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Factors associated with Health-Related Quality of Life in Hispanic population with mental disorders using medical expenditure panel survey 2013-2017

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ABSTRACT

There is a lack of U.S. population-based research surrounding the marked decrease in health-related quality of life (HRQoL) caused by the morbidity of mental disorders in the U.S. Hispanic demographic. This cross-sectional study utilized data from the 2013-2017 Medical Expenditure Panel Survey (MEPS) to identify Hispanic community-dwelling residents with mental disorders in the U.S. The independent variable was the presence of mental disorders, and the dependent variable was HRQoL. HRQoL was measured with the Short Form 12 (SF-12) Physical Health Composite Scale (PCS) and Mental Health Composite Scale (MCS). A total of 34,434 patients met the inclusion criteria, representing about 38,683,299 Hispanic individuals. Of this group, those older than 18 were stratified by the presence of mental disorders. The two groups were those with mental disorders: 4,122 individuals representing a sample size of 4,789,634; and those without mental disorders: 30,312 individuals representing a sample size of 33,893,665. Based on our study, Hispanic patients with mental disorders were associated with lower HRQoL scores. SF-12 PCS scores (95% CI) were 45.3 (44.5, 46.1) for those with mental disorders and 50.8 (50.5, 51.0) for those without mental disorders. SF-12 MCS scores (95% CI) were 42.6 (42, 43.3) in patients with mental disorders and 52.6 (52.3, 52.8) in patients without mental disorders. These differences in scores denote the impact of mental health disorders on HRQoL scores in the Hispanic demographic and mark the way for further research on identifying means of improving such scores for Hispanic patients.

Key Words: Menta Disorders, Health-related quality of life, Hispanic Population, Medical Expenditure Panel Survey

1. INTRODUCTION

Mental health disorder is an illness that affects an individual's work, school, relationships, and ability to adapt and cope with adversity.[1] Types of mental disorders include anxiety, panic, obsessive-compulsive disorder, phobia, depression, bipolar, eating disorder.[2] According to the American Psychiatric Association, nearly 1 out 5 U.S adults experience some kind of mental illness, and 1 in 24 develop a severe mental illness.[1–3] The National Library of Medicine states that more than half of all Americans will be diagnosed with a mental disorder at some time in their life.[2] Factors that may lead to the development of a mental disorder include family history, traumatic life experience, brain injury, chemical imbalances, and the use of alcohol and recreational drugs.[2] Fortunately, treatment is available for mental health disor-

ders.[1] However, disparities in access and quality of care exist amongst different populations and cultures.[4, 5]

The Hispanic population is one of the fastest-growing racial groups in the United States.[4] At about 60.4 million, the Hispanic population makes up 18.3% of the U.S. population.[4, 6] By 2060, the Hispanic population is projected to grow to 119 million, which will be about 28.6% of the U.S. population.[4, 6] Currently, 16% of the Hispanic population in the U.S. is reported to have mental health disorders, and only about 33% receive treatment.[3, 7] Previous studies have reported that more significant mental health care disparities exist for the Hispanic population than for non-Hispanic whites.[5] Some barriers contributing to this disparity are language barriers, socioeconomic barriers, education, health insurance coverage, cultural competence, and legal status.[7]

In addition to morbidity and mortality, Health-Related Quality of Life (HRQoL) is becoming a vital patient factor in determining many diseases' treatment outcomes.[8, 9] Health-Related Quality of Life is a subjective and multidimensional concept that assesses an individual's physical, mental, and social function and well-being.[10, 11] This concept helps quantify how the patient's physical or mental conditions limit their daily living, social experiences, and mental well-being.[10, 11] The inclusion of HRQoL data has proven to increase the accuracy of survival prognostication.[8] Patients with higher HRQoL have been found to have lower mortality risk compared to those with the same health condition and lower HRQoL.[8] Multiple studies have shown that numerous factors can impact an individual's HRQoL.[12–14] These factors include age, gender, race, ethnicity, obesity, socioeconomic status, socio-ecological factors, and health system factors.[10, 12–14] Furthermore, individuals with mental health conditions tend to experience lower HRQoL than individuals with other chronic medical conditions.[5] Mental health disorders correlate with higher prevalence of heavy drinking, smoking, physical inactivity, and obesity- all of which are factors that affect an individual's HRQoL.[15] HRQoL disparities also exist between different races and ethnicities.[14] The Hispanic population experiences lower HRQoL due to lower socioeconomic status caused by differences in immigration status, education, employment, financial status, and health care access.[16, 17] Health-Related Quality of Life data gathered from the Behavior Risk Factor Surveillance System showed that twice as many Hispanics reported fair or poor health conditions than non-Hispanic Whites.[10] Hispanics were also more likely to report more frequent mental distress than non-Hispanic Whites.[10]

This study aims to identify what HRQoL factors most affect the HRQoL of mental health patients in the Hispanic population. The study will help determine what HRQoL disparities

exist between Hispanic mental health patients and Hispanic non-mental health patients, prioritizing changes required to help improve the HRQoL of mental health patients in the Hispanic population.

2. METHODS

2.1 Data source

Data from the 2013-2017 Medical Expenditure Panel Survey (MEPS) were used to conduct a retrospective data study. MEPS provides a complete source of data on the cost and use of healthcare and health insurance coverage through large-scale surveys on families, individuals, and healthcare employees in the United States. MEPS focuses on healthcare access, coverage, and cost using self and caregiver-reported information. Each year, MEPS provides continuous and current estimates of healthcare utilization and expenditure at the individual and household levels. Because MEPS data is publicly available de-identified data, Institutional Review Board (IRB) approval was waived.

2.2 Patient selection and outcome measures

From the MEPS database, Hispanic patients who had positive weight values and were older than 18 were included in the analyses. The Hispanic and Non-Hispanic population was categorized based on the Hispanic ethnicity variables (HISPANX). Patients with a diagnosis of a mental disorder were identified using International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM: 295, 296, 298, 300, 309, 311, F20, F31, F32, F33, F40, F41, F42, F99) and Clinical Classification Code (CCC: 651, 650, 657, 659). The code list of mental disorders was created based on the category determined by AHRQ.[18] Selected patients were older than 18 and had at least one SF-12 PCS or MCS score.

PCS and MCS are computed using the scores of twelve questions. The questions have three or five-level Likert scales that measure health levels; a lower score indicates a low level of health while a higher score indicates a high level of health.[19] The PCS and MCS scoring algorithms incorporate information from all the questions. More heavily weighted questions were addressed for PCS and MCS. In PCS, the heavily weighted questions were questions 1,2,3,4,5, and 8, and for MCS, these questions were questions 6,7,9,11, and 12.[20]

Andersen's Behavioral Model was used to assess factors associated with QOL in patients with mental disorders.[21] Five predictors from the conceptual framework developed the independent variables. These predictors were: predisposing-race, Hispanic ethnicity, and age; enabling- marital status, education, employment, poverty status, insurance coverage,

and usual source of care; need- perceived physical and mental health status, body mass index (BMI), and other chronic conditions; personal health practices- smoking status; and external environment- geographical region.

Factor variables were created for each mutually exclusive demographic category. Age in years was defined as those under 18, 18-44, and 56-64. Race was separated into Hispanic-white and other/multiple races. Educational status categories were no degree or less than high school, high school, and some college. Four geographical regions were defined as Northeast, Midwest, South, and West. Marital status was divided into married and unmarried (widowed, divorced/separated, or never married). Smoking status and employment were also determined as yes or no. Type of health insurance was categorized as public, private, or uninsured. Poverty level was defined as poor/low income (less than 200%), middle income (200% to less than 400%), and high income (greater than or equal to 400%). Perceived health status and perceived mental health status were both categorized as fair/poor, good, or excellent/very good. BMI was separated into underweight/normal less than 24.9, overweight 25.0-29.9, and obese more than 30.0.

2.3 Statistical analysis

Since MEPS uses a complex multistage sampling design to represent the overall population, individual responses must be weighted by the proportion of their representative population. Individual weights in MEPS were used to derive national estimates of demographics and socioeconomic covariates. The number of respondents with mental disease and the weighted sample size were presented. Unique weighted variables designed for the self-administration questionnaire (SAQ) for people 18 and older were used to weigh the SF-12 scores. The weighted variables adjust for SAQ non-respondents and accounts for the U.S. civilian noninstitutionalized population.[20] Multivariate regression models controlling for covariates were performed to predict MCS and PCS scores amongst the Hispanic population. The "proc survey" procedure of SAS and the "svy" procedure of Stata calculated accurate point estimates and their standard errors for the nationally representative population with MEPS survey weights.[22] All analyses were conducted using SAS version 9.4 (SAS Institute Inc., Cary, NC) and Stata version 12 (Stata Corp. LP, College Station, TX). All statistical analyses were 2-tailed, and the significance level was set a priori at $p < .05$.

3. RESULTS

A total of 166,098 respondents with positive individual weights were identified, representing a weighted sample size of 320,701,450. Hispanic respondents older than 18 were stratified by the existence of mental disorder: Mental disorder: 4,122 (weighted sample size: 4,789,634) and Non-Mental disorder: 30,312 (weighted sample size: 33,893,665). Most patients were of Mexican or Mexican American descent at 46.3%, followed by those of Cuban or Dominican descent at 23.4%. The mean age was 56.76 years with a standard deviation (*SD*) of 1.52 years (see Figure 1).
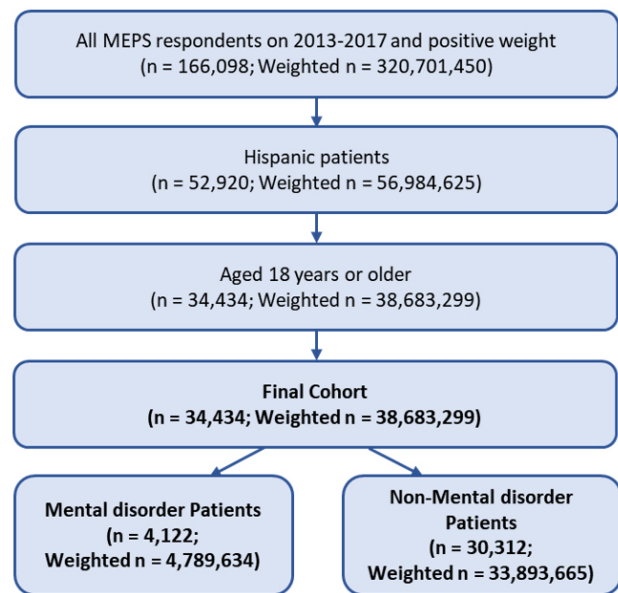
Figure 1. Patient attrition

Hispanic white accounted for 93.3% of all respondents. For overall groups, 46.8% had private insurance, and 40.45% had public insurance only. The mental disorder group had a higher percentage of those with poor or low income (48.8%) compared to the non-mental disorder group (42.1%) ($p < .001$). The mental disorder group had a higher percentage of diabetes, hypertension, high cholesterol, heart disease, arthritis, and cancer compared to the non-mental disorder group ($p < .001$) (see Table 1).

Tables 2 and 3 represent the unadjusted SF-12 scores for PCS and MCS amongst Hispanic patients with mental disorders. The average of SF-12 PCS was 45.3 (95% CI: 44.5-46.1). Patients aged 18-44 had a PCS score of 50.3 (95% CI: 49.5-51.0), 13.3 points higher than patients older than 65 who scored 37.0 (95% CI: 35.4-38.5). Patients who perceived excellent or very good health status had a PCS score of 46.8 (95% CI: 45.7-47.9), 10.2 points higher than those with fair or poor health status 36.6 (95% CI: 35.6-37.6). Similarly, well-educated patients had a score of 47.9 (95% CI: 47.0-48.8), 6 points higher than less-educated patients at a score of 41.9 (95% CI: 40.6-43.2).

Table 1. Demographics and clinics characteristics of Hispanic patients with/without mental disorder

	Overall			Mental disorder			Non-Mental disorder			*p*-value
	n	Weighted N	Weighted %	n	Weighted N	Weighted %	n	Weighted N	Weighted %	
Total	34,434	38,683,299	100.0%	4,122	4,789,634	100.0%	30,312	33,893,665	100.0%	
Age										
Mean (*SD*)	41.39 (0.2)			45.37 (0.48)			40.82 (0.2)			.000
18-44	20,513	23,645,301	61.1%	1,917	2,459,781	51.4%	18,596	21,185,520	62.5%	.000
45-64	10,449	11,037,394	28.5%	1,543	1,585,937	33.1%	8,906	9,451,457	27.9%	
≥ 65	3,472	4,000,604	10.3%	662	743,915	15.5%	2,810	3,256,688	9.6%	
Race/ethnicity										
White	32,321	36,077,933	93.3%	3,734	4,319,997	90.2%	28,587	31,757,936	93.7%	.001
Black	764	922,510	2.4%	123	155,537	3.2%	641	766,972	2.3%	
Others	1,349	1,682,856	4.4%	265	314,099	6.6%	1,084	1,368,757	4.0%	
Region										
Northeast	5,015	5,345,668	13.8%	840	846,465	17.7%	4,175	4,499,203	13.3%	.000
Midwest	3,019	3,429,659	8.9%	432	567,051	11.8%	2,587	2,862,609	8.4%	
South	12,215	14,475,561	37.4%	1,180	1,417,844	29.6%	11,035	13,057,717	38.5%	
West	14,185	15,432,411	39.9%	1,670	1,958,274	40.9%	12,515	13,474,137	39.8%	
Insurance Type										
Any private	13,736	19,051,606	49.3%	1,514	2,240,500	46.8%	12,222	16,811,106	49.6%	.000
Public only	10,290	9,532,215	24.6%	1,976	1,934,604	40.4%	8,314	7,597,611	22.4%	
Uninsured	10,408	10,099,478	26.1%	632	614,530	12.8%	9,776	9,484,949	28.0%	
Marital Status										
Married	15,802	18,159,043	46.9%	1,560	1,897,929	39.6%	14,242	16,261,114	48.0%	.000
Unmarried	18,632	20,524,256	53.1%	2,562	2,891,705	60.4%	16,070	17,632,551	52.0%	
Education Attainment										
Less than high school	13,674	12,482,526	32.3%	1,577	1,408,720	29.4%	12,097	11,073,806	32.7%	.000
High school	9,640	11,022,960	28.5%	1,039	1,154,950	24.1%	8,601	9,868,010	29.1%	
College or higher	11,120	15,177,813	39.2%	1,506	2,225,964	46.5%	9,614	12,951,848	38.2%	
Family Income#										
Negative/poor/low	18,495	16,614,909	43.0%	2,464	2,339,484	48.8%	16,031	14,275,425	42.1%	.000
Middle	10,508	12,750,813	33.0%	1,077	1,386,650	29.0%	9,431	11,364,163	33.5%	
High	5,431	9,317,577	24.1%	581	1,063,500	22.2%	4,850	8,254,077	24.4%	
Current Smoking										
Yes	7,653	8,582,972	22.2%	1,044	1,145,856	23.9%	6,609	7,437,116	21.9%	.048
No	26,781	30,100,327	77.8%	3,078	3,643,778	76.1%	23,703	26,456,549	78.1%	
Health Status										
Excellent/Very good	16,807	20,659,046	53.4%	1,134	1,585,296	33.1%	15,673	19,073,750	56.3%	.000
Good	11,506	12,092,515	31.3%	1,349	1,574,129	32.9%	10,157	10,518,387	31.0%	
Fair/poor	6,121	5,931,738	15.3%	1,639	1,630,209	34.0%	4,482	4,301,529	12.7%	
Diabetes										
Yes	3,786	3,941,341	10.2%	875	904,965	18.9%	2,911	3,036,376	9.0%	.000
No	30,648	34,741,959	89.8%	3,247	3,884,669	81.1%	27,401	30,857,290	91.0%	
Hypertension										
Yes	8,610	9,347,037	24.2%	1,817	1,962,736	41.0%	6,793	7,384,301	21.8%	.000
No	25,824	29,336,263	75.8%	2,305	2,826,898	59.0%	23,519	26,509,364	78.2%	
High cholesterol										
Yes	8,641	9,485,716	24.5%	1,690	1,824,483	38.1%	6,951	7,661,234	22.6%	.000
No	25,793	29,197,583	75.5%	2,432	2,965,151	61.9%	23,361	26,232,432	77.4%	
Heart disease										
Yes	3,173	3,546,103	9.2%	886	982,677	20.5%	2,287	2,563,426	7.6%	.000
No	31,261	35,137,196	90.8%	3,236	3,806,957	79.5%	28,025	31,330,240	92.4%	
Arthritis										
Yes	5,208	5,673,592	14.7%	1,459	1,526,506	31.9%	3,749	4,147,086	12.2%	.000
No	29,226	33,009,707	85.3%	2,663	3,263,128	68.1%	26,563	29,746,579	87.8%	
Cancer										
Yes	1,256	1,493,694	3.9%	296	356,626	7.4%	960	1,137,068	3.4%	.000
No	33,178	37,189,605	96.1%	3,826	4,433,008	92.6%	29,352	32,756,598	96.6%	
Year										
2013	7,472	7,330,196	18.9%	932	916,944	19.1%	6,540	6,413,252	18.9%	.238
2014	6,879	7,536,445	19.5%	832	977,031	20.4%	6,047	6,559,414	19.4%	
2015	7,147	7,748,234	20.0%	900	1,027,695	21.5%	6,247	6,720,539	19.8%	
2016	7,113	7,946,669	20.5%	809	959,184	20.0%	6,304	6,987,485	20.6%	
2017	5,823	8,121,755	21.0%	649	908,779	19.0%	5,174	7,212,976	21.3%	

Note. # Low = family income < 200% of poverty line; middle = family income 200%–400% of poverty line; high = family income > 400% of poverty line. *P*-values were obtained from Chi-2 by comparing the prevalence of depression between cancer survivors and non-cancer survivors. A matched sample will be selected.

In total, the SF-12 MCS score for Hispanic patients with mental disorders was 42.6 (95% CI: 42.0-43.3). In terms of census regions, patients in the Midwest had the highest MCS scores at 43.3 (95% CI: 41.1-45.6). Patients without insurance had MCS scores of 39.4 (95% CI: 38.5-40.4) which is 6.1 points lower than those with private insurance [45.5 (95% CI: 44.5-46.4)] and 3 points lower than those with public insurance (42.4 (95% CI: 40.9-43.8)). Those who perceived their health status as fair or poor had MCS scores of 38.4 (95% CI: 37.3-39.4), significantly less than those

who perceived their health status as excellent or very good [46.2 (95% CI: 45.1-47.3)].

Factors associated with HRQoL in the Hispanic population with mental disorders are summarized in Table 4 using the multiple regression analysis. In the multiple regression analysis of the SF-12 PCS scores, age, census region, poverty level, perceived health status, BMI, and employment were associated with SF-12 scores. Controlling for covariates, the PCS scores in patients aged more than 65 were significantly lower than the 18-44 age group by 4.16 (β = -4.16, p < .001). Poverty level impacted PCS, as reflected by the significantly higher score from high-income patients compared to low-income patients (β = 0.97, p < .001). Perceived health status was positively associated with PCS scores. Patients with fair or poor health had scored -7.71 lower than those with excellent or very good health (β = -7.71, p < .001). Similarly, non-smoking patients had higher scores than smoking

patients (β = 3.22, p < .001).

The multiple regression analysis conducted on the SF-12 MCS scores emphasizes that geographic region, insurance type, marital status, perceived health status, education attainment, and smoking status are associated with SF-12 MCS scores. Patients in the Midwest and South had significantly lower scores than those in the West (p < .05). Type of insurance significantly affected SF-12 MCS scores. No insurance (β = -0.51, p = .057) and public insurance (β = -1.14, p < .001) had lower MCS scores than those with private insurance. Patients with fewer comorbidities had higher MCS scores (β = 4.11, SE = 1.85, p = .027). Perceived health status was positively associated with MCS scores. Patients with fair or poor health had scored -5.68 lower than those with excellent or very good health (β = -5.68, p < .001). Similarly, non-smoking patients had higher scores than smoking patients (β = 4.30, p < .001).

Table 2. Physical Component Summary (PCS)

Category		Overall			Mental Disorder			Non-Mental Disorder		
		Mean	Lower 95% CI	Upper 95% CI	Mean	Lower 95% CI	Upper 95% CI	Mean	Lower 95% CI	Upper 95% CI
Overall		**50.0**	**49.8**	**50.3**	**45.3**	**44.5**	**46.1**	**50.8**	**50.5**	**51.0**
Age	18-44	52.8	52.5	53.0	50.3	49.5	51.0	53.1	52.8	53.3
	45-64	47.5	47.0	48.0	41.5	40.3	42.8	48.6	48.1	49.1
	≥ 65	40.8	39.9	41.8	37.0	35.4	38.5	41.8	40.7	42.8
Race	White	50.0	49.7	50.3	45.0	44.2	45.9	50.7	50.5	51.0
	Black	50.7	49.5	52.0	49.4	46.3	52.4	51.0	49.7	52.4
	Others	50.6	49.6	51.6	47.1	44.5	49.8	51.5	50.5	52.6
Region	Northeast	49.2	48.4	50.0	43.2	41.3	45.1	50.4	49.7	51.1
	Midwest	50.3	49.1	51.4	44.5	41.5	47.4	51.5	50.9	52.2
	South	50.2	49.7	50.6	44.8	43.3	46.3	50.8	50.4	51.3
	West	50.2	49.8	50.5	46.8	45.8	47.8	50.7	50.3	51.1
Insurance Type	Any private	51.6	51.3	51.9	49.0	48.1	49.9	52.0	51.7	52.3
	Public only	45.2	44.6	45.9	40.0	38.8	41.2	46.6	46.0	47.3
	Uninsured	51.6	51.2	52.0	48.3	46.7	49.8	51.8	51.4	52.3
Marital Status	Married	49.7	49.3	50.0	44.7	43.6	45.8	50.3	49.9	50.6
	Unmarried	50.4	50.1	50.7	45.7	44.7	46.7	51.2	50.9	51.5
Education Attainment	Less than high school	48.1	47.6	48.7	41.9	40.6	43.2	49.0	48.5	49.5
	High school	50.4	50.0	50.7	44.8	43.4	46.3	51.1	50.7	51.4
	College or higher	51.5	51.1	51.8	47.9	47.0	48.8	52.1	51.7	52.5
Family Income	Negative/poor/low	50.7	50.3	51.1	47.2	46.1	48.3	51.2	50.8	51.6
	Middle	51.9	51.4	52.4	49.9	48.5	51.2	52.2	51.7	52.7
	High	48.6	48.2	49.0	42.3	41.2	43.4	49.7	49.3	50.1
Current Smoking	Yes	46.3	45.5	47.1	43.7	42.2	45.2	46.9	46.1	47.8
	No	50.5	50.3	50.8	45.6	44.7	46.6	51.2	51.0	51.5
Health Status	Excellent/Very good	49.1	48.7	49.4	46.8	45.7	47.9	49.4	49.1	49.8
	Good	53.5	53.3	53.8	53.1	52.3	54.0	53.5	53.3	53.8
	Fair/poor	40.4	39.8	41.1	36.6	35.6	37.6	42.0	41.3	42.7
Diabetes	Yes	41.0	40.1	41.9	35.9	34.2	37.6	42.7	41.7	43.6
	No	51.1	50.8	51.3	47.5	46.9	48.2	51.6	51.3	51.8
Hypertension	Yes	44.3	43.6	44.9	40.0	38.8	41.2	45.4	44.7	46.2
	No	52.0	51.7	52.2	49.1	48.4	49.9	52.3	52.0	52.5
High cholesterol	Yes	45.4	44.8	46.0	40.8	39.6	42.0	46.6	46.0	47.1
	No	51.6	51.4	51.9	48.2	47.4	49.1	52.0	51.8	52.3
Heart disease	Yes	41.1	40.2	42.1	37.0	35.2	38.8	42.8	41.8	43.8
	No	50.9	50.7	51.2	47.4	46.7	48.2	51.4	51.2	51.7
Arthritis	Yes	40.6	39.9	41.3	36.1	35.0	37.3	42.3	41.6	43.0
	No	51.8	51.5	52.0	49.6	48.9	50.4	52.0	51.8	52.3
Cancer	Yes	43.5	42.1	44.8	37.1	34.3	39.9	45.5	44.1	46.9
	No	50.3	50.1	50.6	46.0	45.2	46.7	51.0	50.7	51.2
Year	2013	50.0	49.6	50.4	44.8	43.7	45.9	50.7	50.3	51.2
	2014	50.2	49.8	50.7	45.3	44.0	46.6	50.8	50.3	51.2
	2015	49.9	49.5	50.3	44.7	43.2	46.1	50.6	50.2	51.0
	2016	50.0	49.6	50.5	46.5	45.2	47.9	50.9	50.5	51.3

Note. Only patients with SF-12 scores were included. PCS and MCS are not available for 2017 MEPS data.

Table 3. Mental Component Summary (MCS)

Category		Overall			Mental Disorder			Non-Mental Disorder		
		Mean	Lower 95% CI	Upper 95% CI	Mean	Lower 95% CI	Upper 95% CI	Mean	Lower 95% CI	Upper 95% CI
Overall		**51.3**	**51.0**	**51.5**	**42.6**	**42.0**	**43.3**	**52.6**	**52.3**	**52.8**
Age	18-44	51.9	51.6	52.3	43.0	42.1	43.9	53.0	52.7	53.3
	45-64	50.7	50.3	51.1	42.3	41.3	43.3	52.2	51.8	52.6
	≥ 65	49.0	48.1	49.8	42.1	40.3	43.9	50.6	49.7	51.4
Race	White	51.3	51.1	51.6	42.8	42.1	43.4	52.6	52.3	52.8
	Black	50.8	49.6	52.0	42.5	39.7	45.2	52.7	51.6	53.8
	Others	49.7	48.6	50.7	40.5	38.3	42.8	52.1	51.2	52.9
Region	Northeast	50.2	49.4	50.9	41.1	39.8	42.4	52.0	51.2	52.7
	Midwest	51.3	50.3	52.2	43.3	41.1	45.6	53.0	52.3	53.7
	South	51.7	51.3	52.1	42.7	41.5	43.8	52.7	52.4	53.1
	West	51.3	50.8	51.7	43.0	42.0	44.0	52.5	52.1	52.9
Insurance Type	Any private	52.5	52.2	52.8	45.5	44.5	46.4	53.5	53.3	53.8
	Public only	48.4	47.9	48.9	42.4	40.9	43.8	50.9	50.5	51.3
	Uninsured	51.6	51.1	52.1	39.4	38.5	40.4	52.2	51.8	52.7
Marital Status	Married	51.8	51.5	52.1	44.1	43.2	44.9	52.8	52.4	53.1
	Unmarried	50.8	50.4	51.1	41.7	40.8	42.5	52.4	52.1	52.7
Education Attainment	Less than high school	49.8	49.4	50.3	40.5	39.5	41.5	51.1	50.7	51.6
	High school	52.0	51.6	52.3	43.8	42.7	44.9	53.0	52.7	53.4
	College or higher	52.0	51.6	52.4	43.4	42.5	44.4	53.5	53.2	53.8
Family Income	Negative/poor/low	52.1	51.7	52.5	44.5	43.4	45.5	53.1	52.7	53.5
	Middle	53.0	52.6	53.4	46.1	45.0	47.2	53.9	53.5	54.4
	High	49.8	49.4	50.1	40.1	39.3	40.9	51.4	51.1	51.8
Current Smoking	Yes	46.4	45.5	47.2	38.4	37.0	39.9	48.3	47.4	49.2
	No	51.9	51.6	52.2	43.5	42.8	44.2	53.1	52.8	53.3
Health Status	Excellent/Very good	50.4	50.1	50.8	46.2	45.1	47.3	51.5	51.1	51.9
	Good	53.7	53.4	54.0	43.6	42.7	44.5	54.3	54.0	54.6
	Fair/poor	44.9	44.4	45.5	38.4	37.3	39.4	47.6	47.0	48.1
Diabetes	Yes	47.8	47.0	48.6	40.6	39.0	42.2	50.1	49.4	50.9
	No	51.7	51.4	51.9	43.1	42.4	43.8	52.8	52.5	53.1
Hypertension	Yes	48.7	48.2	49.1	41.3	40.4	42.3	50.8	50.3	51.2
	No	52.1	51.8	52.4	43.5	42.7	44.4	53.1	52.8	53.4
High cholesterol	Yes	49.1	48.6	49.7	42.1	41.0	43.2	50.9	50.4	51.4
	No	52.0	51.7	52.3	43.0	42.2	43.7	53.1	52.8	53.3
Heart disease	Yes	47.0	46.3	47.8	40.0	38.5	41.6	49.9	49.2	50.6
	No	51.7	51.4	52.0	43.3	42.6	44.0	52.8	52.5	53.0
Arthritis	Yes	47.9	47.2	48.5	40.3	39.2	41.4	50.7	50.0	51.3
	No	51.9	51.6	52.2	43.7	42.9	44.5	52.8	52.6	53.1
Cancer	Yes	48.6	47.5	49.7	41.3	38.3	44.3	50.9	49.8	52.0
	No	51.4	51.1	51.7	42.7	42.1	43.4	52.6	52.4	52.9
Year	2013	50.7	50.3	51.2	41.8	40.8	42.9	52.0	51.6	52.5
	2014	51.6	51.2	52.0	42.3	41.2	43.3	52.8	52.4	53.2
	2015	51.4	50.9	51.9	43.6	42.5	44.7	52.8	52.4	53.3
	2016	51.3	50.9	51.7	42.7	41.5	43.8	52.5	52.1	52.9

Note. Only patients with SF-12 scores were included. PCS and MCS are not available for 2017 MEPS data.

4. DISCUSSION

This study's objective was to identify relevant factors that affect Hispanic patients with mental health problems' HRQoL scores to distinguish disparities that must be addressed. HRQoL scores, which include physical, mental, and perceived health and social well-being, are essential factors determining treatment outcomes.[8, 9] They are affected by various factors, including age, race, education, socio-geographic, and socioeconomic status.[10, 12–14] These influencing factors are enormously consequential for Hispanic patients with mental disorders when analyzing HRQoL scores and treatment outcomes because of the large socioeconomic and health disparities already felt by this demographic.[16, 17]

Overall, many Hispanic patients are uninsured, at a rate of 26.1%, which may impede their ability to seek treatment. A higher percentage of patients with mental health problems are over 65 years old (15.5%) than those without mental health problems (9.6%). The mental disorder group has higher education rates than the overall and non-mental disorder group, with 46.5% of patients having attended college or higher compared to 39.2% and 38.2%, respectively. Most respondents reported having a low family income, but this percentage was significantly higher in Hispanic patients with mental disorders at a rate of 48.8%, 6.7% higher than those without a mental disorder.

Table 4. Demographic characteristics associated with SF-12 among Mental disorder vs. non-Mental disorder

Category	Physical Component Summary (PCS)					Mental Component Summary (MCS)				
	Estimate	t	Lower 95% CI	Upper 95% CI	p	Estimate	t	Lower 95% CI	Upper 95% CI	p
Mental disorder										
Mental disorder	Ref.					Ref.				
Non-Mental disorder	1.10	3.77	0.53	1.67	**.000**	7.83	26.70	7.25	8.40	**< .0001**
Age										
18-44	Ref.					Ref.				
45-64	-1.90	-8.00	-2.37	-1.44	**< .0001**	0.44	1.93	-0.01	0.88	.054
≥ 65	-4.16	-10.83	-4.92	-3.41	**< .0001**	0.71	1.62	-0.15	1.58	.105
Race/ethnicity										
White, Hispanic	Ref.					Ref.				
Black, Hispanic	0.85	1.77	-0.09	1.79	.077	0.14	0.28	-0.83	1.10	.780
Others, Hispanic	0.68	1.71	-0.10	1.46	.089	-0.65	-1.43	-1.55	0.25	.154
Region										
Northeast	Ref.					Ref.				
Midwest	0.13	0.31	-0.72	0.98	.758	0.79	1.64	-0.16	1.74	.101
South	-0.15	-0.47	-0.76	0.46	.637	0.38	1.07	-0.32	1.07	.287
West	0.02	0.06	-0.58	0.62	.953	0.35	0.94	-0.37	1.07	.346
Insurance Type										
Any private	Ref.					Ref.				
Public only	-1.91	-7.41	-2.42	-1.40	**< .0001**	-1.14	-4.23	-1.67	-0.61	**< .0001**
Uninsured	-0.14	-0.62	-0.60	0.31	.533	-0.51	-2.00	-1.01	-0.01	**.047**
Marital Status										
Married	Ref.					Ref.				
Unmarried	0.31	1.74	-0.04	0.65	.082	-0.41	-2.15	-0.78	-0.04	**.032**
Education Attainment										
Less than high school	Ref.					Ref.				
High school	0.41	1.64	-0.08	0.90	.101	1.27	5.14	0.79	1.76	**< .0001**
College or higher	0.56	2.26	0.07	1.04	**.024**	0.72	3.08	0.26	1.18	**.002**
Family Income [a]										
Negative/poor/low	Ref.					Ref.				
Middle	0.58	3.11	0.21	0.94	**.002**	0.96	4.15	0.50	1.41	**< .0001**
High	0.97	3.80	0.47	1.47	**< .000**	1.02	3.48	0.44	1.60	**.001**
Current Smoking										
Yes	Ref.					Ref.				
No	3.22	8.35	2.46	3.98	**< .0001**	4.30	9.94	3.45	5.15	**< .0001**
Health Status										
Excellent/Very good	Ref.					Ref.				
Good	-2.63	-15.23	-2.97	-2.29	**< .0001**	-2.25	-11.10	-2.65	-1.85	**< .0001**
Fair/poor	-7.71	-25.02	-8.31	-7.10	**< .0001**	-5.68	-20.71	-6.22	-5.14	**< .0001**
Diabetes										
Yes	Ref.					Ref.				
No	2.09	6.78	1.48	2.69	**< .0001**	-0.08	-0.24	-0.77	0.60	.810
Hypertension										
Yes	Ref.					Ref.				
No	1.15	4.82	0.68	1.62	**< .0001**	0.48	2.03	0.02	0.95	**.043**
High cholesterol										
Yes	Ref.					Ref.				
No	0.28	1.27	-0.15	0.71	.204	0.62	2.32	0.09	1.15	**.021**
Heart disease										
Yes	Ref.					Ref.				
No	2.89	8.87	2.25	3.53	**< .0001**	1.02	2.82	0.31	1.72	**.005**
Arthritis										
Yes	Ref.					Ref.				
No	4.87	16.49	4.29	5.45	**< .0001**	0.34	1.10	-0.27	0.95	.272
Cancer										
Yes	Ref.					Ref.				
No	0.85	1.70	-0.13	1.83	.091	0.52	0.99	-0.52	1.56	.325
Year										
2013	Ref.					Ref.				
2014	0.10	0.44	-0.35	0.55	.657	0.49	1.88	-0.02	1.00	.061
2015	-0.03	-0.11	-0.59	0.53	.909	0.53	1.80	-0.05	1.11	.073
2016	0.09	0.38	-0.40	0.58	.706	0.44	1.65	-0.08	0.96	.099

Comparing SF-12 PCS and MCS scores in Hispanic patients with mental health disorders, a clear and significant trend appears. The difference in MCS scores between the two groups was twice as high as in the PCS scores. Those with mental health disorders had markedly lower PCS and MCS scores for health status, reflecting how their condition may affect their general well-being. Similarly, patients without comorbidities had much higher PCS and slightly higher MCS scores than those with comorbidities across almost all sampled conditions. This trend is reflected across various health factors, including smoking, with non-smoking patients scoring higher in PCS and MCS. These findings are significant because of the implication that health status is affected by mental and physical well-being.

In the United States, health insurance is a vital necessity to receiving care. Past studies have described how insurance status leads to increased healthcare utilization.[23,24] Most of the overall group was either privately (49.3%) or publicly (24.6%) insured, but many Hispanic patients remain uninsured (26.1%). Many patients were privately insured, with 46.8% of patients with mental health problems and 49.6% of patients without mental disorders having private insurance. The percent of mental health patients with public insurance (40.4%) was almost double that of those without mental health problems using public insurance (22.4%). Patients with mental disorders were more likely to be insured than those without mental disorders. Only 12.8% of those with mental health problems were uninsured, 10% less than those without mental health problems.

Focusing on health status and comorbidities, more than half of patients without mental disorders reported having excellent health; only a more minor third of patients with mental disorders could make the same claim. Most patients with mental disorders, about 34%, felt that their health status was low, compared to 12.7% of patients without mental disorders. Overall, patients reporting fair to low health status reported much lower PCS and MCS scores compared to those who reported having good or excellent/very good health status. Also, PCS scores and MCS scores were lower in patients with mental disorders reporting low health status than patients without mental disorders reporting low health status. Based on the above findings, low perceived health status and HRQoL scores in patients are affected more by the presence of a mental disorder. Across multiple comorbidities, a greater

rate of patients with mental disorders tended to suffer from various conditions than those without mental disorders. The rate of hypertension, diabetes, high cholesterol, heart disease, arthritis, and cancer was about twice as high in patients with mental disorders than those without mental disorders. These findings are consistent with previous findings that exhibited how patients with mental health problems have higher comorbidity rates.[25] The presence of comorbidities resulted in lower PCS and MCS scores with a higher disparity in PCS. When considering the demographic's high rate of low income and lack of insurance, having multiple comorbidities, including mental disorders, can significantly affect HRQoL scores.

This study has several limitations. Its cross-section design cannot explain causation; thus, the results' interpretation is restrained to the association between comorbid anxiety and mood disorders to HRQoL. Also, recall bias is possible because medical conditions in MEPS are self- or proxy-reported and not verified by chart review. Because the general population was involved, a generic tool was used for a controlled comparison. Generic measures are capable of a broad range of HRQoL dimensions with a single instrument but are not as responsive as specific tools focused on a particular disease. Lastly, CCI may not have captured more common comorbidities that might influence the results of this study. However, this study remains the first to present unique data on the HRQoL of the Hispanic population with mental disorders in the United States despite these limitations.

5. CONCLUSIONS

In conclusion, significant disparities exist in HRQoL between patients with mental health disorders and patients without mental health disorders in the Hispanic population. Through SF-12 PCS and MCS surveys, this study found that patients with mental health disorders experience lower HRQoL than those without mental health disorders. Lower family income, lower perceived health status, and comorbidities are factors that significantly lower the HRQoL of patients. We hope this study highlights the impact of mental health disorders in HRQoL in the Hispanic population and leads to further research to identify ways to improve HRQoL in this patient population.

CONFLICTS OF INTEREST DISCLOSURE

The authors declare they have no conflicts of interest.

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