Depression in Medicaid-Covered Youth

Differences by Race and Ethnicity

Laura P. Richardson, MD, MPH; David DiGiuseppe, MSc; Michelle Garrison, MPH; Dimitri A. Christakis, MD, MPH

**Background:** Racial disparities have previously been noted in antidepressant use among Medicaid-covered youth.

**Objective:** To determine if racial and ethnic differences are due to dissimilarity in the prevalence of diagnosed depression or disparate treatment patterns.

**Methods:** Claims were examined for 192,441 youth (5-18 years old) who had been continuously enrolled in Medicaid from July 1, 1997, to December 31, 1998. Diagnosed depression was defined as having been assigned an *International Classification of Diseases, Ninth Revision* code for a depressive disorder in a medical claim. Logistic regression methods were used to evaluate the association between race/ethnicity and (1) depression diagnosis and (2) depression treatment in the 6 months following a new episode of diagnosed depression. All analyses were controlled for age, sex, and rural or urban residence.

**Results:** Two percent of the total sample had a depression diagnosis, 25% of which were new episodes of depression. Compared with white youth, Hispanic (odds ratio [OR], 0.51; 95% confidence interval [CI], 0.46-0.57), Asian/Pacific Islander (OR, 0.16; 95% CI, 0.12-0.21), and black (OR, 0.31; 95% CI, 0.26-0.37) youth were less likely to have a depression diagnosis. Following a new diagnosis, Native American (OR, 0.29; 95% CI, 0.18-0.46) and Hispanic (OR, 0.42; 95% CI, 0.30-0.61) youth were less likely than white youth to have received an antidepressant or a mental health specialty visit.

**Conclusions:** Racial and ethnic disparities exist in both the prevalence and treatment of diagnosed depression. Future studies should examine underlying reasons for these disparities and how they affect the quality of care for depressed Medicaid-covered youth.


By the age of 18 years, it is estimated that 20% of youth will have experienced at least one episode of major depression.1 Depressed youth are at increased risk for suicide, school failure, substance abuse, nicotine dependence, early pregnancy, and social isolation.2,3 Although psychotherapy4 and selective serotonin reuptake inhibitor antidepressants5-7 are thought to be effective treatments for adolescent depression, it is not known what proportion of depressed youth receive these treatments. In the United States, less than half of youth with diagnosable mental health disorders report having received treatment for these disorders8; youth with depressive disorders are less likely to receive mental health services than those with attention-deficit/hyperactivity disorder or other disruptive disorders.9,10

Another concern is the possibility that racial and ethnic disparities exist in the diagnosis and treatment of depression. Although community-based studies suggest that minority youth are at least as likely as white youth to have a depressive disorder or symptoms of depression,11 minority youth have been found to be less likely than white youth to have received antidepressant medications12 or professional help for depression.13 Possible explanations for these disparities include underdiagnosis and undertreatment of depression in minority youth. It is also possible that there are cultural differences in family preferences for depression treatment.

Youth insured by Medicaid are an especially important population in which to examine these issues. Although Medicaid pays approximately a quarter of all mental health costs for children and adolescents in the United States,14 no studies have documented the prevalence of diagnosed depressive disorders in this population. Additionally, because of their social situation, youth covered by Medicaid may represent a vulnerable population for whom underdiagnosis or undertreatment may pose especially grave risks.
We conducted a study with 2 primary objectives: (1) to determine the prevalence of depressive disorder diagnoses in a statewide Medicaid population and (2) to explore whether racial or ethnic disparities exist with respect to diagnosis and treatment of depressive disorders in this sample. We hypothesized that minority youth would be less likely to be diagnosed as having a depressive disorder and that once their condition was diagnosed they would be less likely to receive antidepressant medications or mental health services.

METHODS

SETTING

This study was conducted using Washington State Medicaid claims data collected from July 1, 1997, through December 31, 1998. During these years, the Washington State Medicaid program covered youth up to the age of 19 years in families with incomes up to 200% of the federal poverty level. Most youth were enrolled in a Medicaid managed care plan unless they had complex chronic medical conditions or were placed in foster care, in which case they were covered by a fee-for-service plan. Administrative data captured in claims format were available for both managed care and fee-for-service plan enrollees. Services covered by Medicaid included outpatient and inpatient health care and mental health care, as well as prescription medications.

SUBJECTS

Youth (aged 5-18 years) were eligible to be included in this study if they were continuously enrolled in Medicaid from July 1, 1997, through December 31, 1998. This 18-month window was chosen to allow for the assessment of a full year of “new episodes of depression” (defined as having a coded visit for depression after a 6-month period without antidepressant use or depression diagnosis).

DEPRESSIVE DISORDER DIAGNOSES

Youth were considered to have a depressive disorder diagnosis if they had been assigned an International Classification of Diseases, Ninth Revision (ICD-9) code for a depressive disorder at any time during the 18-month study period. The depression ICD-9 codes used are as follows. Depressive disorder diagnosis codes were selected based on prior claims-based studies of adult depression.15

<table>
<thead>
<tr>
<th>ICD-9</th>
<th>Diagnosis Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>296.2</td>
<td>Major depressive disorder, single episode</td>
</tr>
<tr>
<td>296.3</td>
<td>Major depressive disorder, recurrent episode</td>
</tr>
<tr>
<td>298.0</td>
<td>Depressive-type psychosis</td>
</tr>
<tr>
<td>300.4</td>
<td>Neurotic depression or dysthymic disorder</td>
</tr>
<tr>
<td>309.0</td>
<td>Brief depressive reaction</td>
</tr>
<tr>
<td>309.1</td>
<td>Prolonged depressive reaction</td>
</tr>
<tr>
<td>309.28</td>
<td>Adjustment disorder with mixed emotional features</td>
</tr>
<tr>
<td>311</td>
<td>Depressive disorder, not otherwise specified</td>
</tr>
<tr>
<td>313.1</td>
<td>Misery/unhappiness—childhood disturbances</td>
</tr>
</tbody>
</table>

Because of concerns about stigma, we hypothesized that clinicians might be more likely to use codes of lower perceived severity for coding depression in children. Thus, codes for adjustment disorder with depressive and anxiety features (309.28), brief depressive reaction (309.0), and misery/unhappiness of childhood (313.1) were also included in our definition of depressive disorders. There were 9 ICD-9 code fields available for each claim, although few records had more than 2 or 3 coded diagnoses. A youth was considered to have depression if an included code was present in any ICD-9 code field.

Antidepressant use was defined as having at least one pharmacy claim for a selective serotonin reuptake inhibitor, tricyclic, or other antidepressant in the 6 months following presentation with a new episode of depression. Antidepressant drugs were identified using National Drug Codes for antidepressant medications.

Mental health specialty visits were also assessed in the 6 months following presentation with a new episode of depression. Youth were defined as having a mental health specialty visit if they had (1) an evaluation and management visit coded by a psychiatrist or psychologist, (2) a visit coded with a Current Procedural Terminology code for psychotherapy or psychiatric assessment by any mental health care provider, or (3) a state-specific code for a mental health visit in the capped mental health system.

RACE/ETHNICITY

Data on subject race and ethnicity were obtained from Medicaid eligibility data. As part of the Medicaid eligibility paperwork, parents were asked to categorize the race or ethnicity of their child on a single question on the enrollment questionnaire. Based on these responses, youth were categorized as being white, Hispanic, black, Native American, Asian/Pacific Islander, other, or unknown. All racial and ethnic groups were mutually exclusive. The “other” category consisted of youth who were identified by their parents as not fitting into one of these categories or as being of more than one racial and/or ethnic group. Youth without an identified racial or ethnic category were dropped from the analysis.

COVARIATES

Covariates included sex, subject age, and rural or urban residence, since each of these covariates has been shown to be associated with the likelihood of receiving a diagnosis for depression12 or treatment for depression.10 Age categories (5-10 years, 11-14 years, and 15-18 years) were selected to assess for differences by developmental stage. They were also selected to capitalize on the known increase in prevalence of depression diagnoses for girls that occurs around the age of 15 years.17 Rural or urban residence status was determined using the Rural and Urban Commuting Area coding system developed for the Washington State Area in conjunction with the Federal Office of Rural Health Policy and the Department of Agriculture’s Economic Research Service.18

We hypothesized that youth who were eligible for Medicaid based on the presence of a disabling condition or enrollment in foster care might be more likely to have depression and that reasons for Medicaid enrollment might differ by race or ethnicity. Therefore, we also controlled for category of Medi-
To test the hypothesis that the period prevalence of depression diagnoses would vary by race and ethnicity, logistic regression analyses were performed to test race and ethnicity categories as predictors and presence of a depression diagnosis as an outcome. Logistic regression methods were also used to test the hypothesis that youth of minority racial and ethnic groups would be less likely than white youth to receive antidepressants or to have a mental health specialty visit in the 6 months following presentation with a new episode of depression. Three separate analyses were run for the treatment outcome: the first for antidepressant use, a second for receiving mental health specialty care, and a third for having received either an antidepressant or mental health specialty care. All regression analyses were adjusted for age, sex, rural or urban residence, Medicaid eligibility category, and an interaction term for age and sex.

There were 369006 youth covered by Washington State Medicaid at any time from July 1, 1997, through December 31, 1998, and 192441 youth who were continuously enrolled (Figure 1). There were no significant racial or ethnic differences in youth who were continuously enrolled vs those who were excluded for noncontinuous enrollment. Among continuously enrolled youth, 4048 had a depression diagnosis at any time during the 18-month study period (diagnosis sample), and 1459 met criteria for having a new episode of depression (treatment sample). The demographics of the total sample are given in Table 1.

### MAIN SAMPLE DEMOGRAPHICS

Males and females were evenly distributed in the main sample. More than half of the youth were 5 to 10 years old, and an additional 29% were 11 to 14 years old. Consistent with the population in Washington State, youth in the sample were predominantly white, with Hispanic youth and black youth as the 2 next largest self-identified racial and ethnic groups. Twenty-two percent of our sample was not identified as belonging solely to any one of the available racial or ethnic categories. A small number of youth (2% of the original sample) were coded as having an unknown race or ethnicity; these youth were dropped from further analyses.

Approximately 75% of study youth lived in urban settings and 25% lived in rural settings. Most youth qualified for Medicaid due to low income status (93%) vs disability (4%), foster care enrollment (3%), or other reason for eligibility (0.2%). Compared with white youth, black and Native American youth were less likely to be enrolled for financial reasons and more likely to be enrolled due to foster care placement; Asian and Hispanic youth were more likely than white youth to be enrolled based on low income status ($P < .001$). Hispanic and Native American youth were more likely than white youth to live in rural settings, whereas Asian/Pacific Islander youth and black youth were more likely to live in urban settings ($P < .001$). Asian/Pacific Islander youth in our sample tended to be older than white youth ($P < .001$), whereas Hispanic youth tended to be younger ($P < .001$). Black and Native American youth had similar age distributions to white youth. There were no differences in sex distribution by race or ethnicity.

### STATISTICAL ANALYSIS

Data preparation was performed using SAS statistical software, version 8.2, and all analyses were performed using STATA 7 statistical software. Descriptive analyses were performed to assess the characteristics of depressed and nondepressed youth in our sample. The $\chi^2$ methods were used to compare demographic information by race/ethnicity and by presence of depression diagnoses. Subsequently, estimates of depression diagnosis period prevalence were calculated using all eligible youth as a denominator. Given known differences in depression prevalence by age and sex, period prevalence analyses were stratified by both of these variables.
DIAGNOSES

Overall, 4084 youth (2% of study sample) had a diagnosis of depression on a claim at some time during the study period. Consistent with community-based depression studies, the period prevalence of depression diagnoses increased with age (P<.001). The male-female ratio of youth with depression diagnoses shifted from 2:1 in the 5- to 10-year-old group to 1:2 in the 15- to 18-year-old group. Although the magnitude of depression period prevalence varied with race and ethnicity, similar patterns of the age and sex distribution of depression diagnosis were seen within all racial and ethnic groups. The period prevalence ranged from a low of 0.3 per 1000 population in 5- to 10-year-old male Asian/Pacific Islanders to a high of 94 per 1000 population in 15- to 18-year-old female Native Americans (Figure 2 and Figure 3). In white youth, the age- and sex-adjusted period prevalence of depression diagnoses was 36 per 1000 population compared with 18 per 1000 population in Hispanics, 12 per 1000 population in blacks, 5 per 1000 population in Asian/Pacific Islanders, 40 per 1000 population in Native Americans, and 17 per 1000 population for youth in the “other” category.

With the exception of Native Americans, youth from racial and ethnic minority groups were less likely to have a depression diagnosis present when compared with white youth (Hispanic: odds ratio [OR], 0.51; 95% confidence interval [CI], 0.46-0.57; black: OR, 0.31; 95% CI, 0.26-0.37; Asian/Pacific Islander: OR, 0.16; 95% CI, 0.12-0.21; and other: OR, 0.50; 95% CI, 0.43-0.58). Native American youth had a similar rate of depression diagnoses compared with white youth (OR, 1.14; 95% CI, 0.98-1.34). These differences were present after adjustment for sex, age, Medicaid eligibility category, and rural or urban residence.

TREATMENT

The treatment analysis was conducted among 1459 youth (0.8% of the total sample) who met criteria for having a new episode of depression. The age, sex, and racial and ethnic distributions of new episodes of depression were similar to those seen in the prevalence analyses of the entire sample. Overall, 37% of youth who had a new episode of depression had filled an antidepressant medication prescription, and 26% of youth had a mental health specialty visit in the subsequent 6 months. Fifty-five percent of youth received at least 1 of these 2 forms of depression treatment.

Youth for whom race/ethnicity category was unknown were dropped from the sample, leaving 1435 youth for the regression analysis. After adjusting for age, sex, and rural or urban residence, Hispanic (OR, 0.42; 95% CI, 0.30-0.61), Native American (OR, 0.29; 95% CI, 0.18-0.46), and other (OR, 0.55; 95% CI, 0.34-0.88) youth were less likely than white youth to have the combined outcome of either a filled antidepressant prescription or mental health visit in the 6 months following presentation with a new episode of depression (Table 2). There were no significant differences between white youth and black or Asian/Pacific Islander youth. Our definition of depression was broad and included some diagnoses for which treatment might not be given, such as adjustment disorder. In a post hoc analysis, we narrowed our definition to include only diagnostic categories that are used to assess treatment in adult studies (ICD-9 codes 296.2, 296.3, 300.4, and 311). Limiting analyses to youth who had one of these diagnostic codes did not significantly change the results of our analysis.

COMMENT

The findings of our study suggest that racial and ethnic disparities exist in both the prevalence of diagnosed depression and the treatment of depression once identified. Hispanic, black, and Asian/Pacific Islander youth in this Medicaid sample were less likely than white youth to have a medical claim with a diagnosis of depression. In addition, Native American and Hispanic youth were less likely than white youth to have mental health specialty care or to have filled an antidepressant medication prescription in the 6 months following presentation with a new episode of depression.

Assuming that the underlying prevalence of depression is similar in all racial and ethnic groups, what are possible explanations for the observed racial and ethnic disparities in the depression diagnosis prevalence? First, physician identification of depressive disorders may differ by race and ethnicity. Mental health disorders may be particularly prone to diagnostic bias because patterns of
depressive symptoms and the stigma associated with mental health disorders are culturally based and cultural experiences may differ by race and ethnicity. Primary care physicians have been shown to be less likely to detect depression in adult members of some racial minority groups. Additionally, the concordance of race and ethnicity between patient and physician has been shown to be associated with patient trust of their physician. Lack of trust in a physician might prevent patients and their families from discussing sensitive mental health issues.

Second, differences in depression diagnosis prevalence in our data may be due to racial and ethnic differences in accessing the health care system for depression and mental health treatment preferences. Compared with white youth, minority youth report that they are more likely to receive mental health services outside the medical sector in school settings. Other settings where youth may receive mental health services that might not be captured in our claims data include churches, community centers, and social services.

Third, continuity of medical care may also play an important role in the racial and ethnic disparities in diagnosis noted in our study. Minority youth have been shown to be less likely than white youth to have a regular source of care, to receive scheduled immunizations, and to obtain appropriate medications for asthma. Physician familiarity with pediatric patients has been associated with the identification of psychosocial problems and with treatment compliance.

Finally, although racial/ethnic differences in depression prevalence have not been observed in community-based studies, Medicaid-covered youth are not a random sample from the community. It is possible that the factors that contribute to the need for Medicaid coverage and to the development of depression, such as parental depression or family disruption, may differ by race and ethnicity. However, even if the observed differences in diagnosis are due to racial and ethnic variation in underlying depression prevalence, the apparent disparities in depression treatment are still concerning.

It is not clear why there are racial and ethnic differences in depression treatment once depression is diagnosed. Although community-based studies do not support lesser severity of depression in minority compared with white youth, it may be that racial and ethnic differences in the reporting of depression symptoms result in the perception of lower depression severity in minority youth. Another possibility is that there is physician bias in depression treatment; prior studies have shown that racial and ethnic bias exists in treatment for other diseases, such as adult cardiac disease. Racial and ethnic differences in depression treatment may also reflect patient and family preferences for specific types of depression treatment. For example, alternative therapies are commonly used in both Native American and Hispanic cultures, and adult members of some minority groups report a high level of distrust regarding the use of psychotropic medications. In our data, lack of receipt of services may reflect either the lack of prescriptions or referrals by physicians or lack of follow-through by patients and families. A lack of follow-through may also account for differences between racial and ethnic disparities noted in claims data but not on physician self-report of prescribed treatments.

Limitations in our design may have affected our results. First, this study was conducted in a Medicaid sample from a single state, and the results may not be generalizable to other settings. This may explain why racial and ethnic disparities in diagnosis and treatment were noted in our study but not in a prior study conducted in private pediatric office settings. Second, it is possible that claims data do not completely represent all care that youth have received. This may particularly be a problem for patients in managed care systems where claims are not required for reimbursement. Although we do not anticipate that there would be large racial and ethnic differences in claims reporting, to the extent that claims data are incomplete, we may have underestimated the overall prevalence of treatment in our sample. Third, the categories of race and ethnicity were broad; there are likely to be differences within categories that are not accounted for in this analysis. Finally, few black and Asian youth were diagnosed as having depression in our sample, resulting in a small sample size for the treatment analysis. It is possible that the lack of difference between white youth and youth in these categories was due to the small sample size.

Because these were administrative data, we did not have information regarding depression that was diagnosed but not coded. Although this lack of coding may have led to underestimation of prevalence estimates, it should only have contributed to racial and ethnic disparities if physicians have different depression coding practices by race and ethnicity. Since the prevalence of

### Table 2. Likelihood of Filling an Antidepressant Prescription or Having a Mental Health Visit Within 6 Months of New Episode of Depression*

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>No. of Subjects (n = 1435)</th>
<th>Any Antidepressant Prescription Filled</th>
<th>Any Mental Health Visit</th>
<th>Any Mental Health Visit or Antidepressant Prescription Filled</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>1048 Referent</td>
<td>Referent</td>
<td>Referent</td>
<td>Referent</td>
</tr>
<tr>
<td>Native American</td>
<td>154</td>
<td>0.22 (0.12-0.41)</td>
<td>0.63 (0.36-1.09)</td>
<td>0.29 (0.18-0.46)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>90</td>
<td>0.45 (0.30-0.69)</td>
<td>0.61 (0.40-0.93)</td>
<td>0.42 (0.30-0.61)</td>
</tr>
<tr>
<td>Black</td>
<td>48</td>
<td>0.68 (0.37-1.28)</td>
<td>0.75 (0.37-1.50)</td>
<td>0.65 (0.36-1.17)</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>19</td>
<td>0.76 (0.29-1.97)</td>
<td>1.37 (0.50-3.71)</td>
<td>0.88 (0.35-2.20)</td>
</tr>
<tr>
<td>Other</td>
<td>76</td>
<td>0.62 (0.37-1.02)</td>
<td>1.15 (0.68-1.96)</td>
<td>0.55 (0.35-0.88)</td>
</tr>
</tbody>
</table>

*All analyses adjusted for sex, age, sex × age interaction, Medicaid eligibility category, and rural or urban residence.
Prior studies have shown that racial and ethnic disparities exist in the use of antidepressants and receipt of psychotherapy among youth. However, few studies have specifically studied diagnosis and treatment patterns for depression in this age group. In this study, we examined racial and ethnic disparities in both the presence of coded diagnoses of depression and treatment once depression was identified.

We found that, with the exception of Native American youth, who were members of racial and ethnic minority groups were less likely to have a coded diagnosis of depression than white youth. We also found that Native American and Hispanic youth were less likely to have received antidepressants or a mental health visit in the 6 months after depression was diagnosed. Thus, racial and ethnic disparities were noted both in depression diagnoses and in treatment of new episodes of depression. Future studies regarding racial and ethnic differences in care-seeking behaviors and treatment preferences and how these differences affect quality of care for depressed youth may increase our understanding of why these disparities exist and may provide insight regarding how we can improve the treatment of depression for all youth.

Accepted for publication March 28, 2002.

This project was supported in part by funding from the Nesholm Family Foundation. Dr Richardson also receives funding through the Klingenstein Third Generation Foundation (New York, NY) Fellowship in Child and Adolescent Depression and the Poncin Family Scholarship (University of Washington School of Medicine, Seattle).

Corresponding author: Laura P. Richardson, MD, MPH, Child Health Institute, 6200 NE 74th St, Suite 210, Seattle, WA 98115 (e-mail: lpr@u.washington.edu).

REFERENCES