



HHS Public Access

Author manuscript

Psychiatr Serv. Author manuscript; available in PMC 2016 September 01.

Published in final edited form as:

Psychiatr Serv. 2015 September ; 66(9): 930–937. doi:10.1176/appi.ps.201400342.

Use of Mental Health Services by Children Ages Six to 11 With Emotional or Behavioral Difficulties

Alan E. Simon, M.D., Patricia N. Pastor, Ph.D., Cynthia A. Reuben, M.A., Larke N. Huang, Ph.D., and Ingrid D. Goldstrom, M.Sc.

Dr. Simon, Dr. Pastor, and Ms. Reuben are with the Office of Analysis and Epidemiology, National Center for Health Statistics, Hyattsville, Maryland (fpa8@cdc.gov). Dr. Huang is with the Office of Behavioral Health Equity, Substance Abuse and Mental Health Services Administration (SAMHSA), Rockville, Maryland. Ms. Goldstrom was a consultant to SAMHSA at the time that this research was completed

Abstract

Objective—The authors reported use of mental health services among children in the United States between ages six and 11 who were described by their parents as having emotional or behavioral difficulties (EBDs).

Methods—Using data from the 2010–2012 National Health Interview Survey, the authors estimated the national percentage of children ages six to 11 with serious or minor EBDs (N=2,500) who received treatment for their difficulties, including only mental health services other than medication (psychosocial services), only medication, both psychosocial services and medication, and neither type of service. They calculated the percentage of children who received school-based and non-school-based psychosocial services in 2011–2012 and who had unmet need for psychosocial services in 2010–2012.

Results—In 2010–2012, 5.8% of U.S. children ages six to 11 had serious EBDs and 17.3% had minor EBDs. Among children with EBDs, 17.8% were receiving both medication and psychosocial services, 28.8% psychosocial services only, 6.8% medication only, and 46.6% neither medication nor psychosocial services. Among children with EBDs in 2011–2012, 18.6% received school-based psychosocial services only, 11.4% non-school-based psychosocial services only, and 17.3% both school- and non-school-based psychosocial services. In 2010–2012, 8.2% of children with EBDs had unmet need for psychosocial services.

Conclusions—School-age children with EBDs received a range of mental health services, but nearly half received neither medication nor psychosocial services. School-based providers played a role in delivering psychosocial services, but parents reported an unmet need for psychosocial services among some children.

In 2013, the Centers for Disease Control and Prevention published a report highlighting the central influence of mental health on the well-being of young school-age children (1).

Diagnosed mental disorders were shown to be among the most prevalent chronic health conditions of children between the ages of six and 11. According to parent reports, 8.4% of

children had been diagnosed as having attention-deficit hyperactivity disorder (ADHD), 4.3% as having anxiety disorder, 2.9% as having phobias or fears, and 2.3% as having depression (1). For some children, mental conditions result in serious difficulties with school (2), peer, and family activities (3) and are associated with problems related to substance use (4), sexual risk-taking behavior (5), and criminal activity in young adulthood (6). Furthermore, symptoms of a childhood mental disorder are often the first signs of a persistent mental condition (7–9).

Both medication and other types of treatment have been shown to improve symptoms of mental disorders among children. Clinical studies have established the efficacy and safety of psychotropic medications for the treatment of some childhood mental disorders (10), including ADHD (11,12), and guidelines for their use have been developed (13). Evidence also supports the effectiveness of psychosocial services (treatment other than medication, including counseling) for ADHD as well as other mental disorders of childhood (14–19).

Despite the serious impact of child mental conditions and the benefit of treatment (20–28), many children do not receive needed mental health care (29–31). In the 1990s, the percentage of children with unmet need for mental health services was estimated to be as high as 80% (29,32,33). Several factors contribute to the unmet need for mental health care among children, including provider shortages (30,34), inadequate insurance coverage for mental health services (35), and an inability or reluctance among parents to recognize and seek treatment for mental conditions among their children. Providers may also have difficulty recognizing mental disorders among child patients (36–39). In some cases, subclinical symptoms of mental disorders are difficult to detect, or transient episodes resolve spontaneously before care is obtained.

National studies of utilization of medication and psychosocial services for childhood mental disorders have primarily focused on adolescents (40,41). There have been fewer national studies that describe mental health service use among younger school-age children. Mental health service utilization by school-age children has been shown to differ from other age groups for specific subpopulations of children, such as children enrolled in Medicaid (42). However, there has been no recent examination on a national basis of mental health service utilization patterns in this age group. Most existing studies also lack a comprehensive description of mental health service use among children with emotional or behavioral difficulties (EBDs) or lack clarity in the services that survey respondents include when reporting receipt of a mental health service (29,43). Some studies have focused on children with a specific diagnosis, primarily ADHD (44–47). Other national studies have used a single question to identify whether a child received psychosocial services, often without clarifying whether school-based services were included (48,49). Still others have focused on utilization in terms of visits to physicians or physician prescribing behavior (50) or health care expenditures (51). These studies have not examined mental health services from a population perspective. Finally, most previous studies have focused solely on either psychotropic drug usage (52–55) or psychosocial services (56), but not both. Although a few studies have collected information about both medication and psychosocial services (43,57,58), whether psychosocial services were used alone or in conjunction with medication has not been well described. The few large studies that included both medication

usage and a broader range of psychosocial services are older and may not reflect children's current use of mental health services (32,33,58,59).

This study built on previous research by using data from a large, nationally representative household health survey to describe use of a broad range of mental health services among U.S. children ages six to 11.

METHODS

Data Source

The 2010–2012 National Health Interview Survey (NHIS), a nationally representative, cross-sectional, in-person household interview survey of the civilian non-institutionalized population, was used for this study. For some analyses, only data from the 2011–2012 NHIS were used, as described below. The complex sample design has been described in detail elsewhere (60). Information about a sample child is obtained from an adult residing in the household who is knowledgeable about the child's health. Because over 90% of respondents for children were their parents, in this study the respondent is referred to as the child's parent. In 2010, 2011, and 2012, the response rate for the sample child segment of the survey was 70.7%, 74.6%, and 69.7%, respectively (60–62).

This analysis included 11,286 children ages six to 11 from the sample child files of the 2010–2012 NHIS. Because of missing data about the severity of the child's EBDs, 104 children were excluded (N=11,182). Except as otherwise noted, data from all three survey years were combined to yield more reliable estimates.

Measures

EBDs during the past six months—All children were categorized by level of EBDs (no, minor, or serious) by using two survey questions. First, the parent was asked about current difficulties: “Overall, do you think that (sample child) has difficulties in any of the following areas: emotions, concentration, behavior, or being able to get along with other people?” If the parent answered, “No,” the child was categorized as having no EBDs. If the parent answered, “Yes, minor difficulties,” the child was categorized as having minor EBDs. If the parent answered, “Yes, definite difficulties,” or “Yes, severe difficulties,” the child was categorized as having serious EBDs. The combining of “definite” and “severe” difficulties is consistent with previous work using these questions (58,63–65). This question is from the Strengths and Difficulties Questionnaire, a validated scale for identifying behavioral problems (66). This single overall difficulties question has been shown to correlate with utilization of mental health resources (58) and has been used as an indicator of population-level mental health well-being in U.S. federal government reports (63).

Next, parents were asked, “Has (sample child) had any difficulties with emotions, concentration, behavior, or getting along with others during the past six months?” If a parent answered “yes” but had answered “no” to the first question, the child was categorized as having minor EBDs. Therefore, children with current EBDs or with EBDs during the past six months were included in our analytic sample.

Service use and unmet need during the past six months—The parents of all children were asked a question about whether the child was prescribed medication or took medication for EBDs during the past six months or was currently taking medication for EBDs. Although children may take medication for many conditions, henceforth “medication” refers only to medication for EBDs. Only parents of children identified as having either serious or minor EBDs (N=2,516) were asked a set of questions about the use of psychosocial services. On the basis of responses to questions about medication and psychosocial services, children with EBDs were categorized into four service use groups: both medication and psychosocial services use; psychosocial services use only, medication only; and neither type of service use. Sixteen parents did not provide enough information to categorize children into a service use group. Perceived unmet need for psychosocial services was assessed by asking whether the child had needed treatment or counseling for EBDs during the past six months but had not received services. [Survey questions about the use of psychosocial services are available in an online supplement to this article.]

In 2011 and 2012, the NHIS included questions about treatment provided to children with EBDs during the past six months by specific types of psychosocial service providers [see online supplement]. The questions on EBD classification and receipt of both medication and psychosocial services were consistent across all three years of the NHIS, but the questions on psychosocial service providers on the 2011–2012 NHIS differed from those used in 2010. Parents were asked about receipt of services from non–school-based providers, including a pediatrician or family doctor; a psychiatrist; a psychologist, a clinical social worker, or a psychiatric nurse; a speech, occupational, or physical therapist or “other” provider; a religious or spiritual counselor or advisor; and a probation or juvenile corrections officer or court counselor. Parents could state that the child received services from multiple types of providers; responses were not mutually exclusive. School-based services for children with EBDs included special schools, special programs located in regular schools, and services at schools that were not part of a special program for children with EBDs. We formed a hierarchy of mutually exclusive categories of school-based services. The analysis of service providers was limited to the 2011–2012 sample.

Child sociodemographic characteristics—Children were categorized by sex, insurance status (any private, public only, and uninsured), race-ethnicity (non-Hispanic white, non-Hispanic black, non-Hispanic other, and Hispanic), and family income (<200% or ≥200% of federal poverty level [FPL]). Less than 1% of children had missing values for these sociodemographic variables, with the exception of family income. For family income, 16.1% (unweighted) of children had missing data, but multiply imputed values were supplied by the NHIS and used in all analyses. Observations with missing, but not imputed, values for a given variable were excluded from analyses involving that variable.

Analysis

Chi square tests were used both to examine the distribution of socioeconomic variables across EBD categories of serious, minor, and none and to examine distributions of service utilization across sociodemographic groups within serious and minor EBD categories. When chi square testing yielded statistically significant results, further pairwise comparisons were

conducted by using Z tests. Multivariate analysis was not conducted because of multicollinearity of independent variables and because the focus of the analyses was utilization by different sociodemographic groups rather than drivers of utilization patterns. The results of multivariate analyses can be found elsewhere (56,64). [Detailed methods of the analysis can be found in the online supplement.]

RESULTS

Prevalence of EBDs

In 2010–2012, 23.1% (95% confidence interval [CI]=22.2%–24.1%) of children ages six to 11 in the United States were identified as having EBDs, with 5.8% (CI=5.3%–6.4%) having serious EBDs and 17.3% (CI=16.5%–18.2%) having minor EBDs. As shown in Table 1, children with serious and minor EBDs were more likely than children without EBDs to be boys, to be older (ages nine to 11), and to have family incomes of <200% of FPL and were less likely than children without EBDs to have private insurance ($p<.001$ for all comparisons). Children with serious EBDs were more likely than children with minor EBDs to be boys and to have family incomes of <200% of FPL and were less likely than children with minor EBDs to have private insurance ($p<.001$ for all comparisons) (Table 1).

Use of Services Among Children With EBDs

As shown in Table 2, among all children with EBDs, 17.8% were receiving both medication and psychosocial services, 28.8% psychosocial services only, 6.8% medication only, and 46.6% neither type of service. Among children with serious EBDs, 40.0% were receiving both medication and psychosocial services, 34.6% psychosocial services only, 7.2% medication only, and 18.2% neither type of service. Among children with minor EBDs, 10.3% were receiving both medication and psychosocial services, 26.9% psychosocial services only, 6.7% medication only, and 56.1% neither type of service.

Among children with serious EBDs, boys were more likely than girls to receive both medication and psychosocial services ($p<.01$), and children in families with incomes of 200% of FPL were more likely to receive medication only ($p<.05$). Among children with minor EBDs, however, all sociodemographic characteristics, except age, were associated with use of services.

Providers of Psychosocial Services

In 2011–2012, among all children with EBDs, 18.6% (CI=16.4%–20.9%) received school-based psychosocial services only, 11.4% (CI=9.6%–13.5%) received non-school-based psychosocial services only, and 17.3% (CI=15.2%–19.7%) received both school-based and non-school-based psychosocial services. A higher percentage of children with serious EBDs compared with minor EBDs received school-based and non-school-based psychosocial services, both solely and jointly (data not shown).

Non-school-based providers—As shown in Table 3, 71.2% of children with EBDs did not receive non-school-based psychosocial services; 5.4% of children with EBDs received non-school-based psychosocial services from a pediatrician or family doctor, 6.9% from a

psychiatrist, and 11.1% from a psychologist, clinical social worker, or psychiatric nurse. The percentage of children receiving services from each of the provider groups listed above was higher among children with serious EBDs compared with minor EBDs ($p < .01$ for each comparison).

School-based providers—As shown in Table 4, among children with EBDs, 4.9% received school-based psychosocial services from a special school for children with EBDs, 12.3% received services in a special program at a regular school, and 18.5% received services at a regular school but not as part of a special program for children with EBDs. Nearly two-thirds (64.2%) received no school-based psychosocial services. The percentage of children with EBDs receiving school-based psychosocial services varied by level of EBDs, with 72.5% of children with minor EBDs and 39.3% of children with serious EBDs receiving no school-based services ($p < .001$).

Unmet Need for Psychosocial Services

In 2010–2012, the parents of 8.2% (CI=7.0%–9.7%) of all children with EBDs stated that their child had unmet need for psychosocial services, including 17.6% (CI=13.9%–22.0%) of children with serious EBDs and 5.1% (CI=4.1%–6.4%) of children with minor EBDs ($p < .001$ for comparison of unmet need among children with serious and minor EBDs).

DISCUSSION

This study indicates that although 23% of children ages six to 11 in the United States were reported to have EBDs, only 53% of children with these difficulties received either medication or psychosocial services. Use of some type of mental health service was greater among children with serious EBDs (82%) compared with children with minor EBDs (44%).

Previous national studies have often reported lower utilization rates for child mental health services (29,33,56,58,67) compared with the rates reported in this study. However, comparisons across studies are challenging, given that methodologies vary in terms of age groups, populations examined, time periods included, and definitions of child mental health problems and service use. We used a broader definition of mental health services compared with other studies (29,48), explicitly including medication as well as both school-based and non-school-based psychosocial services. Our estimates of service use also may be higher because of the recent rise in use of medication (54,68) and psychosocial services. Prior to this study, the most recently published national data on utilization of mental health services in this age group were from 2005–2006 (57), and some commonly cited studies used data from the 1990s (29) or earlier (33).

In our study, there were more associations between sociodemographic variables and service use among children with minor EBDs compared with serious EBDs. These relationships may be difficult to interpret. For example, it is unclear why the percentage of children with minor EBDs who used services was greater among those with public insurance versus no insurance or private insurance.

Regardless of the severity of difficulties, a greater percentage of children with EBDs received psychosocial services versus medication. Many children with EBDs (18.6%) received psychosocial services only at school, suggesting an important role for schools in providing services. Few studies have estimated the use of school-based services on a large scale (57), and it is likely that service provision may have changed since the data were collected (33,69,70).

Among providers of non-school-based psychosocial services, psychologists, clinical social workers, and psychiatric nurses were shown to play an important role in providing services to children with EBDs. The importance of these providers for mental health care in the United States has been shown previously, although there are no recent estimates of utilization of their services (70).

Measurement of unmet need for mental health services among children with EBDs presents several challenges. In our study, we identified possible unmet need among children with EBDs in two ways: parent reports of perceived unmet need for children's psychosocial services regardless of current use of services and parent report of use of neither medication nor psychosocial services. Need for services among persons who do not receive services may be difficult to ascertain, particularly among children with minor EBDs. For example, some of the 56.1% of children with minor EBDs who received no services may have subclinical symptoms and may not require services. Nonetheless, other studies have used similar measures of unmet need (29,32). Among all children with EBDs in our study, 8.2% had an unmet need for psychosocial services, according to parent report. Using the second measure of unmet need, we found that approximately 18% and 56% of children with serious EBDs and minor EBDs, respectively, were receiving no mental health services. In previous large population surveys, when estimates of unmet need for mental health services have been based on the percentage of children receiving needed mental health services, estimates of unmet need have usually been higher than the estimates we report (29,32,33,48,56). Higher estimates of unmet need in those studies compared to ours are most likely due to inclusion of fewer types of mental health services in ascertainment of whether mental health services were obtained. Earlier estimates of perceived unmet need for mental health services, however, have been similar to our findings (58,71).

This study had limitations. Our measure of EBDs was based on two questions, but previous research suggests that this measure correlates with more detailed mental health assessments and may be more sensitive than more detailed mental health assessments in identifying children who have received mental health services (58). Although our mental health service use measures were based on parental recall, rather than a child's school or medical records, previous studies have shown that parental report is a reliable measure of child mental health service utilization (72,73). Also, responses were parent reports, and the meaning of responses in some situations was not always clear, such as affirmative responses to the question about unmet need. Also, the direction of causality between reported severity of EBDs and utilization may be difficult to ascertain. Finally, the estimates reported did not include children in the institutionalized population.

CONCLUSIONS

Young school-age children (ages six to 11) with EBDs currently receive a mix of services, depending on the severity of their difficulties and other sociodemographic characteristics. However, many school-age children with EBDs receive neither medication nor psychosocial services. Also, school-based providers play an important role in delivering psychosocial services to children with serious and minor EBDs.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

REFERENCES

1. Perou R, Bitsko RH, Blumberg SJ, et al. Mental health surveillance among children—United States, 2005–2011. *MMWR Surveillance Summaries*. 2013; 62(suppl 2):1–35.
2. Kessler RC, Foster CL, Saunders WB, et al. Social consequences of psychiatric disorders, I. educational attainment. *American Journal of Psychiatry*. 1995; 152:1026–1032. [PubMed: 7793438]
3. Schieve LA, Boulet SL, Kogan MD, et al. Parenting aggravation and autism spectrum disorders: 2007 National Survey of Children's Health. *Disability and Health Journal*. 2011; 4:143–152. [PubMed: 21723521]
4. Hawkins JD, Catalano RF, Miller JY. Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for substance abuse prevention. *Psychological Bulletin*. 1992; 112:64–105. [PubMed: 1529040]
5. Lehrer JA, Shrier LA, Gortmaker S, et al. Depressive symptoms as a longitudinal predictor of sexual risk behaviors among US middle and high school students. *Pediatrics*. 2006; 118:189–200. [PubMed: 16818565]
6. Copeland WE, Miller-Johnson S, Keeler G, et al. Childhood psychiatric disorders and young adult crime: a prospective, population-based study. *American Journal of Psychiatry*. 2007; 164:1668–1675. [PubMed: 17974931]
7. Kessler RC, Amminger GP, Aguilar-Gaxiola S, et al. Age of onset of mental disorders: a review of recent literature. *Current Opinion in Psychiatry*. 2007; 20:359–364. [PubMed: 17551351]
8. Kessler RC, Berglund P, Demler O, et al. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*. 2005; 62:593–602. [PubMed: 15939837]
9. Barbaresi WJ, Colligan RC, Weaver AL, et al. Mortality, ADHD, and psychosocial adversity in adults with childhood ADHD: a prospective study. *Pediatrics*. 2013; 131:637–644. [PubMed: 23460687]
10. Appropriate Use of Psychotropic Drugs in Children and Adolescents. Important Issues and Evidence-Based Treatments. Scottsdale, Ariz, Magellan Health Services, Inc; 2013. a Clinical Monograph. Available at www.magellanhealth.com/media/549660/e-21rev2_appropriate_use_of_psychotropic_drugs_in_children.pdf
11. MTA Cooperative Group. National Institute of Mental Health multimodal treatment study of ADHD follow-up: 24-month outcomes of treatment strategies for attention-deficit hyperactivity disorder. *Pediatrics*. 2004; 113:754–761. [PubMed: 15060224]
12. Farone SV, Buitelaar J. Comparing the efficacy of stimulants for ADHD in children and adolescents using meta-analysis. *European Child and Adolescent Psychiatry*. 2010; 19:353–364.
13. Practice parameter on the use of psychotropic medication in children and adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2009; 48:961–973. [PubMed: 19692857]
14. Silverman WK, Hinshaw SP. The second special issue on evidence-based psychosocial treatments for children and adolescents: a 10-year update. *Journal of Clinical Child and Adolescent Psychiatry*. 2008; 37:1–7.

15. Durlak JA, Wells AM. Evaluation of indicated preventive intervention (secondary prevention) mental health programs for children and adolescents. *American Journal of Community Psychology*. 1998; 26:775–802. [PubMed: 9861693]
16. Jones D, Godwin J, Dodge KA, et al. Impact of the fast track prevention program on health services use by conduct-problem youth. *Pediatrics*. 2010; 125:e130–e136. [PubMed: 20008428]
17. Pelham WE Jr, Fabiano GA. Evidence-based psychosocial treatments for attention-deficit/hyperactivity disorder. *Journal of Clinical Child and Adolescent Psychology*. 2008; 37:184–214. [PubMed: 18444058]
18. Charach, A.; Dashti, B.; Carson, P., et al. Attention Deficit Hyperactivity Disorder: Effectiveness of Treatment in At-Risk Preschoolers; Long-Term Effectiveness in All Ages; and Variability in Prevalence, Diagnosis, and Treatment. Agency for Healthcare Research and Quality; Rockville, Md: 2011. Available at www.ncbi.nlm.nih.gov/books/NBK82368/
19. Maalouf FT, Brent DA. Child and adolescent depression intervention overview: what works, for whom and how well? *Child and Adolescent Psychiatric Clinics of North America*. 2012; 21:299–312. viii. [PubMed: 22537728]
20. Connolly SD, Bernstein GA, AACAP Work Group on Quality Issues. Practice parameter for the assessment and treatment of children and adolescents with anxiety disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2007; 46:267–283. [PubMed: 17242630]
21. Birmaher B, Brent D, Bernet W, et al. Practice parameter for the assessment and treatment of children and adolescents with depressive disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2007; 46:1503–1526. [PubMed: 18049300]
22. Subcommittee on Attention-Deficit/Hyperactivity Disorder, Steering Committee on Quality Improvement and Management. Wolraich M, et al. ADHD: clinical practice guidelines for the diagnosis, evaluation, and treatment of attention-deficit/hyperactivity disorder in children and adolescents. *Pediatrics*. 2011; 128:1007–1022. [PubMed: 22003063]
23. Fergusson DM, Horwood LJ, Ridder EM. Show me the child at seven: the consequences of conduct problems in childhood for psychosocial functioning in adulthood. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*. 2005; 46:837–849.
24. Chen H, Cohen P, Kasen S, et al. Impact of adolescent mental disorders and physical illnesses on quality of life 17 years later. *Archives of Pediatrics and Adolescent Medicine*. 2006; 160:93–99. [PubMed: 16389217]
25. Zechmeister I, Kilian R, McDaid D, et al. Is it worth investing in mental health promotion and prevention of mental illness? A systematic review of the evidence from economic evaluations. *BMC Public Health*. 2008; 8:20. [PubMed: 18211677]
26. Scott S, Knapp M, Henderson J, et al. Financial cost of social exclusion: follow-up study of antisocial children into adulthood. *BMJ (Clinical Research Ed)*. 2001; 323:191.
27. McCrone P, Knapp M, Fombonne E. The Maudsley long-term follow-up of child and adolescent depression: predicting costs in adulthood. *European Child and Adolescent Psychiatry*. 2005; 14:407–413. [PubMed: 16254770]
28. Doshi JA, Hodgkins P, Kahle J, et al. Economic impact of childhood and adult attention-deficit/hyperactivity disorder in the United States. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2012; 51:990–1002. e2. [PubMed: 23021476]
29. Kataoka SH, Zhang L, Wells KB. Unmet need for mental health care among US children: variation by ethnicity and insurance status. *American Journal of Psychiatry*. 2002; 159:1548–1555. [PubMed: 12202276]
30. Behavioral Health, United States, 2012. Substance Abuse and Mental Health Services Administration; Rockville, Md: 2013. Available at store.samhsa.gov/product/Behavioral-Health-United-States-2012/SMA13-4797
31. 2012 National Healthcare Quality Report. Agency for Healthcare Research and Quality; Rockville, Md: 2013. Available at www.ahrq.gov/research/findings/nhqrdr/
32. Flisher AJ, Kramer RA, Grosser RC, et al. Correlates of unmet need for mental health services by children and adolescents. *Psychological Medicine*. 1997; 27:1145–1154. [PubMed: 9300518]
33. Leaf PJ, Alegria M, Cohen P, et al. Mental health service use in the community and schools: results from the four-community MECA study. *Methods for the Epidemiology of Child and*

- Adolescent Mental Disorders Study. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1996; 35:889–897. [PubMed: 8768348]
34. Thomas CR, Holzer CE III. The continuing shortage of child and adolescent psychiatrists. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2006; 45:1023–1031. [PubMed: 16840879]
 35. Bethell CD, Kogan MD, Strickland BB, et al. A national and state profile of leading health problems and health care quality for US children: key insurance disparities and across-state variations. *Academic Pediatrics*. 2011; 11(suppl):S22–S33. [PubMed: 21570014]
 36. Katzelnick DJ, Greist JH. Social anxiety disorder: an unrecognized problem in primary care. *Journal of Clinical Psychiatry*. 2001; 62(suppl 1):11–16. [PubMed: 11206029]
 37. Dilsaver SC, Henderson-Fuller S, Akiskal HS. Occult mood disorders in 104 consecutively presenting children referred for the treatment of attention-deficit/hyperactivity disorder in a community mental health clinic. *Journal of Clinical Psychiatry*. 2003; 64:1170–1176. [PubMed: 14658964]
 38. Higgins ES. A review of unrecognized mental illness in primary care: prevalence, natural history, and efforts to change the course. *Archives of Family Medicine*. 1994; 3:908–917. [PubMed: 8000563]
 39. Jensen PS, Goldman E, Offord D, et al. Overlooked and underserved: “action signs” for identifying children with unmet mental health needs. *Pediatrics*. 2011; 128:970–979. [PubMed: 22025589]
 40. Merikangas KR, He JP, Burstein M, et al. Service utilization for lifetime mental disorders in US adolescents: results of the National Comorbidity Survey–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child and Adolescent Psychiatry*. 2011; 50:32–45. [PubMed: 21156268]
 41. Results From the 2012 National Survey on Drug Use and Health. HHS pub no SMA 13-4805. Substance Abuse and Mental Health Services Administration; Rockville, Md: 2013. Mental Health Findings. Available at www.samhsa.gov/data/sites/default/files/2k12MH_Findings/2k12MH_Findings/NSDUHmhfr2012.pdf
 42. Pires, SA.; Grimes, KE.; Allen, KD., et al. Faces of Medicaid series. Center for Health Care Strategies, Inc; Hamilton, NJ: 2013. Examining Children's Behavioral Health Service Utilization and Expenditures. Available at www.chcs.org/media/Faces-of-Medicaid_Examining-Childrens-Behavioral-Health-Service-Utilization-and-Expenditures1.pdf
 43. The Mental and Emotional Well-Being of Children. A Portrait of States and the Nation 2007. Department of Health and Human Services, Maternal and Child Health Bureau; Rockville, Md: 2010.
 44. Olfson M, Gameroff MJ, Marcus SC, et al. National trends in the treatment of attention deficit hyperactivity disorder. *American Journal of Psychiatry*. 2003; 160:1071–1077. [PubMed: 12777264]
 45. Visser SN, Lesesne CA, Perou R. National estimates and factors associated with medication treatment for childhood attention-deficit/hyperactivity disorder. *Pediatrics*. 2007; 119(suppl 1):S99–S106. [PubMed: 17272592]
 46. Visser SN, Danielson ML, Bitsko RH, et al. Trends in the parent report of health care provider–diagnosed and medicated attention-deficit/hyperactivity disorder: United States, 2003–2011. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2014; 53:34–46. e2. [PubMed: 24342384]
 47. Froehlich TE, Lanphear BP, Epstein JN, et al. Prevalence, recognition, and treatment of attention-deficit/hyperactivity disorder in a national sample of US children. *Archives of Pediatrics and Adolescent Medicine*. 2007; 161:857–864. [PubMed: 17768285]
 48. Performance Snapshots. Unmet Need for Mental Health Care: Children and Adolescents. Commonwealth Fund; New York: 2006. Available at datacenter.commonwealthfund.org/#ind=675/sc=1
 49. Merikangas KR, He JP, Brody D, et al. Prevalence and treatment of mental disorders among US children in the 2001–2004 NHANES. *Pediatrics*. 2010; 125:75–81. [PubMed: 20008426]

50. Olfson M, Blanco C, Wang S, et al. National trends in the mental health care of children, adolescents, and adults by office-based physicians. *JAMA Psychiatry*. 2014; 71:81–90. [PubMed: 24285382]
51. Ringel JS, Sturm R. National estimates of mental health utilization and expenditures for children in 1998. *Journal of Behavioral Health Services and Research*. 2001; 28:319–333. [PubMed: 11497026]
52. Zito JM, Safer DJ, dosReis S, et al. Trends in the prescribing of psychotropic medications to preschoolers. *JAMA*. 2000; 283:1025–1030. [PubMed: 10697062]
53. Olfson M, Marcus SC, Weissman MM, et al. National trends in the use of psychotropic medications by children. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2002; 41:514–521. [PubMed: 12014783]
54. Zuvekas SH, Vitiello B. Stimulant medication use in children: a 12-year perspective. *American Journal of Psychiatry*. 2012; 169:160–166. [PubMed: 22420039]
55. Chirdkiatgumchai V, Xiao H, Fredstrom BK, et al. National trends in psychotropic medication use in young children: 1994–2009. *Pediatrics*. 2013; 132:615–623. [PubMed: 24082002]
56. Simpson GA, Cohen RA, Bloom B, et al. The impact of children's emotional and behavioural difficulties on their lives and their use of mental health services. *Paediatric and Perinatal Epidemiology*. 2009; 23:472–481. [PubMed: 19689498]
57. Simpson, GA.; Cohen, RA.; Pastor, PN., et al. Use of mental health services in the past 12 months by children aged 4–17 years: United States, 2005–2006. NCHS Data Brief no 8. Sep. 2008 Available at www.cdc.gov/nchs/data/databriefs/db08.pdf
58. Bourdon KH, Goodman R, Rae DS, et al. The Strengths and Difficulties Questionnaire: US normative data and psychometric properties. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2005; 44:557–564. [PubMed: 15908838]
59. Simpson, G.; Scott, G.; Henderson, MJ., et al. Estimates of attention, cognitive, and emotional problems and health services use by US school-age children; in *Mental Health, United States, 2002*. Manderscheid, RW.; Henderson, MJ., editors. Substance Abuse and Mental Health Services Administration; Rockville, Md: 2004.
60. 2012 National Health Interview Survey Public Use Data Release. National Center for Health Statistics; Hyattsville, Md: 2013.
61. 2010 National Health Interview Survey Public Use Data Release. National Center for Health Statistics; Hyattsville, Md: 2011.
62. 2011 National Health Interview Survey Public Use Data Release. National Center for Health Statistics; Hyattsville, Md: 2012.
63. Federal Interagency Forum on Child and Family Statistics. *America's Children: Key National Indicators of Well-Being, 2013*. US Government Printing Office; Washington, DC: 2013.
64. Pastor PN, Reuben CA, Duran CR. Identifying emotional and behavioral problems in children aged 4–17 years: United States, 2001–2007. *National Health Statistics Reports*. 2012; 48:1–17. [PubMed: 22737946]
65. Simpson GA, Bloom B, Cohen RA, et al. US children with emotional and behavioral difficulties: data from the 2001, 2002, and 2003 National Health Interview Surveys. *Advance Data*. 2005; 360:1–13. [PubMed: 16004071]
66. Goodman R. Psychometric properties of the Strengths and Difficulties Questionnaire. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2001; 40:1337–1345. [PubMed: 11699809]
67. Coker TR, Elliott MN, Kataoka S, et al. Racial/ethnic disparities in the mental health care utilization of fifth grade children. *Academic Pediatrics*. 2009; 9:89–96. [PubMed: 19329099]
68. Vitiello B, Zuvekas SH, Norquist GS. National estimates of anti-depressant medication use among US children, 1997–2002. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2006; 45:271–279. [PubMed: 16540811]
69. Flaherty LT, Weist MD, Warner BS. School-based mental health services in the United States: history, current models and needs. *Community Mental Health Journal*. 1996; 32:341–352. [PubMed: 8840077]

70. Zahner GE, Daskalakis C. Factors associated with mental health, general health, and school-based service use for child psychopathology. *American Journal of Public Health*. 1997; 87:1440–1448. [PubMed: 9314794]
71. Inkelas M, Raghavan R, Larson K, et al. Unmet mental health need and access to services for children with special health care needs and their families. *Ambulatory Pediatrics*. 2007; 7:431–438. [PubMed: 17996836]
72. Hoagwood K, Horwitz SM, 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). *Journal of Child and Family Studies*. 2000; 9:315–331.
73. Horwitz SM, Hoagwood K, Stiffman AR, et al. Reliability of the services assessment for children and adolescents. *Psychiatric Services*. 2001; 52:1088–1094. [PubMed: 11474056]

TABLE 1

Sociodemographic characteristics of children ages six to 11 with serious, minor, or no emotional or behavioral difficulties (EBDs)^a

Characteristic	EBDs						p
	Serious (N=605)		Minor (N=1,911)		None (N=8,666)		
	%	SE	%	SE	%	SE	
Age (years)							<.01
6–8	43.4	2.4	47.5	1.5	51.2	.7	
9–11	56.6	2.4	52.5	1.5	48.8	.7	
Sex							<.001
Male	65.4	2.4	59.7	1.3	48.8	.6	
Female	34.6	2.4	40.3	1.3	51.2	.6	
Insurance							<.001
Private	35.9	2.3	50.5	1.4	58.9	.8	
Public	58.3	2.4	43.1	1.4	34.0	.7	
None	5.8	1.3	6.4	.6	7.1	.3	
Race-ethnicity							<.001
Hispanic	17.9	1.7	20.0	1.1	24.5	.7	
Non-Hispanic white	57.6	2.5	56.2	1.4	53.4	.8	
Non-Hispanic black	8.6	.7	15.3	1.0	12.8	.5	
Non-Hispanic other	8.7	1.3	8.6	.7	9.3	.4	
Family income							<.001
<200% of FPL ^b	61.5	2.3	50.2	1.5	44.8	.8	
200% of FPL ^b	38.5	2.3	49.8	1.5	56.0	.8	

^aSource: 2010–2012 National Health Interview Survey (60–62). Percentages are weighted.

^bFederal poverty level

TABLE 2

Use of medication and psychosocial services during the past six months among children ages six to 11, by severity of emotional and behavioral difficulties (EBDs) and sociodemographic characteristic^a

Severity of EBDs and characteristic	Psychosocial services and medication		Psychosocial services only		Medication only		Neither psychosocial services nor medication		p
	%	SE	%	SE	%	SE	%	SE	
Total (N=2,500)	17.8	.9	28.8	1.1	6.8	.6	46.6	1.2	
Serious EBDs (N=600)	40.0	2.3	34.6	2.4	7.2	1.2	18.2	2.0	
Sex									<.05
Male	44.4	2.9	31.9	2.7	8.2	1.5	15.5	2.1	
Female	31.5	3.9	39.7	4.7	5.5 ^b	1.8	23.3	4.1	
Insurance									ns
Private	35.5	3.8	37.3	4.0	10.8	2.4	16.4	3.0	
Public	44.7	3.2	31.2	3.0	5.0	1.2	19.2	2.9	
Uninsured	21.7	8.8	53.2	11.5	8.4 ^b	5.2	16.7	7.6	
Race-ethnicity									ns
Hispanic	35.7	4.7	36.1	4.9	5.5 ^b	2.5	22.7	4.1	
Non-Hispanic white	41.5	3.1	30.8	3.2	9.9	1.8	17.8	3.0	
Non-Hispanic black	36.4	5.9	43.8	6.7	2.6 ^b	1.5	17.2	4.6	
Non-Hispanic other	45.6	8.2	39.7	8.2	1.7 ^b	1.7	13.0 ^b	5.5	
Poverty									<.05
<200% of FPL ^c	41.1	3.2	34.0	3.2	4.7	1.1	20.2	2.8	
200% of FPL ^c	38.2	3.6	35.5	3.6	11.3	2.5	15.0	2.7	
Minor EBDs (N=1,900)	10.3	.8	26.9	1.2	6.7	.7	56.1	1.4	
Sex									<.001
Male	12.7	1.2	27.0	1.6	8.1	1.0	52.2	1.9	
Female	6.8	1.1	26.7	1.9	4.6	.9	61.9	2.1	
Insurance									<.001
Private	9.3	1.1	23.9	1.7	8.4	1.2	58.5	1.9	
Public	12.7	1.4	29.8	2.0	5.1	.9	52.5	2.2	
Uninsured	3.0 ^b	1.3	29.6	4.6	4.0 ^b	2.8	63.4	5.0	
Race-ethnicity									<.01
Hispanic	9.1	1.7	27.9	2.4	2.6 ^b	.8	60.4	2.7	
Non-Hispanic white	9.6	1.1	26.7	1.7	8.9	1.1	54.8	1.9	
Non-Hispanic black	15.6	2.6	24.6	3.0	5.6	1.6	54.1	3.4	
Non-Hispanic other	8.2 ^b	2.5	29.7	4.5	3.4 ^b	1.5	58.7	4.7	
Poverty									<.05
<200% of FPL ^c	11.6	1.3	29.4	1.7	5.3	.8	53.7	1.9	

Severity of EBDs and characteristic	<u>Psychosocial services and medication</u>		<u>Psychosocial services only</u>		<u>Medication only</u>		<u>Neither psychosocial services nor medication</u>		p
	%	SE	%	SE	%	SE	%	SE	
200% of FPL ^c	9.0	1.0	24.3	1.7	8.1	1.2	58.6	2.0	

^aSource: 2010–2012 National Health Interview Survey (60–62). Percentages are weighted.

^bEstimate is statistically unreliable because of relative standard error of >30%.

^cFederal poverty level

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

TABLE 3

Receipt of psychosocial services from non–school-based providers during the past six months among children with serious or minor emotional or behavioral difficulties (EBDs)^a

Provider	Total (N=1,728)		Serious EBDs (N=413)		Minor EBDs (N=1,315)	
	%	SE	%	SE	%	SE
Pediatrician or family doctor	5.4	.6	10.5	1.9	3.7	.6
Psychiatrist	6.9	.8	12.7	1.9	5.0	.8
Psychologist, clinical social worker, or psychiatric nurse	11.1	.9	18.5	2.2	8.7	.9
Speech, occupational, or physical therapist or other provider	7.7	.9	18.0	2.7	4.3	.7
Religious or spiritual counselor or advisor or probation, or juvenile corrections officer or court counselor	.5 ^b	.2	1.7 ^b	.9	.1 ^b	.1
No non–school-based services	71.2	1.4	47.3	3.1	79.1	1.4

^aSource: 2011–2012 National Health Interview Survey (60,62). Percentages are weighted. Column percentages do not add to 100% because the groups were not mutually exclusive and a child may have received services from multiple providers.

^bEstimate is statistically unreliable because of relative standard error of >30%.

TABLE 4

Receipt of school-based services during the past six months among children with serious or minor emotional or behavioral difficulties (EBDs), by type of provider^a

Provider	Total (N=1,728)		Serious EBDs (N=413)		Minor EBDs (N=1,315)	
	%	SE	%	SE	%	SE
Special school	4.9	.6	11.1	1.7	2.9	.5
special program in a regular school	12.3	1.0	22.0	2.8	9.2	.9
Services at regular schools that were not part of a special program	18.5	1.1	27.6	2.8	15.5	1.1
No school-based services	64.2	1.3	39.3	2.9	72.5	1.4

^aSource: 2011–2012 National Health Interview Survey (60,62). Percentages are weighted.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript