Title

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Journal

Journal of Racial and Ethnic Health Disparities, 4(3)

ISSN

2197-3792

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Publication Date

2017-06-01

DOI

10.1007/s40615-016-0236-x

Peer reviewed

HHS Public Access

Author manuscript

J Racial Ethn Health Disparities. Author manuscript; available in PMC 2018 June 01.

Published in final edited form as:

J Racial Ethn Health Disparities. 2017 June ; 4(3): 354–363. doi:10.1007/s40615-016-0236-x.

Disparities in Treatment and Service Utilization among Hispanics and Non-Hispanic Whites with Bipolar Disorder

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Abstract

Objectives—Due to the serious and recurrent nature of bipolar disorder, continuous long-term medication treatment is typically recommended. Little is known about whether these treatment recommendations are effectively implemented for Hispanics. This study examined differences in mood stabilizer use and mental health service utilization between adult English-speaking Hispanic and non-Hispanic white respondents with bipolar disorder.

Methods—The sample included 163 participants with lifetime bipolar I and II disorders in the National Comorbidity Survey Replication. Demographics, symptom presentation, and acculturation were examined as covariates.

Results—None of the 26 Hispanic respondents were taking mood-stabilizing medication, compared to 21% of non-Hispanic whites, and Hispanics were less likely to receive medications for emotional problems, see a professional for manic episodes, or attend psychotherapy. Even after accounting for differences in symptom profiles and sociodemographics, ethnicity continued to be a significant predictor of mood stabilizer use and psychotherapy attendance. There was a nonsignificant trend towards lower acculturation among Hispanics being associated with even poorer service utilization.

Conclusions—No Hispanics were receiving minimally adequate treatment for their bipolar disorder. Future research should focus on identifying the barriers that lead to these stark ethnic disparities in treatment.

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Compliance of Ethical Standards:

Conflict of Interest: Ms. Salcedo, Ms. McMaster, and Dr. Johnson declare that they have no conflicts of interest.

Ethical Approval: The National Comorbidity Survey Replication (NCS-R) is part of the Collaborative Psychiatric Epidemiology Surveys (CPES) data collection, which was supported by the National Institute of Mental Health (NIMH). The Human Subjects Committees of Harvard Medical School and the University of Michigan, Ann Arbor, approved all procedures. Verbal informed consent was obtained from all respondents before the interviews. All data analyses procedures were conducted from the public NCS-R dataset, which is de-identified and was considered exempt from human subjects review.

Keywords

bipolar disorder; Latinos/Hispanics; acculturation; service utilization; mood stabilizer use

Hispanics are the fastest growing minority group in the U.S., with approximately 50 million individuals currently in the U.S. and projections that they will comprise 20% of the U.S. population by 2020 [1]. Despite representing an increasingly large proportion of the population, Hispanics in the U.S. are much less likely than non-Hispanic whites to receive mental healthcare services for psychiatric disorders [2-4]. Research has examined the various contributing factors; however, less is known about the nature of these disparities within bipolar disorder.

Ethnic disparities in the treatment of bipolar disorder in particular are associated with several negative consequences. Bipolar disorder is a severe psychiatric disorder characterized by distinct periods of abnormally and persistently elevated, expansive, or irritable mood called manias [5]. The disorder is associated with major impairments in social and occupational functioning [6, 7], reduced quality of life [8], and high mortality [9]. Undetected and untreated bipolar disorder has been linked to unemployment [10], poorer overall functioning [11], and premature death [12]. Although bipolar disorder is equally prevalent and standard medications are equally effective across race and ethnic groups [13, 14], minorities with bipolar disorder often do not receive treatment or are inadequately treated [15]. Treatment disparity thus puts Hispanics with bipolar disorder at high risk for the poor outcomes associated with non-treatment or inadequate treatment.

Improving treatment rates and outcomes among Hispanics with bipolar disorder requires further study of the specific disparities and the factors that contribute to their generation. The current study aims to clarify Hispanic-white disparities in bipolar disorder treatment and to provide one of the first empirical examinations of potential mechanisms underlying them.

Pharmacological Treatment Disparities

Medical guidelines suggest mood stabilizer pharmacotherapy—which includes lithium, first- and second-generation antipsychotics, and anticonvulsants—reduces the chances of relapse in bipolar disorder [16]. The few available studies examining pharmacotherapy disparity between Hispanics and non-Hispanic whites with bipolar disorder show mixed results. For example, Depp and colleagues examined records of Medicaid beneficiaries with bipolar disorder who received services from the San Diego public mental health system and found that Hispanics were significantly less likely than whites to be prescribed mood stabilizers or antipsychotics [17]. In contrast, in a study of Florida Medicaid recipients with bipolar disorder, non-Hispanic whites and Hispanics showed equivalently low rates of mood-stabilizing medication use [18]. Thus, extant research fails to clarify the degree of Hispanic-white disparity in the pharmacological treatment of bipolar disorder. Mixed findings may be due in part to the use of samples from various geographical locations, necessitating more representative sampling. In addition, these studies relied on archival clinical diagnoses rather than structured diagnostic interviews [18, 17], which has been shown to systematically under-estimate bipolar disorder among Hispanic individuals [14]. Further, these studies were

constrained by the focus on Medicaid recipients. Although nationally representative analyses of Hispanic-white disparities in pharmacological treatment of bipolar disorder are not available, analyses of nationally representative samples with mental health issues generally defined (not distinguishing between disorders) from the Medical Expenditures Panel Survey have consistently shown wide gaps between Hispanics and whites in prescription drug use, with Latinos using prescriptions less and receiving less adequate treatment, even after controlling for factors like income, insurance, and education [19-21]. In the current study we also used a nationally representative sample of Hispanics and non-Hispanic whites to provide a clearer picture of pharmacological treatment disparity specific to bipolar disorder.

Service Utilization Disparities

In contrast to the gaps in our knowledge concerning pharmacological treatment disparity, it has been well documented that Hispanics have very low rates of mental health service utilization relative to non-Hispanic whites [22-25]. Significantly fewer Hispanics than non-Hispanic whites with psychiatric disorders report seeking specialty mental health services, which includes psychiatrist, psychologist, or other mental health professional visit [6% versus 12%, respectively; 26]. When Hispanics do seek help for mental health problems, they are much more likely than whites to go to their primary care provider or a general medical professional rather than seek these specialty mental health services [26-28]. These disparities exist even after controlling for socioeconomic status [29, 30]. However, researchers have typically included all psychiatric conditions together in their analyses, leaving it unknown whether these diminished help-seeking behaviors generalize to serious mental illnesses, and one possibility is that the severity of symptoms would increase help seeking even among minority individuals. Consistent with this idea, in one study of bipolar disorder, Hispanics and non-Hispanic patients did not differ significantly in self-reported psychotherapy use in the 90 days before assessment [31]. Another study found that black and white individuals with bipolar disorder in a nationally representative sample did not differ in the rates of help seeking or types of care sought [15]. Therefore, in the current study, we examined whether there are disorder-specific patterns in service utilization disparities between Hispanics and non-Hispanic whites with bipolar disorder.

Hispanic-White Disparity Mechanisms in Bipolar Disorder

Where ethnic disparities in pharmacotherapy and service utilization are documented, several mechanisms might be involved. Previous research suggests that insurance coverage, cultural variation in symptom expression, and acculturation are each important to consider.

Regarding insurance coverage, Hispanics are almost three times as likely as whites to be uninsured [32]. Some evidence suggests that greater coverage could reduce disparity. One study found that insurance coverage in combination with other interventions eliminated service disparities between whites and Latinos [33]. Other evidence, however, suggests that racial and ethnic minorities are less inclined to seek care even when they have coverage or when their coverage is enhanced [34]. Hence, it is unclear whether insurance explains Hispanic-white disparity in bipolar disorder. In the Systematic Treatment Enhancement Program for Bipolar Disorder (STEP-BD), the largest naturalistic study to date of bipolar

disorder treatment across 22 U.S. sites, the Hispanic patients who enrolled in the study were as likely as whites to be insured, and no differences were observed in treatment outcomes (Gonzalez et al., 2010). This finding, however, may not be representative, as the majority of patients in this study were enrolled in private insurance, and people with severe mental illnesses in community samples tend to be insured mostly through public programs [35].

As mentioned, another commonly proposed mechanism for racial and ethnic disparity in mental health treatment is cultural variation in the presentation of psychopathology. Some researchers have suggested that Hispanics may minimize symptoms of pathology. For example, Hispanics are thought to express psychological distress as somatic complaints more than whites, and thus they are more likely to seek help from primary care providers before considering a mental healthcare specialist [36-38]. Evidence for bipolar disorder symptom presentation differences between Hispanics and whites is sparse and the few available findings are mixed. In one clinical sample, Hispanic and white groups did not differ significantly in overall functioning and symptom severity for major depression or bipolar disorder [14]. In contrast, in an analysis of a nationally representative sample of Hispanics with bipolar disorder from the National Epidemiologic Survey on Alcohol and Related Conditions study (NESARC), Hispanics reported fewer depressive episodes and were more likely to endorse grandiosity than whites [39]. Given the mixed findings, more research is warranted on expression of affective symptoms by Hispanics and whites in bipolar disorder.

Acculturation level among Hispanic groups is another widely cited explanation of Hispanic-white disparities. Acculturation has been defined as “the process by which individuals adopt the attitudes, values, customs, beliefs, and behaviors of another culture” [40]. According to theory, as an individual adopts the new culture, changes in that person's culturally based treatment preferences occur [41]. Language is the most frequently used proxy measure for tests of acculturation mechanisms in service disparity research. Within the nationally representative NESARC sample, Latinos with mood disorders who preferred using Spanish were nearly half as likely as whites to use mental healthcare services [30]. As above, though, it is important to consider more specific diagnoses. In a longitudinal study of more than 6,000 San Diego county patients with serious mental illness, Spanish-speaking Latinos with major depression had lower rates of service use than English-speaking Latinos, while Spanish-speaking Latinos with bipolar disorder and schizophrenia had rates of service use similar to English-speaking Latinos [42]. Several additional limitations are noted in this literature. Only this one study analyzing the San Diego sample, to our knowledge, examines the influence of acculturation variables on treatment receipt in bipolar disorder. In addition, Spanish language as a proxy measure of acculturation is limited in that effects are confounded with low health literacy in monolingual groups, a known barrier to mental healthcare [13]. In the current study, we examined other common acculturation proxy variables that may be better indicators of exposure to and adoption of U.S. culture, including nativity, acquisition of U.S. citizenship, and their relationships to both treatment receipt and service utilization in a nationally representative bipolar disorder sample.

The Current Study

The current study aimed to address limitations in the extant Hispanic-white disparity research in bipolar disorder. We used data from the National Comorbidity Survey Replication (NCS-R), a large household sample of Americans with mental health problems, to obtain nationally representative estimates of Hispanic white disparities. Bipolar disorder diagnoses were also obtained in this sample with structured diagnostic instruments, which allowed us to look specifically at pharmacological treatment and service utilization disparities within a carefully diagnosed bipolar disorder sample. Finally, we make one of the first examinations of Hispanic-white disparity mechanism in bipolar disorder treatment, looking specifically at three sets of variables, sociodemographic variables, including insurance status, symptom presentation, and acculturation, which have gained the most backing from general mental healthcare disparity literature. Following the observed patterns in general mental health disparity research, we hypothesized that Hispanics would be prescribed and taking fewer mood-stabilizing medications and would be less likely to seek mental health treatment than non-Hispanic whites. We also hypothesized that less acculturated Hispanics, as indicated by their birthplace, and citizenship status, would be less likely to take mood-stabilizing medications and seek mental health treatment. We expect these differences to persist even after controlling for differences in symptom presentation and sociodemographics.

Method

The National Comorbidity Survey Replication (NCS-R) involved face-to-face interviews with a United States nationally representative sample of English-speaking respondents 18 and over. The NCS-R was conducted in two parts. In Part I (N = 9,282) interviewers used the World Health Organization (WHO) Composite International Diagnostic Interview (WMH-CIDI) to generate diagnoses of mental disorders in accordance with the ICD-10 and the DSM-IV. Part II, which was administered to 5,692 of the Part I respondents that met criteria for at least one of the psychiatric disorders assessed in Part I and a probability subsample of the other respondents [for a detailed review, see 43]. Part II assessed service utilization, and other mental health-related variables. The Human Subjects Committees of Harvard Medical School and the University of Michigan, Ann Arbor, approved all procedures. All data analyses procedures were conducted from the public NCS-R dataset, which is de-identified and was considered exempt from human subjects review. Among other well-known representative surveys, such as the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), National Latino and Asian American Study (NLAAS), and the National Survey of American Life (NSAL), we opted to analyze responses from the NCS-R because it is the only survey that included reliable diagnoses of bipolar disorder, specific information on types of medication taken, and both Hispanic and non-Hispanic white respondents.

Sample

Consistent with definitions employed by the U.S. Census Bureau [1], “Latinos” or “Hispanics” are those that self-identify as Cuban, Mexican, Puerto Rican, South or Central

American, or other Spanish culture, irrespective of race. In the total NCS-R sample, there were 6,696 non-Hispanic White respondents and 883 Hispanic respondents. Only participants with bipolar disorder that identified as Hispanic (Mexican and all other Hispanic) or non-Hispanic Whites were included in analyses. One hundred sixty three respondents (including 26 Hispanics) from the NCS-R met criteria for bipolar I or II disorders. Seventy-nine were diagnosed with bipolar I disorder and 84 with bipolar II disorder.

Variables

Pharmacological treatment receipt—Respondents were shown a list of medications and were asked, “In the past 12 months, did you take any of the following types of prescription medications under the supervision of a doctor, for your emotions or nerves or your use of alcohol or drugs?” Participants then listed the medications they took. Adequate treatment was defined according to the American Psychiatric Association definition of adequate treatment for bipolar I and II disorders (Hirschfeld et al., 2002), that is prescription of a mood-stabilizing medications: traditional antipsychotic medications (i.e. chlopromazine, haloperidol, fluphenazine), atypical antipsychotic medications (i.e. clozapine, olanzapine, quetiapine), anticonvulsant medications (i.e. lamotrigine, valproic acid, carbamazepine) or lithium. To assess psychiatric medication receipt, respondents were asked, “Did you ever get a prescription or medicine for your emotions, nerves or mental health [(or substance use)] from any type of professional?”

Service utilization—Respondents were asked, “Did you ever in your life talk to a medical doctor or other professional about your episode(s) of being very [(excited and full of energy/ irritable or grouchy)]?” To assess psychotherapy use, respondents answered, “Did you ever in your life have a session of psychological counseling or therapy that lasted 30 minutes or longer with any type of professional?” For use of Internet resources (Internet support groups or chat rooms) respondents were asked, “Did you ever use an Internet support group or chat room to get help for problems with your emotions or nerves?” Respondents were also asked, “Which of the following types of professionals did you ever see about problems with your emotions or nerves or your use of alcohol or drugs?” Provider types were organized into the following categories: medical doctors/psychiatrists, psychologists or other health/mental health professionals, religious/spiritual advisors, or other healers.

Sociodemographics—Respondents reported the following: Gender, age (18-29, 30-44, 45-59, and ≥ 60 years), years of education (≤11, 12, 13-15, and ≥16), household income (< $18,000, $18,000-$31,999, $32,000-$54,999, ≥$55,000), marital status (Married/cohabiting, Divorced/separated/widowed, never married), employment (yes or no), and health insurance status (yes or no).

Mania and depression symptoms—Respondents were asked to identify their worst manic episode in the past year and then rate the severity of 11 symptoms from the Young Mania Rating Scale (YMRS) items [44]: elevated mood, physical arousal, sexual interest, need for sleep, increased energy, irritability, racing thoughts, unrealistic thinking, disruptive behavior, appearance/grooming, and insight. Each symptom was rated on a scale of 1 to 5 (1

– “no change/increase”; 5 – “symptom persistent most of the time”). For depression, respondents were asked to identify their worst depressive episode in the past year and rate the severity (1 – not severe; 4 - severe) for the following nine symptoms: problems falling asleep, waking up at night, waking up too early in the morning, amount of sleep, feeling sad, ability to concentrate and make decisions, feeling down on oneself, lack of interest in daily activities, and reduced energy level. Respondents reported the number of manic episodes and the number of depressive episodes in the prior year. Respondents also rated the extent to which mania or depression interfered across four areas of functioning: managing the home, ability to work, forming and maintaining close relationships, and having a social life (1 – “no interference”; 10 – “very severe interference”).

Anxiety and substance use disorders diagnoses—To examine psychiatric comorbidity as a potential covariate, we coded lifetime diagnosis of an anxiety disorder (e.g., panic disorder, generalized anxiety disorder, agoraphobia without panic disorder, specific phobia, social phobia, posttraumatic stress disorder, obsessive-compulsive disorder, separation anxiety disorder) or a substance use disorder *(*alcohol and drug abuse and dependence) .

Acculturation—Two acculturation indices were assessed. These included country of birth (U.S. or other) and U.S. citizenship (yes or no).

Analytic Plan

All analyses were conducted using the Stata/IC 12.1 statistical software. Alpha was set to . 05, and two-tailed tests were used. The Taylor series linearization method was used to estimate standard errors.

To test primary hypotheses that ethnic disparities are present in bipolar disorder treatment, chi-square tests using population weights were used to examine ethnic differences in the proportion of participants who had taken mood stabilizing medication, were prescribed medication for emotions/mental health, and in four service utilization variables (seeing a professional for their manic episodes, attending psychotherapy, using Internet support groups/chat rooms, and type of mental health service sought).

Hypothesized explanatory variables were then examined to determine their effect on observed treatment disparities. To be conservative in our conclusions and avoid falsely attributing a disparity to ethnicity that was better explained by other processes, we conducted a series of tests on our proposed explanatory variables. To address multiple comparisons, we used either omnibus tests or a Bonferroni correction. To test whether sociodemographics explained treatment disparities, logistic regressions were used with sociodemographic and clinical variables that varied by ethnicity entered as predictors of the significant treatment variables to assess whether ethnicity remained significant after controlling for these variables.

To test for ethnic differences in symptom presentation and control for Type I error from multiple comparisons, four MANOVAs were conducted to examine ethnic group differences in (a) the severity of 11 manic symptoms; (b) severity of nine depressive symptoms; (c) four

areas of functional interference by mania; and (d) four areas of functional interference by depression. Wald F-tests were conducted to examine ethnic group differences in the number of manic episodes and the number of depressive episodes in the prior year. Any symptom or clinical variables that differed by ethnicity were then examined in logistic regression analyses to determine whether these statistically accounted for disparities in receipt of adequate pharmacological treatment and service utilization.

The effects of acculturation on receipt of adequate pharmacological treatment and on service use were assessed using chi-square analyses within the Hispanic group only. For the acculturation analyses, a Bonferroni correction was used for the eight tests, with the adjusted critical value of p=.00625.

Results

Sample characteristics are described in Table 1. Age, gender, education, income, and employment status were not significantly related to ethnicity. Hispanics were less likely to be insured and divorced than non-Hispanic whites. Hispanics were also significantly less likely to be U.S. citizens or to be born in the United States.

Adequate Pharmacological Treatment Receipt

As shown in Table 2, no Hispanics were taking any mood-stabilizing medications, a proportion that differed significantly from the 21% of non-Hispanic whites who were taking a mood stabilizing medication. Fewer Hispanics than non-Hispanic whites received prescription medication for problems relating to their emotions or mental health.

Service Utilization

Hispanics were less likely to see a professional for their manic episodes and less likely to attend psychotherapy than were non-Hispanic whites. Hispanics were marginally (but nonsignificantly) more likely to use Internet support services (χ^2=123.3, df=1, p=.06) and to prefer seeing religious leaders or other healers (χ^2=157.9, df=2, p=.10) compared to non-Hispanic whites.

Sociodemographic Differences by Ethnicity

Because marital status and insurance status differed by ethnic group, we conducted analyses to clarify if these variables explained the treatment disparities. As shown in Table 2, after using logistic regressions to control for group differences in marital status and insurance coverage, ethnicity still predicted attending psychotherapy. Ethnicity no longer significantly predicted receipt of medications, seeing a professional for a manic episode, or using Internet support groups. Because no Hispanics reported taking any mood stabilizing medication, analyses could not be conducted with this variable.

Symptom Differences by Ethnicity

We compared manic and depressive symptom severity and interference by ethnicity. Hispanics and non-Hispanic whites did not differ on manic symptoms (MANOVA Hotelling's Trace=.31, F=1.57, df=11,55, p=.13), depressive symptoms (MANOVA

Hotelling's Trace=.12, F= 1.04, df=7,62, p= .41), functional interference by mania (MANOVA Hotelling's Trace=.06, F= 1.04, df=4,72, p=.39), or functional interference by depression (MANOVA Hotelling's Trace=.03, F=0.45, df=4,72 p=.77). Hispanics and non-Hispanic whites also did not differ in the number of reported manic symptoms, F=1.51, df=1,35, p=.23, or depressive episodes in the past year, F=1.03, df=1,34, p=.32 (see Table 1). Hispanics and non-Hispanic whites did not differ in the likelihood of meeting criteria for an anxiety disorder or substance use disorder (ps > .23; see Table 1). When number of manic and depressive episodes in the past year were added as predictors to these logistic regressions, the results were substantively similar.

Acculturation

We conducted analyses to examine whether acculturation variables related to the observed differences in adequate treatment receipt and service utilization variables among Hispanics. U.S. citizenship and birthplace were not related to receiving medications, talking to a professional for a manic episode, or seeing a professional for a manic episode (all p§>.05). Birthplace and U.S. citizenship were related to psychotherapy attendance. None of the foreign-born Hispanics reported seeing a psychotherapist, a proportion that differed from the 72% (SE=.15) of U.S.-born Hispanics that reported attending psychotherapy, X^2=1348.9, df=1, p=.01. None of the non-U.S. citizen Hispanics reported attending psychotherapy, which differed from the 62% (SE=.59) of Hispanic U.S. citizens that attended psychotherapy, X^2=668.4, df=1, p=.04. With the Bonferroni correction (critical value p=. 0065), these differences were not statistically significant.

Discussion

The goal of this study was to consider whether treatment receipt and service utilization differed among Hispanics and non-Hispanic whites diagnosed with bipolar disorder and to examine three sets of explanatory factors that might clarify the creation of such gaps in care. The current study is strengthened by the use of a large representative sample and by consideration of the role of sociodemographic variables, symptom presentation, and acculturation. Perhaps the most striking finding of this study is that none of the Hispanics diagnosed with bipolar disorder received standard care of mood-stabilizing medication [45, 16]. This contrasted significantly with the 21% of non-Hispanic whites who were taking adequate mood-stabilizing medications. This low medication rate among non-Hispanic whites is consistent with previous research showing that pharmacological treatment for bipolar disorder is severely underutilized [46, 47], so our study adds to the literature by showing that this undertreatment is even more pronounced in Hispanics. Hispanics with bipolar disorder were also less likely than non-Hispanic whites to receive pharmacotherapy or psychotherapy for emotional or mental health reasons more generally.

Neither sociodemographic variables, symptom presentation appeared to explain these stark ethnic differences in healthcare utilization. Although Hispanics in our sample were less likely to be insured, this difference appears to be unrelated to the ethnic disparities we observed in treatment. Specifically, Hispanics remained less likely to attend psychotherapy after accounting for differences in sociodemographic variables, including insurance

coverage. In addition, bipolar symptom profiles were comparable across ethnicities, which is consistent with previous research about this clinical population [14]. Rates of comorbid anxiety and substance use disorder were also similar between these groups. Taken together, findings suggest a profound and disturbing under-treatment of bipolar disorder among Hispanics in the United States. The current findings fit well with a growing literature on low rates of service utilization among Hispanics in general [48, 13] and suggest that the profile observed can be extended to the specific population managing bipolar disorder. Furthermore, in contrast to two predominant theories about mechanisms underlying Hispanic-white treatment disparities in mental healthcare, our findings suggested that insurance and symptom presentation differences do not fully explain the gaps in care in bipolar disorder. There may be additional disparity mechanisms that are unique to this clinical population [48, 13]

We also examined the role of acculturation in service utilization within the Hispanic group, and the study is novel in examining how acculturation relates to psychotherapy utilization within bipolar disorder. Psychotherapy utilization rates differed greatly between U.S.- and foreign-born Hispanics in our sample (72% versus none, respectively), as well as between U.S. citizens and non-citizens (62% versus none, respectively), suggesting that acculturation may be one component of the mechanism driving Hispanic-white treatment disparities in bipolar disorder. However, after controlling for multiple comparisons, these differences were not statistically significant. Moreover, we could not directly test whether birthplace or citizenship predicted psychotherapy service utilization or non-utilization because no foreign-born individuals used these services in our sample. Nonetheless, our findings are consistent with broader findings that as immigrants become more acculturated to the U.S., their health seeking behaviors and access become more similar to that of U.S.-born Americans [49, 42]. Our findings provide a basis, at least, for the further consideration of acculturation as a potential mechanism in Hispanic-white disparities research in bipolar disorder. Given that differences emerged in treatment by birthplace and citizenship status, these should be included as proxy variables for acculturation in future studies in this domain [49, 42].

Several limitations must be noted. First, even though the current study included a representative sample of 9,282 participants, our findings should be interpreted with caution due to the small number of Hispanics diagnosed with bipolar disorder in our sample, which also interfered with the ability to examine Hispanic subgroups. Previous research has suggested that Mexicans and Central Americans differ from Puerto Ricans and Cubans in the types of services sought [48], and Puerto Ricans have exhibited service utilization rates similar to those of non-Hispanic whites [2]. We were also unable to examine variability in mood stabilizer usage within the Hispanic respondents because none were receiving this standard care. Second, our sample only included English-speaking Hispanics, and disparities may be even more dramatic among non-English-speaking Hispanics [50]. Third, current analyses relied on self-reported service and medication use. However, self-reported and physician-reported rates of medication use have been shown to be highly concordant [51]. It has been argued that because visits regarding conditions such as bipolar disorder may be highly salient, such that recall accuracy may be robust [52]. Furthermore, although our proxy measures of acculturation (i.e., citizenship status, birthplace) have been commonly used and show strong psychometric characteristics [53], future research should consider how

other acculturation factors, such as attitudes, ethnic identity, and feelings of adaptation about living in the U.S., affect service utilization rates in Hispanics with bipolar disorder. Moreover, with multiple comparisons, there is the potential for type I errors; however, we attempted to address this limitation statistically by using omnibus tests and Bonferroni corrections.

Despite limitations, this is one of the first studies to examine treatment adequacy for bipolar disorder in a representative sample of Hispanics in the U.S. The findings illustrate the profound under-treatment of bipolar disorder among Hispanics. Mental health consequences for such profound under-treatment are highly likely. Under-treatment of bipolar disorder has been related to suicide [54], hospitalization [55], and increased medical comorbidities [56]. Furthermore, our examination of three leading theories about mental healthcare disparity mechanisms help to clarify which potential underlying variables warrant further investigation in the specific clinical population of bipolar disorder.

To begin addressing this gap in mental healthcare, future research should aim to understand the context in which care is received among Hispanics in the U.S. In research on mental health services more broadly, Hispanics have been found to seek help for psychological problems from their primary care physicians [57, 58] and family members [59] rather than from mental health specialists. The lack of care through specialized mental health providers may be a consequence of the heightened stigma toward mental health diagnoses that has been documented among Hispanics, and particularly foreign-born Hispanics [60, 61]. Related to stigma, Hispanics have been found to be less likely to attribute mood symptoms to biomedical causes, and so they may be less likely to seek conventional medical treatments [62]. Furthermore, future research should examine the role of other factors, such as clinician bias, that could influence the detection and treatment receipt of minorities seeking care for bipolar disorder symptoms. Studies of mechanisms, as well as potential interventions targeting those mechanisms, are warranted to appropriately fill the gaps in care. In sum, to address this grave problem, future research must consider multiple factors, including potential differences in systems providing care as well as individual attitudes toward mental health diagnoses and treatment.

Acknowledgments

Funding: The National Comorbidity Survey Replication (NCS-R) is part of the Collaborative Psychiatric Epidemiology Surveys (CPES) data collection, which was supported by the National Institute of Mental Health (NIMH).

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Table 1

Sociodemographic and clinical characteristics of non-Hispanic whites and Hispanics with bipolar disorder.

Characteristic	Non-Hispanic Whites (N = 137)		Hispanics (N = 26)		X^2
	%	*SE*	%	*SE*	
Age (years)					194.6
18-29	24.8	.04	50.0	.11	
30-44	38.0	.04	34.6	.08	
45-59	30.7	.04	15.4	.09	
≥60	6.6	.02	0	-	
Female	62.8	.05	50.0	.10	85.1
Education (years)					70.0
≤11	19.7	.04	23.1	.10	
12	30.7	.05	34.6	.11	
13-15	35.8	.04	30.8	.09	
≥16	13.1	.03	11.5	.04	
Household Income					19.1
<$18,000	23.4	.04	19.2	.06	
$18,000-$31,999	17.5	.05	23.1	.08	
$32,000-$54,999	27.0	.05	23.1	.09	
≥$55,000	31.4	.03	34.6	.11	
Marital Status					264.3*
Married/cohabiting	51.1	.05	61.5	.09	
Divorced/separated/widowed	28.5	.04	3.8	.02	
Never married	20.4	.04	34.6	.09	
Insured	85.4	.03	65.4	.11	239.7*
Unemployed	43.8	.04	42.3	.12	0.39
U.S. Citizen	100	-	80.9	.09	997.1**
Born in the U.S.	98.5	.001	69.2	.08	1410.9**
Any Lifetime Anxiety Disorder	91.2	.03	84.6	.08	74.3
Any Lifetime Substance Use Disorder	51.1	.04	50.0	.08	0.81
	M	*SE*	*M*	SE	*F*
Number of Manic Episodes in the Prior Year	6.36	2.35	3.31	.78	1.51
Number of Depressive Episodes in the Prior Year	8.91	2.56	6.10	1.10	1.03

Note: Percentages are calculated of number of valid cases.

* $p < .05$

** $p < .001$

Table 2

Medication usage and service utilization characteristics by ethnicity.

Characteristic	Non-Hispanic whites (N = 137)		Hispanics (N = 26)		*X2*	Odds Ratios controlling for Marital Status and Insurance status	β controlling for marital status and insurance status	*SE*	*95 % Confidence Intervals*
	%	*SE*	%	SE					
Medication Usage									
Mood stabilizing medication	21.2	.04	0	.	248.3*	--	--	--	--
Prescribed medication for emotions/mental health	73.7	.04	46.2	.12	227.5*	0.37	−0.99	0.67	[−2.34, 0.36]
Service Utilization									
Professional for manic episode	65.7	.05	34.6	.13	258.5*	0.43	−0.85	0.56	[−1.99, 0.29]
Psychotherapy	83.2	.03	50.0	.11	587.5**	0.19**	−1.66**	0.45	[−2.58, −0.74]
Internet support groups/chat rooms	6.7	.02	20.0	.08	123.3^	3.11	1.14	0.62	[−0.11, 2.38]
Mental Health Service Type					157.9	--	--	--	--
Doctor/Psychiatrist	15.8	.03	19.1	.08					
Psychologist, counselor, or other mental health professional	55.1	.04	33.3	.10					
Religious/spiritual advisor or healer	29.1	.03	47.6	.09					

Note: Percentages are calculated of number of valid cases. For logistic regressions, Non-Hispanic whites are the reference group.

-- = Not applicable

* $p < .05$

** $p < .005$

^ $p = .06$