26.2)
Not covered	12.9 (11.3,14.5)*	37.1 (30.0,44.1)***
Financial Strain		
None/a little	8.8 (8.1,9.5)	17.1 (14.6,20.7)
Some/a great deal	12.0 (11.4,12.5)***	32.1 (30.0,34.6)***
Marital Status		
Married	9.5 (8.7,10.2)	22.7 (19.4,26.0)
Divorced/separated	11.5 (9.6,13.5)	28.2 (19.3,39.0)
Widowed	12.2 (11.2,13.2)	30.6 (26.2,35.1)
Never married	10.2 (7.9,12.6)***	22.3 (11.7,32.7)***
Living Arrangement		
Alone	11.2 (10.3,12.2)	26.6 (24.3,30.8)
2+ person household	10.3 (9.8,10.8)	25.3 (23.1,27.6)
Report of Confidant		
Have confidant	9.9 (9.4,10.4)	24.0 (21.9,26.2)
No confidant	13.4 (12.3,14.6)***	32.7 (27.8,37.8)***
Bereavement Status		
Bereaved	13.3 (12.3,14.4)	35.5 (30.9,40.1)
Not bereaved	9.9 (9.4,10.4)***	23.4 (21.3,25.6)***
Immigrant Status		
Recent immigrant	16.9 (13.0,20.8)	57.2 (40.0,74.6)
Nonrecent immigrant	10.7 (9.9,11.5)	26.3 (22.7,29.8)
U.S.-born	10.9 (9.5,10.8)***	23.6 (20.7,26.5)***
Level of Acculturation		
Low acculturation	11.5 (10.9,12.0)	29.2 (26.7,31.8)
Moderate-high acculturation	9.4 (8.7,10.1)***	21.1 (18.0,24.2)***
Level of Assimilation		
Low assimilation	10.8 (10.2,11.3)	27.1 (24.8,29.3)
Moderate-high assimilation	10.1 (9.3,10.9)	22.9 (19.3,26.6)
Health Locus of Control		
None/some	12.5 (12.0,13.1)	31.6 (29.0,34.1)
A great deal	8.0 (7.3,8.6)***	18.1 (15.1,21.0)***
Number of Chronic Conditions ^b		
0–1	8.5 (7.8,9.1)	18.3 (15.6,21.1)
2 or more	12.5 (11.9,13.1)***	32.6 (29.9,35.3)***
Functional Impairment		
Any ADL impairment	16.5 (15.3,17.8)	46.2 (40.7,51.7)
No ADL impairment	9.7 (9.2,10.2)***	22.8 (20.7,24.8)***

* $p < .05$; *** $p < .001$; t -test and ANOVA statistics.

^aBased on a total CES-D score of 16 or more.

^bChronic conditions include having a physician's report of cardiac problems, stroke, cancer, diabetes, gall bladder disease, hip fracture, arthritis, or incontinence.

ported by those who had experienced the death of a loved one in the year prior to interview.

In terms of cultural factors, significant differences were evident for immigrant status, with immigrants at higher risk than those born in the United States. Recent immigrants were at particularly high risk, with an average CES-D score of 16.9 and a prevalence rate of 57.2%. Respondents with low levels of acculturation had substantially higher CES-D scores and prevalence rates in relation to those with moderate to high acculturation. Substantial differences in mean CES-D scores were not apparent for level of assimilation, but those with low levels of assimilation had substantially higher prevalence rates than those who were moderately or highly assimilated. Substantial differences for both scores and prevalence rates were evident for health locus of control, with those feeling less control at significantly higher risk than those feeling more control.

Both the mean CES-D scores and the prevalence rates increased with the number of reported chronic conditions, with those reporting two or more conditions at significantly higher risk. Similarly, those respondents who reported any ADL impairments had significantly higher mean CES-D scores and higher prevalence rates than those who reported no such impairments.

Multivariate Results

An initial logistic regression indicated that female gender, no insurance coverage, financial strain, and recent immigration increased the risk for depressive symptoms, as did the number of reported chronic conditions and having any ADL impairment. A lower risk was associated with higher education, higher acculturation and assimilation, and feeling greater control over health. With the above predictors in the equation, age, employment, marital status, living arrangement, immigrant status, and language of interview were no longer significant.

Importantly, an interaction between gender and immigrant status was also found. In order to better understand this phenomenon, we conducted analyses stratified by gender. The results of these regressions are presented in Table 3. As can be seen in the table, different models were derived for men and women. In both genders, financial strain, the number of chronic conditions, and ADL impairment increased the risk for high levels of depressive symptoms. The direction of the effects of education, no insurance coverage, low assimilation, and health locus of control were the same for both genders, but were much stronger predictors among the older women, whereas not having a confidant and experiencing the death of a close friend or relative were much stronger predictors among the older men.

Interestingly, nonrecent immigration (more than five years prior to interview) was a stronger predictor in women than in men, and the effects were in opposite directions. As can be seen in Table 3, nonrecent immigrant women were at significantly higher risk for high levels of depressive symptoms than women born in the United States (although not as high as among recent immigrant women), whereas nonrecent immigrant men were at somewhat less risk than those born in the United States. Individuals who had immi-

Table 3. Logistic Regression Analyses Predicting High Depressive Symptoms^a for Older Mexican American Men and Women

	Older Men (N = 1176)			Older Women (N = 1647)		
	Coefficient	Odds Ratio	95% CI	Coefficient	Odds Ratio	95% CI
Age Group (75+)	-0.05	0.95	0.67-1.38	-0.03	0.96	0.75-1.24
Education (6-11 years)	-0.05	0.95	0.62-1.47	0.02	1.02	0.78-1.33
Education (12+ years)	-0.35	0.71	0.36-1.37	-0.61**	0.54	0.33-0.87
Currently Employed	-0.55	0.58	0.18-1.91	-0.33	0.72	0.37-1.37
No Insurance Coverage	0.55*	1.73	1.01-3.00	0.52***	1.69	1.18-2.42
Financial Strain (some/great deal)	0.70***	2.01	1.37-2.90	0.69***	2.00	1.57-2.54
Currently Married	-0.07	0.93	0.57-1.51	0.05	1.05	0.80-1.39
Living Alone	0.13	1.13	0.60-2.11	-0.08	0.92	0.69-1.24
Have Confidant	-0.78***	0.46	0.31-0.68	-0.26	0.77	0.58-1.05
Bereaved	0.87***	2.38	1.62-3.50	0.05	1.05	0.78-1.41
Recent Immigrant	1.39***	4.01	1.60-9.75	1.08***	2.74	1.41-5.34
Nonrecent Immigrant	-0.45*	0.64	0.43-0.93	0.28**	1.32	1.07-1.68
Low Acculturation	0.08	1.09	0.69-1.58	0.08	0.93	0.70-1.22
Low Assimilation	0.18	1.19	0.81-1.77	0.33*	1.41	1.02-2.10
Health Locus of Control (none/some)	0.29	1.35	0.94-1.91	0.46***	1.58	1.24-2.02
2 or more Chronic Conditions	0.57***	1.76	1.25-2.49	0.70***	2.00	1.58-2.54
Any ADL Impairment	1.12***	3.08	2.01-4.71	0.69***	1.99	1.44-2.76

* $p < .05$; ** $p < .01$; *** $p < .001$.

^aTotal CES-D score of 16 or more.

grated in the past five years were at substantially higher risk, regardless of gender.

Differences were most dramatic among older women: the mean CES-D score was 11.4 among the women born in the U.S., 12.9 among the nonrecent immigrant women, and 17.7 among the recent immigrant women. Prevalence rates for high levels of depressive symptoms were 28.2 among the women born in the U.S., 34.9 among the nonrecent immigrant women, and 56.6 among the recent immigrant women. Less dramatic differences were evident among older men, with mean CES-D scores of 8.4 and 7.7 and prevalence rates of 17.4 and 14.6 among the men born in the U.S. and the nonrecent immigrant men. Among the recent immigrant men, the mean CES-D score of 15.6 and prevalence rate of 58.3 were comparable to those of recent immigrant women.

As a result, we were particularly interested in any apparent differences between immigrant and nonimmigrant women, regarding factors associated with depressive symptoms. Table 4 presents results of analyses stratified by immigrant status for the older women. Financial strain and chronic health conditions increased the risk for high symptom levels in both the immigrant and U.S.-born women. The direction of the effects of education, lack of insurance coverage, low assimilation, and ADL impairments were the same for both groups of women, but lack of insurance coverage and ADL impairment were much stronger predictors among the older immigrant women, whereas education, low assimilation, and health locus of control were stronger predictors among the U.S.-born women. As noted earlier, recent immigrant women were at higher risk for high levels of depressive symptoms. Living arrangements were found to have opposite effects in the two groups: living alone was associated with greater risk among the immigrant women and lower risk among women born in the United States.

DISCUSSION

Prevalence of Depressive Symptomatology

The prevalence of depressive symptoms was considerably higher in this study than generally has been reported for older adults in other studies. Table 5 presents the prevalence rates reported in other studies that employed the CES-D among community-dwelling older adults. The rate of 25.6% found in this study was higher than that found in the Three Generations Study of Mexican Americans (20.0%; Mendes de Leon & Markides, 1988) and substantially higher than the rate reported for older Mexican Americans in the HHANES (13.2%; Moscicki et al., 1989). A comparable rate was reported for Mexican Americans in the Alameda County study (30.0%; Vernon, Roberts, & Lee, 1982), however, as noted in the table, these respondents ranged in age from 46 to 60 years, a considerably younger group than the subjects in the Hispanic EPESE. Indeed, our findings are more in line with several studies that have reported higher rates of depressive symptoms among younger, nonelderly Mexican Americans (Frerichs et al., 1981; Vernon & Roberts, 1982; Vega et al., 1984).

The rate of depression found in the present study is also considerably higher than rates reported in studies of older non-Hispanics. As can be seen in Table 5, lower rates have been reported for older African Americans and non-Hispanic Whites in the Duke EPESE (9.0%; Blazer et al., 1991), the Yale EPESE (16.4%; Berkman et al., 1986), and the Iowa EPESE (9.0%; O'Hara, Kohout, & Wallace, 1985), as well as the NHANES I (14.8%; Eaton & Kessler, 1981), and other studies that have employed the CES-D (16.3%; Callahan & Wolinsky, 1994; 16.9%; Kennedy et al., 1989). A more comparable rate of 22.0% was reported by Jones-Webb and Snowden (1993) for African Americans aged 60-69.

The differences in prevalence rates between the present

Table 4. Logistic Regression Analyses Predicting High Depressive Symptoms* for Older Immigrant and US-Born Mexican American Women

	U.S.-Born Women (N = 969)			Immigrant Women (N = 678)		
	Coefficient	Odds Ratio	95% CI	Coefficient	Odds Ratio	95% CI
Age Group (75+)	-0.02	0.98	0.70-1.39	-0.17	0.84	0.58-1.22
Education (6-11 years)	-0.13	0.88	0.61-1.28	0.07	1.08	0.72-1.62
Education (12+ years)	-1.06**	0.37	0.18-0.66	-0.16	0.85	0.40-1.81
Currently Employed	-0.13	0.85	0.34-2.24	-0.86	0.42	0.16-1.09
No Insurance Coverage	0.43	1.54	0.85-2.75	0.65***	1.91	1.19-3.06
Financial Strain (some/great deal)	0.58***	1.79	1.29-2.50	0.96***	2.60	1.79-3.78
Currently Married	0.08	1.08	0.74-1.58	-0.06	0.94	0.63-1.41
Living Alone	-0.47*	0.62	0.40-0.96	0.27	1.31	0.86-2.01
Have Confidant	-0.11	0.88	0.58-1.36	-0.46*	0.63	0.40-0.98
Bereaved	0.08	1.07	0.72-1.61	-0.02	0.98	0.62-1.55
Low Acculturation	0.04	1.10	0.65-1.42	0.10	1.10	0.71-1.73
Low Assimilation	0.42*	1.52	1.06-2.22	0.14	1.15	0.75-1.81
Health Locus of Control (none/some)	0.69***	1.99	1.41-2.81	0.19	1.20	0.84-1.72
2 or more Chronic Conditions	0.69***	2.00	1.42-2.82	0.64***	1.90	1.35-2.67
Any ADL Impairment	0.41	1.51	0.95-2.39	1.04***	2.84	1.75-4.59
Recent Immigrant	—	—	—	0.82*	2.27	1.15-4.48

* $p < .05$; ** $p < .01$; *** $p < .001$.

*Total CES-D score of 16 or more.

Table 5. Comparison of Prevalence Rates From Studies Using the CES-D to Measure Depressive Symptoms Among Older Adults

Study	Population	Age Range	Prevalence of High Depressive Symptoms*		
			Overall	Women	Men
Hispanic EPESE	Mexican Americans	65-99	25.6	31.9	17.3
Moscicki et al., 1987 (Hispanic HANES)	Mexican Americans	65-74	13.2	nr	nr
	Cuban Americans		11.0	nr	nr
	Puerto Ricans		27.9	nr	nr
Mendes de Leon & Markides, 1988 (Three Generations Study)	Mexican Americans	65+	20.0	26.0	5.0
Vernon, Roberts & Lee, 1982 (Alameda County)	Mexican Americans	46-71	30.0	nr	nr
	Blacks		21.2	nr	nr
	Whites		18.6	nr	nr
Callahan & Wolinsky, 1994	Blacks	60+	16.3	13.8	9.3
	Whites		(overall)	26.8	15.7
Jones & Snowden, 1993 National Alcohol Survey	Blacks	60-69	22.0	nr	nr
	Whites		15.0	nr	nr
Blazer et al., 1991 (Duke EPESE)	Blacks & Whites	65+	9.0	10.7	6.4
Kennedy et al., 1989	General Population	65+	16.9	19.9	11.1
Berkman et al., 1986 (Yale EPESE)	Whites & Non-Whites	65+	16.4	19.2	11.3
O'Hara, Kohout, & Wallace, 1985 (Iowa EPESE)	Rural Iowa	65+	9.0	nr	nr
Eaton & Kessler, 1981 (NHANES I)	Blacks & Whites	65-74	14.8	nr	nr

*Total CES-D score of 16 or more; nr = not reported.

study and what has been reported previously are apparent even when the men and women are considered separately. Among older women, for example, the rate of 31.9% found in this study is higher than the rate of 26.0% found in the Three Generations Study (Mendes de Leon & Markides, 1988), the 10.7% reported in the Duke EPESE (Blazer et

al., 1991), or the 19.2% reported in the Yale EPESE (Berkman et al., 1986). The rates found in the present study are particularly high, however, in regards to older Mexican American men: our rate of 17.3% is considerably higher than the 5.0% reported for older Mexican American men in the Three Generations Study (Mendes de Leon & Markides,

1988) and the 6.4% reported for males in the Duke EPESE (Blazer et al., 1991). These differences are also evident in the mean CES-D scores.

Standard Risk Factors

Many of the risk factors for depressive symptoms found in the present study are consistent with those identified in previous studies of older adults, including older Mexican Americans. These include gender (Berkman et al., 1986; Blazer et al., 1991; Moscicki et al., 1989), lack of insurance coverage (Callahan, Hui, Nienaber, Musick, & Tierney, 1994), financial difficulties (Eaton & Kessler, 1981; Vega, Kolody, & Warheit, 1985), living arrangements, not having a confidant, and bereavement (Vega, Kolody, Valle, & Hough, 1986). As has been reported for other groups of older adults (Blazer et al., 1991), we found no association between age and depressive symptoms, particularly when controlling for confounding measures such as disability, financial stress, and isolation.

Our findings regarding marital status were mixed. Similar to several other studies (Berkman et al., 1986; Blazer et al., 1991; Moscicki et al., 1989; Vega et al., 1986), bivariate analyses indicated that disrupted marital status was associated with greater risk for depressive symptoms in this sample of older Mexican Americans. In our multivariate analyses, however, the influence of marital status disappeared. This may in part be the result of the comparatively low rates of divorce and separation among Mexican Americans. However, it also suggests that, at least among older Mexican Americans, widowhood may not have as strong an effect on psychological well-being as has been postulated.

Education has been found to have an inverse relationship with depressive symptoms among older adults, with those less educated at higher risk (Moscicki et al., 1989; Vega et al., 1984). The risk for depressive symptoms among older Blacks and Whites was found to be higher among women and among the less educated in the previous EPESE surveys (Berkman et al., 1986; Blazer et al., 1991; O'Hara et al., 1985), as well as in other studies of older adults (Callahan & Wolinsky, 1994; Jones-Webb & Snowden, 1993; Kennedy et al., 1989; Lopez-Aqueres et al., 1984). In the present study, a higher level of education was associated with a significantly lower risk for depressive symptoms in bivariate analyses. In multivariate analyses, this influence remained significant among the older women with 12 or more years of education, but disappeared among the older men. This may be the result of generally very low levels of education in this group of older Mexican Americans.

Current employment has also generally been found to have a protective effect (Mendes de Leon & Markides, 1988; Moscicki et al., 1989), but none was found in the present study. This may be the result of so few of the older Mexican Americans being currently employed.

The influence of chronic conditions and functional impairment on psychological distress found in this sample of older Mexican Americans is also consistent with that found among the older population in general (Berkman et al., 1986; Blazer et al., 1991; Murrell et al., 1983), as well as other studies of older Mexican Americans (Lewinsohn, Hoberman, & Rosenbaum, 1988; Palinkas, Wingard, & Barrett-Connor, 1990; Vega et al., 1986).

Cultural Risk Factors

Our findings both support and contrast other reports regarding the influence of cultural factors on depressive symptomatology. Our finding that low acculturation is associated with higher risk for depressive symptoms is consistent with other literature (Griffin, 1983; Masten, Penland, & Nayani, 1994). Moyerman and Forman (1992) postulated that the stress of acculturation is a primary factor in adjustment problems among immigrants. Several investigators have found increased risk among respondents who conducted interviews in Spanish (Garcia & Marks, 1989; Vega et al., 1985). In the Hispanic HANES, however, Moscicki et al. (1989) found no significant difference among Mexican Americans according to language of interview, although they did find higher rates of depression among those Cubans and Puerto Ricans who responded in Spanish.

Of particular note is our finding that immigrant women and recent immigrants of both genders are at greater risk for depressive symptomatology than their U.S.-born counterparts. With the exception of recent immigrants, older immigrant men were at lower risk than their U.S.-born counterparts. In contrast, Moscicki et al. (1989) found non-immigrants of both genders to report higher levels of psychological distress. Similarly, Golding and Burnam (1990) found Mexican immigrants had lower depression scores than Mexican Americans born in the United States.

These results indicate that somewhat different phenomena are occurring in the older women and the older men. Lack of insurance coverage, low levels of health locus of control, and immigrant status had more deleterious effects among the older women. In contrast, recent immigration and bereavement had much stronger negative effects among the older men, while having a confidant and nonrecent immigrant status had more protective effects. These findings indicate that migration selection, often cited as a reason for better physical health among immigrants (Moscicki et al., 1989), may have a less protective influence among women than men. It may be that earlier immigrants, primarily men, immigrated to the United States for employment opportunities, and thus were healthier. More recent immigrants, primarily women, would be more likely to have immigrated to be with adult children, and thus would be less likely to evidence any healthy immigrant effect. Similarly, older men who had recently immigrated would be less likely to evidence a healthy immigrant effect.

The differences in immigration experiences suggested by our findings also help to identify the specific factors associated with increased risk for depressive symptoms among the older women. We found that lack of insurance coverage and ADL impairment had particularly negative effects among the immigrant women, whereas they had little effect among the women born in the United States. Recent immigration also had a negative effect among the immigrant women. Health locus of control had a much stronger effect among the U.S.-born women, whereas having a confidant had a more protective effect among the immigrant women. Living alone decreased the risk among U.S.-born women, whereas it increased the risk for immigrant women.

These findings suggest that the process of acculturation and assimilation may be more stressful for immigrant

women than men. In addition to immigrating at later ages and for different reasons, immigrant women may be more likely to be caught between two cultures. Two salient features of the Mexican American culture are familism, wherein the central core of life is the family, and "marianism," by which women are expected to be submissive, docile, and sentimental, with specific role expectations (Paniagua, 1994). Traditionally, Mexican American women are the keepers of culture; they are expected to maintain family and cultural traditions, passing on practices to children and acting as the central force of family concerns. Men, in contrast, are often expected to do whatever is necessary to provide for the family. As a result, acculturation may be more sanctioned for men than for women, or, at the very least, there may be greater expectations for women to maintain the traditional culture while functioning in the new culture.

Another salient feature of Mexican American culture is fatalism, the belief that individuals cannot control or prevent adverse events if they are the will of God (Paniagua, 1994). In the present study, we found a low sense of health locus of control was associated with increased risk for depressive symptoms, both in bivariate and multivariate analyses. This may, in part, be reflective of the effects of fatalism in this cultural group, in that individuals who were more fatalistic might have felt less control over their health through their own actions. It also may be related in part to the predominantly low rates of acculturation seen in this group. Szapocznik and Kurtines (1980) postulated that those who are underacculturated lack the necessary flexibility to cope with the psychological demands of cultural assimilation. This may be the case especially among immigrant women and recent immigrants of both genders, individuals who may be more poorly acculturated, more socially isolated, less educated, and more economically marginal than their counterparts who are better assimilated into mainstream American culture.

Immigrants may suffer the effects of added stress from a variety of sources. For example, it has been postulated that the disruption of social support systems experienced by the immigrants may be particularly stressful (Vega et al., 1986). Indeed, we found that among the immigrant women those with greater household sizes were at less risk than those who lived alone or with one other person. Another issue involves the legal status of these individuals. Although we did not assess legal status in the present study, we are aware that many older Mexican Americans may be undocumented aliens, which can add stress and insecurity to the already difficult processes of immigration and assimilation.

Possible Explanations for Increased Prevalence of Depressive Symptoms

In summary, the findings of the present study suggest a substantially elevated risk for depressive symptoms among older Mexican Americans. Risk factors such as gender, lack of insurance coverage, financial strain, absence of a confidant, bereavement, number of chronic health conditions, and functional impairment were as predictive among this group as they are among older adults in general. It is not clear, however, if the elevated rates can be adequately ex-

plained by these traditional risk factors. Indeed, evidence does not suggest that the sociodemographic risk factors function any differently in this group than in other groups of older adults. It is more likely that the elevated risks are related to a greater prevalence of these traditional risk factors coupled with cultural factors. For example, part of the increased risk found in the present study may be explained by the overall level of education of the older Mexican Americans, which is lower compared with that of other groups. Similarly, the greater proportions of older Mexican Americans reporting a lack of insurance coverage and financial strain may also add to the increased prevalence. Immigrant status appears to be particularly influential among recent immigrants and among older women. It does not explain the higher rates reported by the older men, however.

Can the higher rates of depression be explained in terms of chronic conditions and associated functional impairment? Evidence indicates that older Mexican Americans may have fewer chronic conditions than older non-Hispanic Whites or African Americans (Berkman et al., 1986; Kennedy et al., 1989) but higher rates of functional impairment (Markides et al., 1996). This suggests that the critical factor may not be the number of medical conditions but, rather, the nature of the conditions reported and their impact on the lives of those afflicted. A large portion of the variability may be explained by examining the contributions of specific chronic medical disorders that are associated more commonly with depression, particularly those that are associated strongly with functional declines. These include arthritis, cancer, thyroid disease, stroke, diabetes, and cardiovascular disease (Finch, Ramsay, & Katona, 1992; Golding & Burnam, 1990; Katon & Sullivan, 1990; Lewinsohn et al., 1988; Ouslander, 1982), several of which are particularly prevalent among older Mexican Americans. For example, research over the past decade has increasingly demonstrated that adult-onset diabetes mellitus, a disease that is both highly prevalent among Mexican Americans and associated with substantial functional disabilities, is associated more strongly with depression than many other chronic conditions, particularly among older adults (Gavard, Lustman, & Clouse, 1993; Wing, Marcus, Blair, Epstein, & Burton, 1990). Weyerer, Hower, Pfeifer-Kurdo, and Dilling (1989), for example, reported the prevalence of depression to be 27.3% among older diabetics, compared with a rate of 10.6% among healthy older adults and a rate of 20.3% among older adults suffering from other chronic diseases. Among the 22% of respondents in the present study who reported a physician's diagnosis of diabetes, over 31% had high rates of depressive symptoms. This compares with about 26% of those with other chronic conditions and about 18% of those who reported having no chronic conditions.

Our findings highlight both similarities and differences between older Mexican Americans and other ethnic groups of older adults in the United States. These findings are limited, however, in two important ways. First, although the measure of depressive symptoms used in this study, the CES-D, is the most frequently used measure of psychological distress in surveys of older community-dwelling adults, it is only moderately correlated with the clinical syndrome of depression (as delineated in the DSM-IV; American Psy-

chiatric Association, 1994). Indeed, research has indicated that, compared with clinical diagnostic measures, symptom scales may overestimate the prevalence of depression because they include the sequelae of age-related physical disorders and increased somatic symptoms, such as sleep or appetite disturbance (Berry, Storandt, & Coyne, 1984; Blazer, 1982; Newman, 1989). This may be particularly relevant for older Mexican Americans, who may be more likely to express psychological problems with somatic symptoms (Angel & Angel, 1995). Thus, it may not be appropriate to generalize the results for psychological distress into depression as a clinical disorder. Further research is needed to examine potential risk factors using a diagnosis of depressive disorder as the measure of outcome. Despite this limitation, however, the present results are an important addition to the understanding of depression, albeit subsyndromal depression, among older adults, a phenomenon considered common but poorly understood (Blazer et al., 1987; Newman, 1989).

A more important limitation is that the data presented in this article are cross-sectional and cannot adequately reflect longitudinal relationships between physical illness or functional disabilities and depressive symptoms in older Mexican Americans. An important question remains as to whether depressive symptoms are the result of physical health problems, whether physical illness and disability are in part the result of psychological distress, or whether both processes are operating concurrently, as has been suggested by Berkman and colleagues (1986).

These limitations raise another important concern: Does the elevated risk for depressive symptoms indicate an actual increase in the prevalence of depression or does it reflect some sociocultural differences not directly related to psychological distress? This has not been supported either by the reports of clinicians or by studies that have employed diagnostic criteria, such as the Diagnostic Interview Schedule (DIS), which have suggested that the prevalence of depression in older Mexican American adults is the same or less than that of other older Americans (Vernon & Roberts, 1982). Data from the Hispanic HANES (Moscicki et al., 1989) indicate that older Mexican Americans have lower rates of major depression than other groups of older adults. Similarly, data from the Epidemiologic Catchment Area (ECA; Karno et al., 1987) studies indicate no greater risk for depression (as defined by the DIS) among older Mexican Americans than among older African Americans or non-Hispanic Whites.

The ECA data did, however, demonstrate that Mexican American women over the age of 40 were at greater risk for dysthymia, a less severe yet more chronic depressive disorder (Karno et al., 1987). Recent literature has also documented an increased sociocultural acceptance among Mexican Americans to express psychological stress through somatic symptoms (Canino et al., 1992; Katon, Kleinman, & Rosen, 1982a, 1982b). When viewed in conjunction with the increased prevalence of sociodemographic risk factors and the possible effects of the specific chronic medical conditions most prevalent in this group, it appears likely that the increased burden of psychological distress among older Mexican Americans is real. We hope to better address these

issues with longitudinal analyses of the second wave of Hispanic EPESE data.

The findings of this study are important for a number of reasons. For clinicians and policy makers, our results identify similarities and differences between older Mexican Americans and older adults in general. Our findings of higher rates of depressive symptoms among older Mexican Americans have substantial implications for the detection and treatment of mental health in this population. More importantly, however, our findings illustrate the complexity of influences on both mental and physical health in older adults, many of which can be modified. Addressing this complexity benefits not only older Mexican Americans but society as a whole.

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Address correspondence to Dr. Sandra A. Black, 3.324 Jennie Sealy Hospital, Center on Aging, University of Texas Medical Branch, Galveston, TX 77555-0460. E-mail: sblack@utmb.edu

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