

Mental Health Services for Youths in Foster Care and Disabled Youths

ABSTRACT

Objectives. This study assessed whether mental health services for youths differ with respect to medical assistance aid category.

Methods. Computerized claims for 15 507 youths with Medicaid insurance in a populous county of a mid-Atlantic state were used to establish population-based prevalence estimates of mental disorders and psychotherapeutic treatments during 1996.

Results. An analysis of service claims revealed that the prevalence of mental disorders among youths enrolled in foster care (57%) was twice that of youths receiving Supplemental Security Income (SSI; 26%) and nearly 15 times that of other youths receiving other types of aid (4%). Rates of mental health service use were pronounced among foster care youths aged 6 to 14 years. Attention-deficit/hyperactivity disorder, depression, and developmental disorders were the most prevalent disorders. Stimulants, antidepressants, and anticonvulsants were the most prevalent medications.

Conclusions. Youths enrolled in foster care and youths receiving SSI use far more mental health services than do youths in other aid categories. Additional research should evaluate the complexity and outcomes of mental health services for youths in foster care. (*Am J Public Health*. 2001;91:1094–1099)

Susan dosReis, PhD, Julie Magno Zito, PhD, Daniel J. Safer, MD, and Karen L. Soeken, PhD

Nearly 50% of the US Medicaid population, totaling 23 million, is below the age of 20 years.^{1,2} The welfare and mental health of children from low-income families has been a public health issue for many years, largely because developmental and psychosocial problems are more prevalent and of greater severity among poor children.^{3–6} Furthermore, low-income families and their children face greater barriers to care and receive less health and mental health care.^{3,7,8}

During the 1990s, policy and legislative changes expanded the conditions under which children are eligible for Medicaid benefits. In 1998, Title XXI of the Social Security Act made federal grants available through the State Children's Health Insurance Plan, so that states could finance insurance for children in families not previously qualified for Medicaid. In addition, changes in the Social Security Administration guidelines for determining mental health disabilities among children^{9,10} and a Supreme Court decision (*Sullivan v Zebley*¹¹) made it easier for youths to obtain Medicaid benefits through Supplemental Security Income (SSI) disability. Consequently, there was an increase in the services available to SSI youths.¹²

Foster care enrollment in the United States has also exhibited growth, increasing by 79% between 1982 and 1994 (from 262 000 to 468 000 youths).¹³ Moreover, the use of mental health services among youths enrolled in foster care has gained considerable attention during a time in which the United States has experienced increases in youth psychiatric treatments.^{14,15} Historically, foster care placement was largely due to illness, poverty, or family death and was a means of helping families during financial hardship.^{16,17} Just over 50% of placements are now attributed to abuse and neglect of children,^{16,18,19} and these causes have justified increasing placements since 1987.²⁰ The result is that children in foster care have more chronic medical problems,^{16,21–23} and a substantial proportion exhibit emotional and

psychologic disorders.^{16,18,19,22–24} Research indicates that between 40% and 60% of youths in foster care have at least 1 psychiatric disorder, and approximately 33% have 3 or more diagnosed psychiatric problems.²⁵

There is a considerable body of literature on mental health services among youth Medicaid populations.^{8,15,26–31} However, few studies have examined Medicaid reimbursement claims for youths in foster care relative to other Medicaid recipients.^{32–34} Using 1988 Medicaid reimbursement claims, Halfon and colleagues reported a 23% greater age-adjusted service use rate for youths in foster care than for youths insured under Medicaid as a whole, along with a 70% higher expenditure rate per eligible child.³² Takayama and colleagues reported that the rate of mental health service use was 8 times higher among children in foster care than among youths receiving Medicaid benefits under Aid to Families with Dependent Children (AFDC),³⁴ which is now known as Temporary Assistance to Needy Families. These studies did not examine psychotropic medication treatments, however, and they did not compare mental health services across the 3 subgroups of youth Medicaid recipients: foster care, AFDC, and SSI.

We undertook this research to address the following questions. To what extent do child Medicaid enrollees use mental health serv-

Susan dosReis is with the School of Pharmacy, University of Maryland, and the School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md. Julie Magno Zito is with the School of Pharmacy and the School of Medicine, University of Maryland, Baltimore. Daniel J. Safer is with the School of Medicine, Johns Hopkins Medical Institutions. Karen L. Soeken is with the School of Nursing, University of Maryland.

Requests for reprints should be sent to Susan dosReis, PhD, Johns Hopkins Hospital, Division of Child and Adolescent Psychiatry, 600 N Wolfe St, CMSC 346, Baltimore, MD 21287-3325 (e-mail: sdosreis@jhmi.edu).

This article was accepted August 23, 2000.

ices? Does mental health service use differ with respect to children's Medicaid category of assistance? Do psychotropic medication treatments differ with respect to children's Medicaid category of assistance? Thus, the primary goal of the study was to compare the prevalence of mental disorders and psychotherapeutic treatments among youths in foster care, youths receiving SSI, and youths in all other aid categories.

Methods

Study Design

We conducted a 1-year cross-sectional analysis of youth mental health services based on computerized administrative claims data for the population of continuous and noncontinuous Medicaid enrollees younger than 20 years in a populous suburban county of a mid-Atlantic state during 1996. Mental health services were identified on the basis of 1 or more medical or prescription claims associated with a mental disorder or psychotherapeutic medication. *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)* codes 290 through 319 were used to define mental disorders. Mental disorders were grouped into 15 subcategories: attention-deficit/hyperactivity disorder (ADHD), adjustment disorders, anxiety disorders, bipolar disorder, conduct disorder, depression, developmental disorders, learning disorders, mental retardation, oppositional defiant disorder, personality disorder, psychoses, substance abuse, tic disorder, and all other mental disorders.

Psychotherapeutic medications were defined according to American Hospital Formulary System categories. Psychotherapeutic medication treatment consisted of psychotropic and certain nonpsychotropic agents. The major psychotropic classes included antidepressants, anticonvulsants, and lithium, along with antiparkinsonian, antipsychotic, anxiolytic, hypnotic, and stimulant medications. Nonpsychotropic medications included clonidine and guanfacine, alpha-adrenergic agonists that are centrally acting agents indicated for the treatment of adult hypertension. These medications were included because they are often prescribed for youths with ADHD to ameliorate the insomnia that frequently accompanies the condition or follows afternoon doses of stimulant medication.³⁵ However, youths with claims for an alpha-adrenergic agonist were included only when another psychotropic medication was identified during the study year. Claims data from physician visits, outpatient services, and pharmacy records were used to identify youths receiving mental health services.

Study Population

The population comprised all youths aged 0 to 19 years as of January 1, 1996, who were enrolled in the fee-for-service Medicaid program and resided in the study county during 1996 (n=15 507). One third of the youth Medicaid population in this county were enrolled in a managed care organization and were not included in our analyses, because paid claims for medical and prescription services were not available in the state Medicaid database.

Medicaid enrollees aged 0 to 19 years represented 48% of the statewide Medicaid population and 42% of the county Medicaid population. The study county represented 7.5% of the statewide Medicaid population younger than 20 years, 7% of the other aid category, 6% of the SSI population, and 4% of the foster care population. The statewide racial composition among youths aged 0 to 19 years with Medicaid insurance was as follows: 34% White, 57% African American, and 6% "other." The study county had a slightly larger proportion of minority youths: 20% White, 40% African American, and 34% "other." Race was not recorded for 3% and 6% of youths enrolled statewide and of county-enrolled youths, respectively.

The state Medicaid program defined categories of assistance for which youths were eligible, and these categories were classified into 3 mutually exclusive groups: SSI, foster care, and other aid. The SSI category followed the state definition and included youths who were developmentally, psychologically, or physically disabled. The foster care category comprised youths in foster care, including those placed outside the home by juvenile services and those placed in a state adoption agency. The other aid category comprised AFDC (60%); the pregnant women and children program (32%), which included coverage for various groups of infants, children aged 1 through 5 years, and youths 6 years or older; non-AFDC primary care and preventive services (2%); programs for the medically needy (3%); the family planning program (2%); and the pharmacy assistance program (0.3%).

Data Source

Data were derived from Medicaid fee-for-service reimbursement claims for services rendered. Recipients' age, date of birth, sex, ethnicity, enrollment status (continuous vs noncontinuous), and zip code of residence were obtained from the eligibility file. Service files represent reimbursement claims for (1) services provided by office-based physicians or community health clinics, (2) outpatient services, and (3) services provided by psychologists and social workers. These files provide information on date of service, medical diagnoses, and physician specialty. Medication files contain

paid claims for prescriptions dispensed from community-based pharmacies and include dispensing date, prescription number, unique medication national drug code, and quantity dispensed. Unique recipient identifiers, coded for confidentiality, were part of each file so that the claims data from separate files could be linked to 1 individual.

Medications were recorded as 11-digit numeric national drug codes in the claims data, which necessitated the use of a dictionary to obtain additional descriptive information about medications. The dictionary represented all Medicaid-reimbursable medications and was linked to the medication file via the code number. Specific dictionary variables included dosage form, generic product name, trade name, product strength, package size, and American Hospital Formulary System therapeutic category.

Data Analysis

A population-based, 12-month prevalence rate of mental health services was established. Prevalence rates of mental disorders diagnosed were measured as the number of youths among each 100 enrolled who had a medical service claim associated with an *ICD-9-CM* mental disorder. Similarly, psychotherapeutic medication prevalence rates were measured as the number of youths among each 100 enrolled who had a prescription claim for a psychotherapeutic medication. Prevalence rates were also established for specific diagnostic categories and major psychotherapeutic classes. Descriptive measures of prevalence were established in terms of age, sex, and race within each Medicaid subcategory. Relative ratio comparisons and 95% confidence intervals (CIs) for mental disorders and psychotherapeutic drug prevalence rates were calculated according to category of assistance and demographic characteristics. Analyses involving inferential statistics were not performed because the present data were population based.

Results

Description of Study Population

The study county's 1996 Medicaid youth enrollment was as follows: foster care, 2%; SSI, 5%; and other aid, 93%. The demographic characteristics of the enrolled population are shown in Table 1. Seventy percent of all foster care and SSI enrollees were aged 6 to 19 years. The majority of the SSI and other aid groups were female, whereas male and female youths were equally represented in foster care. Whites were more likely to be included in the SSI group, while nearly half of the members of the foster care and other aid groups were African American.

TABLE 1—Characteristics According to Aid Category: 15 507 Youths Enrolled During 1996 in One County of a Mid-Atlantic State Medicaid Program

	Medical Assistance Aid Category		
	Foster Care (n=310), No. (%)	SSI (n=775), No. (%)	Other Aid (n=14 422), No. (%)
Sex			
Male	156 (50)	281 (36)	5065 (35)
Female	154 (50)	494 (64)	9357 (65)
Age group, y			
0–5	93 (30)	232 (30)	7932 (55)
6–14	133 (43)	380 (49)	5336 (37)
15–19	84 (27)	163 (21)	1154 (8)
Race			
White	110 (35)	372 (48)	3180 (22)
African American	142 (46)	143 (18)	6223 (43)
Other	58 (19)	260 (34)	5019 (35)

Note. SSI = Supplemental Security Income.

Among claims for youths who received a mental health service, the highest percentages were from physicians and nurse-practitioners (22%) and mental health specialists (18%). Other providers included local education agencies (11%), hospital-based outpatient services (5%), home health care and day care services (5%), public clinics (3%), and social workers (1%).

Mental Health Treatment Prevalence Rates

Mental health services were compared across the 3 Medicaid categories. Table 2 displays prevalence rates of any mental health service, any mental disorder, and any psychotherapeutic medication by Medicaid category enrollment, according to age, sex, and race. A total of 1001 youths aged 0 to 19 years, representing 6.5% of youths insured through Medicaid in the county, evidenced any use of mental health services. Among those enrolled in foster care and those receiving SSI, 193 (62%) and 228 (29%), respectively, had used mental health services. Use of services for mental health problems was less prevalent among youths enrolled in the other aid category (4%; n=580).

Youths enrolled in foster care were more likely to use mental health services than were youths receiving SSI (relative ratio [RR]=2.1, 95% CI=1.8, 2.4) or other types of aid (RR=15.5, 95% CI=13.8, 17.4). Among youths aged 6 to 14 years, the rate of mental health service use was substantially higher for those enrolled in foster care (87%) than for those in the SSI group (31%) or the other aid group (7%).

Similar patterns were observed for the prevalence of any mental disorder or the use of any psychotherapeutic medication (Table 2). Rates of mental disorders among youths in foster care were 2.2 (95% CI=1.9, 2.5) times higher

than those among youths receiving SSI and 16 (95% CI=14.1, 18.2) times higher than those among youths in the other aid group. Similarly, psychotherapeutic treatment prevalence rates for foster care youths were 1.7 (95% CI=1.4, 2.2) times higher than those for SSI youths and 18 (95% CI=14.9, 22.7) times higher than those for youths in the other aid group.

Mental disorder and psychotherapeutic medication rates increased with age among youths in the SSI and other aid groups. However, among youths in foster care, rates of mental disorders and use of psychotropic medications peaked in the 6- to 14-year age group. With the exception of the foster care group, in which diagnostic prevalence rates were similar between the sexes, rates of mental disorders and psychotherapeutic medication treatments were 4 times higher among male youths than among female youths. Overall, White youths in the foster care and other aid groups were more likely to use mental health services; African Americans in the SSI group had the highest rates of mental disorders and psychotherapeutic treatments.

Table 3 illustrates the relationship between prevalence of mental disorders and specific psychotherapeutic treatments. ADHD, depression, and developmental disorders were consistently among the most frequent diagnoses overall and by Medicaid category. ADHD and depression were twice as prevalent in the foster care group as in the SSI group, and adjustment disorders were more than 10 times as prevalent. By comparison, psychoses and learning disorders were more likely to be associated with receipt of SSI. Mental disorders were far less prevalent among youths in the other aid category.

Similarly, psychotherapeutic medication prevalence rates were highest for those medications used to treat the most commonly occurring diagnoses (Table 3). Stimulants, antidepressants, and anticonvulsants were the

most prevalent psychotherapeutic medications across all 3 groups. Psychotherapeutic medications were more prevalent among youths in foster care than among youths in the other 2 groups. SSI group medication rates fell halfway between the other 2 group extremes in the case of antidepressants and stimulants; otherwise, they were similar to rates in the foster care group.

Relative Ratio Comparisons of Prevalence Rates

The White to African American prevalence ratios for the top 4 diagnostic groups varied according to eligibility category (Table 4). Overall, Whites were approximately 2 times more likely to be diagnosed with ADHD, depression, or adjustment disorder. Nonetheless, in the SSI group, African Americans were 3.6 times (95% CI=3.0, 6.2) more likely to be diagnosed with ADHD and 2.8 times (95% CI=1.6, 4.9) more likely to be diagnosed with developmental disorders. Psychotherapeutic medications showed similar racial and Medicaid category variations (Table 4). These subgroup analyses should be interpreted with caution owing to the relatively small numerators (ranging from approximately 10 to 70).

Discussion

This cross-sectional analysis of Medicaid claims among youths revealed that approximately 7% had a mental health service contact in 1996 and 6% had a claim associated with a mental disorder; psychotherapeutic medications were prescribed for 3% of the population. Although youths enrolled in foster care represented 2% of the population and youths receiving SSI represented 5%, these youths were far more likely than the youths in the other aid category (representing the remaining 93% of the population) to have mental disorders and to receive psychotherapeutic medications (rates were approximately 16 times and 8 times greater, respectively). African American youths represented the largest racial group in the foster care and other aid groups, but their rate of mental health service use was comparatively lower than that of White youths in these groups.

Use of mental health services increased with age in the SSI and other aid categories. However, among youths in foster care, nearly 90% of those aged 6 to 14 years received mental health treatments. Finally, male youths exhibited a higher prevalence of mental health service use than female youths except in the foster care group, in which the patterns were similar.

The largest disparity in mental health service use was observed between the foster care group and the other aid group, the latter largely

TABLE 2—Mental Health Service Use, Mental Disorder Diagnosis, and Psychotherapeutic Medication Treatment According to Medicaid Aid Category

	Foster Care, No. (%)	SSI, No. (%)	Other Aid, No. (%)
All mental health services			
Sex			
Male	100 (64)	157 (56)	376 (7)
Female	93 (60)	71 (14)	204 (2)
Age group, y			
0–5	26 (28)	47 (20)	109 (1)
6–14	116 (87)	116 (31)	362 (7)
15–19	51 (61)	65 (40)	109 (10)
Race			
White	84 (76)	95 (26)	210 (7)
African American	99 (70)	95 (66)	245 (4)
Other	10 (17)	38 (15)	125 (3)
Total	193 (62)	228 (29)	580 (4)
Mental disorders			
Sex			
Male	90 (58)	141 (50)	331 (7)
Female	88 (57)	63 (13)	186 (2)
Age group, y			
0–5	25 (27)	43 (19)	100 (1)
6–14	107 (81)	105 (28)	321 (6)
15–19	46 (55)	56 (34)	96 (8)
Race			
White	78 (71)	88 (24)	188 (6)
African American	91 (64)	82 (57)	215 (4)
Other	9 (16)	34 (13)	114 (2)
Total	178 (57)	204 (26)	517 (4)
Psychotherapeutic medications			
Sex			
Male	54 (35)	100 (34)	162 (3)
Female	40 (26)	37 (8)	76 (0.8)
Age group, y			
0–5	6 (7)	13 (6)	23 (0.3)
6–14	64 (48)	79 (21)	166 (3)
15–19	24 (29)	45 (28)	49 (4)
Race			
White	45 (41)	58 (16)	105 (3)
African American	43 (30)	58 (41)	93 (2)
Other	6 (10)	21 (8)	40 (0.8)
Total	94 (30)	137 (18)	238 (2)

Note. SSI = Supplemental Security Income.

represented by AFDC. In the 0- to 5-year age group, the rate of service use was more than 20 times higher among youths in foster care than among those in the other aid group (28% vs 1%). Takayama and colleagues³⁴ used 1990 Medicaid claims data to compare health care use among children younger than 8 years who were continuously enrolled in foster care and AFDC in Washington State. These researchers reported that 25% of children in foster care, compared with only 3% of children receiving AFDC, used mental health services.³⁴ The much larger discrepancy between the foster care and other aid preschool groups reported here may be due in part to differences in age and how mental health services and Medicaid aid categories were defined.

Mental disorder and psychotherapeutic treatment rates were less disparate among foster care and SSI youths, and this may be ex-

plained in part by legislation that affected the SSI disability qualifications for children. A 3-year trend analysis of Medicaid claims from 4 states revealed that the prevalence of ADHD among youths aged 0 to 20 years receiving SSI was nearly 3 times higher after the Social Security Administration implemented new guidelines in 1990 for mental health disabilities among children.¹² Although psychosocial problems have been shown to be more pronounced among Medicaid than among non-Medicaid youths,³⁶ children with chronic illness and disability are more likely to have mental health and social adjustment problems³⁷ and are more likely to use mental health services³⁸ than their nondisabled peers. Thus, our finding that mental health service use was higher among youths in foster care than among youths receiving SSI is surprising.

Several limitations should be considered when interpreting the present findings. First, these data were derived from a cross-sectional assessment of mental health services for youths insured through Medicaid in a single county and may not be representative of the entire state. Second, because our sample represents a small proportion of the statewide Medicaid, other aid, SSI, and foster care population younger than 20 years, the disparity in mental health treatment use among the foster care, SSI, and other aid groups in the study county may not reflect statewide patterns.

Third, claims databases represent reimbursement for medical conditions that prompted the visit and the medications dispensed, and the potential to underestimate the prevalence of chronic mental disorders exists.³⁹ However, we quantified the extent to which mental health services were provided in a 12-month period, which should have been sufficient to identify treatment of chronic conditions. Fourth, because claims data for youths enrolled in Medicaid managed care were not available, it was not possible to examine whether mental health services differ with respect to fee-for-service and managed care settings. Finally, these data may underestimate the prevalence of psychotherapeutic treatments in this population because only outpatient services were included.

Nevertheless, the public health implications for pediatric psychiatry and psychopharmacology are manifold. First, the greater use of mental health services among youths aged 6 to 14 years in foster care merits further investigation. Several researchers have documented poorer health and mental health status, less organized and comprehensive treatments, more discontinuity of care, and greater barriers to health services among youths in foster care,^{16,22,40,41} yet this population uses an unusually high proportion of mental health services. The extent of multiple psychotherapeutic medication regimens among these youths has not been established. Preliminary data suggest that Medicaid youths are exposed to multiple classes of psychotropic medications,¹⁵ but the extent to which youths in foster care are disproportionately represented necessitates further study.

Second, rates of mental health problems among youths in the other aid group were much lower than those found in community studies.⁴²⁻⁴⁴ Individuals in the other aid group qualify for Medicaid because of very limited financial resources and are characteristically different from those who qualify because of a psychologic or physical impairment. Therefore, it is not surprising that they use fewer mental health services than youths in foster care or those receiving SSI.

Although the findings from the other aid group in the present Medicaid population are

TABLE 3—Mental Disorder Diagnostic Groups and Psychotherapeutic Medication Classes According to Medicaid Aid Category

	Foster Care (n=310)		SSI (n=775)		Other Aid (n=14 422)	
	No.	Prevalence per 100 ^a	No.	Prevalence per 100 ^a	No.	Prevalence per 100 ^a
Mental disorders^b						
Adjustment disorder	64	21	18	2	86	0.6
ADHD	48	16	55	7	121	0.8
Depression	46	15	53	7	102	0.7
Developmental	32	10	56	7	149	1.0
Conduct disorder	26	8	23	3	51	0.4
Oppositional defiant	24	8	15	2	26	0.2
Anxiety	20	7	13	2	31	0.2
Substance abuse	15	5	15	2	55	0.4
Learning disorder	12	4	37	5	62	0.4
Psychoses	5	2	26	3	16	0.1
Psychotherapeutic medications^c						
Stimulant	57	18	51	7	152	1.0
Antidepressant	47	15	56	7	76	0.5
Anticonvulsant	21	7	61	8	52	0.4
Antipsychotic	18	6	37	5	24	0.2
Clonidine	15	5	18	2	18	0.1
Lithium	7	2	14	2	12	0.08
Anxiolytic	6	2	22	3	9	0.06
Antiparkinsonian	4	1	13	2	6	0.04

Note. SSI=Supplemental Security Income; ADHD=attention-deficit disorder with or without hyperactivity.

^a(No./number enrolled per group) × 100, which is the prevalence per 100 enrolled.

^bBipolar disorders, tic disorders, mental retardation, and all other mental disorders are not represented owing to small numbers.

^cHypnotic medications are not represented owing to small numbers.

TABLE 4—Population-Based White to African American Relative Ratio According to Aid Category for the Most Prevalent Mental Disorders and Psychotherapeutic Classes

Diagnostic group	White:African American Relative Ratio			
	Foster Care	SSI	Other Aid	Total
ADHD ^a	1.2:1.0	1.0:3.6	2.4:1.0	1.8:1.0
Depression	1.4:1.0	1.0:1.7	1.9:1.0	1.9:1.0
Developmental	1.0:1.6	1.0:2.8	1.6:1.0	1.3:1.0
Adjustment	1.1:1.0	1.0:1.8	1.6:1.0	1.6:1.0
Psychotherapeutic medications				
Stimulants	1.3:1.0	1.0:3.2	2.2:1.0	1.8:1.0
Antidepressants	1.6:1.0	1.0:2.5	3.3:1.0	2.4:1.0
Anticonvulsants	2.2:1.0	1.0:2.6	2.8:1.0	2.3:1.0

Note. Ratios were based on White (W) and African American (AA) population enrollments within aid categories: foster care, W=110, AA=142; Supplemental Security Income (SSI), W=372, AA=143; other aid, W=3180, AA=6223.

^aAttention-deficit disorder with or without hyperactivity.

not representative of the general youth population aged 0 to 19 years, it is somewhat surprising that this group exhibited a much lower prevalence of mental health service use than the 15% to 20% estimates derived from community-based studies.⁴⁴⁻⁴⁶ There are data showing that minorities and younger children receive fewer mental health services and psychotherapeutic medications,^{31,47-53} and so it is likely that overrepresentation of minority racial groups and overrepresentation of children 5 years or younger have contributed to the lower use in this Medicaid group.

Finally, our data provide potentially important information on racial characteristics and mental health service use among the Medicaid population. In a previous study, our research group demonstrated that the prevalence of psychotropic treatments among White enrollees was twice as high as that among African American youths,³⁰ which corroborates the overall findings presented here. When aid category is considered, however, the racial disparity becomes less clear. Perhaps the severity of mental health problems overcomes the racial differences in use.

This countywide study extends previously published findings and highlights the need for more adequate assessment of the duration, complexity, and effectiveness of mental health services for children. Our group is undertaking additional studies using a statewide Medicaid population to corroborate these findings. It is clear from this work that mental health services differ significantly across Medicaid eligibility categories. What is less clear and warrants further investigation is the extent to which racial characteristics influence perceptions of the need for and use of mental health services.

Furthermore, in terms of determining appropriateness of treatments, linking use of mental health treatments and psychopharmacologic medications to measures of long-term behavioral, academic, and social functioning should be a priority for research on child mental health services. This could lead to potentially important advances in scientific knowledge of the extent of child mental health service use and of the effectiveness of psychopharmacologic treatments. □

Contributors

S. dosReis planned the study, analyzed the data, and wrote the manuscript. J. M. Zito and D. J. Safer assisted during all phases of the project, particularly the conception of the study, data analysis and interpretation, and the technical writing of the manuscript. K. L. Soeken contributed to the analysis and to the technical writing of the manuscript.

Acknowledgments

The research was funded by a dissertation grant award from the National Institute of Mental Health (R03-MH58470). Medicaid administrators and research analysts provided the data for these analyses and were instrumental in bringing this project to completion.

References

1. American Academy of Pediatrics Committee on Child Health Financing. Medicaid policy statement. *Pediatrics*. 1999;104:344-347.
2. *Medicaid Eligibles of Medical Care by Age and State: Fiscal Year 1997*. Washington, DC: Health Care Financing Administration; 1999.
3. Fossett JW, Perloff JD, Kletke PR, Peterson JA. Medicaid and access to child health care in Chicago. *J Health Polit Policy Law*. 1992;17:273-298.
4. Parker S, Greer S, Zuckerman B. Double jeopardy: the impact of poverty on early child development. *Pediatr Clin North Am*. 1988;35:1227-1240.
5. Starfield B. Family income, ill health, and medical care of US children. *J Public Health Policy*. 1982;3:244-259.
6. Wise PH, Meyers A. Poverty and child health. *Pediatr Clin North Am*. 1988;35:1169-1186.
7. Newacheck PW, Hughes DC, Stoddard JJ. Children's access to primary care: differences by race, income, and insurance status. *Pediatrics*. 1996;97:26-32.
8. Rosenbach ML. The impact of Medicaid on physician use by low-income children. *Am J Public Health*. 1989;79:1220-1226.
9. *Supplemental Security Income for the Aged, Blind, and Disabled. Determining Disability for Children*. Washington, DC: US Dept of Health and Human Services; 1990.
10. *Social Security Benefits for Children With Disabilities*. Washington, DC: Social Security Administration; 1997. SSA publication 05-10026.
11. *Sullivan v Zebley*, 110 SCt 885 (1990).
12. Perrin JM, Kuhlthau K, McLaughlin TJ, Ettner SL, Gortmaker SL. Changing patterns of conditions among children receiving Supplemental Security Income disability benefits. *Arch Pediatr Adolesc Med*. 1999;153:80-84.
13. Craig C, Herbert D. *The State of the Children: An Examination of Government-Run Foster Care*. Dallas, Tex: Institute for Children, National Center for Policy Analysis; 1997. NCPA report 210.
14. Achenbach TM, Howell CT. Are American children's problems getting worse? A 13-year comparison. *J Am Acad Child Adolesc Psychiatry*. 1993;32:1145-1154.
15. Zito JM, dosReis S, Safer DJ, Ghose B. Trends in psychotropic prescriptions for youths with Medicaid insurance from a midwestern state, 1987-1995. In: *Conference Proceedings of the New Clinical Drug Evaluation Unit 38th Annual Meeting, Boca Raton, Fla*. Bethesda, Md: National Institute of Mental Health; 1998. Abstract 78.
16. Schor EL. The foster care system and health status of foster children. *Pediatrics*. 1982;69:521-528.
17. Schor EL. Foster care. *Pediatr Clin North Am*. 1988;35:1241-1252.
18. Simms MD. The foster care clinic: a community program to identify treatment needs of children in foster care. *J Dev Behav Pediatr*. 1989;10:121-128.
19. Takayama JI, Wolfe E, Coulter KP. Relationship between reason for placement and medical findings among children in foster care. *Pediatrics*. 1998;101:201-207.
20. Wang CT. *Current Trends in Child Abuse Reporting and Fatalities: The Results of the 1997 Annual Fifty State Survey*. Chicago, Ill: Center on Child Abuse Prevention Research; 1997. Report 808.
21. Pinkney DS. America's sickest children. *American Medical News*. January 10, 1994:13-15.
22. Swire MR, Kavalier F. The health status of foster children. *Child Welfare*. 1977;56:635-653.
23. Hochstadt NJ, Jaudes PK, Zimo DA, Schachter J. The medical and psychosocial needs of children entering foster care. *Child Abuse Negl*. 1987;11:53-62.
24. Frank G. Treatment needs of children in foster care. *Am J Orthopsychiatry*. 1980;50:256-263.
25. Stein E, Rae-Grant N, Ackland S, Avison W. Psychiatric disorders of children "in care": methodology and demographic correlates. *Can J Psychiatry*. 1994;39:341-347.
26. Azarian K, Rothbard AB. Children's use of psychotropic medication in a fee-for-service and managed care program. In: *Conference Proceedings of the American Public Health Association 126th Annual Meeting*. Washington, DC: American Public Health Association; 1998:241.
27. Hughes DC, Newacheck PW, Stoddard JJ, Halfon N. Medicaid managed care: can it work for children? *Pediatrics*. 1995;95:591-594.
28. Rabin DL, Bush PJ, Fuller NA. Drug prescription rates before and after enrollment of a Medicaid population in an HMO. *Public Health Rep*. 1978;93:16-23.
29. Zito JM, Safer DJ, Riddle MA, Johnson RE, Speedie SM, Fox M. Prevalence variations in psychotropic treatment of children. *J Child Adolesc Psychopharmacol*. 1998;8:99-105.
30. Zito JM, Safer DJ, dosReis S, Riddle MA. Racial disparity in psychotropic medications prescribed for youths with Medicaid insurance in Maryland. *J Am Acad Child Adolesc Psychiatry*. 1998;37:179-184.
31. Zito JM, Safer DJ, dosReis S, Magder LS, Riddle MA. Methylphenidate patterns among Medicaid youths. *Psychopharmacol Bull*. 1997;33:143-147.
32. Halfon N, Berkowitz G, Klee L. Children in foster care in California: an examination of Medicaid reimbursed health services utilization. *Pediatrics*. 1992;89:1230-1237.
33. Halfon N, Berkowitz G, Klee L. Mental health service utilization by children in foster care in California. *Pediatrics*. 1992;89:1238-1244.
34. Takayama JI, Bergman AB, Connell FA. Children in foster care in the state of Washington. *JAMA*. 1994;271:1850-1855.
35. Prince JB, Wilens TE, Biederman J, Spencer TJ, Wozniak JR. Clonidine for sleep disturbances associated with attention-deficit hyperactivity disorder: a systematic chart review of 62 cases. *J Am Acad Child Adolesc Psychiatry*. 1996;35:599-605.
36. Starfield B, Gross E, Wood M, et al. Psychosocial and psychosomatic diagnoses in primary care of children. *Pediatrics*. 1980;66:159-167.
37. Cadman D, Boyle M, Szatmari P, Offord DR. Chronic illness, disability, and mental and social well-being: findings of the Ontario Child Health Study. *Pediatrics*. 1987;79:805-813.
38. Smyth-Staruch K, Breslau N, Weitzman M, Gortmaker S. Use of health services by chronically ill and disabled children. *Med Care*. 1984;22:310-328.
39. Bright RA, Avorn J, Everitt DE. Medicaid data as a resource for epidemiologic studies: strengths and limitations. *J Clin Epidemiol*. 1989;10:937-945.
40. Halfon N, Klee L. Health services for California's foster children: current practices and policy recommendations. *Pediatrics*. 1987;80:183-191.
41. Klee L, Halfon N. Mental health care for foster children in California. *Child Abuse Negl*. 1987;11:63-74.
42. Bird HR, Canino G, Rubio-Stipec M, et al. Estimates of the prevalence of childhood maladjustment in a community survey in Puerto Rico: the use of combined measures. *Arch Gen Psychiatry*. 1988;45:1120-1126.
43. Costello EJ, Angold A, Burns BJ, et al. The Great Smoky Mountains Study of Youth: goals, design, methods, and the prevalence of DSM-III-R disorders. *Arch Gen Psychiatry*. 1996;53:1129-1136.
44. Offord DR, Boyle MH, Szatmari P, et al. Ontario Child Health Study, II: six-month prevalence of disorder and rates of service utilization. *Arch Gen Psychiatry*. 1987;44:832-836.
45. Burns BJ, Costello EJ, Angold A, et al. Children's mental health service use across service sectors. *Health Aff*. 1995;14:147-159.
46. Leaf PJ, Alegria M, Cohen P, et al. Mental health service use in the community and schools: results from the four-community MECA Study. *J Am Acad Child Adolesc Psychiatry*. 1996;35:889-897.
47. Zito JM, Safer DJ, dosReis S, Gardner JF, Boles M, Lynch F. Trends in the prescribing of psychotropic medications to preschoolers. *JAMA*. 2000;283:1025-1030.
48. Zito JM, Safer DJ, dosReis S, Magder LS, Gardner JF, Zarin DA. Psychotherapeutic medication patterns for youths with attention deficit/hyperactivity disorder. *Arch Pediatr Adolesc Med*. 1999;153:1257-1263.
49. Rappley MD, Gardiner JC, Jetton JR, Houang RT. The use of methylphenidate in Michigan. *Arch Pediatr Adolesc Med*. 1995;149:675-679.
50. Blendon RJ, Aiken LH, Freeman HE, Corey CR. Access to medical care for black and white Americans. A matter of continuing concern. *JAMA*. 1989;261:278-281.
51. Geiger HJ. Race and health care—an American dilemma? *N Engl J Med*. 1996;335:815-816.
52. Lawson WB. Clinical issues in the pharmacotherapy of African-Americans. *Psychopharmacol Bull*. 1996;32:275-281.
53. Perkins RE, Moodley P. Perception of problems in psychiatric inpatients: denial, race and service usage. *Soc Psychiatry Psychiatr Epidemiol*. 1993;28:189-193.