



**Disparities in Child and Adolescent Psychoactive Medication
Prescription Practices by Race and Ethnicity**

Prepared by:

**Lisa Fortuna, M.D., M.P.H., Carl Fulwiler, M.D., Ph.D., Rosalie Torres Stone, Ph.D.,
Lisa M. Smith, B.A., & Kathleen Biebel, Ph.D.**

**Center for Mental Health Services Research
Department of Psychiatry
October 30, 2008**

Disparities in Child and Adolescent Psychoactive Medication Prescription Practices by Ethnicity and Race

Key Points

- Compared to their non-Latino white counterparts, children and adolescents from racial-ethnic minority groups in the U.S. are less likely to receive prescriptions for psychoactive medication
- Racial-ethnic minority children and adolescents are also significantly less likely to receive mental health care
- Controlling for access to mental health care and for geographic variation reduces but does not eliminate variations in psychoactive prescriptions by race and ethnicity
- Controlling for mental health need and level of impairment does not eliminate variations in psychoactive prescriptions by race and ethnicity
- Reducing disparities will require coordinated efforts to educate families and providers, promotion of evidence-based practices, steps to overcome geographic and language barriers, and additional research for understanding the underlying reasons for variations in prescription patterns

Introduction

Understanding and eliminating racial/ethnic disparities in access and quality of mental care has emerged as a national priority as highlighted in the 2001 Surgeon General's report and the President's New Freedom Commission on Mental Health (U.S. Department of Health and Human Services, 2001). Despite similar prevalence rates of mental health disorders to whites (with the exception of Latino children who appear to have higher rates than whites) and the overrepresentation of minorities in public service sector systems, minority youth and white American children receive mental health treatment at differing rates (Cunningham and Freiman 1996; Cuffe et al., 1995; Costello et al., 1997; Zito et. al. 1998; Flisher et al., 1997; Lahey et al., 1996). For example, using the National Medical Expenditure Panel Survey, Cunningham and Freiman (1996) found that African American children were less likely than white children to have made a mental health outpatient visit. The difference could not be attributed to underlying socioeconomic, family-related, or regional differences between the groups.

Mental Health Services Use by Racial/Ethnic Minority Children and Adolescents

Disparities in mental health services use by race and ethnicity may have implications for variations in prescription patterns for psychoactive medications in children and adolescents by race/ethnicity. Although the research on the use of mental health services by minority children and youth is scarce, available evidence indicates unmet needs for this population (Lahey et. al. 1996). The following are some key studies reported in the Surgeon General's Report on mental health and children in youth. One studied showed that irrespective of the source of treatment used, African American children and youth are less likely than whites to receive any mental health treatment including school-based services (Cuffe et al., 1995; Costello et al., 1997). The

investigators found that Puerto Rican youth who met criteria for a psychiatric condition in Puerto Rico were significantly less likely to use mental health services compared to minorities from other geographic sites. Of those Puerto Rican youth with a diagnosable mental disorder, only 20 percent reported using mental health-related services (Leaf et al., 1996). This study was unique in that it obtained a measure of unmet need that was based both on a diagnosis and on a significant degree of impairment, where impairment was related to key symptoms of the diagnosis (Flisher et al., 1997). In other study of children's use of mental health care in two communities in Texas (Galveston and the lower Rio Grande Valley) (the researchers found that Hispanics reported significantly fewer life-time counseling visits than white youth (2 versus 4) (Pumariega et al., 1998). Overall, the studies support that minority children are less likely to use mental health services irrespective of need.

Variations in Prescription Patterns for Psychoactive Medications in Children and Adolescent by Race/Ethnicity

Objectives

The literature review presented in this brief focuses on studies which examine racial-ethnic variation in psychoactive prescribing practices for children and adolescents which may suggest disparities in care. In our review and discussion of this literature we follow the definition of disparities used in the Institute of Medicine's *Unequal Treatment* report:

Disparities in healthcare are differences in the quality of healthcare that are not due to access related factors or clinical needs, preferences, and appropriateness of interventions.

While many troubled children across all racial/ethnic groups do not receive needed mental health services, children from racial-ethnic minority groups are even less likely to receive care and demonstrate lower rates of receiving psychoactive medication prescriptions. This report addresses two main questions:

- 1) Do differences in psychoactive medication prescription rates represent racial/ethnic disparities as defined by the IOM report?
- 2) Are factors which perpetuate these disparities clarified in the literature?

Methods

To identify the literature on disparities in child and adolescent psychoactive medication prescription practice by race and ethnicity, we searched published literature using standard sources (Ovid/Medline, PubMed), reviewed the Institute of Medicine Unequal Treatment Report and findings from the Annual National Healthcare Disparities Report/SAMHSA National Survey. The search terms included psychoactive drugs, ethnic groups, adolescent, and a combination of disparities and psychoactive drugs, psychoactive drugs and race/ethnicity, insurance and psychoactive drugs in children, youth and adolescents. The search resulted in approximately 100 articles. We reviewed abstracts for all articles since 1994 and from these identified 13 based on quality and relevance for full review. The two primary methodologies used in this literature are to study large databases of prescription claims for data

on prescription patterns and to use responses to large surveys which may prescribe data on prescription use. These articles also led us to review two national reports: the *National Healthcare Disparities Report* by the Agency for Healthcare Research and Quality, and the Institute of Medicine's Executive Summary, *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*.

Results

The primary studies that form the basis for this report are summarized and compared in Tables 1 and 2. They represent studies conducted within the last 10 years using sound scientific methods for examining ethnic-racial disparities in psychoactive prescription patterns and associated factors which may contribute to the disparities.

Table 1 is organized by the psychoactive class studied: stimulants, antidepressants, antipsychotics, and multiple classes. Primary limitations of each study are noted for each study. Table 2 is organized alphabetically and allows studies to be compared more easily. Any recommendations offered by the authors are included in this table. Full citations are provided in the References section.

Variations in psychoactive prescriptions patterns by race/ethnicity:

- Differential use across race/ethnicity groups has been identified using data from case studies Medicaid claims data, and nationally representative survey data. Overall, the literature on prescription patterns suggests that white youth are more likely to be prescribed psychoactive medications as compared to racial-ethnic minorities. African American and Latino/Hispanic are the two ethnic/racial minority groups most often studied. Asians, Native Americans and other groups have been studied less due to their small numbers in the commonly used databases.
- Large differences have also been found in psychoactive use across groups defined by insurance status. Several studies indicated that antipsychotics are more likely to be prescribed to children with public insurance.
- Disparities in both prescription pattern and use are consistently greatest for stimulant medications.

Possible explanations – Disparities have been attributed to several factors including prescriber and family preferences or bias, private vs. public insurance, and the mental health care system itself. More research is needed in understanding which factors mediate differences in prescription patterns across racial/ethnic groups. Some studies have made an attempt at approaching this question:

- Unequal access
 - Racial-ethnic minority children are less likely to have a usual source of care and more likely to be uninsured. However, in most studies which control for number of visits variations in prescription patterns still remain.
 - Studies which use Medicaid prescription databases (Zito, 2005; 1998) at least partially control for access to mental health care because all have Medicaid and other studies control for access in regression models (Hudson 2007). The only

study we found which controls for number of mental health visits (Olfson, 2006) found that racial/ethnic minority differences in antipsychotic prescriptions became nonsignificant controlling for mental health visits. However, the disparity between public vs. private insurance remained. Several studies indicated that antipsychotics are more likely to be prescribed to children with public insurance. As children on SSI because of a mental health disability and children in foster care are disproportionately more likely to receive public insurance, this finding has been attributed to greater severity of illness in this population.

- *Differences in utilization of mental health care* – In studies conducted with minority community samples, distrust of mental health professional and of medications, religious practices, and social network support were identified as explanations for lower utilization of psychoactive medications. The research also shows that racial/ethnic minorities are less likely to access services and once they enter services are less likely to be retained.
- Geographical variation due to racial/ethnic population differences within states and across regions of the country account for some but not all of the disparity. Geographic location or place of residence may also be a critical factor in access to and quality of child mental health services.
- Unequal treatment
 - *Discriminatory treatment/prescribing practices*: Racially biased diagnosis of adults with schizophrenia has been well documented, but similar studies have not been conducted with children. Yet it is well known that race/ethnicity and culture affect symptom presentation and are likely to influence diagnosis and treatment by prescribers who are mostly white.
 - The well-designed study by Hudson et al (2007) found that the majority of racial/ethnic differences in children's stimulant use are explained by differences in responses to individual/family characteristics. In particular, black children in fair/poor mental health, with a child limitation (e.g., academic difficulty) or other impairment all have substantially lower probabilities of stimulant use than white children identified with the same mental health and behavioral issues. Hispanic children with a child limitation also have a lower probability of stimulant use than their white counterparts. The possible explanations suggested by the authors include discrimination in medical treatment and/or access to care, and cultural differences (racial/ethnic and/or community) in the diagnosis and treatment of behaviors associated with ADHD. In particular, culture may play a large role in determining how parents respond to the behavioral cues of their children, in their level of confidence in the medical system, and in their beliefs about the effectiveness or appropriateness of using medications to treat mental health and behavioral problems.

Table I: Summaries of Primary Studies Reviewed by Psychoactive Class

a) Antidepressants

Article Reference	AHRQ, Annual National Healthcare Disparities Report 2007, Department of Health and Humans Services Agency (2008)
Ages studied/sample number/ region/ data source	12-17yo/National /Substance Abuse and Mental Health Services Administration (SAMHSA), National Survey on Drug Use and Health, 2005
Results/prescription variation/findings	In 2005, in no group did even half of children 12-17 with major depressive episode receive treatment for depression in the past year. No statistically significant differences on the basis of race, ethnicity, or family income in the proportion of children ages 12-17 with major depressive episode who received treatment for depression in the past year.
Any explanations/attribution of differences	The prevalence of mental disorders for racial and ethnic minorities is similar to that of whites. However, research based evidence has shown minorities have less access to mental health care and are less likely to receive needed service. These differences may reflect, in part, socioeconomic status, variation in preferences and cultural attitudes toward mental health and mental health care.
Limitations	Data for Asians, Native Americans or Other Pacific Islander, American Indian or Alaska Native, and multiple races did not meet criteria for statistical reliability due to small sample sizes.

b) Antipsychotics

Article Reference	Olfson, M., Blanco, C., Liu, L., Moreno, C., & Gonzalo, L., National Trends in the Outpatient Treatment of Children and Adolescents With Antipsychotic Drugs (2006)
Ages studied/sample number/ region/ data source	<20yo/National Ambulatory Medical Care Surveys (NAMCS) 1993 to 2002
Results/prescription variation/findings	Analysis of national antipsychotic use by race and ethnicity found White adolescents more likely to be prescribed antipsychotics in office-based setting; they also had 3 times more mental health visits and general health care visits. When controlling for a number of visits the odds ratio for White youth compared to ethnic minority groups were no longer significant. Antipsychotic prescriptions were also greater for youth on Medicaid as compared to those w/ private insurance. Differences remained after adjusting for patient diagnosis and other background characteristics.
Any explanations/attribution of differences	Minority children and adolescents tend to be underserved in office-based settings. Illness severity may account for difference between public and private because insurance covers children with SSI due to mental health disability and children who are medically needy in foster care.
Limitations	Information is unavailable concerning dosages and duration of prescribed antipsychotic and other psychotropic medication; samples restricted to office based visit possibly underestimating outpatient antipsychotic treatment.

c) Stimulants

Article Reference	Hudson, J.L., Miller, G.E. & Kirby, J.B., Explaining Racial and Ethnic Differences in Children's Use of Stimulant Medications (2007)
Ages studied/sample number/ region/ data source	5-17yo/ National /Medical Expenditure Panel Survey (MEPS) 2000-2002
Results/Prescription Variation/findings	Focused on prescription for stimulants nationwide; differences in prescription rates were significant; white 5.1%, Black 2.8%, and Hispanic 2.1%. Although differences in access to care were also significant (Blacks and Hispanics were both less likely than whites to be insured). However, regression models showed these variables fail to account for any of the racial gap in stimulant use.
Any explanations/ attribution of differences	Although results suggest that most of the racial/ethnic gap in stimulant use is due to differences in the effects of individual /family characteristics on stimulant use, the source of these differences remains unclear. Possible explanations include discrimination in medical treatment and /or access to care and cultural differences (racial/ethnic and/or community) in the diagnosis and treatment of behaviors associated with ADHD.
Limitations	MEPS does not have clinical information on the prevalence of ADHD.

Article Reference	Stevens, J., Harman, J.S., & Kelleher, K.J., Race/Ethnicity and Insurance Status as Factors Associated with ADHD Treatment Patterns (2005)
Ages studied/sample number/ region/data source	3-18yo/(N=27802) /National survey; regional differences found/1997-2000 Medical Expenditure Panel Surveys (MEPS)
Results/prescription variation/findings	Children w/o insurance had lower level of care in all stages of relative to children w/o insurance. White Americans were more likely to be diagnosed with ADHD compared to African American and Hispanic – American Youth. Children with Medicaid were more likely to be diagnosed with ADHD than were children without insurance. Significant group differences for age, ethnicity and type of insurance ($p < 0.05$) but not region. Prescription Variations include: (1) Children with ADHD 7-12 and 13-18 yrs. more likely to receive at least one stimulant prescription relative to those 3-6 yrs., (2) White children with ADHD more likely to receive at least one stimulant prescription compared to African-American children with ADHD but not compared to Hispanic-American children, (3). Children with ADHD with private insurance more likely to receive at least one stimulant compared to children with ADHD having public insurance or no insurance.
Any explanations/ attributions of differences	Hispanic-American and African –American children were less likely to be diagnosed with ADHD by parent report than white American children; African American youths with ADHD were less likely to initiate stimulant medication relative to White American children. Not surprisingly, 7-12 years olds were more likely to be diagnosed with ADHD compared with ages 13-18 who in turn were more likely to be diagnosed compared to children 3-6 yrs.

	Uninsured children had a lower likelihood of ever receiving a stimulant prescription. Furthermore, compared to children with coverage, medicated children without insurance had fewer stimulant prescriptions, physician visits for ADHD, and fewer psychotherapy visits for both ADHD and comorbid conditions.
Limitations	None noted.
d) Multiple classes	
Article Reference	Zito, J.M., Safer, D.J., dosReis, S., & Riddle, M.A., Racial Disparity in Psychotropic Medications Prescribed for Youths With Medicaid Insurance in Maryland (1998)
Ages studied/sample number/ region/ data source	5-14yo/(N=99,217)/Maryland Medicaid prescription drug claims analyzed
Results/prescription variation/findings	African Americans were less than half as likely to receive psychotropic prescriptions as whites, and about 2/3 as likely to receive other non-psychotropic medications. The greatest differences were found for stimulants with an OR of (1:2.5).
Any explanations /attribution of differences	The racial disparity of use was not altered by partial (noncontinuous enrollment) eligibility status; and, although controlling for geographic variation reduced the racial disparity, a twofold racial difference remained.
Limitations	Does not control for mental health service use/number of visits; based on single state Medicaid population; Because African American income was four times as likely than Caucasians to have more than half their income come from public assistance; African Americans may not be utilizing mental health services relative to Caucasians.

Article Reference	Zito, J.M., Safer, D.J., Zuckerman, I.H., Gardner, J.F., & Soeken, K., Effect of Medicaid Eligibility Category on Racial Disparities in the Use of Psychotropic Medications Among Youths (2005)
Ages studied/sample number/ region/ data source	2-19 yo/(N=217,900)/Maryland Medicaid prescription data
Results/prescription variation/findings	Follow up to same group's 1998 study examined differences in psychotropic medication prevalence in different eligibility categories within Medicaid. Categories reflect either income or special needs (youth on SSI for mental illness and youth in foster care who tend to have more severe mental illness). Ages studied; 2-19 years for the year 2000. There were not enough Hispanic youth (N=396) to compare separately; they were included in 'other' category with Asian (N=110), Native American (N=37), Pacific Islander or Alaskan (N=1). Overall disparity was the same as in 1998 study. White youth as compared to African Americans were twice as likely to receive psychotropic medications and 3.75 times as likely as compared to the 'Other' minority group. Among psychotropic classes the disparity was greatest for antidepressants.
Any explanations/attribution of differences	These more detailed analyses are pertinent now that we have established that eligibility categories are crucial to an understanding of the racial disparity in psychotropic prevalence patterns.

Limitations	Use of prescription claims precludes examination of other variables of interest such as diagnosis, treatment provider, and mental health service use (number of visits); single state Medicaid data.
-------------	--

Article Reference	dosReis, S., Zito, J.M., Safer, D.J., Gardner, J.F., Puccia, K.B., & Owens, P.L., Multiple Psychotropic Medication Use for Youths: A Two-State Comparison (2005)
Ages studied/ sample number/ region/ data source	<20yo/Maryland Medicaid & State Children's Health Insurance Programs (SCHIP)
Results/prescription variation/findings	Data from computerized administrative claims representing medical visits to health-care providers and medications dispensed from outpatient community pharmacies in 1999. Overall prevalence of multiple psychotropic medication use was about 2-3%, of which nearly half was for 5-12 months. Prevalence was higher for males, whites, 10-14 year olds, disabled and severe mental illness.
Any explanations/attribution of differences	A considerable proportion of multiple uses involve antidepressant medications, and approximately 60% of antidepressant use was an SSRI.
Limitations	Differences in the definition of multiple psychotropic treatment limit comparisons to other studies; two state comparison of states in the mid-Atlantic regions.

Article Reference	Leslie, L.K. et al., Racial/Ethnic Differences in the Use of Psychotropic Medication in High-Risk Children and Adolescents (2003)
Ages studied / sample number/ region/data source	6-17yo/(N = 1,715) sample of youths ages /San Diego County, CA./Patterns of Youth Mental Health Care in Public Service Systems (POC)
Results/prescription variation/findings	Race ethnicity distribution: whites (48.6%), African American (22.7%), Latino (19.4%) and Other (13.3%). A higher proportion of African Americans had public insurance. Overall results: Racial/ethnic differences in use of psychotropic medication occur in children served in public service sectors and need to be considered in clinical diagnosis and treatment. Despite high diagnosis rates, overall rates of psychotropic medication use in the past year was low (27.9%), with rates of lifetime use across the sample at 40.8%. For children who met DSM-IV criteria for mood and/or anxiety disorder or ADHD less than half (47.9%) had received medication in the past year, 61.4% reported lifetime medication use. Females were less likely to report past year or lifetime psychotropic medication use. African American and Latino children were 0.59 and 0.46 times as likely to report past year medication use compared to whites: Latino and Other children were 0.41 and 0.55 times as likely to report lifetime medication use compared to whites.
Any explanations	Racial Disparities explanations in minorities include differences in the

/attributions of differences	prevalence of psychiatric conditions; however, studies have shown some prevalence rates comparable and some higher. Unequal access to care includes fewer psychiatrist's practice in economically disadvantage neighborhoods and poor access to physicians. Unequal quality of care in comparison to whites includes uneven and /or poor quality side effect management and lack of psychoeducational information and provider bias to racial/ethnic backgrounds. Cultural factors may affect acceptance, poorer compliance rates and communication (language) barriers and side effects.
Limitations	Study could not address access, quality, cultural and genetic factors which may have affected treatments offered to children/families. Difficult to gauge the degree to which accessibility and appropriateness of services may have played a role in lower medication use. Racial/ethnic category included no heterogeneity within each group. Sample represents high-risk children in a single service system area. Missing Data: 134 missing medication data; 372 missing DISC-IV data. Of the 372, 200 were Spanish speaking and had no translator at interview.

Article Reference	Raghavan, R. et al., Psychotropic Medication Use in a National Probability Sample of Children in the Child Welfare System (2005)
Ages studied/sample number/region/data source)	8yo mean age/48% (n=1479) were boys, 47% Caucasian, 28% African-American, and 18% Latino/Latina. (N=3114) children and adolescents/The National Survey of Child and Adolescent Well-Being
Results/prescription variation/findings	62% were Medicaid recipients; 87% were living at home; 14% saw a mental health provider only and 5% saw both a specialty and 3% saw a nonspecialty provider for a mental health problem.13.5% of children (threefold increase) were taking psychotropic medications at NSCAW's 12 month follow up. Mean age on medication was 10 years; Mean age not on medication was 8 yrs. The proportion of children aged between12 and 16 years; medication use was 7 times greater than among children aged between 2 to 5 years. Male gender, Caucasian race/ethnicity with a history of physical abuse, public insurance status, sub score above 60 on the CBCL were significantly associated with medication use. African-American and Latino race/ethnicity with a history of neglect and being uninsured were negatively associated with medication use.
Any explanations/ attributions of differences	5%-6% of psychotropic medication statewide uses among Medicaid children; among commercially insured children even lower 4%.
Limitations	Partly owing to small sample size, study does not permit us to identify many associations between type of provider visit, use of psychotropic medications, provider history based on parent and caregiver report, and no information on type, dosage and duration of medications taken by child.

Article Reference	Richardson, L.P., DiGiuseppe, D., Garrison, M., & Christakis, D.A., Depression in Medicaid-Covered Youth (2008)
Ages studied/sample number/ region/ data source	(N=192,441) youth 5-18 years/ Washington State Medicaid claims data from July 1, 1997 to December 31, 1998
Results/prescription variation/findings	Compared with white youth, Hispanic, Asian/Pacific Islander and black youth were less likely to have a depression diagnosis. Following a new diagnosis, Native American (OR; 0.29) and Hispanics (OR; 0.42) youth were less likely than white youth to receive an antidepressant or a mental health specialty visit (within 6 months following new episode of depression).
Any explanations/ attribution of differences	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. Lack of trust in a physician; differences in depressive diagnosis may be due to racial and ethnic accessing care for mental health treatment preferences; continuity of regular medical care.
Limitations	One state Medicaid sample; claims may not represent all medical care youth receive; few black and Asian youth were diagnosed with depression resulting in small size for analysis.

Article Reference	Rushton, J.L. & Whitmire, T., Pediatric Stimulant and Selective Serotonin Reuptake Inhibitor Prescription Trends (2003)
Ages studied/sample number/region/data source	Population range from 342,333 in 1992 to 581,088 in 1998 of children ages 1-19 years/ State of North Carolina/Medicaid Database
Results/ prescription variations /findings	<p>1992-1998 included all prescription claims (included age, sex, racial group county etc.) SSRIs & stimulants were studied. Overall stimulant prescription prevalence per number of pre-school age (1-5) and school age (6-14) doubled and SSRI prevalence rate increased even more during the 7 year period of the study.</p> <p>Racial demographics: 1992, 56.4 % of children prescribed stimulants and 75.9 % prescribed SSRI's were white. Racial difference narrowed between 1992-1998. However, in 1998 50.6% stimulants and SSRI's 65.9% were given to white children even though 48.3% of the Medicaid children were black, 39.7% white and 12% other racial groups.</p> <p>In 1998, stimulant prescriptions differed for white school aged males (18.3%) vs black females (3.4%) and SSRI's for white school aged males (2.8%) vs black females (0.6%).</p> <p>Asian, Hispanic, American Indian and other racial groups were less likely to receive stimulants and SSRI's. Sex differences also reported a male predominance of AD/HD. In 1998 male/female ratio was 3.2:1 a decrease from 4.2:1 in 1992. SSRI's more predominant in females; in 1992 female /male ratio (1.8:1), but in 1998 female/male was equal</p>

	(1:1).
Any explanations/ attributions for differences	Increased recognition and treatment of previously unrecognized mental disorders, improved access to psychiatric care, increased education about medications their harmful effects and negative association with expansion of prescription utilization. Differences were found in stimulant and increased SSRI prevalence for whites and other racial groups. But caution differences could be in miss classification, cultural beliefs of MI, access to care, different acceptance of psychotropics.
Limitations	Maryland Medicaid patients only. More attention to Hispanic Medicaid population needed across the U.S. population. Limited Hispanic data for analysis in this Medicaid state data.

Article Reference	Cuffe, S.P., Waller, J.L., Cuccaro, M.L., Pumariega, A.J., & Garrison, C.Z., Race and Gender Differences in the Treatment of Psychiatric Disorders in Young Adolescents (1995)
Ages studied/sample number/ region/ data source	7 th , 8 th & 9 th grade adolescents/(N=478)/Washington State Medicaid claims data
Results/prescription variation/findings	Twenty-two percent of the sample had contact with professionals during the prior year, including 58% of adolescents with a psychiatric diagnosis. Trends for undertreatment of females and African-Americans were evident in univariable and multivariable models. The OR (0.34) for African-American females was significant in the multivariable model. African Americans were significantly more likely to receive only one or two treatments contacts.
Any explanations/ attribution of differences	Referral bias; low cultural competence of mental health professionals, and cultural differences in the expression and tolerance of symptoms and help-seeking behaviors.
Limitations	Inferences from the results of this study are limited by the shortcomings of the diagnostic instrument and collection of relevant data.

Table 2: Comparison of Studies on Disparities in Children and Adolescent Psychoactive Medications

First Author (year)	Data Source/sample	Primary findings on Race/ethnicity/other disparity	Recommendations for addressing any disparities or identifying reasons
AHRQ (2008)	National Healthcare Disparities Report 2007 U.S. Department of Health and Human Services/ SAMHSA National Survey	SAMHSA National survey on drug use and health found that for 2005, in no group did even half of children 12-17 years of age w/major depressive episode received treatment, but no significant racial/ethnic/income disparity in receipt of treatment.	Prevalence of mental disorders for racial and ethnic minorities in US is similar for Whites...research based evidence has shown minorities have less access to mental health care & are less likely to receive needed services. Differences may reflect socioeconomic status, variation in preferences and cultural attitudes toward mental health and mental health care.
Cuffe, S.P. (1995)	(N=478) Seventh, eighth and ninth grade students/ Southeastern U.S. school district.	Trends for undertreatment of females and African Americans were evident in univariable and multivariable models. The OR (0.34) for African American females was significant in multivariable model. African American were more likely to receive only one or two treatment contacts.	Data suggest race and gender differences in treatment of adolescent psychiatric disorders. Possible referral bias, low cultural competence of mental health professionals, and cultural differences in the expression and tolerance of symptoms and help-seeking behaviors.
dosReis, S. (2005)	Age < 20 years, Administrative data examined multiple psychotropic use ...a two mid-Atlantic state comparison of youth/1999 Medicaid and SCHIP.	Overall prevalence of multiple psychotropic medication use was about 2-3%. Prevalence higher for males, whites, 10-14 year olds, disabled, and with severe mental illness.	Many findings consistent with other studies regarding multiple psychotropic drug use; further investigations of the effectiveness and outcomes of combined pharmacotherapy can target this population.
Hudson, J.L. (2006)	(N=19,115) ages 5-17 years/Medical Expenditure Panel Survey (MEPS)	Focused on prescriptions for stimulants nationwide. Significant disparities; Whites 5.1%, Blacks 2.8%, Hispanic 2.1%.	Differences in access to care were significant (Blacks & Hispanics less likely than Whites to have a usual source of care & Hispanics were also about 3 times as likely as Whites to be uninsured). However, variables fail to account for racial gap in stimulant use.
Leslie, L.K. (2003)	(N = 1,715) sample of youth ages 6 - 17 yrs/ Patterns of Youth Mental Health Care in Public Service Systems (POC)	Rates of psychotropic medication use of those given a diagnosis was low (27.9%), with rates of lifetime use at 40.8%. Children with mood and/or anxiety disorder or ADHD; less than half (47.9%) on medication in past year; 61.4% lifetime. Minority groups 40-60% less likely than Whites to report past year medication use.	Studies have shown some prevalence rates comparable and some higher and unequal access to care. Fewer psychiatrists practice in economically disadvantage areas; poor access to physicians; unequal quality of care; uneven and /or poor quality side effect management; lacking psychoeducational information; provider bias to racial/ ethnic backgrounds etc.
Olfson, M. (2006)	Ages <20 years/National Ambulatory Medical Care Survey (NEMCS)	Analysis by race/ethnicity found White adolescents, more likely to be prescribed antipsychotics, but also had 3 times more mental & general health visits; when controlling for # of visits, the Odds Ratio for White youth compared to ethnic minority groups was no longer significant. Also, antipsychotics Rx' s greater in kids on Medicaid vs. private insurance.	The lower population rate of antipsychotic treatment visits by children and adolescents of minority racial or ethnic ancestry appears to be more closely tied to a nonspecific tendency for these children and adolescents to be underserved in office-based settings rather than tied to racial/ethnic differences in prescribing practices of office-based physicians.

First Author (year)	Data Source/sample	Primary findings on Race/ethnicity/other disparity	Recommendations for addressing any disparities or identifying reasons
Raghavan, R. (2005)	(N=1479) 48% boys, 47% Caucasian, 28% African-American, and 18% Latino/a. (N=3114); 62% Medicaid; 87% at home; 14% saw a MH provider; 5% saw both specialty & 3% nonspecialty for MH /The National Survey of Child & Adolescent Well-Being.	13.5% of children (threefold increase) were taking psychotropic medications at NSCAW's 12-month follow up. The proportion of medication use among children 12-16 yrs was seven times greater than among children 2-5 yrs. Caucasian males were significantly associated with medication use. African-American & Latinos were negatively associated with medication use.	5%-6% prevalence rates of psychotropic medication in statewide Medicaid children and among commercially insured children prevalence was even lower at 4%. This sample is a point prevalence estimate at follow up only.
Richardson, L.P. (2003)	(N=192,441) youth aged 5-18 years/Washington State Medicaid claims data	Compared with White youth, Hispanics, Black and Asian/Pacific Islander youth were less likely to have a medical claim w/ depression diagnosis. Following a new diagnosis, Native American and Hispanic youth were less likely than White youth to have received an antidepressant or a mental health specialty visit.	Physician identification of depressive disorders may differ by race/ethnicity (diagnosis bias); stigma is culturally based and cultural experiences may differ by race/ethnicity; Lack of trust in physicians limits mental health discussions.
Rushton, J.L. (2001)	(N=342,333) in 1992 to 581,088 in 1998 of children ages 1-19 years/ State of North Carolina/Medicaid Database	65.9% of prescriptions for stimulants and SRI's were to white children even though 48.3% of the Medicaid children were black, 39.7 % white and 12% other racial groups. Asian, Hispanic, American Indian and other racial groups less likely to receive stimulants & SSRI's.	More research needed to address how psychotropic prescription practices affect utilization of other medical services, and differences by age, sex and race; immediate attention needed to address underprescribing to Hispanic youth across nationwide Medicaid population.
Stevens, J. (2005)	(N=27,802) observations of children 3-18 years/1997-2000 Medical Expenditure Panel Surveys (MEPS)	Children w/o insurance had lower level of care in all stages compared to those with insurance. White Americans more likely to be diagnosed with ADHD compared to African American & Hispanic – American Youth. White children with ADHD more likely to receive at least one stimulant Rx compared to African-American children w/ ADHD but not to Hispanic-Americans.	Hispanic-American and African – American children were less likely to be diagnosed with ADHD by parent report than white American children; African-American youths with ADHD were less likely to initiate stimulant medication relative to White American Children. Uninsured children had a lower likelihood of ever receiving a stimulant.
Zito, J.M. (1998)	(N=99,217) African-American and Caucasian aged youth 5-14 years /Maryland Medicaid prescription drug claims analyzed	African-Americans were less than half as likely to receive psychotropic prescriptions than whites and about 2/3 as likely to receive nonpsychotropic prescriptions. Greatest ratio difference for stimulants was 1:2.5.	Single state Medicaid population; Does not control for mental health service use/number of visits; Because African American income was four times as likely than Caucasians to have more than half their income come from public assistance; African Americans may not be utilizing mental health services relative to Caucasians.
Zito, J.M. (2005)	(N =217,900) youths aged 2 to 19 years/Maryland Medicaid follow up study to '98 examine prevalence of psychotropic medications in different eligibility categories	Overall disparity was about the same as '98 study. White youth were 2.17 times more likely to receive a psychotropic medication compared to African American youth, and 3.75 times as likely compared to the "Other" minority group. Disparity was greater by income; Whites 3.2-3.8 times more likely to get psychotropic medications.	Eligibility category should be taken into account when ascertaining the roles of access, undertreatment and culture in disparities. Not enough Hispanic youth to compare separately; they are included in the "other" category with Asian, Native American, Pacific Islander or Alaskan.

Recommendations

Available evidence shows that white children are more likely to be prescribed psychoactive medication compared to racial-ethnic children but are also more likely to report higher rates of mental health and general health visits compared to racial-ethnic children. The most common factors for which researchers have adjusted for in models have been access and services use. These factors have at least partially explained potential disparities for minority populations but other factors such as insurance status and geography have been identified in the literature. Specific psychoactive medications including stimulants and antidepressants have been well studied and suggest significant differences in prescription patterns. Other factors have been identified as influencing differences in prescription patterns: fewer psychiatrists practicing in economically disadvantage areas; poor access to physicians; unequal quality of care; uneven and /or poor quality side effect management; lack of psycho-educational information for certain communities; and provider bias to racial/ ethnic backgrounds.

Parents, advocates, and protective service workers have expressed concern that minority children might be over-medicated and not provided with non-pharmacological services, relative to “white” children and youth. This observation is similar to the observation of disparate rates of coercive interventions (seclusion and restraint) among minority youth; the over-representation of minority youth in youth corrections (as opposed to mental health) settings, and the differential referral of minority youths seen in emergency wards. Differential access, limited resources, and provider bias are cited as possible causes. However, the results from this literature review suggest that minority youth have lower rates of being prescribed psychoactive medications overall although antipsychotics may be more likely to be prescribed to youth with public insurance. More research is needed in the field of disparities research which examines the prescribing of medications concurrent with other mental health services including psychosocial treatments. Multi-modal treatments have been cited in the literature as efficacious and in many instances recommended as standard of care in the field of child psychiatry for such conditions as major depression (TADS study) and to a lesser degree ADHD (MTA study, NIH). As the field advances in that regard there is also a need to examine equitable access to quality care across race/ethnicity. The use of psychoactive medication treatment of children is not an unqualified good especially if we are limited in our examination of the quality of services provided. However, variations in prescribing patterns by race-ethnicity are marked and warrant further study.

Policy and Practice Implications

Common recommendations which have been suggested in the literature for addressing mental health disparities (including those related to psychoactive medications) have included the following and are compatible with the mission of DMH:

- Increase awareness of disparities among providers and families and throughout DMH
- Consistency and equity of care should be promoted through the use of evidence-based guidelines for providers
- Increase the numbers of minority providers
- Increase availability of interpreters to overcome language barriers
- Provide education programs for consumers to improve knowledge of mental illness and its treatment and their ability to participate in decision-making

- Collect and monitor data on patients' access and utilization of health care services by race, ethnicity, and primary language
- Cultural competence trainings for providers and DMH workers with specific focus on disparities in psychoactive prescription and use among children.

Recommendations for research

Assessing the quality of treatment received and the appropriate prescribing practice of psychoactive medications to children and youth of different racial/ethnic backgrounds is beyond the scope of this report. However, recent legislation passed in the Commonwealth of Massachusetts which prioritizes child mental health screening and treatment may pose an opportune moment to examine factors which may begin to assist in equitable care as well as help delineate areas for reviewing policies and their impact on racial/ethnic disparities.

- Quantitative and qualitative research (mixed methodology) within DMH services and state databases could assist in exploring factors which can be targeted for identifying and reducing disparities and can be addressed locally. Factors which might be examined are: the role of insurance type on prescribing patterns, use and retention of mental health services by racial-ethnic minority families of children with mental health disorders, qualitative examination of parental preferences, parent-provider agreement vs. differences in perceived need and treatment options, impact of standardized mental health screening and (diagnosis) on prescribing patterns, and whether the use of multimodal/combined treatments as recommended in current practice guidelines are practiced equitably.
- The IOM definition distinguishes between health status, preferences and disparities. Competing arguments could be made to treat some factors either as measures of health status/preferences or as potential mediators of disparities. Geography is one such variable, but there are others, such as education, and nativity. Future research should focus on understanding the sources of disparities including identifying the various mediators which could be identified in empirical analysis. Understanding the important mediators of disparities can be very helpful in the development of policy. For example, disparities mediated through education or income might be very difficult to address in the short term, but disparities mediated through insurance coverage might be more amenable to changes in health policy.

References

- Agency for Healthcare Research and Quality (2008). *National healthcare disparities report 2007*. Retrieved from <http://www.ahrq.gov/qual/nhdr07/nhdr07.pdf>.
- Costello, E. J., Farmer, E. M., Angold, A., Barns, B. J., & Erkanli, A. (1997). Psychiatric disorders among American Indian and white youth in Appalachian Mountains study. *American Journal of Public Health, 87*, 827–832.
- Cuffe, S. P., Waller, J. L., Cuccaro, M. L., Pumariega, A. J., & Garrison, C. Z. (1995). Race and gender differences in the treatment of psychiatric disorders in young adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry, 34*(11), 1536-1543.
- Cunningham, P. J., & M. P. Freiman (1996). Determinants of ambulatory mental health services use for school age children and adolescents. *Health Services Research 31*(4), 409-427.
- dosReis, S., Zito, J. M., Safer, D. J., Gardner, J. F., Puccia, K. B., & Owens, P. L. (2005). Multiple psychotropic medication use for youths: A two-state comparison. *Journal of Child & Adolescent Psychopharmacology, 15*(1), 68-77.
- Flisher, A. J., Kramer, R. A., Gorsser, R. C., Alegria, M., Bird, H. R., Bourdon, K. H., Goodman, S.H., Greenwald, S., Horwitz, S. M., Moore, R. E., Narrow, W. E., & Hoven, C. W. (1997). Correlates of unmet need for mental health services by children and adolescents. *Psychological Medicine, 27*, 1145–1154.
- Hudson, J. L., Miller, E., & Kirby, J. B. (2007). Explaining racial and ethnic differences in children's use of stimulant medications. *Medical Care, 45*, 1068-1075.
- Lahey, B. B., Flagg, E. W., Bird, H. R., Schwab-Stone, M. E., Canino, G., Dulcan, M. K., Leaf, P.J., Davies, M., Brogan, D., Bourdon, K., Horwitz, S. M., Rubio-Stipec, M., Freeman, D. H., Lichtman, J. H., Shaffer, D., Goodman, S. H., Narrow, W. E., Weissman, M. M., Kandel, D. B., Jensen, P. S., Richters, J. E., & Regier, D. A. (1996). The NIMH methods for the epidemiology of child and adolescent mental disorders (MECA) study: Background and methodology. *Journal of the American Academy of Child and Adolescent Psychiatry, 35*, 855–864.
- Leaf, P. J., Alegria, M., Cohen, P., Goodman, S., Horwitz, S. M., Hoven, C. W., Narrow, W. E., Vaden-Kiernan, M., & Regier, D. (1996). Mental health service use in the community and schools: Results from the four-community MECA study. *Journal of the American Academy of Child & Adolescent Psychiatry, 35*, 889–897.
- Leslie, L. K., Weckerly, J., Landsverk, J., Hough, R. L., Hurlburt, M. S., & Wood, P. A. (2003). Racial/Ethnic differences in the use of psychotropic medication in high-risk children and adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry, 42*(12), 1433-1442.
- Olfson, M., Blanco, C., Liu, L., Moreno, C., & Laje, G. (2006). National trends in the outpatient treatment of children and adolescents with antipsychotic drugs. *Archives of General Psychiatry, 63*, 679-685.
- Pumariega, A. J., Glover, S., Holzer, C. E., III, & Nguyen, H. (1998). II. Utilization of mental health services in a triethnic sample of adolescents. *Community Mental Health Journal, 34*, 145–156.
- Raghavan, R., Zima, B. T., Andersen, R. M., Leibowitz, A. A., Schuster, M. A., & Landsverk, J. (2005). Psychotropic medication use in a national probability sample of children in the child welfare system. *Journal of Child & Adolescent Psychopharmacology, 15*(1), 97-106.

- Richardson, L. P., DiGiuseppe, D., Garrison, M., & Christakis, D. A. (2003). Depression in Medicaid-covered youth. *Archives of Pediatric & Adolescent Medicine*, *157*, 984-989.
- Rushton, J. L., & Whitmore, J. T. (2001). Pediatric stimulant and selective serotonin reuptake inhibitor prescription trends. *Archives of Pediatric & Adolescent Medicine*, *155*, 560-565.
- Smedley, B. D., Stith, A. Y., & Nelson, A. R. (2003). *Unequal treatment: Confronting racial and ethnic disparities in health care*: National Academies Press.
- Stevens, J., Harman, J. S., & Kelleher, K. J. (2005). Race/Ethnicity and insurance status as factors associated with ADHD treatment patterns. *Journal of Child & Adolescent Psychopharmacology*, *15*(1), 88-94.
- U.S. Department of Health and Human Services. (2001). Mental health: Culture, race, and ethnicity—a supplement to mental health: A report of the Surgeon General. Retrieved from <http://www.surgeongeneral.gov/library/mentalhealth/cre/>.
- Zito, J. M., Safer, D. J., dosReis, S., & Riddle, M. A. (1998). Racial disparity in psychotropic medications prescribed for youths with Medicaid insurance in Maryland. *Journal of the American Academy of Child & Adolescent Psychiatry*, *37*(2), 179-184.
- Zito, J. M., Safer, D. J., Zuckerman, I. H., Gardner, J. F., & Soeken, K. (2005). Effect of Medicaid eligibility category on racial disparities in the use of psychotropic medications among youths. *Psychiatric Services*, *56*(2), 157-163.