



Published in final edited form as:

Acad Pediatr. 2009 ; 9(2): 89–96. doi:10.1016/j.acap.2008.11.007.

Racial/Ethnic Disparities in the Mental Health Care Utilization of Fifth Grade Children

Dr. Tumaini R. Coker, MD, MBA, Dr. Marc N. Elliott, PhD, Dr. Sheryl Kataoka, MD, MSHS, Dr. David C. Schwebel, PhD, Dr. Sylvie Mrug, PhD, Dr. Jo Anne Grunbaum, EdD, Dr. Paula Cuccaro, PhD, Dr. Melissa F. Peskin, PhD, and Dr. Mark A. Schuster, MD, PhD

Department of Pediatrics, Mattel Children's Hospital, David Geffen School of Medicine at UCLA, Los Angeles, Calif (Dr Coker); RAND Corporation, Santa Monica, Calif (Drs Coker, Elliott, and Schuster); Psychiatry and Biobehavioral Sciences, David Geffen School of Medicine at UCLA, Los Angeles, Calif (Dr Kataoka); Department of Psychology, University of Alabama at Birmingham, Birmingham, Ala (Dr Schwebel and Dr Mrug); Prevention Research Center Program, Centers for Disease Control and Prevention Research, Atlanta, Ga (Dr Grunbaum); Center for Health Promotion and Prevention Research, University of Texas Health Science Center at Houston, Houston, Tex (Dr Cuccaro and Dr Peskin); and Department of Medicine, Children's Hospital Boston, Harvard Medical School, Boston, Mass (Dr Schuster)

Abstract

Objective—The aim of this study was to examine racial/ethnic differences in fifth grade children's mental health care utilization.

Methods—We analyzed cross-sectional data from a study of 5147 fifth graders and their parents in 3 US metropolitan areas from 2004–06. Multivariate logistic regression was used to examine racial/ethnic differences in mental health care utilization.

Results—Nine percent of parents reported that their child had ever used mental health care services; fewer black (6%) and Hispanic (8%) children had used services than white children (14%). Fewer black and Hispanic children with recent symptoms of attention-deficit/hyperactivity disorder, oppositional defiant disorder, and conduct disorder, and fewer black children with symptoms of depression had ever utilized services compared with white children. In multivariate analyses controlling for demographic factors, parental mental health, social support, and symptoms of the 4 mental health conditions, we found that black children were less likely than white children to have ever used services (Odds ratio [OR] 0.3, 95% confidence interval [95% CI], 0.2–0.4, $P < .001$). The odds ratio for black children remained virtually unchanged when the analysis was restricted to children with symptoms of 1 mental health condition, and when the analysis was stratified by mental health condition. The difference in utilization for Hispanic compared with white children was fully explained by sociodemographics in all multivariate models.

Address correspondence to: Tumaini R. Coker, MD, MBA, Mattel Children's Hospital UCLA, David Geffen School of Medicine at UCLA, UCLA/RAND Center for Adolescent Health Promotion, 1072 Gayley Avenue, Los Angeles, California 90024 (tcoker@mednet.ucla.edu).

The findings and conclusions in this report are those of the authors and do not represent the official position of the Centers for Disease Control and Prevention.

Conclusions—Disparities exist in mental health care utilization for black and Hispanic children; the disparity for black children is independent of sociodemographics and child mental health need. Efforts to reduce this disparity may benefit from addressing not only access and diagnosis issues, but also parents' help-seeking preferences for mental health care for their children.

Keywords

mental health; racial/ethnic disparities; utilization

National and community studies have found racial/ethnic differences in mental health care utilization for children and adolescents;^{1–6} these studies suggest that black and/or Hispanic children are less likely than white children to receive mental health care services. Other studies document significant variation in parental help-seeking behaviors for different child mental health conditions.^{2,7,8} Most data on racial/ethnic disparities in mental health care utilization, however, only account for general child mental health need.^{2,3,5,6} Few studies provide a comparative examination of racial/ethnic disparities in utilization for specific mental health conditions. One study of specialty mental health care use found that black children were less likely than white children to receive specialty care for depression but were just as likely to receive specialty care for behavioral problems.¹ Data on condition- or symptom-specific racial/ethnic disparities in utilization could help researchers and clinicians focus their efforts in reducing these disparities in mental health care use. We know of no published population-based studies that examine how primary and specialty mental health care utilization differs by child race/ethnicity among children with symptoms of each of the most common childhood mental health conditions. Therefore, our study aims to examine racial/ethnic differences in 1) the utilization of mental health care in children, and 2) the utilization of mental health care among children with symptoms of 4 of the most common psychiatric diagnoses in children—attention-deficit/hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), conduct disorder (CD), and depression. We hypothesize that 1) significant racial/ethnic disparities exist in mental health care utilization that are more pronounced among children with ADHD and less apparent among children with depression and that 2) socioeconomic factors will explain the observed racial/ethnic differences in utilization. These racial/ethnic differences will be examined using the Andersen model of health care utilization as a conceptual framework;⁹ thus, predisposing factors (ie, age, race/ethnicity), enabling factors (ie, income, insurance) and need factors (ie, mental health symptoms) may influence and contribute to child mental health care utilization.

METHODS

Healthy Passages, funded by the Centers for Disease Control and Prevention, is a longitudinal study of a cohort of 5147 fifth graders and their parents that explores health behaviors, outcomes, and related risk and protective factors by using a multilevel approach. Baseline data collected from 2004 to 2006 were used for this analysis. Institutional review boards at each study site and the Centers for Disease Control and Prevention approved this study. “Healthy Passages” provides a comprehensive assessment of preadolescent health and behavior by using baseline data from multiple sources (child, parent, and school).

Psychometrically sound standardized measures were used when feasible. Qualitative (ie, focus groups, cognitive interviews) and quantitative studies were conducted during study development, pretesting, and pilot testing to evaluate the appropriateness of survey language, translation, field procedures, and language-specific study materials; these are detailed elsewhere.¹⁰

Study Population and Sampling Procedure

Participants were recruited from public schools located in 3 areas: 1) 10 contiguous public school districts in and around Birmingham, Alabama, 2) 25 contiguous public school districts in Los Angeles County, California, and 3) the largest public school district in Houston, Texas. Eligible schools had an enrollment of at least 25 fifth graders, representing over 99% of students enrolled in regular classrooms in the 3 areas. To ensure adequate sample sizes of black, Hispanic, and white students, we used a 2-stage probability sampling procedure. In the first stage, we randomly sampled schools by using probabilities that were a function of how closely a school's racial/ethnic mix corresponded to the site's racial/ethnic target. In the second stage, all fifth grade students in regular classrooms of sampled schools were invited to participate. The small number of students who were not identified as black, Hispanic, or white were categorized as "other" for sampling purposes only. The sampling procedure is detailed elsewhere.¹⁰

The 118 sampled schools had 11 532 enrolled fifth graders. Almost all students in regular classrooms were eligible to participate; the only exclusion criterion was if the child or primary caregiver was unable to complete the study interview in English or Spanish. A primary caregiver (henceforth referred to as "parent") for each student received a letter requesting permission for contact by study personnel. Of the 11 532 parents—6663 who either agreed to be contacted or who were unsure but were invited to participate—77% (5147) completed an interview. This sample size reached the predetermined sample size targets, which were designed to allow detection of small effects within racial/ethnic subgroups. Details of statistical power are described elsewhere.¹⁰ Interviews were conducted at the parent's home, study center, or another preferred location. Prior to interviews, parents gave informed consent for their participation and their child's participation; children gave assent.

Measures

Mental Health Care Utilization—To measure mental health care utilization, we adapted one set of questions from the Services Assessment for Children and Adolescents, a self- and parent-report instrument designed to assess the use of outpatient and inpatient mental health services by children aged 8 to 18 years.¹¹ The Services Assessment for Children and Adolescents shows good concordance ($\kappa = 0.76$) between parent reports and documentation for services.¹²

Parents were asked, "Has your child ever received care for emotional, behavioral, drug, or alcohol problems?" Parents were also asked where their child received that care and could answer with one or more of the following: a) pediatrician, family doctor, medical clinic, general hospital, or other medical provider; b) psychiatrist, psychologist, psychiatric nurse,

clinical social worker, other mental health professional in a mental health clinic or office; or c) school counselor, school psychologist, or other school mental health worker.

Although our utilization measure is lifetime service use for emotional, behavioral, drug, or alcohol problems, it likely provides information on more recent utilization (previous 3 years) since the age of the children is 10 to 11 years. National studies demonstrate that 3% of children <8 years old have ever used mental health care services or have a significant mental health condition.^{5,13} Further, since the prevalence of drug and alcohol use was extremely low among the “Healthy Passages” fifth grade participants (eg, 2% reported ever using marijuana; <1% reported ever using other drugs), most reported utilization was likely for emotional and behavioral problems.

Child Mental Health Symptoms—We adapted 32 questions from the Diagnostic Interview Schedule for Children (DISC) Predictive Scales (DPS) to assess the presence of parent-reported symptoms of ADHD (8 yes/no items), ODD (12 yes/no items), CD (8 yes/no items), and child-reported symptoms of depression (6 yes/no items) during the previous 12 months. The DPS is a screening tool based on the DISC; it identifies children with symptoms of 11 *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* diagnoses (sensitivities and specificities for ADHD, ODD, CD, and depression = 0.89).¹⁴ We created dichotomous variables for each disorder, defined by a score (sum of symptoms) above the sample 90th percentile. We used this cutoff value, which was more stringent than cutoff values used in a previously studied community sample,¹⁴ since we did not include impairment or severity measures for symptoms.

Covariates—We collected data on several child and parent characteristics previously hypothesized to influence child and adult mental health care use.^{1,5,6,15–18} Child sociodemographic covariates included child race/ethnicity (non-Hispanic black, Hispanic, non-Hispanic white, other race/ethnicity), age (10 years, 11 years [93% were 10 or 11]), gender, insurance status (uninsured, insured), annual household income (<\$20 000, \$20 000–\$69 999, \$70 000), and household composition (2-parent, 1-parent, other). Parent sociodemographic covariates included parent age (18–34 years, 35–44 years, 45 years), education level (no high school degree, high school degree/some college, college degree or greater), and English language proficiency (speaks English very well vs less than very well;¹⁹ monolingual English speakers were categorized as English proficient). Insurance categories (private insurance, Medicaid, State Children’s Health Insurance Program) were dichotomized into insured and uninsured, because bivariate analyses showed no significant differences by insurance type. Parent age and income were categorized based on differences observed in mental health care utilization in bivariate analyses. Lastly, we also included covariates for parental psychological distress, parental social support, and child symptoms of ADHD, ODD, CD, and depression. We omitted parent gender because 93% were female.

Parents completed the Brief Symptom Inventory (BSI 18), a validated tool to identify adult psychological distress.²⁰ Global distress scores were dichotomized using published cutoff values validated in community samples.²¹

Two subscales from the 10-item Social Well-Being Scale determined the number of social contacts (3 items) and social resources (1 item) available to parents.²² These questions asked about the frequency of visits with friends and the number of close friends/relatives with whom the parent feels at ease.^{22,23} Total scores were calculated for each subscale and used as continuous variables.

Statistical Analysis

All analyses employed design and nonresponse weights and accounted for both the effects of weights and of the clustering of children within sites by using Stata SE 10 (StataCorp LP, College Station, Tex).^{24–26} First, we used chi-square tests of homogeneity, *t* tests, and logistic regression to describe the characteristics of children using mental health care. We also used bivariate analyses to describe the proportion of children with mental health symptoms by child race/ethnicity and mental health care utilization among them. Next, we used multiple logistic regression to examine the adjusted odds ratios of mental health care utilization in 4 separate models for children with symptoms of 1) ADHD, 2) ODD, 3) CD, and 4) depression. Finally, we examined these odds ratios in multiple regression models that 1) included all children, regardless of symptoms, and 2) were restricted to children with a mental health care need as determined by having symptoms of ADHD, ODD, CD, or depression.

All multiple regression models included the following covariates: child age, gender, and health insurance; parent age, educational attainment, English proficiency, social contacts/resources, and psychological distress; household composition and income; and study site. The model that examined utilization for all children also included child mental health need (symptoms of ADHD, ODD, CD, or depression). Due to low missing-item rates among the covariates used (mean 1.3%), we used subgroup (school) mean imputation for covariates to avoid the bias that arises with list-wise deletion of complete cases in multivariate models.²⁷ We did not perform imputation for our main dependent or independent variables (ie, mental health care utilization, mental health symptoms).

RESULTS

Characteristics of All Children Using Mental Health Care

Nine percent of fifth graders had received care at some time in their lives for emotional, behavioral, or drug/alcohol problems (Table 1). Of these, 71% received care from mental health specialists (psychiatrist, psychologist, psychiatric nurse, clinical social worker, other mental health professional/specialist), 20% used school services only (school counselor, school psychologist, or other school mental health worker), and 9% received care from a primary care provider only (pediatrician, family doctor, medical provider). Data are not shown. A larger percentage of white (14%) than black (6%) or Hispanic (8%) children had ever used mental health care. There were no significant differences in utilization by parental psychological distress or social contacts/resources. In contrast to children with recent symptoms (during the past 12 months) of depression (16%), more children with recent symptoms of ADHD (30%), ODD (28%), and CD (27%) were reported by their parents to have used mental health services at some time. Of those with a mental health need as

determined by symptoms of 1 of the 4 mental health conditions, 68% had symptoms of 1 disorder, 20% had 2, 11% had 3, and 1% had all 4 (data not shown).

Racial/Ethnic Differences in the Prevalence of Mental Health Symptoms

Bivariate analyses showed significant differences in parent-reported symptoms of ADHD, ODD, and CD across race/ethnicity. Hispanic children were less likely to have symptoms of ADHD (7%), ODD (5%), and CD (5%), compared with white children (10% ADHD, 10% ODD, 9% CD), whereas black children were more likely to have ADHD (14%) and CD symptoms (13%) than white children. There were no significant differences in the report of depressive symptoms by race/ethnicity (Table 2).

Mental Health Care Utilization by Race/Ethnicity and Mental Health Condition

We found significant differences in utilization among children with symptoms of ADHD, ODD, and CD. Forty-nine percent of white children with ADHD symptoms had ever used mental health care, compared with 20% of black, 26% of Hispanic, and 45% of other children. Results were similar for ODD and CD. Black (9%) children with depressive symptoms had much lower utilization than white (28%) children (Table 3). In each of 4 condition-specific multivariate models, black children with symptoms of ADHD, ODD, CD, and depression were less likely than white children to have ever used mental health services. There were no significant differences for Hispanic or other children compared with white children (Table 4).

Multivariate Analysis of Mental Health Care Utilization Among All Children

In a multivariate model of all children, black children (OR 0.3, 95% CI 0.2–0.4, $P < .001$) were less likely to have ever used services compared with white children, but the odds ratio for Hispanic children compared with white children was not significant (Table 5).

Study site, parental education, household composition, and parental English language proficiency were associated with mental health care utilization in the multivariate model (Table 5). Children with symptoms of each of the mental health conditions were more likely to have ever used services compared with those without. The odds ratio was greatest for children with ADHD symptoms (OR 3.8, 95% CI 2.8–5.1, $P < .001$) when compared with children who did not have ADHD symptoms. Odds ratios for children with symptoms of ODD (OR 2.0, 95% CI 1.5–2.9, $P < .001$), CD (OR 2.0, 95% CI 1.4–2.8, $P < .001$), and depression (OR 1.8, 95% CI 1.2–2.6, $P = .004$) were also significant but lower in magnitude.

Multivariate Analysis of Mental Health Care Utilization Among Children with Symptoms

In a multivariate logistic model that only considered children with symptoms of 1 mental health condition, black children (OR 0.3, 95% CI 0.2–0.4, $P < .001$) with symptoms were less likely to have ever used care than white children with symptoms (Table 5). The odds ratio for Hispanic compared with white children was not significant.

DISCUSSION

Our findings suggest that there is a significant and robust disparity in mental health care utilization for black children, which cannot be fully explained by racial/ethnic differences in child mental health, family sociodemographics, or parental social factors. This disparity persists even when just considering those children with symptoms of a mental health condition. It also exists in similar magnitude across all 4 examined mental health conditions. We did not find a disparity in utilization between Hispanic and white children in multivariate analyses.

Our findings are consistent with other studies of racial/ethnic disparities in utilization, although unlike our study, some studies have also reported disparities for Hispanic children. Researchers analyzing 1987 data found that black and other nonwhite children were less likely to receive ambulatory mental health care compared with white children.⁶ In another study using 1996 to 1998 data, researchers found that black and Hispanic children were less likely to use specialty mental health care.⁵ After controlling for sociodemographics, unmet need for primary or specialty care was significantly lower for Hispanic children, but not black children, compared with white children. A study using a more recent national dataset (2000) found that black and Hispanic children were less likely than white children to have a mental health care specialty visit, after controlling for a number of covariates, including need.¹ In contrast, the “Great Smoky Mountains Study” of youth (1992–1993), a longitudinal, community-based study in western North Carolina, did not find any significant differences in utilization among black and white youth.²⁸ One reason that we did not find a disparity for Hispanic children may be that we included a number of covariates that seemed to explain the unadjusted difference in utilization between Hispanic and white children. For example, none of these studies included a variable to account for English language proficiency in multivariate analyses.

In unadjusted analyses, fewer black and Hispanic children with symptoms of ADHD, ODD, and CD, and fewer black children with symptoms of depression had ever utilized services compared with white children. A previous study found that black and Hispanic children were less likely to have a specialty visit for depression when compared with white children.¹ More broadly, our findings suggest that many children (of all racial/ethnic categories) who experience depressive symptoms do not receive primary and specialty mental health care services.

In a multivariate model, we found that site, parent education, parent English proficiency, and household composition were positively associated with mental health care utilization. Children in households other than a 2-parent household were more likely to have used services. In a previous study, presence of a father in a household decreased the likelihood of child mental health care utilization.¹ The authors hypothesized that fathers may be less amenable to utilizing mental health care for mental health problems in their children, although other factors may have influenced utilization. Our finding that children in households without 2 parents were more likely to have ever used mental health care than those in 2-parent households may suggest that help seeking for mental health problems

differs by household composition, or that children in these “other composition” households have additional mental health care needs that we did not measure (eg, adjustment problems).

The differences in utilization between black and white children were not explained by sociodemographics, parental support, parental mental health, or child mental health symptoms. It is possible that the disparity is a result of cultural differences in mental health care utilization that we were unable to account for in this analysis. Researchers have hypothesized that cultural differences in parental help-seeking preferences may be responsible, in part, for racial/ethnic disparities in mental health care utilization.^{2,7} Although our findings do not suggest a differential response to mental health symptoms by parent race/ethnicity, other studies have found racial/ethnic differences in parents’ threshold for seeking care based on child symptoms.^{2,8,29} In one study, black parents were less likely than white parents to contact mental health care professionals as their first step in help seeking for their child’s problem behaviors. The correlation between professional help seeking and perceived severity of the child’s behavior was greater for blacks than for Hispanics and whites, suggesting that black parents may have a higher threshold for child symptoms before they seek professional help.^{2,7} This higher threshold could be a result of cultural differences or differences in access to care.

Although we accounted for mental health need by assessing recent symptoms of 4 mental health conditions, we were unable to account for parental perceived need. Cultural differences in parents’ perceived need for mental health care, and preferred help-seeking behavior when a mental health need is perceived, may partially explain the black-white disparity in utilization. These cultural differences have been explored for ADHD. For example, dosReis and colleagues³⁰ and Olaniyan and colleagues³¹ found that some black parents perceived ADHD symptoms as behaviors that are better addressed by parenting and discipline than by medical and mental health professionals. Bussing and colleagues^{32,33} found that black parents were less likely than white parents to prefer medication treatment for ADHD. There are still other factors that we did not measure that could account for the black-white disparity, including difficulty accessing mental health care services despite insurance, parental perceived discrimination by the health care system, or parental distrust of mental health professionals.

There are limitations to this study. First, our results are based on data collected from 3 major metropolitan areas in 3 different states and may not generalize to other areas or the US population as a whole. Second, in our multivariate model for utilization, we only account for recent (last 12 months) mental health symptoms, but our main outcome measure of utilization is lifetime mental health care use for any mental health problems. Because of this discrepancy, our estimates of utilization accounting for mental health needs could be overestimated. Further, for children who did use care, we do not have information on the type, duration, or adequacy of treatment received. Next, although we can account for recent symptoms of mental health disorders, we did not assess parents’ perceptions of mental health care needs for their children. Further, we only collected data (including parent-reported child symptoms) from 1 parent for each child and do not have similar data from the other parent in 2-parent households. Lastly, our measures of mental health symptoms do not include functional impairment, which is necessary for diagnosis.³⁴

Despite these limitations, our findings have implications for child mental health policy and practice. There is a significant and robust disparity in utilization for black children compared with white children that was not explained by the need, predisposing, or enabling factors that we explored. This disparity existed for all examined mental health conditions in similar magnitude and may be a result of cultural differences in the recognition or perception of mental health problems or in parents' help-seeking preferences. Efforts to reduce these disparities for black children should focus on educating parents about common child mental health conditions and their treatment options and investigating cultural factors that may shape parents' help-seeking preferences for mental health symptoms in their children.

Acknowledgments

The "Healthy Passages" study was funded by the Centers for Disease Control and Prevention, Prevention Research Centers (Cooperative Agreements U48DP000046, U48DP000057, and U48DP000056; Dr Mark A. Schuster). The authors thank Dr Greta Massetti for her review of this manuscript.

References

1. Zimmerman FJ. Social and economic determinants of disparities in professional help-seeking for child mental health problems: evidence from a national sample. *Health Serv Res.* 2005; 40:1514–1533. [PubMed: 16174145]
2. McMiller WP, Weisz JR. Help-seeking preceding mental health clinic intake among African-American, Latino, and Caucasian youths. *J Am Acad Child Adolesc Psychiatry.* 1996; 35:1086–1093. [PubMed: 8755806]
3. Sturm R, Ringel JS, Andreyeva T. Geographic disparities in children's mental health care. *Pediatrics.* 2003; 112:e308. [PubMed: 14523217]
4. Hough RL, Hazen AL, Soriano FI, et al. Mental health care for Latinos: mental health services for Latino adolescents with psychiatric disorders. *Psychiatr Serv.* 2002; 53:1556–1562. [PubMed: 12461215]
5. Kataoka SH, Zhang L, Wells KB. Unmet need for mental health care among U.S. children: variation by ethnicity and insurance status. *Am J Psychiatry.* 2002; 159:1548–1555. [PubMed: 12202276]
6. Cunningham PJ, Freiman MP. Determinants of ambulatory mental health services use for school-age children and adolescents. *Health Serv Res.* 1996; 31:409–427. [PubMed: 8885856]
7. Cuffe SP, Waller JL, Cuccaro ML, et al. Race and gender differences in the treatment of psychiatric disorders in young adolescents. *J Am Acad Child Adolesc Psychiatry.* 1995; 34:1536–1543. [PubMed: 8543522]
8. Lambert MC, Knight F, Weisz JR. Over- and under-controlled clinic referral problems of Jamaican and American children and adolescents: the culture general and the culture specific. *J Consult Clin Psychol.* 1989; 1989:467–472. [PubMed: 2768604]
9. Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? *J Health Soc Behav.* 1995; 36:1–10. [PubMed: 7738325]
10. Windle M, Grunbaum JA, Elliott M, et al. Healthy passages. A multilevel, multimethod longitudinal study of adolescent health. *Am J Prev Med.* 2004; 27:164–172. [PubMed: 15261905]
11. Horwitz SM, Hoagwood K, Stiffman AR, et al. Reliability of the services assessment for children and adolescents. *Psychiatr Serv.* 2001; 52:1088–1094. [PubMed: 11474056]
12. Hoagwood K, Horwitz S, Stiffman A, et al. Concordance between parent reports of children's mental health services and service records: the Services Assessment for Children and Adolescents (SACA). *J Child Fam Stud.* 2000; 9:315.
13. Simpson GA, Bloom B, Cohen RA, et al. U.S. children with emotional and behavioral difficulties: data from the 2001, 2002, and 2003 National Health Interview Surveys. *Adv Data.* Jun.2005 :1–13. [PubMed: 16004071]

14. Lucas CP, Zhang H, Fisher PW, et al. The DISC Predictive Scales (DPS): efficiently screening for diagnoses. *J Am Acad Child Adolesc Psychiatry*. 2001; 40:443–449. [PubMed: 11314570]
15. Bovier PA, Chamot E, Eytan A, Perneger TV. Patterns of use of ambulatory mental health services in a universal care setting. *Psychiatr Serv*. 2001; 52:1515–1520. [PubMed: 11684749]
16. Lam JA, Rosenheck R. Social support and service use among homeless persons with serious mental illness. *Int J Soc Psychiatry*. 1999; 45:13–28. [PubMed: 10443246]
17. Albert M, Becker T, Mccrone P, Thornicroft G. Social networks and mental health service utilisation- a literature review. *Int J Soc Psychiatry*. 1998; 44:248–266. [PubMed: 10459509]
18. Golding JM. Social support and use of mental health services by Mexican-Americans and non-Hispanic whites. *Basic Appl Soc Psych*. 1990; 11:443–458.
19. US Census Bureau. [Accessed June 1, 2008] Selected social characteristics in the United States. 2006. Available at: http://factfinder.census.gov/servlet/ADPTable?_bm=y&_-qr_name=ACS_2006_EST_G00_DP2&-geo_id=01000US&-ds_name=ACS_2006_EST_G00_&-_lang=en&-redoLog=false
20. Derogatis, L. [Accessed November 12, 2007] BSI 18 Brief Symptom Inventory 18. Available at: www.pearsonassessments.com/tests/bsi18.htm
21. Derogatis, L. BSI-18: Administration, Scoring, and Procedures Manual. Minneapolis, Minn: National Computer Systems; 2000.
22. Donald, CA.; Ware, JE. The Quantification of Social Contacts and Resources. Santa Monica, Calif: RAND Corporation; 1982.
23. Sherbourne CD. The role of social support and life stress events in use of mental health services. *Soc Sci Med*. 1988; 27:1393–1400. [PubMed: 3238458]
24. Williams R. A note on robust variance estimation for cluster-correlated data. *Biometrics*. 2000; 56:645–646. [PubMed: 10877330]
25. Skinner, CJ. Domain means, regression and multivariate analyses. In: Skinner, CJ.; Holt, D.; Smith, TMF., editors. *Analysis of Complex Surveys*. Chichester, England: John Wiley & Sons Inc; 1989. p. 59-88.
26. Wooldridge, J. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, Mass: MIT Press; 2002.
27. Little, RJA.; Rubin, DB. *Statistical Analysis with Missing Data*. New York, NY: John Wiley & Sons; 2002.
28. Burns BJ, Costello EJ, Angold A, et al. Children's mental health service use across service sectors. *Health Aff (Millwood)*. 1995; 14:147–159. [PubMed: 7498888]
29. Weisz JR, Suwanlert S, Chaiyasit W, Walter BR. Over- and undercontrolled clinic-referral problems among Thai and American children and adolescents: the wat and wai of cultural differences. *J Consult Clin Psychol*. 1987; 55:719–726. [PubMed: 3454782]
30. dosReis S, Mychailyszyn MP, Myers M, Riley AW. Coming to terms with ADHD: how urban African-American families come to seek care for their children. *Psychiatr Serv*. 2007; 58:636–641. [PubMed: 17463344]
31. Olaniyan O, dosReis S, Garriett V, et al. Community perspectives of childhood behavioral problems and ADHD among African American parents. *Ambul Pediatr*. 2007; 7:226. [PubMed: 17512883]
32. Bussing R, Gary F, Mills T, Wilson Garvan C. Parental explanatory models of ADHD. *Soc Psychiatry Psychiatr Epidemiol*. 2003; 38:563. [PubMed: 14564385]
33. Bussing R, Schoenberg NE, Perwien AR. Knowledge and information about ADHD: evidence of cultural differences among African-American and white parents. *Soc Sci Med*. 1998; 46:919–928. [PubMed: 9541077]
34. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 4. Washington, DC: American Psychiatric Association; 2000.

Table 1Characteristics of Children Using Mental Health Care Services[†]

	No.	Yes, %	Unadjusted OR [‡] (95% CI [§])
Total	5112	9	...
Sociodemographic Characteristics			
Child race/ethnicity			
Black	1738	6	0.4 (0.3–0.5) ***
Hispanic	1792	8	0.5 (0.4–0.7) ***
White	1224	14	Referent
Other	358	14	1.0 (0.6–1.5)
Study site			
Birmingham, Alabama	1578	10	Referent
Houston, Texas	1781	6	0.6 (0.4–0.8) **
Los Angeles, California	1735	11	1.2 (0.9–1.6)
Parent age, y			
18–34	1635	8	Referent
35–44	2409	9	1.1 (0.9–1.5)
45	1048	12	1.7 (1.3–2.2) ***
Child age, y			
10	2305	9	Referent
11	2807	9	1.1 (0.8–1.4)
Child gender			
Female	2591	7	Referent
Male	2521	11	1.5 (1.2–1.9) ***
Annual household income, \$			
<20 000	1690	8	Referent
20 000–69 999	1758	8	1.0 (0.7–1.3)
70 000	1531	12	1.6 (1.1–2.2) *
Parent educational attainment			
No high school degree	1224	5	Referent
High school degree /GED/some college	2352	10	2.1 (1.4–3.1) ***
4-year college degree	1449	11	2.4 (1.7–3.5) ***
Household composition			
2-parent household	2850	7	Referent
Single parent household	2017	10	1.5 (1.1–2.1) *
Other composition (foster, adoptive)	241	22	3.8 (2.6–5.6) ***
Child health insurance status			
Insured	4520	10	Referent
Uninsured	592	4	0.4 (0.2–0.7) **
Other Parent Characteristics			

	No.	Yes, %	Unadjusted OR [‡] (95% CI [§])
Parent English proficiency			
English proficiency	3693	11	Referent
Limited English proficiency	1423	5	0.5 (0.3–0.6) ***
Parent psychological distress			
Negative screen	4248	9	Referent
Positive screen	764	10	1.2 (0.9–1.6)
Social contacts and resources			
Social contacts scale (mean, CI)	5112	7.1 (6.9–7.3)	1.1 (1.0–1.1)
Social resources scale (mean, CI)	5112	4.0 (3.8–4.3)	1.1 (1.0–1.1)
Child mental health			
ADHD ^{//} symptoms [¶]	515	30	5.9 (4.6–7.5) ***
ODD ^{††} symptoms [¶]	407	28	4.9 (3.9–6.3) ***
CD ^{‡‡} symptoms [¶]	431	27	4.6 (3.5–5.9) ***
Depressive symptoms [¶]	366	16	2.0 (1.4–2.9) ***

[†]Results are based on responses to the question “Has your child ever received care for emotional, behavioral, or drug/alcohol problems?” N = 5112 because 35 participants did not answer the utilization question.

[‡]OR indicates odds ratio. Unadjusted model does not control for other covariates.

[§]CI indicates confidence interval.

^{//}ADHD indicates attention-deficit/hyperactivity disorder.

[¶]Referent variable is children with a symptom score less than or equal to the sample’s 90th percentile.

^{††}ODD indicates oppositional defiant disorder.

^{‡‡}CD indicates conduct disorder.

* $P < .05$.

** $P < .01$.

*** $P < .001$.

Table 2

Unadjusted Odds of Having Symptoms of a Mental Health Condition

	ADHD [†] (n = 515)		ODD [‡] (n = 407)		CD [§] (n = 431)		Depression (n = 369)	
	No. (%)//	OR [¶]	No. (%)	OR (95% CI) ^{‡‡}	No. (%)	OR (95% CI)	No. (%)	OR (95% CI)
Black	244 (14)	1.4 (1.1–1.9)**	165 (10)	1.0 (0.8–1.3)	215 (13)	1.5 (1.0–2.3)*	136 (9)	1.4 (1.0–2.0)
Hispanic	120 (7)	0.6 (0.5–0.8)**	100 (5)	0.5 (0.4–0.7)***	83 (5)	0.5 (0.3–0.8)**	124 (7)	1.1 (0.8–1.6)
White	121 (10)	Referent	113 (10)	Referent	100 (9)	Referent	79 (6)	Referent
Other	30 (8)	0.8 (0.5–1.2)	29 (9)	0.9 (0.5–1.4)	33 (10)	1.2 (0.8–1.9)	30 (10)	1.6 (1.0–2.7)

[†] ADHD indicates attention-deficit/hyperactivity disorder.

[‡] ODD indicates oppositional defiant disorder.

[§] CD indicates conduct disorder.

// Children with symptoms; unweighted No., weighted percentage.

[¶] OR indicates odds ratio.

^{‡‡} CI indicates confidence interval.

* $P < .05$.

** $P < .01$.

*** $P < .001$.

Table 3
Unadjusted Odds Ratio of Mental Health Care Utilization Among Children With Symptoms of a Mental Health Condition

	ADHD [†] (n = 513)		ODD [‡] (n = 407)		CD [§] (n = 431)		Depression (n = 366) ^{//}	
	No. (%) ^{¶¶}	OR ^{††}	No. (%)	OR (95% CI) ^{‡‡}	No. (%)	OR (95% CI)	No. (%)	OR (95% CI)
Black	49 (20)	0.3 (0.2–0.4)***	40 (22)	0.5 (0.3–0.8)**	43 (19)	0.3 (0.2–0.6)***	13 (9)	0.3 (0.1–0.7)*
Hispanic	32 (26)	0.4 (0.2–0.6)**	22 (22)	0.5 (0.2–0.9)*	20 (24)	0.5 (0.2–0.9)*	17 (13)	0.4 (0.2–1.0)*
White	56 (49)	Referent	42 (38)	Referent	42 (41)	Referent	21 (28)	Referent
Other	12 (45)	0.9 (0.4–2.0)	12 (50)	1.7 (0.6–4.8)	10 (36)	0.8 (0.4–1.8)	7 (30)	1.1 (0.3–4.2)

[†] ADHD indicates attention-deficit/hyperactivity disorder.

[‡] ODD indicates oppositional defiant disorder.

[§] CD indicates conduct disorder.

^{//} 369 students reported depressive symptoms, but 3 had missing data for mental health care utilization.

^{¶¶} Children using care (children with symptoms); unweighted No., weighted percentage.

^{††} OR indicates odds ratio.

^{‡‡} CI indicates confidence interval.

* $P < .05$.

** $P < .01$.

*** $P < .001$.

Table 4

Adjusted Odds Ratio of Mental Health Care Utilization Among Children With Symptoms of a Mental Health Condition[†]

	ADHD [‡] (n = 515)	ODD [§] (n = 407)	CD ^{//} (n = 431)	Depression (n = 366)
Black	0.3 (0.2–0.5)***	0.4 (0.2–0.7)**	0.4 (0.2–0.8)**	0.2 (0.1–0.6)*
Hispanic	0.7 (0.3–1.5)	0.5 (0.2–1.2)	0.8 (0.3–2.1)	1.4 (0.5–4.7)
White	Referent	Referent	Referent	Referent
Other	0.5 (0.2–1.3)*	1.2 (0.4–4.0)	0.7 (0.2–1.9)	1.8 (0.5–7.1)

[†] Adjusted for child age, gender, and health insurance; parent age, educational attainment, English proficiency, social contacts/resources, and psychological distress; household composition and income; and study site. Values are adjusted odds ratios (95% confidence interval).

[‡] ADHD indicates attention-deficit/hyperactivity disorder.

[§] ODD indicates oppositional defiant disorder.

^{//} CD indicates conduct disorder.

* $P < .05$.

** $P < .01$.

*** $P < .001$.

Table 5

Adjusted odds ratios for mental health care utilization by all children and by children with mental health symptoms[†]

	Adjusted odds ratio of mental health care utilization among all children (n=5,002)	Adjusted odds ratio of utilization among children with ADHD, [‡] ODD, [§] CD, or MDD symptoms (n=1,187)
	OR (95% CI)	
Child race/ethnicity		
Black	0.3 (0.2–0.4) ***	0.3 (0.2–0.4) ***
Hispanic	0.8 (0.6–1.2)	0.7 (0.3–1.2)
White	Referent	Referent
Other	0.8 (0.5–1.3)	0.7 (0.3–1.5)
Symptoms of:		
ADHD	3.8 (2.8–5.1) ***	–
ODD	2.0 (1.5–2.9) ***	–
CD	2.0 (1.4–2.8) ***	–
Depression	1.8 (1.2–2.6) **	–
Child age		
10 and under	Referent	Referent
11 and over	1.0 (0.8–1.4)	1.2 (0.9–1.7)
Child gender		
Female	Referent	Referent
Male	1.3 (1.0–1.7)	1.7 (1.2–2.4) **
Parent psychological distress	1.3 (0.9–1.7)	1.3 (0.8–2.0)
Study site		
Birmingham, Alabama	Referent	Referent
Houston, Texas	1.0 (0.7–1.4)	1.0 (0.6–1.5)
Los Angeles, California	1.9 (1.4–2.6) ***	2.0 (1.4–3.0) ***
Parent age		
18–34 years	Referent	Referent
35–44	1.0 (0.7–1.4)	0.9 (0.5–1.3)
over 45 years	1.1 (0.8–1.6)	0.9 (0.5–1.6)
Annual household income		
<\$20,000	Referent	Referent
\$20,000 to \$69,999	1.0 (0.8–1.4)	0.8 (0.5–1.3)
\$70,000	1.3 (0.9–2.0)	0.9 (0.5–1.7)
Parent educational attainment		
No high school degree	Referent	Referent
High school/some college	1.9 (1.2–3.0) **	2.2 (1.2–4.0) *
4-year college degree	1.8 (1.0–3.0) *	3.0 (1.5–6.2) **
Household composition		

	Adjusted odds ratio of mental health care utilization among all children (n=5,002)	Adjusted odds ratio of utilization among children with ADHD, [‡] ODD, [§] CD, ^{//} or MDD symptoms (n=1,187)
2- parent household	Referent	Referent
1- parent household	1.8 (1.3–2.6)**	1.6 (1.1–2.5)*
Other composition	3.6 (2.2–6.0)***	4.9 (2.9–8.6)***
Child health insurance status		
Insured	Referent	Referent
Uninsured	0.5 (0.3–1.0)	0.6 (0.3–1.3)
Parent English proficiency		
English proficiency	Referent	Referent
Limited English proficiency	0.6 (0.4–0.9)**	0.5 (0.2–0.9)*
Social contacts and resources		
Social contacts scale	1.0 (0.9–1.1)	1.0 (0.9–1.1)
Social resources scale	1.0 (0.9–1.0)	1.0 (0.9–1.1)

[†] Values are adjusted (multivariate) odds ratios (95% confidence interval).

[‡] ADHD indicates attention-deficit/hyperactivity disorder.

[§] ODD indicates oppositional defiant disorder.

^{//} CD indicates conduct disorder.

* $P < .05$.

** $P < .01$.

*** $P < .001$.