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Co-occurrence of mental and physical illness in U.S. Latinos

Alexander N. Ortega, PhD,
University of California Los Angeles, School of Public Health, Department of Health Services, Box 951772, Los Angeles, CA 90095-1772, USA, Tel.: +1-310/794-0912, Fax: +1-310/794-2728

Jonathan M. Feldman, PhD,
Yeshiva University, Ferkauf Graduate School of Psychology, Bronx, NY, USA

Glorisa Canino, PhD,
University of Puerto Rico Medical Sciences Campus, Behavioral Sciences Research Institute, San Juan, Puerto Rico

Kenneth Steinman, PhD, and
Ohio State University, Division of Health Behavior & Health Promotion, School of Public Health, Columbus, OH, USA

Margarita Alegría, PhD
Cambridge Health Alliance and Harvard Medical School, Center for Multicultural Mental Health Research, Department of Psychiatry, Sommerville, MA, USA

Alexander N. Ortega: aortega@ucla.edu; Jonathan M. Feldman: ; Glorisa Canino: ; Kenneth Steinman: ; Margarita Alegría:

Abstract

Background—This study describes the prevalence of comorbid physical and mental health problems in a national sample of U.S. Latinos. We examined the co-occurrence of anxiety and depression with prevalent physical chronic illnesses in a representative sample of Latinos with national origins from Mexico, Cuba, Puerto Rico, and other Latin American countries.

Method—We used data on 2,554 Latinos (75.5% response rate) ages 18 years and older from the National Latino and Asian American Study (NLAAS). The NLAAS was based on a stratified area probability sample design, and the sample came from the 50 states and Washington, DC. Survey questionnaires were delivered both in person and over the telephone in multiple languages, including Spanish and English. Psychiatric disorders were assessed using the World Mental Health Survey Initiative version of the World Health Organization Composite International Diagnostic Interview (WMH-CIDI). Physical chronic illness was assessed by self-reported history.

Results—Puerto Ricans had the highest prevalence of meeting criteria for any comorbid psychiatric disorder (more than one disorder). Puerto Ricans had the highest prevalence (22%) of subject-reported asthma history, while Cubans had the highest prevalence (33%) of cardiovascular disease. After accounting for age, sex, household income, number of years in the U.S., immigrant status, and comorbid anxiety and depression, anxiety was associated with diabetes and cardiovascular disease, in the entire sample. Depression and comorbid anxiety and depression were associated with asthma but not with other physical diseases, in the entire sample. The relationship between chronic physical and mental illness was not confounded by immigration status or number of years in the U.S.

Discussion—Despite previous findings that link acculturation with both chronic physical and mental illness, this study does not find that number of years in the US nor nativity explain the prevalence of psychiatric-medical comorbidities. This study demonstrates the importance of

Correspondence to: Alexander N. Ortega, aortega@ucla.edu.

considering psychiatric and medical comorbidity among specific ethnic groups, as different patterns emerge than when using aggregate ethnic measures. Research is needed on both the pathways and the mechanisms of comorbidity for the specific Latino groups.

INTRODUCTION

Growing evidence has demonstrated substantial comorbidity between physical and mental illness [34]. For instance, depression and anxiety are associated with heart disease [24,42], type 2 diabetes [15], renal disease [21], obesity [32,51], and asthma [16,17,37]. Furthermore, there are data to suggest that subjects with comorbid physical and mental illness have higher health care costs than people without comorbidities [31].

The pathways between mental and physical illness comorbidities are not fully understood. Several possible mechanisms and synergies exist. For instance, depression may lead to overeating and obesity and, thus, greater risk for cardiovascular disease or diabetes. On the other hand, enduring the stressors related to having a chronic disease may lead to the development of depression. For asthma, it remains unclear if anxiety is an outcome related to anticipating an attack or a precursor to an asthma exacerbation [38].

Within the Latino population, mental and physical health problems have been separately identified as important public health concerns, but there is little empirical information about the comorbidities among Latinos. In general, Latinos have lower rates of mental health problems than non Latino whites, but evidence has shown that their risk for mental illness increases with acculturation [36,47]. In fact, Vega et al. (1998) found that Mexicans in the central valley of California had lower lifetime rates of psychiatric illness compared with the general population. Recent immigrants had the lowest rates of psychiatric illness, while immigrants who had been in the U.S. for more than 13 years had rates that approximated those of the U.S. general population. More recent data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) [19], as well as from the National Latino and Asian American Study (NLAAS) (Alegria et al., unpublished report) have also found that with more exposure to the US, the likelihood of at least certain psychiatric disorders, such as depression, is increased among the Latino population.

As of the last counting of the United States Census (2003), at 13% of the total US population, Latinos are the largest minority group in the country. Within the Latino population, those of Mexican and Puerto Rican descent comprise the two largest groups, accounting for 58.5% and 9.6%, respectively (not including the 3.5 million U.S. citizens in Puerto Rico). Given the growing numbers of Latinos in American society, it is important that researchers begin to focus on behavioral, clinical and pathological factors related to disease risk among Latinos. The first step, however, is to describe the disease prevalence in not only the general Latino population but also in the specific ethnic subgroups, as such information is generally lacking in the literature. The current literature suggests that Latinos, in general, have different disease risk profiles than non-Latino whites and blacks, and differences emerge even across Latino subgroups [5,20,35,36].

Previous population-based reports on chronic illness among Latinos have been limited by sampling, for example grouping Latinos together or just studying one subgroup, usually Mexican-Americans or Puerto Ricans [10,22,44]. The National Health and Nutrition Examination Survey (NHANES) and other epidemiological studies have demonstrated that compared with non-Latino whites, Latinos have high risk for certain chronic diseases such as diabetes [9], but they have low risk for other conditions such as asthma, hypertension and cancer mortality [7,8,10,22]. Using the Behavioral Risk Factors Surveillance System (BRFSS), the Centers for Disease Control and Prevention (CDC) reported that 5% of adult Latinos had

lifetime reports of asthma compared with 9% for blacks and 8% for whites; however, once stratified by location, island Puerto Ricans had the highest proportion of asthma (16%) [6,8]. Other studies have demonstrated that both island and mainland Puerto Ricans, especially children, have the highest risk for asthma than any other U.S. racial or ethnic group, with rates of approximately 20% for mainland Puerto Rican children and 33% for island Puerto Rican children [3,5,14,30,37,39]. These studies demonstrate the importance of examining ethnic subgroups, as opposed to simply combining all Latinos into one category. Data from the NHANES also showed that 54% of Mexican Americans had hypertension compared with 71% for whites and 73% for blacks [22]. Among those subjects with hypertension, Mexican-Americans were less likely to be aware of their condition and less likely to be under current treatment [10] than the other comparison groups. The 1998–2002 BRFSS demonstrated that 9.8% of Latinos versus 5% of whites had self-reported diabetes [9].

The risks for asthma, hypertension, cancer and mental illness have been shown to increase with acculturation for Latinos [25,36,44,46]. The role of acculturation (the complex process of adaptation to an alien host society or culture) in the epidemiology of these conditions is not well understood. However, researchers have posited that the role of health behaviors related to adapting to mainstream American lifestyles, such as diets high in fat, salt and cholesterol, smoking patterns and sedentary lifestyles, may increase the risk for a slew of chronic physical health problems. For psychiatric and substance use disorders, the mediating factors are less clear. Researchers have suggested that the increased risk for mental illness among acculturated Latinos may be due to the breakdown of the family network and social support system [12, 36].

In this paper, using a stratified national probability sample of Puerto Ricans, Mexicans, Cubans and other Latinos we will a) determine the prevalence of psychiatric disorders; b) determine the prevalence of select chronic physical health problems (asthma, diabetes, and cardiovascular disease); and c) determine the associations of depression and anxiety to chronic physical illness, after accounting for immigration status and number of years in the U.S., as well as other potential confounding factors.

METHODS

The data presented here are based on a nationally representative sample of Latinos obtained from the National Latino and Asian American Study (NLAAS), which was described by Heeringa et al. (2004). The original study makes use of both national Latino and Asian samples; however, we only report on the Latino sample here. In brief, the NLAAS is based on a stratified area probability sample design. All subjects are 18 years or older from the non-institutionalized population of the 50 states, Washington, DC and Puerto Rico. The sample consists of 2,554 Latinos. Of the Latinos, 577 were Cuban, 495 were Puerto Rican, 868 were Mexican, and 614 were other Latino. The interviews were conducted in both English and Spanish by trained interviewers at the University of Michigan's Institute for Social Research (ISR) between May 2002 and November 2003. The overall response rate for the weighted Latino sample was 75.5% [23].

Measures

The surveys used in the NLAAS were delivered in multiple languages, including English and Spanish. Standard pre-validated measures that were not available in Spanish were translated and adapted using a comprehensive process guided by a conceptual model [1] that focused on cross-cultural equivalence in five dimensions (semantic, content, technical, criterion, and conceptual equivalence).

A module in the survey asked respondents about lifetime histories of physical chronic illness. We decided to examine only those illnesses that were highly prevalent in the Latino population: lifetime history of asthma, diabetes (type I or II), and cardiovascular disease.

Lifetime and 12-month psychiatric disorders were measured using the diagnostic interview of the World Mental Health Survey Initiative version of the World Health Organization Composite International Diagnostic Interview (WMH-CIDI) [29]. For the current study, we examined lifetime measures of psychiatric illness, since we used lifetime measures of chronic physical illness. The WMH-CIDI is a fully structured diagnostic instrument administered by trained lay interviewers. WMH-CIDI diagnoses are based on criteria of the Diagnostic and Statistical Manual of Mental Disorders, version 4 (DSM-IV) and ICD-10 symptom criteria. The validity of earlier versions of the English and Spanish CIDI diagnostic assessments were found to be consistent with those obtained independently by trained clinical interviewers [41, 50].

For the purposes of the present study, we concentrated on depression and anxiety, since the literature points to their specific associations with chronic illness. Two global diagnostic categories for lifetime anxiety and depression were developed. Categories were constructed by collapsing all specific diagnoses with common clinical characteristics, e.g. major depressive episode and dysthymia, into the category of "any depressive disorder" and specific anxiety disorders, e.g., panic disorder, agoraphobia, social phobia, and generalized anxiety disorder, into the category of "any anxiety disorder." We also measured whether the respondents had any lifetime psychiatric disorder across the full array of disorders measured in the NLAAS, more than one disorder (comorbid psychiatric disorders), and comorbidity between anxiety and depressive disorders.

Several personal and demographic characteristics were measured to see if they explained differences in the relationships between psychiatric illness and physical illness by Latino subgroup. They included language use (Spanish only, both English and Spanish, or English only), gender, marital status (married, never married, widowed/separated/divorced), education (11 years or less, 12 years, 13–16 years, 17 years or more), perception of financial need (has more money than need, just enough money, not enough money), family household income ($\leq$ \$14,999, \$15,000–\$34,999, \$35,000–\$74,999, $\geq$ \$75,000), immigration/nativity (mainland U.S.-born versus Puerto Rico island- or foreign-born), number of years in the U.S., if foreign born, and age (18–34, 35–39, 50–64, 65 or more years).

DATA ANALYSIS

All analyses were weighted using STATA (2004) to account for the stratified and over-sampling features of the study design. For a full description of the NLAAS sample design see Heeringa et al. (2004). First, chi-square analyses were conducted to examine associations across the Latino subgroups (Puerto Rican, Cuban, Mexican, or other Latinos) and the demographic variables. Second, across the subgroups we compared the association between national origin and having any psychiatric disorder, more than one disorder, any depressive disorder, any anxiety disorder, and comorbid anxiety and depressive disorders. Third, we compared across the subgroups the associations between national origin and the selected lifetime reports of chronic physical illnesses (asthma, diabetes, and cardiovascular disease). Fourth, using multiple logistic regression analyses, we compared the associations of the dependent chronic physical illness measures for asthma, diabetes, and cardiovascular disease with anxiety and depressive disorders, as independent variables. The logistic regression models were fitted for the entire Latino sample and stratified by each of the three major ethnic subgroups (Puerto Ricans, Cubans and Mexicans). We did not include other Latinos for these last analyses, since they are an aggregate of multiple Latino subgroups. The regression models

were adjusted for age, gender, family household income, number of years in the U.S., and immigration/nativity. For the multivariate models that focused on any anxiety disorder and any depressive disorder, we also adjusted for any depressive disorder and any anxiety disorder, respectively. For the chi-square analyses, we established significance at the alpha = 0.05 level. For the logistic regression analyses, we report odds ratios (OR) with their 95% confidence intervals.

RESULTS

Table 1 shows the results demonstrating the associations between the total Latino sample, each Latino subgroup, and the demographic variables. Cubans had the highest percentage of Spanish only speakers, while Puerto Ricans had the highest percentage of English only speakers. Mexicans had the highest percentage of males, while "other Latinos" had the highest percentage of female participants. Mexicans had the highest proportion of subjects who were married while Puerto Ricans and "other Latinos" had the highest percentages of those who were never married. Mexicans had the highest proportion of subjects who had less than 12 years of education and the lowest percentage with 17 years or more of education; Cubans had the highest percentage of subjects with 17 years or more of education. Cubans had the highest percentage of families that made $75,000 or more a year, while Mexicans had the highest percentage of Latino respondents that made less than $15,000 a year. Puerto Ricans were more likely to be born in the mainland U.S. Puerto Ricans had the highest percentage of families who have spent more than 20 years in the U.S.; Cubans had the least average number of years living in the U.S. Mexicans were younger while Cubans were older.

Table 2 shows the associations between Latino ethnic subgroups and the classifications for psychiatric disorders. Puerto Ricans had the highest lifetime prevalence rates of any psychiatric disorder, meeting criteria for more than one disorder, any depressive or any anxiety disorder. No significant differences were found for comorbid anxiety and depressive disorder across Latino subgroups.

Table 3 shows the associations between the ethnic subgroups and the selected self-reported histories of chronic physical illnesses. Two significant associations were found. Approximately 22% of the Puerto Ricans had a history of asthma compared with only 12% of Cubans, 6% of Mexicans, and 9% of other Latinos. Cubans had the highest subject reported history of cardiovascular disease. Approximately 33% of the Cubans had a history of cardiovascular disease compared with 24% of Puerto Ricans, 14% of Mexicans, and 18% of other Latinos.

Table 4 shows the unadjusted and adjusted effects of anxiety and depressive disorders on asthma, diabetes, and cardiovascular disease for the entire sample and stratified by the three main Latino subgroups. The following summarizes the adjusted logistic regression analyses, which controlled for age, sex, income, number of years in the U.S. and immigrant status/nativity. The multivariate models for "any anxiety disorder" and "any depressive disorder" also controlled for any depressive disorder and anxiety disorder, respectively. For anxiety disorder, effects were found for diabetes and cardiovascular disease. When stratified by Latino subgroup, anxiety was associated with cardiovascular disease for the Puerto Ricans, diabetes for Cubans, and with diabetes and cardiovascular disease for Mexicans.

Depressive disorder was associated with asthma for the entire Latino sample. Once stratified, depressive disorder was associated with asthma among Puerto Ricans and Mexicans. Interestingly, Puerto Ricans with any depressive disorder had a lower odds of cardiovascular disease compared with Puerto Ricans without any depressive disorder. Comorbid anxiety and depressive disorder was associated with asthma in the entire Latino sample, and once stratified, was associated with asthma only in Mexicans. The unadjusted analyses yielded similar results.

DISCUSSION

To our knowledge, this paper is the first attempt to quantify the national estimates of the co-occurrence of anxiety and depression and chronic physical illness in a diverse national sample of Latinos. Consistent with unpublished previous reports of these same data (Alegria et al., unpublished report), Puerto Ricans had a higher prevalence of having any lifetime psychiatric disorder, having more than one disorder, having any depressive disorder, and having any anxiety disorder than the other Latino groups. This is the first national probability study that demonstrates that Puerto Ricans have the highest levels of psychiatric comorbidity than other Latino groups. Lifetime anxiety was significantly associated with diabetes and cardiovascular disease, in the entire Latino sample. Lifetime depression was only associated with asthma, in the entire Latino sample. Further, the finding that asthma was most prevalent among Puerto Ricans is consistent with increasing evidence that Puerto Ricans have the highest odds of having asthma than any other group of people in the United States [3,6,14,26,30,37]. To our knowledge, the higher cardiovascular disease prevalence in Cubans is a new observation.

The findings from the present study replicate the established link between anxiety and cardiovascular disease for Latinos. However, Latinos do not show comorbidity between depression and cardiovascular diseases. A recent meta-analysis [43] showed that both anxiety and depression are associated prospectively with increased risk for developing cardiovascular disease among healthy individuals at baseline. Suls and Bunde (2005) concluded that this association with cardiovascular disease might be attributed to a general personality trait of negative affect, as opposed to specific effects of the individual constructs. Therefore, the specific link between anxiety and cardiovascular disease among Latinos is a unique finding in that it shows differentiation between anxiety and depression. One possible explanation may be that the Latino adult population is younger, on average, than other ethnic and racial groups, and thus the comorbidity is not yet evident. Stratified analyses by Latino subgroups showed that the association between anxiety disorders and cardiovascular disease was significant among Puerto Ricans and Mexican-Americans. This finding is particularly interesting given the low rate of anxiety disorders among Mexican-Americans in the present study. Furthermore, the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) study showed that Mexicans (US-born and foreign-born) have lower rates of anxiety disorders than non-Latino whites [19]. This link between anxiety and cardiovascular disease may be related to common behavioral risk factors, such as cigarette smoking, which has been linked in prospective studies to the development of anxiety disorders [28]. Wilkinson et al. (2005) showed that the rate of cigarette smoking among Mexican-Americans in the US, particularly among US-born men, appears to be higher than previous studies have shown. Higher levels of acculturation and time spent in the US appear to increase the risk of smoking among Mexican-Americans. Additionally, anxiety and stress may promote cardiovascular disease via physiological pathways involving activation of the sympathetic nervous system and hypothalamic-pituitary-adrenocortical axis [26]. Future research should investigate physiological reactivity to stress across Latino subgroups as another possible mechanism in anxiety-cardiovascular disease comorbidity.

The findings on comorbidity between depression and diabetes and cardiovascular disease were consistent. The absence of an association between depression and diabetes contradicts previous research showing a twofold increased likelihood of patients with diabetes having depression versus patients without diabetes [2]. Traditional Latino cultural values such as familism, which emphasizes close-knit family bonds, may serve as a protective factor in preventing the development of depression among individuals with cardiovascular disease and diabetes.

The association between anxiety and diabetes among Latinos in the present study is consistent with the previous literature [40,45]. Comorbidity between anxiety and diabetes was found

among Cuban-Americans and Mexican-Americans but not Puerto Ricans. Furthermore, there was no evidence of comorbidity between anxiety and asthma among Puerto Ricans. This finding is particularly interesting given the high rate of lifetime anxiety disorders (22%) and asthma (22%) among Puerto Ricans in the present study. Puerto Ricans appear to be at higher risk for an anxiety disorder, regardless of whether there are comorbid medical conditions present.

The result from the present study showing associations between asthma and depression is consistent with community-based studies [17,18]. Asthma was the only chronic physical disease in the present study that was associated with depression and comorbid anxiety and depression.

Examination of Latino subgroups revealed that asthma was associated with depression among Puerto Ricans and Mexican-Americans but not Cuban-Americans. This finding is particularly salient given recent data showing that Puerto Ricans are less responsive to β_2-agonist medication and have greater disease severity and morbidity than Mexicans [4]. Therefore, asthma-depression comorbidity may be consistent across levels of asthma severity. The absence of a significant association between asthma and anxiety when examining ethnic subgroups may be attributed to the small sample size in these analyses.

The findings concerning psychiatric-medical comorbidity were independent of age, sex, household family income, number of years in the U.S., and immigrant status/nativity. Studies have consistently shown that individuals of low and middle socioeconomic status are at greater risk for psychiatric disorders, across different types of psychiatric diagnoses [27,33,49]. Additionally, acculturation has been identified as a predictor of psychiatric disease in Latinos [36]. Foreign-born Mexican-Americans appear to be at lower risk for psychiatric disorders than US-born Mexican-Americans [19,36,48]. Younger age of entry into the US and more time spent in the US increase the risk of psychiatric disorders [48]. Therefore, controlling for these predictors of mental health demonstrates that the findings on psychiatric-medical comorbidity are robust in the present study.

While the current paper is useful to help establish the magnitude of the effects for comorbid psychiatric and physical illness in different Latino groups, the study has several limitations. First, the measures of lifetime history of chronic illnesses in this study are rather crude measures based on subject self reports. The NLAAS was not originally designed to specifically address the issue of physical and mental health comorbidities, so the analyses presented here were secondary to the original study aims. Second, we use lifetime psychiatric and chronic physical conditions and not current assessments. As in any retrospective observational study, the data may be threatened by recall bias, and the directionality of the associations cannot be determined. However, we used lifetime assessments for both illness classifications in order to minimize the issue of time reference. Third, even though we account for important demographic variables and number of years in the U.S. and immigration status/nativity, our covariates are limited in their ability to test the full range of potential mechanisms that might account for comorbidities (i.e., other common risk factors). Fourth, the NLAAS did not collect data on the 25% who did not respond to the survey, so we are unable to compare responders versus non-responders to determine if there are any potential biases due to who responded. Fifth, there a no published studies that validate the Composite International Diagnostic Interview (CIDI) for Latinos. Thus, while the instrument has been shown to be valid for several disorders in non-Latino populations, in particular mood and substance disorders, its validity still needs to be determined for Latinos.

CONCLUSION

To our knowledge, this is the first paper to describe the national prevalence estimates of comorbid psychiatric and chronic physical illness in different Latino subgroups. This paper demonstrates that anxiety disorders are associated with diabetes and cardiovascular disease among a representative sample of Latinos in the United States. Having a depressive disorder and having comorbid anxiety and depressive disorders were only associated with asthma. Therefore, these findings demonstrate that Latinos may show a different pattern of psychiatric-medical comorbidity than the general population.

Furthermore, this study shows the importance of examining psychiatric-medical comorbidity among specific ethnic subgroups, as unique patterns emerged for Mexican-Americans, Cuban-Americans, and Puerto Ricans. It will be important for future research to explore the mechanisms and directionality of psychiatric and medical illnesses in each of these ethnic subgroups. Additional studies should also examine the potential role of culture in protecting against the onset of depressive disorders among patients with cardiovascular disease and diabetes. Primary care may be an important place to identify co-morbid mental health conditions among Latinos and ensure that appropriate treatment is provided for both mental and physical conditions.

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Table 1

Demographic characteristics of the NLAAS sample, n (%)

	Total Latinos(2554)		Puerto Rican(495)		Cuban(577)		Mexican(868)		Other Latino(614)		*p*
	N	percentage	N	percentage	N	percentage	N	percentage	N	percentage	
Language use											0.0027
Spanish only	1348	48.89%	171	33.46%	409	70.64%	445	52.64%	323	43.39%	
Both English and Spanish	332	13.46%	92	18.32%	65	10.58%	96	11.73%	79	15.64%	
English only	874	37.65%	232	48.22%	103	18.79%	327	35.63%	212	40.97%	
Gender											0.0205
Male	1127	51.50%	213	48.68%	276	52.59%	398	53.89%	240	47.61%	
Female	1427	48.50%	282	51.32%	301	47.41%	470	46.11%	374	52.39%	
Marital status											<0.0001
Married	1288	51.86%	195	39.71%	309	56.09%	505	57.14%	279	45.02%	
Never Married	669	29.72%	162	33.38%	90	16.49%	228	28.43%	189	33.12%	
Widow/Seperated/Divorced	596	18.42%	138	26.91%	177	27.43%	135	14.43%	146	21.86%	
Education											<0.0001
11 years or less	993	44.48%	172	34.45%	177	30.37%	441	52.71%	203	34.00%	
12 years	633	24.52%	140	28.17%	136	24.51%	215	24.32%	142	23.64%	
13–16 years	757	26.33%	160	32.83%	190	32.22%	183	19.72%	224	36.17%	
17 years or more	170	4.67%	23	4.55%	74	12.91%	29	3.25%	44	6.19%	
Perception of financial need											0.0979
Has more money than needed	138	5.38%	29	6.18%	35	6.09%	36	4.26%	38	7.20%	
Just enough money	1324	55.27%	243	51.25%	292	52.27%	486	57.74%	303	52.28%	
Not enough money	1063	39.35%	209	42.56%	248	41.63%	335	38.00%	271	40.52%	
Family income											0.0218
<=$14,999	711	27.48%	139	27.11%	168	28.10%	253	29.32%	151	23.90%	
$15,000–$34,999	691	28.68%	107	21.86%	134	23.41%	271	31.24%	179	26.86%	
$35,000–$74,999	695	27.73%	144	29.47%	143	24.83%	230	26.29%	178	30.44%	
$75,000+	457	16.11%	105	21.56%	132	23.66%	114	13.15%	106	18.81%	
Nativity											0.0011
Born in US	924	41.46%	278	54.95%	76	13.85%	380	42.93%	190	38.28%	
Born in Puerto Rico or foreign	1630	58.54%	217	45.05%	501	86.15%	488	57.07%	424	61.72%	
Years in US (not US mainland born)											0.0001
<3 years	151	5.45%	4	0.89%	60	10.89%	46	5.68%	41	5.70%	
4–10 years	344	13.31%	20	5.05%	105	18.48%	118	13.84%	101	14.33%	
11–20 years	496	22.44%	72	14.83%	61	10.52%	193	22.83%	170	26.25%	
>20 years	1555	58.80%	398	79.22%	350	60.12%	506	57.65%	301	53.72%	
Age											<0.0001
18–34 years	1068	49.01%	190	39.15%	135	25.70%	458	53.01%	285	48.31%	
35–49 years	801	30.07%	165	32.50%	166	26.15%	266	29.48%	204	31.01%	
50–64 years	454	13.38%	99	18.92%	160	25.31%	102	11.35%	93	13.51%	
65 years or more	231	7.55%	41	9.43%	116	22.84%	42	6.16%	32	7.16%	

[1] The percentages are obtained weighted using survey command in Stata.

[2] The numbers of observations are not weighted, since they are just counts of cases.

[3] The new weights (newshrinkwgt) are used.

Table 2

Psychiatric disorders by ethnicity, n (%)

	Total		Puerto Rican		Cuban American		Mexican-American		Other Latinos		*p*
	N	percentage	N	percentage	N	percentage	N	percentage	N	percentage	
Any psychiatric disorder	785	29.89%	183	39.60%	173	29.25%	258	29.13%	171	28.08%	0.0076
More than 1 disorder	416	16.02%	109	23.93%	76	12.31%	143	16.28%	88	13.33%	<0.0001
Any depressive disorder	407	14.05%	94	18.97%	97	16.22%	123	12.83%	93	14.38%	0.0044
Any anxiety disorder	430	15.31%	103	21.61%	96	15.71%	130	14.75%	101	14.16%	0.0346
Anxiety and depressive disorder	196	6.56%	43	8.62%	44	6.85%	54	5.69%	55	7.48%	0.0879

Table 3

Physical problems by ethnicity, n (%)

	Total		Puerto Rican		Cuban American		Mexican-American		Other Latinos		*p*
	N	percentage	N	percentage	N	percentage	N	percentage	N	percentage	
Asthma	282	8.76%	102	21.55%	67	12.06%	54	6.04%	59	9.13%	<0.0001
Diabetes	225	8.61%	61	11.99%	55	8.71%	70	8.54%	39	7.54%	0.3211
Cardiovascular disease	523	16.99%	113	24.11%	186	32.85%	118	13.92%	106	17.99%	0.0003

Table 4

Unadjusted and adjusted effects of anxiety and depressive disorders on chronic physical illness in U.S. Latinos

	lifetime prevalence for any anxiety disorder (Unadjusted)	lifetime prevalence for any depressive disorder (Unadjusted)	lifetime anxiety and depressive disorder (Unadjusted)	lifetime prevalence for any anxiety disorder (Adjusted)[a]	lifetime prevalence for any depressive disorder (Adjusted)[b]	lifetime anxiety and depressive disorder (Adjusted)
Total Sample						
asthma	1.63 (1.10 – 2.41)**	2.30 (1.63 – 3.25)***	1.89 (1.19 – 2.98)***	1.16 (0.75 – 1.79)	1.97 (1.31 – 2.97)***	1.68 (1.07 – 2.64)**
diabetes	2.41 (1.60 – 3.64)***	1.00 (0.68 – 1.48)	1.48 (0.84 – 2.62)	2.59 (1.56 – 4.28)***	0.59 (0.34 – 1.04)	1.21 (0.64 – 2.29)
cardiovascular	2.05 (1.50 – 2.80)***	1.36 (0.82 – 2.28)	1.53 (0.85 – 2.75)	1.96 (1.38 – 2.78)***	1.03 (0.54 – 1.97)	1.38 (0.63 – 3.02)
Puerto Ricans						
asthma	1.73 (0.80 – 3.75)	2.02 (1.17 – 3.50)**	1.34 (0.47 – 3.81)	1.33 (0.59 – 3.01)	1.90 (1.02 – 3.54)**	1.28 (0.41 – 4.02)
diabetes	0.86 (0.31 – 2.42)	0.66 (0.29 – 1.49)	0.42 (0.10 – 1.74)	1.09 (0.36 – 3.27)	0.66 (0.22 – 1.96)	0.47 (0.11 – 1.91)
cardiovascular	1.40 (0.80 – 2.46)	0.65 (0.38 – 1.12)	0.60 (0.27 – 1.31)	2.2 (1.06 – 4.55)**	0.52 (0.29 – 0.92)**	0.62 (0.28 – 1.37)
Cubans						
asthma	1.60 (0.88 – 2.92)	0.97 (0.52 – 1.83)	1.05 (0.35 – 3.17)	1.50 (0.83 – 2.72)	0.74 (0.35 – 1.56)	0.88 (0.33 – 2.35)
diabetes	2.45 (1.36 – 4.39)***	2.19 (1.07 – 4.50)**	2.27 (0.82 – 6.28)	2.08 (1.02 – 4.25)**	1.84 (0.83 – 4.10)	2.05 (0.69 – 6.14)
cardiovascular	1.77 (1.08 – 2.91)**	1.17 (0.72 – 1.90)	1.15 (0.45 – 2.92)	1.83 (0.96 – 3.48)	0.87 (0.53 – 1.43)	0.90 (0.27 – 2.95)
Mexicans						
asthma	1.70 (0.82 – 3.53)	3.35 (1.78 – 6.31)***	3.43 (1.57 – 7.47)***	0.99 (0.44 – 2.19)	2.95 (1.32 – 6.59)**	2.78 (1.25 – 6.19)**
diabetes	3.40 (2.28 – 5.06)***	1.00 (0.53 – 1.89)	2.18 (1.07 – 4.46)**	3.23 (1.71 – 6.07)***	0.50 (0.21 – 1.19)	1.59 (0.51 – 4.95)
cardiovascular	2.67 (1.79 – 3.99)***	1.74 (0.74 – 4.11)	2.55 (1.08 – 5.99)**	2.08 (1.27 – 3.42)***	1.38 (0.51 – 3.73)	2.26 (0.54 – 9.45)

[a] Adjusted for age, sex, household income, immigrant status, year in US, and any depressive disorder

[b] Adjusted for age, sex, household income, immigrant status, year in US, and any anxiety disorder.

Odds ratios and 95% confidence intervals

** significant at 5%;

*** significant at 1%