Racial and Ethnic Disparities in Treatment of Youth With Bipolar Disorders

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Objective: Little is known about racial/ethnic disparities in the treatment of pediatric bipolar disorder. This study examined racial and ethnic differences in prescription fill patterns and receipt of recommended treatment among Medicaid-enrolled youth.

Method: A retrospective longitudinal cohort study using Medicaid claims data from 36 states was conducted for youth 10 to 17 years of age with a "new episode" of bipolar disorder from January 1, 2017, through December 31, 2018 (N = 16,807). Measures related to receipt of guideline-concordant care included filled prescription of a mood stabilizer or antipsychotic, any antidepressant monotherapy, and any psychotherapy visit within 90 days of the new episode of bipolar disorder. We used generalized linear mixed models to examine differences by race/ethnicity in guideline-concordant treatment patterns.

Results: Approximately two-fifths (39.5%) of the cohort filled prescriptions for the recommended treatment of mood stabilizers or antipsychotic medication and about one-half (47.6%) received psychotherapy within 90 days of the first diagnosis during the 365-day follow-up period. Less than one-fifth (17.5%) of youth received antidepressant monotherapy. After controlling for demographic, clinical, and contextual factors, both Hispanic (adjusted odds ratio [AOR] = 0.70, 95% CI = 0.64-0.77) and non-Hispanic Black youth (AOR = 0.58, 95% CI = 0.53-0.63) had lower odds of filling a mood stabilizer or antipsychotic prescription compared to non-Hispanic White youth. Non-Hispanic Black youth also had lower odds of antidepressant monotherapy (AOR = 0.57, 95% CI = 0.50-0.64) or receiving psychotherapy (AOR = 0.89, 95% CI = 0.81-0.97) than non-Hispanic White youth.

Conclusion: Racial/ethnic differences in guideline-concordant treatment for youth with bipolar disorder underscore the need to identify barriers to recommended care for minoritized youth.

Plain language summary: Using Medicaid claims data from 36 states, this study identified low prevalence of receipt of guideline-concordant care among Medicaid-enrolled youth aged 10 to 17 years with a new episode of bipolar disorder. We identified marked differences in receipt of recommended treatment by race/ethnicity. Compared to non-Hispanic White youth, non-Hispanic Black and Hispanic youth were less likely to receive the recommended first-line medications for bipolar disorder (mood stabilizer or antipsychotic). Non-Hispanic Black youth were less likely to receive psychotherapy. These racial/ethnic differences in receipt of guideline-concordant treatment for youth with bipolar disorder underscore the need to identify barriers to recommended care in this population, particularly among minoritized youth.

Key words: bipolar disorder; adolescents; race and ethnicity; pharmacotherapy; psychotherapy

P ediatric bipolar disorders (PBDs) are psychiatric conditions characterized by episodes of mania/hypomania and depression, with or without psychotic features, and high rates of psychiatric comorbidities.[1-4] Globally, the prevalence of PBDs is 3.9%; the rate within the United States is similar.[5] In adolescents, PBD is the fourth leading cause of lost years of life from premature mortality and lost years from disability.[6] Without adequate treatment, individuals with PBDs are at increased risk for poor psychosocial and health-related outcomes and decreased quality of life.[3] Early appropriate treatment is crucial to mitigate the long-term morbidity and mortality of PBDs.

The mainstay treatment for PBDs is pharmacotherapy.[7,8] According to treatment guidelines, first-line pharmacotherapies include mood stabilizers and antipsychotics.[8] Among medications that are approved by the US Food and Drug Administration (FDA) for adolescents with PBD are lithium (mood stabilizer) and atypical antipsychotics (ie, risperidone, aripiprazole, asenapine, quetiapine, and lurasidone). Antidepressants may help treat bipolar depression when used with mood stabilizers or antipsychotics; however, studies are mixed regarding the efficacy and possible side effects, including rapid cycling, of antidepressant monotherapy for bipolar disorder.[9] Adjunct psychotherapy is also recommended, as it may help address areas of psychosocial functioning, behavior, and symptom severity.[7,8,10] Despite these clinical recommendations, many youth receive treatment inconsistent with guidelines or no treatment at all.[11-14]

Evidence in adults suggests that racial and ethnic minoritized individuals are less likely to receive adequate care for bipolar disorder.[15-19] Youth of minoritized race/ethnicity are also often less likely to receive care than are non-Hispanic White youth for a variety of mental health conditions. In one study of 11,878 children 9 to 10 years of age who were enrolled in the Adolescent Brain Cognitive Development (ABCD) Study, White children were more likely to use at least one pharmacological medication, including an antidepressant, stimulant, or antipsychotic, and to receive psychotherapy than were youth of other racial/ethnic categories. Hispanic youth had lower odds of receiving any mental health intervention.[20] The Medical Expenditure Panel Survey data from 2006-2012 show mental health visit rates for non-Hispanic Black and Hispanic youth were about one-half that of non-Hispanic White youth.[21] Among participants in the Longitudinal Assessment of Manic Symptoms study, which followed youth at risk for bipolar disorder at study initiation, Black youth, compared to youth of other racial groups, were less likely to receive adequate pharmacotherapy.[22] Disparities for non-Hispanic Black youth have further increased from 2010 to 2011 until 2016 to 2017, and although mental health care rates in Hispanic youth have increased, both Hispanic and non-Hispanic Black youth continue to have lower access to mental health care than non-Hispanic White youth.[23]

Although these phenomena have been well documented in general mental health among youth and among adults with bipolar disorder, there is a striking lack of data on whether disparities also exist among youth with PBD. Only 2 studies have previously examined racial/ethnic disparities in treatment among youth with PBD; both identified lower rates of recommended treatment in youth of minoritized race and ethnicity compared to non-Hispanic White youth among cohorts of Medicaid-enrolled youth with PBD.[11,14]

To address this research gap, this study aims to do the following: (1) compare racial/ethnic differences in prescription fill patterns among a multistate population of Medicaid-enrolled youth experiencing a new episode of PBD; and (2) determine whether there are racial/ethnic differences in receipt of guideline-concordant care (ie, treatment consistent with US recommendations for PBD).[7,8] This study focuses on Medicaid-insured youth because it covers nearly 40% of US youth in 2021,[24-26] and because Medicaid is the single largest payer for mental health services[25] and disproportionately serves racial/ethnic minority youth.[27] We build upon previous research by using more recent data from a larger number of states. Based on previous studies,[11,14,19] we hypothesized that treatment patterns would differ across racial/ethnic groups, with Hispanic and non-Hispanic Black youth being less likely to receive guideline-concordant treatment than non-Hispanic White youth.
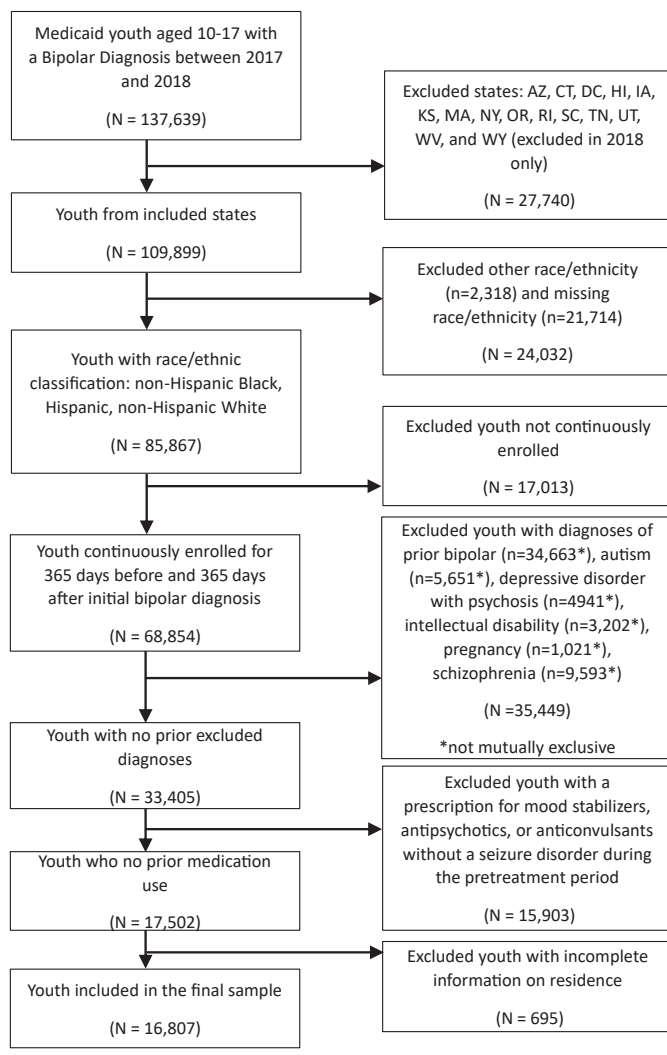
METHOD

Study Design and Data Source

We conducted a retrospective cohort study using multistate Medicaid claims data to examine racial/ethnic differences in treatment among youth with a new PBD episode. Medicaid Transformed Medicaid Statistical Information System Analytic Files (TAF) were obtained via the Centers for Medicare and Medicaid Services (CMS). Claims spanned 2016 through 2019 and included information on patient eligibility and demographics, medical services, and medication prescription fills. Medicaid eligibility files included information on demographics (ie, year of birth, sex, race/ethnicity), county of residence, Medicaid eligibility reason, and enrollment dates. Medical services claims provided information on inpatient, outpatient, and emergency department use and related diagnosis and procedure codes and service dates. Pharmacy claims provided information on prescription fills such as national drug code (NDC), day supply, and dispense dates. Medicaid claims data were linked based on county of residence to the 2017 and 2018 Area Health Resource File for contextual-level data. This study was approved by the Ohio State University Institutional Review Board and followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guidelines.[28]

Sample and Cohort Construction

The sample included all youth 10 to 17 years of age from 36 states with a "new episode" of PBD during calendar years 2017 and 2018 who were continuously enrolled in Medicaid for 365 days before and 365 days after the first claim for PBD. A new episode of PBD was defined as follows: (1) 1 inpatient claim or ≥2 outpatient claims on different service dates for a diagnosis of bipolar I, bipolar II, bipolar not otherwise specified (NOS), and cyclothymic disorder (identified by the *International Classification of Diseases, 10th Revision, Clinical Modification* [*ICD-10-CM*] codes F30 to F31, F34.0); and (2) no history of PBD or mood stabilizer (eg, lithium or anticonvulsant) and/or antipsychotic prescription filled during the pretreatment period (365 days before the initial PBD claim). The treatment period was defined as 365 days after the first PBD claim. The date of the first PBD claim was the index date for cohort entry.

Figure 1 provides a flowchart of the cohort construction. We first identified 137,639 Medicaid-insured youth 10 to 17 years of age with ≥1 inpatient claim or ≥2 outpatient claims on different service dates for PBD at any time from January 1, 2017, to December 31, 2018. Next, we excluded 14 states from 2017 and 15 states from 2018 with a high proportion of missing or inaccurate race/

FIGURE 1 Sampling Methodology

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Medicaid youth aged 10-17 with a Bipolar Diagnosis between 2017 and 2018 (N = 137,639)

Excluded states: AZ, CT, DC, HI, IA, KS, MA, NY, OR, RI, SC, TN, UT, WV, and WY (excluded in 2018 only) (N = 27,740)

Youth from included states (N = 109,899)

Excluded other race/ethnicity (n=2,318) and missing race/ethnicity (n=21,714) (N = 24,032)

Youth with race/ethnic classification: non-Hispanic Black, Hispanic, non-Hispanic White (N = 85,867)

Excluded youth not continuously enrolled (N = 17,013)

Youth continuously enrolled for 365 days before and 365 days after initial bipolar diagnosis (N = 68,854)

Excluded youth with diagnoses of prior bipolar (n=34,663*), autism (n=5,651*), depressive disorder with psychosis (n=4941*), intellectual disability (n=3,202*), pregnancy (n=1,021*), schizophrenia (n=9,593*) (N = 35,449) *not mutually exclusive

Youth with no prior excluded diagnoses (N = 33,405)

Excluded youth with a prescription for mood stabilizers, antipsychotics, or anticonvulsants without a seizure disorder during the pretreatment period (N = 15,903)

Youth who no prior medication use (N = 17,502)

Excluded youth with incomplete information on residence (N = 695)

Youth included in the final sample (N = 16,807)

ethnicity data based on CMS quality reports (n = 27,740).[29] We also excluded youth with a documented race/ethnicity other than Hispanic, non-Hispanic Black, and non-Hispanic White, including those with multiple races, because of small sample size (n = 2,318), and those with missing race/ethnicity data (n = 21,714). After applying the requirement for continuous Medicaid enrollment in the pretreatment and treatment periods, the cohort was reduced to 68,854. We also excluded youth with PBD diagnoses (n = 34,663) or diagnoses of autism (ICD-10 codes F84.0, F84.5) (n = 5,651), depressive disorder with psychosis (ICD-10 codes F32.3, F33.3) (n = 4,941), intellectual disabilities (ICD-10 codes F70 to F79, F84.2 to F84.3, F84.8 to F84.9) (n = 3,202), pregnancy (ICD-10 codes O09-O82) (n = 1,021), and schizophrenia (ICD-10 codes F20-F29) (n = 9,593) during pretreatment. Youth with these diagnoses were excluded to ensure that the

treatments being received were for PBD rather than for other disorders; similarly, pregnant individuals were excluded because lack of pharmacological treatment may have resulted from pregnancy. Youth with a filled prescription for anticonvulsants without a diagnosis of seizure disorder or a filled prescription for other mood stabilizers or antipsychotics during the pretreatment period were also excluded (n = 15,903). Finally, youth missing county of residence were excluded (n = 695). Our final cohort included 16,807 Medicaid enrolled youth 10 to 17 years of age from 36 states with a new PBD diagnosis, ≥2 years of continuous Medicaid enrollment, and no prior prescriptions for mood stabilizers or antipsychotics (Figure 1).

Measures

Outcome: Psychotropic Medication Use. Psychotropic medications were identified using the NDC and included all prescriptions filled from the index date through the next 365 days. Medications were grouped into 5 major drug classes according to the American Hospital Formulary Service Pharmacologic Therapeutic Classification System: mood stabilizers, including lithium and anticonvulsants (eg, carbamazepine, valproate sodium, and gabapentin); antipsychotics (first-generation and second-generation); antidepressants (selective serotonin reuptake inhibitors [SSRIs], serotonin and norepinephrine reuptake inhibitors [SNRIs], and others including bupropion and mirtazapine); attention-deficit/hyperactivity disorder (ADHD) medications (including stimulants and nonstimulants such as atomoxetine and clonidine); and benzodiazepines and anxiolytics (eg, alprazolam, buspirone, diazepam) (Table S1, available online). Individuals with ≥1 prescription fill on the index date or during the following 365 days were classified as having the medication. Polypharmacy was captured as an overlap in day supply of ≥60 consecutive days with ≥2 different medication classes. To allow for a gap in medication refills, any period of ≤14 days between prescription fills counted as a continuous period of filled medication. Psychotropic class combinations examined for polypharmacy included the following: (1) any mood stabilizer and any antipsychotic; (2) any mood stabilizer and any antidepressant; (3) any antipsychotic and any antidepressant; and (4) any mood stabilizer, any antipsychotic, and any antidepressant.

Outcome: Guideline-Concordant Care. Four measures, broadly based on practice parameters developed by the American Academy of Child and Adolescent Psychiatry[7,8] and representing minimal standards of care for most patients with PBD, regardless of PBD diagnosis category or episode type, assessed receipt of guideline-concordant care:

(1) Filled mood stabilizer or antipsychotic prescriptions. We examined whether adolescents filled prescriptions with ≥60 consecutive days of supplied medication with no more than a 14-day gap from the first-line treatments of mood stabilizers or antipsychotics during the treatment period. We examined ≥60 consecutive days of supplied prescription medication so that youth had at least 1 medication refill, suggesting continuity of pharmacotherapy.

(2) Any antidepressant monotherapy. A filled prescription for any antidepressant medication without a filled mood stabilizer or antipsychotic prescription for ≥60 consecutive days during the treatment period was assessed. Although antidepressant therapy with mood stabilizers or antipsychotics may be considered as treatment for bipolar depression in adolescents, antidepressant monotherapy is not recommended because studies are mixed regarding its efficacy and potential side effects.[9]

(3) Psychotherapy within 90 days. The receipt of any psychotherapy (individual, family, or group) within 90 days of index date was analyzed. Based on prior research defining an inadequate gap in care as >90 days between outpatient mental health visits,[18,30] we defined 90 days as the maximum length acceptable between PBD episode index date and psychotherapy. The CPT codes used to define psychotherapy visits included individual (90804-90819, 90821-90824, 90826-90829, 90832-90834, 90836-90839, 96152, 96158, 96159, Z5814), group (90848, 90853, 90857, 96153, 96164, 96165), and family (90846, 90847, 90849, 96154, 96155, 96167, 96168, 96170, 96171) in inpatient or outpatient settings. Psychotherapy, including psychoeducation and family-focused therapy, is recommended for adolescents with PBD.[7,8,10]

(4) Combination of antipsychotic or mood stabilizer prescription fill and psychotherapy within 90 days. This measure includes youth meeting criteria for both measure 1 and measure 3 described above.

Race/Ethnicity

Race/ethnicity was based on self-reported information from the Medicaid demographics file. Our study included 3 mutually exclusive race/ethnicity groups: Hispanic, non-Hispanic Black, and non-Hispanic White.

Covariates

Demographic Characteristics. Demographic variables were determined based on the index diagnosis date and included age (10-12, 13-14, or 15-17 years of age), sex (male, female), Medicaid eligibility category (poverty, disabled, foster care, other/unknown), and state and county of residence.

Clinical Characteristics. Clinical variables included the index PBD category classified as bipolar I (*ICD-10* codes F30, F31.0-F31.6), bipolar II (*ICD-10* code F31.81), bipolar NOS (*ICD-10* codes F31.89, F31.9), and cyclothymic disorders (*ICD-10* code F34.0). Prior psychiatric conditions identified in the pretreatment period, defined as ≥1 inpatient or ≥2 outpatient visits with relevant diagnosis codes, included ADHD (*ICD-10* code F90), anxiety disorders (*ICD-10* codes F40-F42, F43.1, F44), conduct and oppositional defiant disorders (*ICD-10* code F91), depressive disorders (*ICD-10* codes F32, F33, F34.1, F34.8, F34.9, F39, excluding F32.3 and F33.3), substance use disorders (*ICD-10* codes F10-F19), and other mental health disorders (*ICD-10* codes F00-F99, except as noted for other psychiatric conditions). Prior outpatient mental health services were identified in the pretreatment period. The pediatric medical complexity algorithm was used to classify pretreatment period medical comorbidities into 3 categories: complex chronic, noncomplex chronic, or no chronic disease.[31]

Contextual Characteristics. Contextual characteristics were based on county of residence at the index date. Variables included whether a youth lived in a metropolitan area (metropolitan/nonmetropolitan), county poverty rate (cut at county-level terciles: low <15.61%, moderate ≥15.61% to <23.76%, high ≥23.76%), pediatrician availability (cut at county-level terciles, with the lowest 2 combined because of low cell size: low/moderate <42.3 per 100,000 youth and high ≥42.3 per 100,000 youth), child psychiatrist availability (cut at county-level mean: none, low [>0 and <11.0 per 100,000 youth], and high [≥11.0 per 100,000 youth]), and presence of a community mental health center.

Statistical Analysis

Descriptive statistics characterized the sample, overall and by race/ethnicity. To examine differences by race/ethnicity in demographic, clinical, and contextual characteristics, prescription fill patterns, and receipt of guideline-concordant care, we used χ^2 tests and post hoc–adjusted residual analyses with a Bonferroni correction to identify significant deviations from the expected frequencies. We also used unadjusted and adjusted (controlling for all demographic, clinical, and contextual variables in Table 1) generalized linear mixed models to examine differences in

TABLE 1 Demographic and Clinical Characteristics of Medicaid-Enrolled Youth Aged 10 to 17 Years With a New Episode of Bipolar Disorder, 2017 to 2018

	Total (N = 16,807)		Hispanic (n = 3,548)		Non-Hispanic Black (n = 4,056)		Non-Hispanic White (n = 9,203)		χ^2	df	p
	n	%	n	%	n	%	n	%			
Demographic characteristics											
Age, y									9.8	4	.04
10-12	3,158	18.8	701	19.8	788	19.4	1,669	18.1			
13-14	4,539	27.0	986	27.8	1,096	27.0	2,457	26.7			
15-17	9,110	54.2	1,861	52.4	2,172	53.6	5,077	55.2			
Sex									32.6	2	<.001
Female	10,169	60.5	2,041	57.5*	2,383	58.8	5,745	62.4*			
Male	6,638	39.5	1,507	42.5*	1,673	41.2	3,458	37.6*			
Medicaid eligibility									435.9	6	<.001
Disabled	2,059	12.3	538	15.2*	736	18.1*	785	8.5*			
Foster care	1,608	9.6	243	6.8*	512	12.6*	853	9.3			
Poverty	12,292	73.1	2,503	70.5*	2,619	64.6*	7,170	77.9*			
Other/unknown[a]	848	5.0	264	7.4*	189	4.7	395	4.3*			
Clinical characteristics											
Bipolar disorder diagnosis category									99.8	6	<.001
Bipolar disorder I	6,305	37.5	1,441	40.6*	1,569	38.7	3,295	35.8*			
Bipolar disorder II	2,002	11.9	381	10.7	351	8.7*	1,270	13.8*			
Bipolar disorder not otherwise specified	7,862	46.8	1,599	45.1	2,003	49.3*	4,260	46.3			
Cyclothymic disorder	638	3.8	127	3.6	133	3.3	378	4.1			
Primary diagnosis location									12.5	2	.01
Inpatient visit	1,403	8.3	252	7.1	379	9.3	772	8.4			
Outpatient visit	15,404	91.7	3,296	92.9	3,677	90.7	8,431	91.6			
Prior outpatient mental health	12,155	72.3	2,537	71.5	2,807	69.2*	6,811	74.0*	33.93	2	<.001
Prior psychiatric conditions											
ADHD	4,715	28.1	945	26.6	1,248	30.8*	2,522	27.4	20.3	2	<.001
Anxiety disorder	4,535	27.0	916	25.8	717	17.7*	2,902	31.5*	277.4	2	<.001
Conduct disorder[b]	3,190	19.0	642	18.1	986	24.3*	1,562	17.0*	100.8	2	<.001
Depressive disorders	7,230	43.0	1,485	41.9	1,497	36.9*	4,248	46.2*	100.8	2	<.001
Substance use disorder	1,398	8.3	300	8.5	269	6.6*	829	9.0*	20.9	2	<.001
Other mental health disorders[c]	5,042	30.0	1,039	29.3	1,197	29.5	2,806	30.5	2.37	2	.30
Pediatric medical disorders									42.9	4	<.001
No chronic disease	13,734	81.7	2,851	80.4	3,257	80.3	7,626	82.9*			
Noncomplex chronic disease	2,068	12.3	497	14.0*	484	11.9	1,087	11.8			
Complex chronic disease	1,005	6.0	200	5.6	315	7.8*	490	5.3*			
Contextual characteristics											
Area of residence									955.4	2	<.001
Metropolitan	13,485	80.2	3,147	88.7*	3,742	92.3*	6,596	71.7*			
Nonmetropolitan	3,322	19.8	401	11.3*	314	7.7*	2,607	28.3*			
Poverty rate									291.9	2	<.001
Low (<15.61%)	4,148	24.7	615	17.3*	792	19.5*	2,741	29.8*			
Medium (≥15.61% and <23.76%)	7,669	45.6	1,756	49.5*	1,961	48.3*	3,952	42.9*			
High (≥23.76%)	4,990	29.7	1,177	33.2*	1,303	32.1*	2,510	27.3*			
Availability of pediatricians									777.4	2	<.001

(continued)

TABLE 1 Continued

	Total (N = 16,807)		Hispanic (n = 3,548)		Non-Hispanic Black (n = 4,056)		Non-Hispanic White (n = 9,203)		χ^2	df	p
	n	%	n	%	n	%	n	%			
Low/moderate (<42.3 per 100,000 youth)	5,745	34.2	1,037	29.2*	761	18.8*	3,947	42.9*			
High (≥42.3 per 100,000 youth)	11,062	65.8	2,511	70.8*	3,295	81.2*	5,256	57.1*			
Availability of child psychiatrist									1,486.4	4	<.001
None	4,537	27.0	539	15.2*	516	12.7*	3,482	37.8*			
Low (<11.0 per 100,000 youth)	6,358	37.8	1,641	46.3	1,448	35.7	3,269	35.5*			
High (≥11.0 per 100,000 youth)	5,912	35.2	1,368	38.6*	2,092	51.6*	2,452	26.6*			
Presence of a community mental health center									1,140.9	2	<.001
None	12,651	75.3	2,332	65.7*	2,462	60.7*	7,857	85.4*			
Any	4,156	24.7	1,216	34.3*	1,594	39.3*	1,346	14.6*			

Note: ADHD = attention-deficit/hyperactivity disorder.
[a]*Other/unknown includes eligibility groups such as those covered for specific conditions, refugees, foreigners, and unknown classifications.*
[b]*Includes oppositional defiant disorder.*
[c]*Includes all International Classification of Diseases, Tenth Revision (ICD-10) diagnosis codes F00 to F99 not included in categories above.*
*Standardized residual is significant after Bonferroni correction for multiple comparisons.

receipt of guideline-concordant care by race/ethnicity. Because individuals included in the analysis were clustered within states, geographic state was treated as a random effect in all models to account for the hierarchical structure of the data, whereas other factors were treated as fixed effects.[32] Statistical significance was set at alpha <0.05. All statistical analyses were performed using SAS 9.4 software. Sensitivity analyses were conducted on 2 subsets of the sample, those first diagnosed with bipolar I and those first diagnosed with bipolar II, to see if results varied by primary diagnosis.

RESULTS

Demographic, Clinical, and Contextual Characteristics

Study sample demographic, clinical, and contextual characteristics are described in Table 1. Among the 16,807 youth, 21.1% (n = 3,548) were Hispanic, 24.1% (n = 4,056) were non-Hispanic Black, and 54.8% (n = 9,203) were non-Hispanic White. The mean age was 14.42 years (SD = 1.98 years), and the majority of youth were female (60.5%). Most youth met Medicaid eligibility through poverty qualifications (73.1%) and had no chronic health conditions (81.7%). Nearly one-half were diagnosed with bipolar NOS (46.8%), followed by bipolar I (37.5%), bipolar II (11.9%), and cyclothymic disorders (3.8%). The majority were diagnosed with PBD in an outpatient setting

(91.7%). Common prior psychiatric conditions included depressive disorders (43.0%), other mental health disorders (30.0%; consisting primarily of adjustment disorder, developmental disorders, stress reaction, and other unspecified mental health disorder diagnoses), ADHD (28.1%), and anxiety (27.0%). Most youth lived in metropolitan counties (80.2%), with moderate poverty rates (45.6%), high rates of pediatricians (65.8%), and no community mental health centers (75.3%).

Although nearly all χ^2 test results were statistically significant, there were several notable differences across racial/ethnic groups based on adjusted residuals. First, the proportion of youth who were female (62.4%) was higher than expected among non-Hispanic White youth and lower among Hispanic youth (57.5%). For Medicaid eligibility, non-Hispanic White youth (77.9%) were more often enrolled via poverty than expected, and Hispanic (15.2%) and non-Hispanic Black youth (18.1%) were enrolled via disability more often than expected. Enrollment via foster care was higher among non-Hispanic Black youth (12.6%) and lower among Hispanic youth (6.8%) than expected. Bipolar I was more frequent among Hispanic youth (40.6%) and less frequent among non-Hispanic White youth (35.8%) than expected, and bipolar II was more frequent among non-Hispanic White youth (13.8%) and less frequent among non-Hispanic Black youth (8.7%) than expected. Depression was the most common prior

psychiatric condition among all racial/ethnic groups, but it was higher among non-Hispanic White youth (46.2%) and lower among non-Hispanic Black youth (36.9%) than expected, as were anxiety (31.5% non-Hispanic White and 17.7% non-Hispanic Black) and substance use diagnoses (9.0% non-Hispanic White and 6.6% non-Hispanic Black). Conduct disorder was higher among non-Hispanic Black youth (24.3%) and lower among non-Hispanic White youth (17.0%) than expected.

Racial/ethnic differences were also evident across all contextual variables. Compared to expected values, more non-Hispanic White and fewer Hispanic and non-Hispanic Black youth lived in nonmetropolitan counties (28.3%, 11.3%, and 7.7%, respectively); in counties with no child psychiatrist (37.8%, 15.2%, and 12.7%, respectively); and in counties with no community mental health centers (85.4%, 65.7%, and 60.7%, respectively). More Hispanic and non-Hispanic Black and fewer non-Hispanic White youth lived in counties with high poverty rates (33.2%, 32.1%, and 27.1%, respectively) and higher availability of pediatricians (81.2%, 70.8%, and 57.1%, respectively) than expected.

Prescribing Patterns of Psychotropic Medications

Filled prescriptions for psychotropic medications on or within 365 days after the index PBD diagnosis are reported overall and by race/ethnicity in Table 2. Overall, 76.4% of the sample filled at least 1 psychotropic medication prescription. Nearly 45% received an antipsychotic, 29.6% received a mood stabilizer, and 44.6% received an antidepressant. Nearly all χ^2 tests were significant, with the primary differences existing within non-Hispanic White and non-Hispanic Black youth. Non-Hispanic White youth had higher rates of any psychotropic medication, most medication classes (ie, mood stabilizers, antipsychotics alone or atypical antipsychotics, antidepressants), and all polypharmacy measures than expected, whereas non-Hispanic Black youth had lower rates. The only significant difference among Hispanic youth was that they had lower rates of SNRI antidepressant fills than expected, although the rates for filled SNRI antidepressants were <5% for all racial/ethnic groups.

Racial and Ethnic Differences in Receipt of Guideline Concordant Care

Table 3 shows receipt of guideline-concordant care. More than one-third of the sample (39.5%) received ≥60 consecutive days supply of any mood stabilizer or antipsychotic starting within 365 days after the index diagnosis. Almost one-half (47.6%) had a psychotherapy visit within 90 days of the index diagnosis. Less than one-fifth (17.5%) received antidepressant monotherapy for ≥60 consecutive days in the 365 days after index diagnosis. Only 20% of the sample received both ≥60 consecutive day supply of a mood stabilizer or antipsychotic and a psychotherapy visit within 90 days of index diagnosis. Among the different racial/ethnic groups, non-Hispanic White youth had higher rates and non-Hispanic Black youth had lower rates than expected for all quality measures. Hispanic youth had lower rates than expected for a filled mood stabilizer or antipsychotic prescription, psychotherapy, or the combination and were no different from expected for the antidepressant monotherapy measure.

Table 4 provides the unadjusted and adjusted regression results for receipt of guideline-concordant care (Table S2, available online, for full models). Controlling for demographic, clinical, and contextual factors, compared to non-Hispanic White youth, Hispanic youth had 30% lower odds (odds ratio [OR] = 0.70, 95% CI = 0.64-0.77) and non-Hispanic Black youth had 42% lower odds (OR = 0.58, 95% CI = 0.53-0.63) of filling mood stabilizer or antipsychotic prescriptions. Compared to non-Hispanic White youth, non-Hispanic Black youth had 43% lower odds (OR = 0.57, 95% CI = 0.50-0.64) of receiving antidepressant monotherapy and 11% lower odds (OR = 0.89, 95% CI = 0.81-0.97) of psychotherapy use within 90 days of the index diagnosis, whereas Hispanic youth did not significantly differ. For the combination of a filled mood stabilizer or antipsychotic and psychotherapy within 90 days, non-Hispanic Black youth had 39% lower odds (OR = 0.61, 95% CI = 0.54-0.68) and Hispanic youth had 22% lower odds (OR = 0.78, 95% CI = 0.69-0.87) compared to non-Hispanic White youth. Similar disparities were generally observed in the sensitivity analyses with samples limited to youth diagnosed with bipolar I and bipolar II only (Tables S3-S5, available online).

DISCUSSION

This study demonstrated racial/ethnic differences in treatments received by a multistate cohort of Medicaid-enrolled youth experiencing a new PBD episode. Consistent with previous research,[11-14] we found that only a small proportion of these youth received treatment according to clinical guidelines.[7,8] Specifically, two-fifths of the cohort filled prescriptions for the recommended treatment of mood stabilizers and/or antipsychotic medication with ≥60 continuous days of supply, and about one-half received psychotherapy within 90 days of the index date during the 365-day follow-up period. Most youth received care

TABLE 2 Patterns of Filled Psychotropic Medication Prescriptions Within 365 Days of a New Episode of Bipolar Diagnosis Among Medicaid-Enrolled Youth Aged 10 to 17 Years, 2017 to 2018

	Total (N = 16,807)		Hispanic (n = 3,548)		Non-Hispanic Black (n = 4,056)		Non-Hispanic White (n = 9,203)		χ^2	df	*p*
	N	%	n	%	n	%	n	%			
Any psychotropic medication	12,840	76.40	2,688	75.76	2,741	67.58*	7,411	80.53*	262.80	2	<.001
Any mood stabilizer	4,976	29.61	1,037	29.23	920	22.68*	3,019	32.80*	138.71	2	<.001
Mood stabilizer alone	1,139	6.78	270	7.61	257	6.34	612	6.65	5.38	2	.07
Anticonvulsant	4,582	27.26	971	27.37	854	21.06*	2,757	29.96*	112.54	2	<.001
Lithium	675	4.02	112	3.16	95	2.34*	468	5.09*	63.57	2	<.001
Any antipsychotic	7,454	44.35	1,547	43.60	1,628	40.14*	4,279	46.50*	47.13	2	<.001
Antipsychotic alone	2,245	13.36	429	12.09	672	16.57*	1,144	12.43*	47.87	2	<.001
Atypical	7,414	44.11	1,543	43.49	1,617	39.87*	4,254	46.22*	46.86	2	<.001
Typical	147	0.87	19	0.54	39	0.96	89	0.97	5.97	2	.05
Any antidepressant	7,499	44.62	1,617	45.57	1,292	31.85*	4,590	49.88*	371.66	2	<.001
SNRI	589	3.50	85	2.40*	52	1.28*	452	4.91*	126.01	2	<.001
SSRI	6,371	37.91	1,411	39.77	1,124	27.71*	3,836	41.68*	240.05	2	<.001
Other[a]	1,677	9.98	330	9.30	243	5.99*	1,104	12.00*	115.31	2	<.001
Any benzodiazepine	513	3.05	90	2.54	71	1.75*	352	3.82	44.98	2	<.001
Any ADHD medication	3,694	21.98	718	20.24	885	21.82	2,091	22.72	9.29	2	.01
Polypharmacy measures											
Antidepressant + antipsychotic	1,833	10.91	385	10.85	263	6.48*	1,185	12.88*	118.39	2	<.001
Antidepressant + mood stabilizer	1,083	6.44	210	5.92	122	3.01*	751	8.16*	126.03	2	<.001
Antipsychotic + mood stabilizer	1,054	6.27	183	5.16	197	4.86*	674	7.32*	38.63	2	<.001
Antidepressant + antipsychotic + mood stabilizer	343	2.04	62	1.75	42	1.04*	239	2.60*	36.27	2	<.001

Note: ADHD = attention-deficit/hyperactivity disorder; SNRI = serotonin and norepinephrine reuptake inhibitor; SSRI = selective serotonin reuptake inhibitor.
[a]Includes bupropion and mirtazapine.
*Standardized residual is significant after Bonferroni correction for multiple comparisons.

consistent with recommendations against antidepressant monotherapy, which has mixed results regarding its efficacy and may trigger mania or rapid cycling among individuals with bipolar disorder.[11] Non-Hispanic White youth were more likely to fill prescriptions for mood stabilizer and antipsychotic medications than Hispanic or non-Hispanic

TABLE 3 Receipt of Guideline-Concordant Care by Racial/Ethnic Group Among Medicaid-Enrolled Youth Aged 10 to 17 Years With a New Episode of Bipolar Disorder, 2017 to 2018

	Total (N = 16,807)		Hispanic (n = 3,548)		Non-Hispanic Black (n = 4,056)		Non-Hispanic White (n = 9,203)		χ^2	df	*p*
	n	%	n	%	n	%	n	%			
Filled mood stabilizer or antipsychotic prescription	6,632	39.46	1,301	36.67*	1,199	29.56*	4,132	44.90*	291.88	2	<.001
Any antidepressant monotherapy	2,948	17.54	633	17.84	447	11.02*	1,868	20.30*	167.80	2	<.001
Psychotherapy within 90 days	8,003	47.62	1,498	42.22*	1,843	45.44*	4,662	50.66*	83.2	2	<.001
Filled mood stabilizer or antipsychotic prescription and psychotherapy within 90 days	3,366	20.03	600	16.91*	576	14.20*	2,190	23.80*	189.1	2	<.001

Note: *Standardized residual is significant after Bonferroni correction for multiple comparisons.

TABLE 4 Racial and Ethnic Differences in Receipt of Guideline-Concordant Care Among Medicaid-Enrolled Youth Aged 10 to 17 Years With a New Episode of Bipolar Disorder, 2017 to 2018

	Antipsychotic or mood stabilizer filled				Any antidepressant monotherapy				Psychotherapy within 90 days				Antipsychotic or mood stabilizer filled and psychotherapy			
	OR	95% CI	AOR	95% CI	OR	95% CI	AOR	95% CI	OR	95% CI	AOR	95% CI	OR	95% CI	AOR	95% CI
Race and ethnicity																
Hispanic	0.67	0.60,0.72	0.70	0.64,0.77	0.93	0.81,1.04	0.99	0.88,1.11	1.00	0.91,1.10	1.02	0.92,1.12	0.72	0.64,0.81	0.78	0.69,0.87
Non-Hispanic Black	0.54	0.50,0.59	0.58	0.53,0.63	0.50	0.44,0.56	0.57	0.50,0.64	0.83	0.77,0.90	0.89	0.81,0.97	0.56	0.51,0.63	0.61	0.54,0.68
Non-Hispanic White	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	

Note: All models controlled for state as a random effect; adjusted models included all demographic (ie, age, sex, Medicaid eligibility), clinical (ie, location of diagnosis, bipolar diagnosis category, prior psychiatric conditions, medical comorbidities), and contextual (ie, area of residence, poverty rate, availability of pediatricians, availability of child psychiatrist, presence of community mental health center) variables. Table S2, available online, provides full models. AOR = adjusted odds ratio; OR = odds ratio.

Black youth. Non-Hispanic Black youth were less likely to receive antidepressant monotherapy or psychotherapy within 90 days than non-Hispanic White youth, but there were no significant differences between Hispanic and non-Hispanic White youth. Racial and ethnic disparities persisted in the sensitivity analyses limited to only bipolar I or bipolar II, although the lack of observation of certain disparities within a specific diagnostic category may be an artifact of the sample size rather than a lack of actual differences by racial/ethnic category.

Our findings that a smaller proportion of minoritized youth than non-Hispanic White youth filled prescriptions for recommended first-line pharmacotherapy is consistent with previous literature. In a cohort of Ohio Medicaid-enrolled youth with PBD from 2006 to 2010, Fontanella *et al.* reported that non-White youth (ie, Hispanic, non-Hispanic Black, and of other non-Hispanic race) had lower odds of filling a mood stabilizer or antipsychotic prescription within 12 weeks of the index date of a new PBD episode than non-Hispanic White youth.[11] Similarly, in a cohort of Medicaid-enrolled youth from 15 states between 2009 and 2013, Llamocca found that, compared to non-Hispanic White youth, Hispanic and non-Hispanic Black youth were less likely to receive minimally adequate pharmacotherapy, defined as filling mood stabilizer or antipsychotic prescriptions with days' supply covering at least 80% of days within the first 180 days after a new PBD episode.[14] Lower receipt of recommended pharmacotherapy among youth of minoritized race/ethnicity groups has also been reported for other mental health conditions,[22,33] including major depression,[34,35] alcohol and substance use disorders,[36] and ADHD.[37]

There was also lower psychotherapy use in non-Hispanic Black relative to non-Hispanic White youth, but receipt of psychotherapy did not differ significantly between Hispanic and non-Hispanic White youth. Fontanella *et al.* found no significant difference between non-White and White youth in receipt of at least 6 psychotherapy visits within 12 weeks of the index date of a new PBD episode.[11] Llamocca reported that non-Hispanic Black youth were less likely to receive 8 psychotherapy visits, but not 12, within 180 days of the index date of a new PBD episode, and found no significant difference between Hispanic and non-Hispanic White youth.[14]

Multiple patient and provider factors may explain the disparities in guideline-concordant care that we observed in this study. Race/ethnicity in the United States is a culturally constructed concept that is highly correlated with resource access and cultural beliefs; such factors likely influence the differences that we observed in our study. Many of these factors are shaped by larger issues such as a history of

systemic racism that has created economic barriers disproportionately affecting certain populations, has prevented certain populations from accessing quality health care, which may have limited exposure to and understanding of mental health care in certain groups, and resulted in mistreatment of certain populations in research and medical treatment, which may contribute to medical mistrust.[38] Attempts to understand and to address barriers to receipt of recommended treatment among youth with PBD must consider these larger underlying issues and approach problem solving from a strengths-based rather than deficit-based approach. First, providers may use varied treatment approaches for youth of different racial/ethnic groups, even if they are not aware of such differences in approach.[39-42] Second, beliefs regarding and preferences for certain treatments may differ between racial and ethnic groups. For example, caregivers of minoritized race/ethnicity backgrounds may have less familiarity with or understanding of counseling, which may affect willingness to seek psychotherapy as treatment for mental illness.[43,44] Perceived stigma of seeking mental health services may lead people to seek informal support, such as from church communities.[44,45] Lack of racially/ethnically concordant providers or lack of culture-specific therapy approaches may also limit access to or uptake of psychotherapy for individuals of minoritized race/ethnicity.[46] Finally, structural factors (eg, rurality status of area of residence, household income, insurance status) correlated with race/ethnicity may underlie observed differences in treatment use.[46] For example, youth with insurance, regardless of type, and with higher household incomes may be more likely to use mental health services.[46] However, although we accounted for several contextual factors by limiting our sample to only Medicaid-enrolled youth and adjusting for metropolitan status of county of residence and county-level access to care and poverty, we still identified differences in receipt of guideline-concordant care by race/ethnicity.

Several interventions might help to address the differences in treatment for PBD that we identified in this study.[11,13] First, culturally sensitive psychoeducation must be provided for youth and families, which may increase receipt of recommended treatment and ultimately reduced symptom severity.[33] Second, additional provider training is vital. Both primary care and specialty providers could benefit from comprehensive training in PBD treatment guidelines; such training could be a combination of case consultation and didactic training with information on both pharmacotherapy and psychotherapy. Providers could receive training on culturally sensitive care to be able to tailor treatments to different racial/ethnic groups. Strategies to support access to culturally sensitive care may include the

following: workforce development to ensure career pathways supporting mental health providers from diverse backgrounds; community health workers and peer support specialists to facilitate culturally competent care options and to improve receipt of recommended treatment; screening and interventions for health-related social needs within health care settings; advocacy and financial support from health care systems and policy makers to create a strong social safety net; and policies to address systemic barriers to health care access, including structural racism.[47-49]

Strengths of the study include the following: (1) a large, diverse population-based sample of Medicaid-enrolled youth with new PBD episodes; (2) detailed, longitudinal information on patterns of medications prescribed to youth after a new PBD episode; and (3) evaluation of multiple guideline-concordant care measures based on evidence-based guidelines for PBD.[7,8] However, the study is not without limitations. First, our findings may not generalize to uninsured youth or to those covered by commercial insurance plans. Second, our study was limited to Hispanic, non-Hispanic Black, and non-Hispanic White youth; however, these groups comprise the majority of Medicaid-enrolled youth, and as such the findings are relevant. We also could not measure race and ethnicity separately or examine heterogeneity within racial and ethnic groups because of how these demographics are captured within the Medicaid data. Third, we examined only differences in treatment after a diagnosis of PBD by race and ethnicity, although differences in obtaining an accurate diagnosis in the first place is also an important barrier to receiving appropriate treatment.[50] Fourth, other factors that can influence treatment decisions and compliance, including patient–provider relationship, provider specialty, and family environment, could not be measured using Medicaid data. Fifth, Medicaid pharmacy claims data reflect only filled prescriptions, which may be influenced by many factors, including differences in prescription patterns and barriers to filling ordered prescriptions, and do not capture adherence to actual medication use. Sixth, although newer treatment guidelines have not been released in the United States to the best of our knowledge, adherence to or operationalization of the 2005/2007 American Academy of Child and Adolescent Psychiatry[7,8] guidelines may have changed over time. Finally, diagnoses were based on clinical judgment and may not have been validated using standardized diagnostic assessment tools.

In this multistate cohort of Medicaid-enrolled youth, less than one-half of youth received guideline-concordant care. However, consistent with treatment guidelines, less than one-fifth of youth (17.5%) received antidepressant monotherapy. Notably, receipt of guideline-concordant care

differed by race/ethnicity. Our findings point to a crucial need to address quality of care for youth with PBD from diverse racial/ethnic backgrounds. To improve PBD care through a health equity lens, health care systems and policy makers must work to address barriers at multiple levels to ensure access to high-quality treatment for all youth.

CRediT authorship contribution statement

Cynthia A. Fontanella: Writing – review & editing, Writing – original draft, Supervision, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Kristy M. Nguyen:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Elyse N. Llamocca:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Rui Huang:** Writing – review & editing, Methodology, Formal analysis. **Danielle L. Steelesmith:** Writing – review & editing, Supervision, Methodology, Formal analysis, Data curation. **Taryn L. Mayes:** Writing – review & editing, Writing – original draft. **Eric A. Youngstrom:** Writing – review & editing, Writing – original draft, Conceptualization. **Susan dosReis:** Writing – review & editing, Writing – original draft, Conceptualization.

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