

Psychiatric Disorder, Impairment, and Service Use in Rural African American and White Youth

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Background: The Caring for Children in the Community Study examined the prevalence of *DSM-IV* psychiatric disorders and correlates of mental health service use in rural African American and white youth.

Methods: Four thousand five hundred youth aged 9 to 17 years from 4 North Carolina counties were randomly selected from school databases. Parents completed telephone questionnaires about their children's behavior problems. A second-stage sample of 1302 was identified for recruitment into the interview phase of the study, and 920 (70.7%) of these were successfully interviewed at home using the Child and Adolescent Psychiatric Assessment and related measures of service use.

Results: Weighted back to general population estimates, 21.1% of youth had 1 or more *DSM-IV* psychiatric disorders in the past 3 months. Prevalence was similar in African American (20.5%) and white (21.9%) youth.

The only ethnic difference was an excess of depressive disorders in white youth (4.6% vs 1.4%). Thirteen percent of participants (36.0% of those with a diagnosis) received mental health care in the past 3 months. White youth were more likely than African American youth to use specialty mental health services (6.1% vs 3.2%), but services provided by schools showed very little ethnic disparity (8.6% vs 9.2%). The effect of children's symptoms on their parents was the strongest correlate of specialty mental health care.

Conclusions: In this rural sample, African American and white youth were equally likely to have psychiatric disorders, but African Americans were less likely to use specialty mental health services. School services provided care to the largest number of youths of both ethnic groups.

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LITTLE IS known about the prevalence of psychiatric disorders and access to mental health care of rural youth, especially rural minority youth.¹⁻⁵ Yet, there are important reasons for paying more attention to this segment of the population. Rural households make up about 25% of the population. Some of the poorest regions of the United States are rural areas and areas with a high proportion of minority residents. Poverty and minority status have both been associated with risk for child psychiatric disorder,⁶⁻¹¹ but these studies used urban samples and cannot elucidate the role of poverty, independent of inner-city residence, in the emotional and behavioral development of minority youth. Similarly, studies¹² of sex and sex by ethnicity differences in the development of different psychiatric disorders have mainly used urban samples. Rural studies are also important in evaluating the effect of treatment availability on use of services, because access is generally poorer in rural areas.¹³

This report on the Caring for Children in the Community Study examines the issues of need for and use of mental

health services in a representative community sample of African American and white children and adolescents living in a largely rural area of North Carolina. The study design is similar to that of the Great Smoky Mountains Study (GSMS),^{5,14-16} which compared white and American Indian children from the same state. The objectives of these studies include examining risk for and outcomes of *DSM-IV* psychiatric disorders from a developmental perspective¹⁷ and the relationship between need for mental health care and the services provided by the various sectors that serve children with mental health care needs: schools, primary medical care, child welfare, juvenile justice, and specialty mental health settings.

METHODS

SAMPLE AND SETTING

The 4 counties surveyed constitute the mental health catchment area served by a single child guidance clinic and used for the Duke University Medical Center rural component of the Epidemiologic Catchment Area study.¹⁸ According to the 1990 census, 76% of the popu-

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lation lived in rural areas, and 50% of the area's youth population (18 years and younger) were African American. Most other youth were white, with a few American Indian and Hispanic inhabitants. Median family income was \$27 794, compared with \$35 225 for the United States and \$28 280 for North Carolina. Median family income of white families in the area was \$33 788; that of African American families was \$19 914.

Basic data on the youth population living in the area were obtained from the 4 county-wide public school districts' Schools Information Management Systems. Because about 99% of youth in this area were on the public school rolls, the Schools Information Management Systems provided the best information on age and home address. The 17 117 youth aged 9 to 17 years in the Schools Information Management Systems were sorted by households; the probability of selection was proportional to the total number of age-eligible children in the household. Within the selected age range, 1 youth was selected on an equiprobability basis to generate a total screening sample of 4500 youth. Each youth was then allocated to 1 of 15 cohorts, corresponding to the 15 months of projected data collection.

Parents completed a brief telephone questionnaire, on the basis of which a subsample of children was selected for intensive assessment. The goal was to increase the number of probable mental health service users in the sample, while retaining the capacity to generate population parameter estimates.^{19,20} We selected a parent-reported questionnaire because pilot testing showed that screening both parent and child increased refusals and incomplete data, without much improvement in case identification. The screening measure consisted of the "externalizing" items from the Child Behavior Checklist^{21,22} plus 7 items covering use of tobacco, cannabis, inhalants, etc, comprising 57 questions. The items tap the constructs included in the *DSM-IV*'s "disruptive behavior disorders": conduct, oppositional, and attentional problems and substance use. Previous studies²²⁻²⁴ showed that parental reports of externalizing problems best predicted most types of psychopathologic conditions, including anxiety and depression and service use. Other reasons for using this screen were that parents are poor reporters on children's anxiety and depression,²⁵⁻²⁸ and we knew from the GSMS that the screen was successful in identifying children with depressive or anxiety disorders.¹⁴ Previous studies^{21,23} have attested to the Child Behavior Checklist's reliability and ability to identify child mental health services users.

The telephone screens were administered by an experienced team of interviewers maintained by the Research Triangle Institute, Research Triangle Park, NC, using a computerized administration and response entry package. If telephone contact could not be made after 10 attempts, the family was referred for tracing and face-to-face screening by one of the field interviewers. Of the 4500 families selected, 3941 (87.6%) proved eligible for the study, and 3613 (91.7%) of these completed screens. Among the others, 559 (12.4% of 4500) had moved from the study area or had incorrect location or age data, 120 (2.7%) could not be located, and 208 (4.6%) refused the screen.

INTERVIEW PROCEDURES

The objective was to optimize the 2-stage design to provide the narrowest variance estimates and maximum statistical power from a sample of fixed size, determined by the available budget. In designing the sampling frame, we relied on theoretical work of Erkanli and colleagues,²⁹⁻³² which provides equations for determining the optimal sampling fractions from 2 or more strata generated by a screening design. Data from the GSMS and the first 4 months of the Caring for Children in the Community Study were used to generate measures of sensitivity and specificity.

In the first 4 months of the Caring for Children in the Community Study, the decision rule for second-stage selection was the same as for the GSMS; ie, 100% of those scoring 20 or higher on the screen and a 10% random sample of the rest were invited to participate in the interviews. Analyses of these data showed that the screen scores were almost identically distributed in the Caring for Children in the Community Study and the GSMS, and that the screen performed similarly in relation to the diagnostic interviews in the 2 studies.

In the second phase, separate sampling fractions were used for each screen decile. Sampling fractions were computed based on the sensitivity and specificity of the screen for the presence of a psychiatric diagnosis in each screen decile.²⁹⁻³² The final sampling fractions ranged from 19% of the lowest-scoring decile to 40% of the highest-scoring decile. After each screen was completed and scored by the computer program, it generated a random number for scores within each decile to determine whether that family would be asked to participate in the interview phase of the study. Of the 3613 families successfully screened, 1302 were selected to participate in the interview phase of the study. Of these, 920 (70.7%) completed interviews.

All field interviewers had at least bachelor's level degrees and received 1 month of initial training. After training, quality control was maintained through postinterview reviews of each schedule, weekly staff meetings to review randomly selected audiotapes of field interviews, and regular refresher sessions with clinical staff.

Participating parents and children met together with 2 interviewers, who reviewed the study and obtained informed consent from parents and assent from children. To ensure privacy, the parent and child were then interviewed separately in different rooms, usually in the family's home. Interviews were tape-recorded. Each parent and child was paid \$15 after the interview.

MEASURES

The Child and Adolescent Psychiatric Assessment (CAPA)^{33,34} is a psychiatric interview for children aged 9 years and older that elicits information about symptoms contributing to a range of *DSM-IV*,³⁵ *DSM-III-R*,³⁶ and *ICD-10*^{37,38} diagnoses. Like respondent-based interviews such as the Composite International Diagnostic Interview,³⁹ the CAPA uses a highly structured protocol with required questions and probes. However, as in interviewer-based interviews such as the Schedules for Clinical Assessment in Neuropsychiatry,⁴⁰ the onus throughout is on the interviewer to ensure that subjects (1) understand the question being asked, (2) provide clear information on behavior or feelings relevant to the symptom, and (3) have the symptom at a prespecified level of clinical severity as defined in a detailed glossary. A 3-month "primary period" is used rather than a longer period, because shorter recall periods are associated with more accurate recall.⁴¹ Diagnoses and symptom scales are generated by computer algorithms. Separate algorithms are available for child and parent reports and "combined reports," in which a symptom is regarded as being present if either the parent or child reports it. In this article, we report *DSM-IV* diagnoses based on combined reports. The functional impairment or incapacities section of the CAPA, which follows the section on symptoms, relates the symptoms to the child's ability to function at a developmentally appropriate level in relationships with family, peers, and teachers and in activities at school, home, and in the community.

A test-retest reliability study of the CAPA^{34,42} provided κ values ranging from 1.00 for substance abuse and dependence to 0.55 for conduct disorder (CD). The intraclass correlation for incapacities was 0.76. The construct validity of CAPA diagnoses is supported by a range of findings.⁴³

The Child and Adolescent Services Assessment⁴⁴ is an interview about use for mental health care of specialty mental health providers, pediatricians and other medical care providers, school counselors and psychologists, juvenile justice staff, social services staff, self-help groups, spiritual advisors, family, and friends. The assessment also asks about barriers to using services for mental health care (such as distance, lack of transportation, and stigma). The Child and Adolescent Services Assessment has high test-retest reliability ($\kappa > 0.80$) for the more intensive services, such as inpatient hospitalization, and good reliability ($\kappa > 0.60$) for less intensive services, such as outpatient and school services.⁴⁴

The parent or caregiver completed the Child and Adolescent Impact Assessment^{45,46} for each child, with any psychiatric symptoms identified by the interviewer. This measure asks whether the parent has experienced an economic burden from having a child with mental health problems, arising from extra costs or reduced ability to work, or any effect on family or other social relationships or perceived stigma, or personal psychological distress caused by the child's symptoms. The intraclass correlation from a 1-week test-retest reliability study was 0.67.⁴⁵

DATA ANALYSIS

Completed and coded interviews were checked by a supervisor for accuracy and electronically verified for internal consistency and completeness. Programs written in SAS (SAS Institute Inc, Cary, NC) created diagnoses and symptom scales. Prevalence estimates, 95% confidence intervals (CIs), and group comparisons were computed using the empirical option of the SAS program GENMOD, which provided appropriately weighted parameter estimates, SEs, and 2-tailed *P* values ($\alpha = .05$), corrected for the study's sampling design and the response rates in the different screening strata. All reported means, prevalences, and odds ratios (ORs) are, therefore, unbiased community estimates of those parameters.

The principal analytic technique was logistic regression, because most of the outcomes of interest were categorical (eg, diagnosis or use of services in a particular sector). For the analysis of mean scores from the screening questionnaire, Poisson regression was used, because the questionnaire data were highly skewed. The first set of analyses compared study participants with nonparticipants. The second set involved bivariate logistic regressions of the probability of diagnoses on sex and ethnicity, and the third set compared risk factors or correlates of service by sex and ethnicity. Finally, we developed a set of multivariable logistic models of mental health service use in 4 sectors: specialty mental health, general medical, schools, and child welfare. Too little mental health service provision in juvenile justice settings was reported to allow such an analysis for that sector. Age, sex, and ethnicity were forced into the models, and all 2-way and 3-way interactions were tested, but only the statistically significant ORs are reported.

RESULTS

DEMOGRAPHIC CHARACTERISTICS OF SCREENED AND INTERVIEWED SAMPLES

The screened sample ($N = 3613$) and sample selected for interview ($n = 1302$) did not differ on any available demographic characteristic (**Table 1**). African American youth had slightly higher mean \pm SD scores on the screen than white youth (15.2 ± 13.2 vs 14.1 ± 12.7 , $F = 6.5$, $P = .01$), and were slightly more likely to have scores of 20 or higher (28.5% vs 25.5%, $\chi^2 = 4.0$, $P = .047$). At the

Table 1. Characteristics of Screened Subjects, Participants, and Refusers*

Characteristic	All Screened (N = 3613)	Refusers (n = 382)	Participants (n = 920)	P Value†
Mean (SD) age at screen, y	12.8 (2.5)	12.8 (2.5)	12.6 (2.4)	.23
Male	50.0	51.8	52.7	.91
Ethnicity				<.001‡
White	44.4	50.5	38.0	
African American	53.8	47.9	59.7	
Other	1.8	1.6	2.3	
Mean (SD) screen score	14.7 (13.0)	16.3 (12.9)	21.0 (15.0)†	<.001
Rural	67.2	67.9	63.8	.16
≥2 Grades below age	1.8	2.6	2.5	.93
Used mental health services	5.3	6.6	8.4	.27

*Data are given as percentages unless otherwise indicated.

†Comparing participants with refusers.

‡Comparing white with African American.

interview stage, the refusers and participants were not significantly different in age distribution or in the proportions that were male, defined themselves as living in a rural area, were 2 or more grades behind for age, or reported using mental health services on the screen. Interviewed subjects had higher mean scores on the screen than refusers (21.0 vs 16.3); perhaps this group was more likely to see the study as potentially helpful. African Americans were more likely than white families to participate when invited (75.0% vs 64.5%, $P < .001$).

THREE-MONTH PREVALENCE OF PSYCHIATRIC DIAGNOSES

Table 2 gives the 3-month prevalence estimates and 95% CIs for DSM-IV diagnoses for the whole sample and separately by sex and ethnicity. A total of 21.1% of subjects had 1 or more DSM-IV diagnoses. Disruptive behavior disorders (attention-deficit/hyperactivity disorder, CD, or oppositional defiant disorder) were more common than affective or anxiety disorders. Among the specific diagnoses, the most common were CD (particularly childhood-onset CD), anxiety disorders (of which the most common was separation anxiety), and substance abuse or dependence. Among the depressive disorders, minor depression (defined as an experimental category by DSM-IV) was the most common. One third of patients with oppositional defiant disorder were comorbid with CD; excluding this group, the prevalence of pure oppositional defiant disorder was low. Among individuals with attention-deficit/hyperactivity disorder with onset before age 7, more were of the combined subtype than of the predominantly hyperactive and impulsive subtype or the purely inattentive subtype. Six percent of youth (29.8% of those with a disorder) had more than 1 diagnosis. Of these, 31.0% had an affective or anxiety disorder and a disruptive behavior disorder. There were too few individuals with obsessive-compulsive disorder, pica, hypomania or mania, anorexia, bulimia, schizophrenia, post-

Table 2. Three-Month Prevalence of *DSM-IV* Diagnoses*

Diagnosis	Total (N = 920)	White (n = 379)	African American (n = 541)	Female (n = 438)	Male (n = 482)
Attention-deficit/hyperactivity disorder					
Combined	1.3 (0.8-2.0)	1.7 (0.9-3.0)	0.9 (0.4-1.9)	0.4 (0.1-1.3)	2.1 (1.3-3.5)†
Predominantly inattentive	0.7 (0.4-1.3)	0.9 (0.4-2.0)	0.5 (0.2-1.3)	0.4 (0.2-1.1)	1.0 (0.5-2.1)
Predominantly hyperactive and impulsive	0.6 (0.3-1.1)	0.6 (0.2-1.4)	0.6 (0.3-1.4)	0.1 (<0.1-0.6)	1.1 (0.6-2.1)‡
Any type	2.6 (1.9-3.5)	3.2 (2.1-4.8)	2.1 (1.3-3.3)	0.9 (0.4-1.8)	4.3 (3.0-6.1)§
Conduct disorder (CD)					
Childhood onset	4.2 (2.9-5.8)	4.4 (2.8-6.9)	4.0 (2.4-6.6)	1.7 (0.8-3.4)	6.6 (4.5-9.7)§
Adolescent onset	1.3 (0.7-2.2)	1.2 (0.5-2.6)	1.4 (0.7-2.9)	1.2 (0.5-2.9)	1.3 (0.7-2.6)
Either type	5.4 (4.1-7.3)	5.6 (3.7-8.2)	5.3 (3.5-8.1)	2.9 (1.7-5.0)	8.0 (5.6-11.2)†
Oppositional defiant disorder					
Excluding those with CD	1.8 (1.1-3.0)	2.7 (1.4-5.1)	1.1 (0.5-2.3)	1.2 (0.6-2.8)	2.4 (1.3-4.6)
Including those with CD	2.9 (1.9-4.2)	4.2 (2.5-6.9)	1.7 (1.0-3.0)‡	2.0 (1.0-4.0)	3.7 (2.3-5.9)
Substance abuse and dependence					
Substance abuse	4.7 (3.3-6.8)	4.0 (2.4-6.6)	5.4 (3.3-8.7)	4.4 (2.6-7.4)	5.0 (3.0-8.2)
Depressive disorders					
Major depression	1.0 (0.5-1.8)	1.5 (0.7-3.1)	0.5 (0.2-1.5)	1.2 (0.5-2.8)	0.7 (0.3-1.6)
Dysthymia	0.3 (0.1-0.6)	0.3 (0.1-1.0)	0.2 (<0.1-0.9)	0.2 (<0.1-0.9)	0.3 (0.1-1.0)
Minor depression	1.7 (1.0-2.8)	2.8 (1.5-5.3)	0.7 (0.3-1.5)†	1.4 (0.7-2.7)	2.0 (0.9-4.1)
Any depressive disorder	2.9 (2.0-4.2)	4.6 (2.9-7.3)	1.4 (0.8-2.5)†	2.8 (1.7-4.6)	3.0 (1.7-5.1)
Anxiety disorders					
Generalized anxiety	1.3 (0.8-2.1)	1.7 (0.9-3.3)	0.9 (0.4-2.0)	1.3 (0.6-2.8)	1.2 (0.6-2.3)
Panic	1.2 (0.5-2.9)	1.4 (0.4-5.2)	0.9 (0.3-3.1)	2.1 (0.8-5.6)	0.2 (0.1-1.0)‡
Separation anxiety	3.0 (1.9-4.6)	4.1 (2.2-7.3)	2.0 (1.2-3.5)	3.4 (1.8-6.5)	2.5 (1.5-4.2)
Specific phobia	0.4 (0.2-1.1)	0.2 (<0.1-0.8)	0.6 (0.2-1.9)	0.8 (0.3-2.2)	0
Social phobia	1.4 (0.7-2.6)	1.1 (0.4-2.9)	1.6 (0.7-3.8)	1.6 (0.6-4.0)	1.1 (0.4-2.7)
Any of the above	5.7 (4.2-7.6)	6.7 (4.3-10.1)	4.8 (3.2-7.2)	7.1 (4.7-10.6)	4.2 (2.8-6.3)
Obsessive-compulsive	0.2 (0.1-0.8)	0.4 (0.1-1.8)	0.1 (<0.1-0.8)	0.4 (0.1-1.6)	0.1 (<0.1-0.8)
Agoraphobia	0.5 (0.2-1.1)	0.2 (<0.1-1.3)	0.7 (0.3-1.9)	0.6 (0.2-1.8)	0.3 (0.1-1.3)
Elimination disorders					
Functional enuresis	2.4 (1.6-3.5)	2.0 (1.0-3.6)	2.7 (1.7-4.4)	1.3 (0.6-2.6)	3.5 (2.2-5.4)‡
Functional encopresis	0.4 (0.2-0.9)	0.5 (0.2-1.5)	0.3 (0.1-1.1)	0	0.9 (0.4-1.9)
Aggregate categories					
Any disruptive behavior disorder	7.3 (5.7-9.3)	8.3 (5.9-11.6)	6.4 (4.4-9.3)	4.2 (2.6-6.5)	10.4 (7.7-14.0)
Any disruptive behavior or substance use diagnosis	12.5 (10.3-15.1)	12.9 (9.8-16.7)	12.2 (9.1-16.1)	7.9 (5.5-11.1)	17.1 (13.4-21.5)§
Any affective or anxiety diagnosis	7.8 (6.1-10.0)	10.0 (7.1-14.0)	5.9 (4.1-8.3)‡	9.0 (6.4-12.6)	6.6 (4.6-9.3)
≥1 <i>DSM-IV</i> diagnosis	21.1 (18.2-24.4)	21.9 (17.5-27.0)	20.5 (16.8-24.8)	18.2 (14.4-22.8)	24.1 (19.8-28.9)
>1 <i>DSM-IV</i> diagnosis	6.3 (4.9-8.1)	8.0 (5.6-11.1)	4.9 (3.4-7.0)	5.4 (3.5-8.2)	7.2 (5.3-9.8)

*Data are given as prevalence (95% confidence interval). Statistical comparisons are between boys and girls, and white and African American youth.

† $P < .01$.

‡ $P < .05$.

§ $P < .001$.

traumatic stress disorder, or Tourette disorder for CIs to be reliable.

EFFECTS OF ETHNICITY, SEX, AND AGE ON PREVALENCE OF *DSM-IV* DIAGNOSES

There was little ethnic difference in the prevalence of psychiatric disorder in general (Table 2). A significantly higher prevalence of depressive disorder (OR, 3.4; 95% CI, 1.6-7.4), oppositional defiant disorder (OR, 2.5; 95% CI, 1.1-5.5), and any affective or anxiety disorder (OR, 1.8; 95% CI, 1.0-3.0) was found in white youth.

Boys had more attention-deficit/hyperactivity disorder than girls (OR, 5.0; 95% CI, 2.0-11.3) and more disruptive behavior disorders, mainly childhood-onset CD (OR, 4.2; 95% CI, 1.8-9.7). However, rates of adolescent-onset CD were almost identical in boys and girls. Functional enuresis and encopresis were also more common in boys than in girls.

The effect of age on disorders varied among diagnoses, but the prevalence of any psychiatric disorder showed a U-shaped distribution, falling from 26.4% at age 9 to 16.8% at age 12, then rising to 31.2% by age 17. Through age 13, the prevalence of any psychiatric disorder was significantly higher in boys than in girls (OR, 2.1; 95% CI, 1.3-3.5), largely as a result of their higher levels of disruptive behavior disorders. From age 14 onward, there was no overall difference between the sexes (OR, 1.0; 95% CI, 0.5-1.7), largely because the prevalence of affective or anxiety disorders increased with age in girls. Substance abuse and dependence increased in both sexes. Age patterns were similar for both ethnic groups.

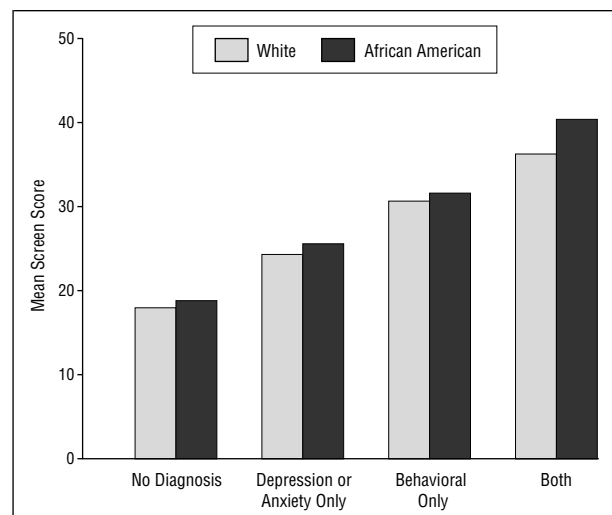
RELATIONSHIP BETWEEN SCREEN SCORE AND DIAGNOSIS BY ETHNICITY

Youth with any psychiatric diagnoses had mean \pm SD screen scores almost twice as high as those without

(23.4±14.9 vs 13.1±11.5, $z=8.61$, $P<.001$). Youth with a disruptive behavior disorder only had a somewhat but not significantly higher score than those with affective or anxiety disorders only (24.6±15.7 vs 19.8±12.6, $z=1.63$, $P=.10$). Although comorbid youth had the highest mean±SD screen score (30.3±18.2), it was not significantly different from that of youth with only disruptive behavior disorders ($z=0.91$, $P=.37$) or those with only anxiety or depression ($z=1.79$, $P=.07$). There were no ethnic differences in screen scores for youth with and without anxiety or depression, disruptive behavior disorder, or both (**Figure**). There was thus no evidence that the diagnostic rates of white or African American youth were differentially affected by response to the screen.

SERVICE USE BY SECTOR

Table 3 gives the 3-month prevalence of service use by sector. In the 3 months before the interview, 13.3% of the sample (including 36.0% of those with a DSM-IV study diagnosis) had used 1 or more professional service sectors for mental health care. The school system was the single most widespread provider of mental health services to children and adolescents in this area. The only



Mean screen scores of white and African American youth by DSM-IV diagnostic category.

service sector in which use of mental health care showed a strong effect of ethnicity or sex was the specialty mental health sector. White youth were twice as likely as African American youth to use such services (OR, 2.0; 95% CI, 1.1-3.5). The ethnic difference in specialty mental health service use was greater in boys (9.0% vs 4.4%; OR, 2.2; 95% CI, 1.1-4.5) than in girls (3.2% vs 2.2%; OR, 1.5; 95% CI, 0.5-4.4).

FACILITATORS AND BARRIERS TO MENTAL HEALTH CARE

Table 4 gives the distribution of key variables selected for their potential to affect service use for the whole sample and by ethnicity and sex. Almost half of African American children came from families living below the federal poverty line, compared with 16.0% of white children. Poverty was reflected in the ethnic difference in private health insurance coverage: most white youth, but only half of African American youth, had some private health insurance. On the other hand, one third of African American youth, compared with 1 in 5 white youth, had some form of public health insurance (mainly Medicaid). As a result, the difference in proportions not covered by any health insurance was small.

Table 5 gives the final results of a series of logistic regression analyses of service use by sector, using the combined set of correlates and their 2-way and 3-way interactions. Only the variables that remained significant in at least one of the models are included there.

The strongest correlate of access to specialty mental health care was the impact of the child's problems on the family, especially on the family's income, as reported by the parent. Having a DSM-IV disorder did not increase the chance of specialty mental health care once impairment and parental impact were entered into the model. In African American and white children, the presence of parental impact made a dramatic difference in the probability of receiving care. Medicaid coverage increased specialty mental health service use, but private insurance did not. (The increased likelihood of access with Medicaid compared with no insurance approached significance: $z=1.8$, $P=.07$.)

The general medical care sector was more often used by younger children, children with a DSM-IV disorder, and those whose parents reported experiencing psycho-

Table 3. Use of Services for Mental Health Care in the Past 3 Months*

Sector	Total (N = 920)	White (n = 379)	African American (n = 541)	Female (n = 438)	Male (n = 482)
Specialty mental health	4.6 (3.5-6.0)	6.1 (4.2-8.8)	3.2 (2.1-4.9)†	2.6 (1.5-4.5)	6.6 (4.7-9.1)‡
General medical	2.0 (1.4-3.0)	2.8 (1.6-4.7)	1.4 (0.8-2.5)	1.7 (0.8-3.4)	2.4 (1.5-3.8)
School system	8.9 (7.2-11.0)	8.6 (6.0-12.1)	9.2 (7.0-11.9)	8.6 (6.1-12.0)	9.2 (7.0-12.1)
Juvenile justice	0.6 (0.3-1.1)	0.6 (0.2-1.6)	0.6 (0.2-1.4)	0.3 (0.1-1.2)	0.9 (0.5-1.8)
Child welfare	0.8 (0.4-1.5)	0.4 (0.1-1.2)	1.1 (0.5-2.4)	0.8 (0.3-2.3)	0.7 (0.3-1.6)
Any	13.3 (11.2-15.7)	13.7 (10.5-17.7)	12.9 (10.3-16.0)	11.6 (8.7-15.1)	15.0 (12.0-18.5)

*Data are given as prevalence (95% confidence interval). Statistical comparisons are between boys and girls, and white and African American youth.

† $P<.05$.

‡ $P<.01$.

Table 4. Risk Factors and Correlates of Mental Health Service Use*

Variable	Total (N = 920)	White (n = 379)	African American (n = 541)	Female (n = 438)	Male (n = 482)
With current <i>DSM-IV</i> diagnosis	21.1 (18.2-24.4)	21.9 (17.5-27.0)	20.5 (16.8-24.8)	18.2 (14.4-22.8)	24.1 (19.8-28.9)
Resources					
In poverty	33.0 (29.0-37.3)	16.0 (11.6-21.7)	48.1 (42.5-53.8)†	31.2 (26.2-36.8)	34.8 (28.8-41.5)
Public health insurance	26.5 (23.2-30.1)	17.4 (13.2-22.6)	34.4 (29.7-39.3)†	24.3 (20.2-28.9)	28.7 (23.6-34.4)
Private health insurance	63.9 (59.9-67.7)	75.2 (69.4-80.3)	54.1 (48.8-59.3)	65.4 (60.1-70.4)	62.4 (56.3-68.1)
No insurance	9.6 (7.4-12.4)	7.3 (4.8-11.2)	11.6 (8.4-15.8)	10.3 (7.3-14.4)	8.9 (6.1-13.0)
With ≥3 barriers	18.0 (15.2-21.2)	17.4 (13.3-22.3)	18.6 (15.0-22.8)	18.5 (14.5-23.2)	17.6 (13.9-22.0)
Impaired functioning	37.7 (33.8-41.7)	35.3 (29.3-41.7)	39.8 (34.8-44.9)	33.7 (28.6-39.2)	41.6 (35.7-47.8)
Effect of symptoms					
Economic	2.6 (1.8-3.8)	3.6 (2.3-5.7)	1.8 (1.0-3.2)	1.3 (0.7-2.6)	4.0 (2.6-6.1)‡
Social	9.3 (7.6-11.4)	9.1 (6.7-12.1)	9.6 (7.2-12.6)	8.2 (5.9-11.3)	10.4 (8.0-13.5)
Psychological	27.2 (23.8-30.9)	29.5 (24.2-35.4)	25.3 (21.1-30.1)	23.8 (19.3-29.0)	30.9 (25.9-36.3)
≥2	13.9 (11.6-16.6)	15.0 (11.6-19.3)	12.9 (10.0-16.5)	11.7 (8.8-15.5)	16.1 (12.7-20.1)

*Data are given as prevalence (95% confidence interval). Statistical comparisons are between boys and girls, and white and African American youth.

† $P < .001$.

‡ $P < .01$.

Table 5. Risk Factors and Correlates of Service Sector Use for Children's Mental Health Problems*

Variable	Specialty Mental Health	General Medical	School System	Child Welfare
Age	NA	0.8 (0.7-1.0) $z = -2.46, P = .01$	NA	0.8 (0.7-0.9) $z = -3.28, P = .001$
Private insurance vs public (1 = public)	2.9 (1.3-6.4) $z = 2.59, P = .01$	NA	NA	NA
Psychiatric disorder	NA	3.1 (1.2-8.4) $z = 2.26, P = .02$	3.9 (1.9-8.0) $z = 3.68, P < .001$	5.5 (1.3-23.8) $z = 2.27, P = .02$
Impairment	3.4 (1.1-10.6) $z = 2.15, P = .03$	NA	2.4 (1.0-5.5) $z = 1.97, P = .049$	NA
Perceived barriers	NA	NA	2.3 (1.2-4.7) $z = 2.35, P = .02$	NA
Effect of symptoms				
Economic	8.9 (3.0-26.5) $z = 3.93, P < .001$	NA	NA	NA
Social	3.1 (1.1-8.9) $z = 2.14, P = .03$	NA	NA	NA
Psychological	3.2 (1.1-9.5) $z = 2.15, P = .03$	4.6 (1.6-13.1) $z = 2.87, P = .004$	2.4 (1.2-5.2) $z = 2.33, P = .02$	NA

*Data are given as odds ratio (95% confidence interval), z score, and P value for the final model in each sector. NA indicates not applicable. Ethnicity, sex, and age were forced into each model. Each prediction variable used in the model has 1 *df*. Error degrees of freedom for each model equal 720 minus the number of predictors in the model.

logical problems because of the child's symptoms. Ethnicity, functional impairment, and availability of health insurance did not affect the likelihood of using primary medical care as a resource.

In the case of school mental health services, psychiatric diagnosis increased the likelihood of service use. School services were used by children with functional impairment, barriers to care, and those whose parents were experiencing a psychological burden caused by the child's problems. African American and white youth were equally likely to receive treatment provided by school mental health services.

The mental health services provided through child welfare went mainly to younger children with psychiatric diagnoses, from both ethnic groups.

COMMENT

The prevalence of *DSM-IV* disorders was similar to estimates from other studies^{1,2,47-56} using a range of *DSM* and *ICD* taxonomies and assessment tools, including the GSMS.¹⁴ The study's 2-stage design, with samples for interview drawn with different probability from different strata of screen scores, produced rates of disorders comparable to those found using both single-stage⁵¹⁻⁵³ and multistage^{14,54-56} designs.

Few studies, however, provide information that permits a comparison of the prevalence of psychiatric disorders for white and African American youth. A recent review⁵⁷ of 9 studies of serious emotional disturbance (psychiatric diagnosis accompanied by significant

functional impairment) showed only small, statistically nonsignificant differences by ethnicity, and other studies^{1-3,58-60} found only minor disparities when other risk factors, especially poverty and inner-city residence, are controlled for. This finding goes back to pioneering work by Lapouse and Monk⁶¹ in which ethnicity alone was associated with small differences on a scale score of behavior problems reported by mothers. The present study is, to our knowledge, the first to provide a full range of *DSM-IV* diagnoses in a large population-based sample of rural African American youth for whom a direct comparison with a white sample is possible.

Despite the widely held belief that CD is more prevalent in African American youth,⁶⁰ we found no such result in our study. In a recent review, Robins⁶² pointed out that the only community-based study to show higher rates of CD in African American children is the 1975 study by Rutter et al⁶³ of children aged 10 to 11 living in central London, which found that the higher prevalence of psychiatric problems in West Indian immigrant children was accounted for by the higher level of stress under which they were living.⁶⁴ In a recent meta-analysis of predictors of serious and violent adolescent offending, Lipsey and Derzon⁶⁵ found that ethnicity fell to a "third-rank" predictor for children aged 6 to 11 and a "fifth-rank" predictor for those aged 12 to 14, carrying much less weight than sex, aggression, family and peer environment, and history. In the adult population, the National Comorbidity Survey found the lifetime prevalence of any psychiatric disorder in African Americans to be half that of whites, while the 12-month prevalence was 30% lower.^{66,67} The difference was most marked in the case of affective and substance abuse disorders. The Epidemiologic Catchment Area multisite investigation of adult populations⁶⁸ found a modestly higher lifetime and active prevalence of psychiatric disorder in African American than white participants, but the difference was restricted to the older (>45 years) segment of the sample and to cognitive impairment and somatization disorders. There were no ethnic differences in self-reports of childhood disruptive behavior symptoms.⁶⁹

Epidemiologic studies^{15,70-73} of rural youth in North America are rare but consistent in finding rates of psychiatric disorder that mirror those of suburban and urban children, once income is controlled for. (The relationship between inner-city residence and criminal behavior appears to be a separate issue.^{65,74}) In the adult population, the Epidemiologic Catchment Area study¹⁸ and National Comorbidity Study⁶⁶ also found no dramatic differences in rates of disorder between urban and rural participants. On the other hand, it is possible that rural residence was a barrier to care, as has been reported for the United States,⁷⁵ although not for Canada.⁷⁰

Like other recent studies^{3,76,77} in the United States, this study identifies a large gap between mental health service use and need for services, whether identified by psychiatric disorder, functional impairment, or both. Only 1 youth in 3 with a current psychiatric disorder had received any mental health care from any professional during the past 3 months, and only 14.6% of those with a disorder had seen a mental health care specialist. It is also

disconcerting to document once again^{3-5,78} that the gap between need and specialty mental health services is exacerbated in ethnic minorities. However, the present study demonstrates that, in analyses including insurance status, ethnicity, and income, Medicaid coverage gave youth of both ethnic groups greater access to specialty mental health care.

Barriers to accessing service use were commonly reported by both ethnic groups. Unfortunately, the number of barriers reported increased with the need for care. This finding of earlier research^{79,80} is replicated in this study; exposure to the mental health care system tends to increase, rather than decrease, patients' awareness of the problems involved in gaining access to needed care. The strongest facilitator of service use for children with treatment needs was also common to both ethnic groups, namely, the impact of the child's psychiatric problems and functional impairment on parents' lives, whether through economic or psychological strain or by disruption of relationships with family and friends. Children, unlike adults, can rarely obtain care by their own efforts; they rely on parents to make appointments, transport them, and pay for treatment.⁸¹ The role of parental concerns in children's access to care deserves more attention.

The prevalence of psychiatric disorders in this community and the rates and correlates of service use bore striking similarity to those found in the GSMS, a study of a rural community some 480 km away. Also striking was the finding in both studies that minority youth had equal access to mental health services provided by the school system (the biggest provider of mental health services in both areas), although they were only half as likely as white youth to use specialty mental health services. This suggests that system disparities in mental health care delivery can be overcome.

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