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# Disparities in Receipt of Specialty Services Among Children With Mental Health Need Enrolled in the CMHI

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**Objective:** The study assessed racial-ethnic differences in receipt of mental health services among children enrolled in systems of care under the Children's Mental Health Initiative (CMHI).

**Methods:** Survey data for 3,920 CMHI enrollees were used to estimate the association between race-ethnicity and the number of days in the 12 months postenrollment during which the child received individual psychotherapy, family and group psychotherapy, medication monitoring, assessment and evaluation, case management, residential treatment, and inpatient care. Two-part regressions with fixed site effects were estimated to adjust for geography and baseline population differences, including child and caregiver characteristics.

**Results:** Compared with white non-Latino children, African Americans had lower odds of using any individual psychotherapy (odds ratio [OR]=.73,  $p=.019$ ), family and group psychotherapy (OR=.79,  $p=.043$ ), and medication monitoring (OR=.51,  $p<.001$ ); among users of each service, African

Americans had lower utilization of individual psychotherapy (incidence rate ratio [IRR]=.79,  $p<.001$ ), family and group psychotherapy (IRR=.86,  $p=.011$ ), and inpatient care (IRR=.75,  $p=.026$ ). Latino children had lower odds of receiving medication monitoring (OR=.70,  $p=.007$ ) and assessment and evaluation services (OR=.75,  $p=.027$ ); among users, Latinos had lower utilization of individual (IRR=.91,  $p=.044$ ) and family and group (IRR=.88,  $p=.044$ ) psychotherapy. Pacific Islanders who received medication monitoring used services at a lower rate (IRR=.60,  $p=.009$ ) than white children. No other associations with race-ethnicity were significant.

**Conclusions:** Racial-ethnic disparities in children's mental health treatment persist within systems of care. Further work is necessary to understand the role of individual program components, their interactions with community characteristics, and how they might affect mental health services use.

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Despite advances in effective treatments for mental disorders, children's mental health remains a public health emergency (1). An estimated 15%–20% of U.S. children meet diagnostic criteria for a mental disorder (2,3), and half of these children experience significant functional impairment (1). Yet only a small proportion of children who need mental health services receive them (3–7).

Research has shown that children from minority groups suffer disproportionately from differential access to mental health services (7–11). For example, compared with white non-Latino children, Latino children are only one-third as likely to receive mental health services and Asian, Pacific Islander, and African-American children are only one-half as likely (7,12–14). Moreover, children from minority groups are more likely than white non-Latino children to receive inadequate mental health treatment (12,14). In turn, disparities in mental health have lifelong consequences in regard to racial disparities, including education failure and justice involvement (15–17).

In response to the increasing awareness regarding gaps in the provision of children's mental health services, starting in 1993 the federal government launched the largest children's mental health program to date, the Comprehensive Community Mental Health Services for Children and Their Families Program (18), also known as the Children's Mental Health Initiative (CMHI).

The CMHI's primary goal is to develop systems of care for children with serious mental health problems that are tailored to the child's needs, family driven, community based, integrated across agencies and providers, easily accessible, and culturally competent (19). Since its inception, the CMHI has funded 173 sites, including entire states, counties, neighborhoods, and tribal organizations. Funded sites provide a wide array of services, including diagnosis and evaluation; case management; individual, family, and group psychotherapy; medication monitoring; consultations with mental health specialists; and a variety of residential care programs. Each site has a tailored approach to developing services for the specific

needs of its population. A number of state-specific and local strategies have been described in detail elsewhere (20,21).

Children with serious emotional disturbances are referred to systems of care from multiple sources, including families, schools, welfare and justice systems, and physicians. An ongoing program evaluation, which has been collecting data for participating children since 1994, makes the CMHI the largest data source on children's use of mental health services in the United States.

The main objective of this study was to examine whether patterns of mental health service utilization for children in the CMHI differ between racial-ethnic groups after adjustment for site-of-care and population characteristics. Several studies have shown that systems of care are effective in improving multiple child-level outcomes, including behavioral and emotional symptoms, school performance, and involvement with the justice system (22). Research also shows that CMHI reaches relatively large proportions of children from minority groups compared with services available to the general population (23). If the program successfully reaches minority groups, then racial-ethnic differences in the utilization of children's mental health services within sites may be significantly reduced across the communities served.

## METHODS

### Data Sources and Study Sample

To date, the CMHI program has collected intake data on six cohorts of participating children (corresponding to distinct funding phases), with the cohort defined by the year funding began for the site. In addition, extensive follow-up data are also collected at six-month intervals for a subsample of these children—the sample for the longitudinal outcomes study. Enrollment in the outcomes study was variable; smaller sites recruited all willing families, whereas larger sites could opt for sampling strategies. The mix of strategies ensured adequate numbers of participating children at all sites. All information was obtained through in-person interviews with each child and his or her primary caregiver.

We used data from phases 4 (years 2002–2004) and 5 (years 2005–2006) of the CMHI. Because data collection quality improved over time, earlier phases could not be combined. We used baseline and follow-up data collected at six and 12 months for children ages 2–18 enrolled in the longitudinal outcomes study (N=8,848). We excluded children with missing data on age (N=179) and children who did not have 12 months of follow-up data because they were recruited too late (N=952) or because they were missing follow-up surveys (N=3,797). The final sample consisted of 3,920 children, including 2,228 children at 26 phase 4 sites and 1,692 children at 29 phase 5 sites. In bivariate comparisons, baseline characteristics of the children retained versus those excluded from the sample were for the most part similar. However, the final sample had a larger proportion of African Americans (27% versus 24%), a smaller proportion of Latinos (18% versus 21%), a larger proportion of children ages 6–13 (52% versus 46%), a smaller proportion of

children ages 14–18 (34% versus 41%), a larger proportion of caregivers with depression (41% versus 38%), and a larger proportion of caregivers who had at least a high school education (45% versus 42%). The final sample also had slightly worse scores on the behavioral checklist used in the study (1.31 and 1.41 points higher than the excluded children on the internalizing and externalizing behavioral scales, respectively). These differences were not considered clinically significant.

### Study Variables

The main study outcomes were the total number of days over the 12 months after enrollment during which the child received services in each of the following categories: individual psychotherapy, family and group psychotherapy, medication monitoring, assessment and evaluation, case management, residential, and inpatient.

Children's race-ethnicity was categorized on the basis of caregiver report as white (non-Latino), African American, Latino, Native American, Asian, Pacific Islander, and multi-racial. Other child-level predictors of service use were gender, age group (2–5, 6–10, 11–13, and 14–18), living situation (at home with parents or relatives, with nonrelatives, in foster care, or not living at home at any time during the 12 months), and insurance coverage (public, private, both public and private, and no insurance). The child's behavioral problems were measured by the internalizing and externalizing scales of the Child Behavior Checklist (CBCL) (24).

The models also adjusted for caregiver-level predictors, including depression, other mental health problems, household income, number of children in the household, and education (less than high school, high school completed, and at least some college).

### Analyses

Unadjusted racial-ethnic differences in utilization could be attributable to differences in site, child, or caregiver characteristics. To address the clustering of children within sites, we considered several options, including generalized estimating equations, multilevel models, random-effects models (a special case of multilevel models), and fixed-effects models (25). [A detailed discussion of the strengths and limitations of each model is included in an online supplement to this article.] Our choice of fixed-effects models was based on several considerations, including a focus on the main effects of race-ethnicity, rather than on profiling of sites, and limited sample sizes by race-ethnicity at the site level. Most important, we considered the biggest threat to the validity of our findings to be potential confounding of the child's race with unobserved site-level heterogeneity. For example, children from minority groups might be more likely to live in areas with a more limited provider supply or worse quality of care (both unobserved). In this case, fixed-effects models would still yield unbiased estimates of the effects of race-ethnicity, because they allow for correlation between observable individual characteristics and site-level heterogeneity (26,27). Other models might not. Therefore, the race-ethnicity effect could

**TABLE 1. Characteristics of 3,920 children enrolled in the CMHI and their caregivers<sup>a</sup>**

Characteristic (missing data)	N	%
<b>Child</b>		
CBCL (M±SD score) <sup>b</sup>		
Externalizing (2.3%)	65.7±9.9	
Internalizing (2.2%)	70.0±9.9	
Race (.54%)		
White non-Latino	1,653	42
African American	1,065	27
Latino	699	18
Native American	132	3
Asian	35	1
Pacific Islander	85	2
Multiracial	230	6
Age group		
2–5	543	14
6–10	1,056	27
11–13	996	25
14–18	1,325	34
Gender		
Male	2,577	66
Female	1,343	34
Living situation (5.2%)		
At home with 2 parents	1,536	41
At home with 1 parent	1,475	40
At home with other relatives	349	9
At home with foster parents	51	1
At home with none of above	43	1
Not living at home any time during past year	264	7
<b>Caregiver</b>		
Mental illness		
Depression (2.6%)	1,549	41
Other psychiatric diagnosis (2.8%)	551	14
Substance abuse (2.6%)	284	7
Household income (4.9%)		
<\$5,000	531	14
\$5,000–\$9,999	530	14
\$10,000–\$14,999	563	15
\$15,000–\$19,999	384	10
\$20,000–\$24,999	406	11
\$25,000–\$34,999	497	13
\$35,000–\$49,999	379	10
\$50,000–\$74,999	297	8
≥\$75,000	143	4
N of children in household (3.0%)		
0 or 1	965	25
2	1,191	31
3	827	22
4	479	13
5	180	5
≥6	160	4
Education (2.6%)		
Did not complete high school	870	23
High school diploma or GED	1,216	32
At least some college	1,731	45
Insurance		
Public only	2,486	63
Private only	768	20
Both public and private	216	6
None	450	11

<sup>a</sup> Data are for children ages 2–18 from phase 4 (years 2002–2004) and phase 5 (years 2005–2006) of the Children's Mental Health Initiative.

<sup>b</sup> Child Behavior Checklist. Standardized scores range from 50 to 100; scores greater than 63 are in the clinical range.

pick up not only differences in children's experience at a given location but also the effect of being in a location with worse access and quality. Given that our primary concern was to avoid confounding by unmeasured site characteristics, fixed-effects models appeared to be the most conservative choice.

Because our utilization outcomes were variables with large numbers of zero values and skewed conditional distributions, we employed two-part regression models (28) to evaluate the associations of each outcome with race-ethnicity. We first estimated conditional fixed-effects logistic regressions to predict the probability of any use of the service type being examined. Estimates reported from these regressions are (adjusted) odds ratios (ORs), standard errors, and p values. The OR associated with each race-ethnicity group reflects the odds of any use of the service among that group compared with white non-Latino children.

We then estimated conditional fixed-effects negative binomial models for the number of days the service was used among the subset of children who used that type of service. Estimates reported from these models are incidence rate ratios (IRRs), standard errors, and p values. IRRs reflect the relative rate of use among each racial-ethnic group compared with white non-Latino children; for example, if African-American children had an IRR of .7, it means that they received only .7 times the number of service days per year that the white children did.

In initial analyses, regression coefficients from multiply imputed data and complete-case data were similar. Therefore, only the complete-case results are presented. For brevity, tables show estimates for individual psychotherapy, family and group psychotherapy, and medication monitoring; results for other outcomes are summarized in the text.

All analyses were performed with Stata MP 12.1. Prior to conducting analyses, we obtained institutional review board approval and a waiver of consent from the University of California, Los Angeles.

## RESULTS

### Sample Characteristics

Sample characteristics are summarized in Table 1. Mean CBCL scores were 65.7 for externalizing behaviors and 70.0 for internalizing behaviors; scores above 63 are in the clinical range. The most common race-ethnicity was white non-Latino, followed by African American and Latino. Roughly two-thirds of the children were boys. Most children resided in their own homes with parents or other relatives.

More than half of caregivers reported household incomes of less than \$20,000 per year; less than 5% reported household incomes over \$75,000 per year. Forty-five percent of caregivers reported having attended or graduated from college. Most children had insurance coverage, predominantly public.

### Service Use Patterns

Table 2 provides descriptive information on utilization patterns by service type, including the proportion of the sample using each type of service and, among those using it, the mean

and standard deviation of the number of days on which the service was used. Most children used individual psychotherapy, assessment and evaluation, and case management services. Roughly half used medication monitoring and family or group psychotherapy services. Residential and inpatient care were less frequently used. Among users, the average number of days of service use varied widely.

### Adjusted Differences by Race-Ethnicity

Table 3 shows the regression-adjusted ORs and IRRs associated with each racial-ethnic group. For any use of services, African-American children had significantly lower odds than white non-Latino children of using individual psychotherapy (OR=.73,  $p=.019$ ), family and group psychotherapy (OR=.79,  $p=.043$ ), and psychotropic medication monitoring (OR=.51,  $p<.001$ ). Latino children also had lower odds of receiving medication monitoring (OR=.70,  $p=.007$ ) and assessment and evaluation services (OR=.75,  $p=.027$ ; results not shown). No other significant associations were found of race-ethnicity with the probability of any specific service use.

In the negative binomial regressions of the number of days on which services were used (Table 3), among children who received individual psychotherapy, African-American and Latino children had lower rates of utilization than white non-Latino children. For African Americans, IRRs were .79 ( $p<.001$ ) for individual psychotherapy and .86 ( $p=.011$ ) for family and group psychotherapy. For Latinos, IRRs were .91 ( $p=.044$ ) for individual psychotherapy and .88 ( $p=.044$ ) for family and group psychotherapy. Among children receiving medication monitoring, the only minority group for which a difference was found in service use rate was Pacific Islanders, for whom the IRR was .60 ( $p=.009$ ). Finally, among children who were hospitalized (data not shown), African-American children had only three-quarters as many inpatient days per year as white non-Latino children (IRR=.75,  $p=.026$ ). Associations of racial-ethnic group with all other outcomes (assessment and evaluation, case management, and residential treatment) were not significant.

## DISCUSSION

Improving access to behavioral health care with culturally competent providers for children with serious mental health needs are primary goals of the CMHI. Because of these goals, we had conjectured that racial-ethnic differences in mental health services utilization among participating children might be only modest, at least after analyses adjusted for other confounding population characteristics that were not directly targeted by the program, such as insurance coverage and site of care.

Instead, our study found varying degrees of association between race-ethnicity and utilization of an array of mental health services, especially for African-American and Latino children. For example, African-American children were less likely to receive all forms of psychotherapy, and those who received psychotherapy used services at a lower rate than white non-Latino children. In addition, Latino children who

**TABLE 2. Service use among children enrolled in the CMHI<sup>a</sup>**

Service type	Any use		N days of service use	
	N	%	M	SD
Individual psychotherapy	2,740	73	30	29
Family and group psychotherapy	1,864	49	33	44
Medication monitoring	1,923	50	16	39
Assessment and evaluation	2,381	63	8	24
Case management	2,569	69	29	41
Residential treatment	744	19	120	120
Inpatient hospitalization	432	11	23	37

<sup>a</sup> Data are for children ages 2–18 from phase 4 (years 2002–2004) and phase 5 (years 2005–2006) of the Children's Mental Health Initiative. Days of service use are among users only.

were users of psychotherapy received this service at a significantly lower rate than white children. Other racial-ethnic differences were also found.

Prior research has shown large racial and ethnic differences in the use of children's mental health services in various communities. Kataoka and colleagues (7) analyzed nationally representative data and found that both black and Hispanic youths had lower rates of mental health service use than their non-Hispanic white counterparts. Regional studies have also shown significant racial-ethnic differences in receipt of mental health services for African-American (10,29), Latino (29), Asian (10), and Pacific Islander (10) children, compared with non-Hispanic white children, after the analyses accounted for potential confounders, such as psychiatric diagnosis, caregiver strain, and socioeconomic status.

Our study found more modest racial-ethnic differences in the use of specific children's mental health services within the framework of the CMHI systems of care. These racial-ethnic differences in service use could be attributable to any number of causes, not all of which can be addressed by CMHI's resources. For example, members of minority communities have been shown to have higher levels of mistrust of the health care system (30) and may harbor particular cultural beliefs about and attitudes toward specific services (31). The CMHI data cannot tell us how many children were referred to mental health services through systems of care but eventually refused services. Thus the racial-ethnic differences observed for some services, such as individual psychotherapy, are likely multifactorial and probably related to both differences in rates of acceptance of services and decreased access to services within sites. In that sense, other research has shown that within the CMHI, enacting cultural and linguistic competence—one of the program's core goals—is a persistent challenge and that some sites may have inadequate levels of culturally representative staff and service options, may make insufficient effort to reach out, and may have trouble providing services in languages needed by minority groups (32).

The sample size did not allow us to test for potential interactions between race-ethnicity and site of care. Although other approaches to handling patient clustering within sites (such as random-effects models) might have allowed for interaction terms, we chose fixed-effects models because of

**TABLE 3. Variables as predictors of any service use and level of use among children enrolled in the CMHI, by race-ethnicity<sup>a</sup>**

Service and group <sup>b</sup>	Any use			N days on which service was used		
	OR	SE	p	IRR	SE	p
Individual psychotherapy						
Native American	.87	.34	.732	.84	.09	.115
Asian	1.06	.56	.908	.89	.19	.586
African American	.73	.10	.019	.79	.03	<.001
Pacific Islander	1.74	.84	.252	.78	.14	.152
Latino	.94	.14	.669	.91	.04	.044
Multiracial	1.23	.26	.327	.95	.06	.430
Family and group psychotherapy						
Native American	1.00	.34	.993	.98	.13	.902
Asian	1.54	.78	.389	.94	.27	.825
African American	.79	.09	.043	.86	.05	.011
Pacific Islander	2.01	1.01	.163	.68	.16	.089
Latino	.96	.12	.747	.88	.06	.044
Multiracial	1.30	.23	.138	1.01	.08	.882
Medication monitoring						
Native American	1.02	.40	.951	1.11	.20	.553
Asian	1.37	.68	.526	.63	.18	.103
African American	.51	.06	<.001	.98	.06	.790
Pacific Islander	1.90	.92	.185	.60	.12	.009
Latino	.70	.09	.007	.99	.07	.866
Multiracial	.93	.17	.685	1.04	.09	.609

<sup>a</sup> Data are for children ages 2–18 from phase 4 (years 2002–2004) and phase 5 (years 2005–2006) of the Children's Mental Health Initiative. Incidence rate ratios (IRRs) for days of service use are among users only. Models adjusted for fixed site effects and for child and caregiver characteristics.

<sup>b</sup> Reference group is white non-Latino children.

their ability to effectively control for bias resulting from confounding, a serious concern given the likelihood of unobservable site heterogeneity.

Several study limitations merit further discussion. First, a significant percentage of the children enrolled in the longitudinal outcomes study had missing follow-up survey data and were thus excluded from the final sample. However, in analyses comparing the characteristics of included children with the entire sample of the outcomes study, differences were small and unlikely to influence results. Second, utilization data were obtained from caregiver report. Although the six-month reporting window should have minimized recall bias, it is possible that perceived stigma led to underreporting, particularly among members of minority groups. Third, sample sizes for the Asian and Pacific Islander populations were small and concentrated in certain sites. However, as fixed-effects analyses hold the site of care constant (by using only the variation among children in the same site for estimation), the concentration of racial-ethnic groups in certain sites should not have biased the estimated associations. On the contrary, fixed-effects models are less statistically efficient than models that exploit the variation both across sites and within sites. Thus our findings may be overly conservative (that is, we may not have been able to detect all existing racial-ethnic differences if the variation within sites was limited). Finally, the study did not capture longitudinal changes in the magnitude of racial-ethnic differences in mental health service use. Other research has shown ongoing progress in

reducing disparities, as sites tend to improve service delivery over time (33).

The interpretation of our findings also bears some discussion. Although differences in utilization patterns for specific services (for example, medication monitoring) appeared to favor white non-Latino children (more days of service), without knowing what services were appropriate, we cannot say definitively whether the children from minority groups were underutilizing services or the white children were overutilizing them. For example, the finding that African-American children had fewer days of inpatient services use is actually in line with the CMHI goals to offer services in the least restrictive environment and could signify that white caregivers may have been more accepting of removing the child from home and using hospital services.

However, some differences in service use are less likely to be explained only by potential overuse by white non-Latino children. Racial and ethnic differences in the use of certain services, such as psychotherapy, which has been shown to be widely beneficial (34), should be closely examined for evidence of possible underuse by children from minority groups and for reasons underlying this utilization pattern (for example, differences in cultural preferences or differences in access to services).

Despite the disparities described above, racial and ethnic differences in children's mental health service use observed in the CMHI were more modest than those observed in the population at large. Although the CMHI was not specifically designed to reduce disparities, prior research has shown that the program successfully recruits children from minority groups living in areas of high social disadvantage (23). Further, the CMHI has been shown to improve other outcomes, such as juvenile delinquency, for youths in disadvantaged communities (35). Given its community-tailored approach, the CMHI is well positioned to improve access to mental health services among children from minority groups, and our findings attest to its potential to reduce mental health disparities.

## CONCLUSIONS

This study sheds an important light on the ability of systems of care to address treatment differences among disadvantaged youths. Although the study found promising results in

terms of reduced disparities in use of mental health services within the CMHI communities under study, it remains unknown whether the knowledge gained from implementing systems of care can be translated into similar utilization patterns in the population at large. Further research is necessary to gain in-depth understanding of the role of specific program components, their interactions with local community characteristics, and the pathways by which program components affect racial-ethnic differences in mental health services utilization.

#### AUTHOR AND ARTICLE INFORMATION

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## Short Descriptions of Novel Programs Invited

Psychiatric Services invites contributions for Frontline Reports, a column featuring short descriptions of novel approaches to mental health problems or creative applications of established concepts in different settings.

Text should be 350 to 750 words. A maximum of three authors, including the contact person, can be listed; one author is preferred. References, tables, and figures are not used. Any statements about program effectiveness must be accompanied by supporting data within text.

Material to be considered for Frontline Reports should be sent to one of the column editors: Francine Cournos, M.D., New York State Psychiatric Institute (e-mail: fc15@columbia.edu), or Stephen M. Goldfinger, M.D., Department of Psychiatry, SUNY Downstate Medical Center (e-mail: smgoldfingermd@aol.com).