Regular Article

The Potential to Reduce Mental Health Disparities Through the Comprehensive Community Mental Health Services for Children and Their Families Program

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Abstract

Few service systems are currently in place with the explicit purpose to reduce youth mental health disparities across socioeconomic status and race–ethnicity, despite substantial interest by the federal government and other institutions to redress health disparities. This study examines the potential for the Comprehensive Community Mental Health Services for Children and Their Families Program to address health disparities, even though this program was not explicitly designed for disparity reduction. Specifically, this study examines whether program sites disproportionately provide services within their catchment areas for youth who come from poor families, who are Black, and who are Hispanic. Data for this study come from 45 sites and 19,189 youth who were enrolled in program sites from 1997 to 2005. Meta-analysis was used to generate Forest plots and to obtain single, pooled estimates of risk ratios and their standard errors across all Children's Mental Health Initiative communities. The results indicate that in comparison to the targeted catchment area (a) the percentage poor youth in the programs was almost three times higher, (b) the percentage Black in the programs was about twice as high, and (c) the percentage Hispanic in the programs was about the same. These results indicate that the program successfully reaches disadvantaged youth and can bring substantial infrastructure to address youth mental health disparities. In fact, to the extent that the program successfully improves mental health among enrollees it may be serving as one of the largest initiatives to redress health disparities, although its role in disparity reduction is not widely recognized.

Introduction

Disparities in children's mental health are present across socioeconomic strata and race–ethnicity. Specifically, children and adolescents who are poorer are more likely to have serious emotional difficulties,[1–4] as are Black and Hispanic children in comparisons to Whites.[1] Both the National Institute of Mental Health and, more broadly, the National Institutes of Health prioritize the reduction of disparities in health, including mental health;[5] in fact, the National Institutes of Health ranks disparity reduction as one of its top three goals.[6] However, despite intentions to reduce known disparities in child and adolescent mental health, national programs explicitly designed to reduce them are lacking.

This paper examines the potential of the federally funded Comprehensive Community Health Services for Children and Their Families Program (hereafter referred to as the Children's Mental Health Initiative (CMHI)) to work to meet this goal, though not designed expressly for this purpose. The analysis examines whether the funded CMHI communities successfully reach disadvantaged youth by comparing the demographics of CHMI enrollees to the demographics of their respective catchment areas. If the CMHI communities disproportionately serve children who are poorer and in minority groups, then it may actually be acting as one of the largest and most influential programs to reduce health disparities, to the extent that it successfully treats serious emotional disorders among its clients.

The CMHI program

More than 70,000 children and their families have received services through the Comprehensive Community Mental Health Services for Children and Their Families Program to date. It is an ongoing program, since 1993, intended to transform the mental health system in the US and its territories. Children enrolled in the program range in age from birth to age 22. A requirement for

enrollment in the program is that youth have a Serious Emotional Disturbance (SED), which is defined as a mental, behavioral, or emotional disorder of sufficient duration to meet diagnostic criteria specified in the Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition,[7] that resulted in functional impairment and substantially interferes with or limits one or more major life activities. The program is based on the system-of-care service delivery model developed by Stroul and Friedman,[8] which recommends that multiagency, coordinated, community-based, family-driven, individualized services be delivered in a culturally sensitive and appropriate manner, in the least restrictive setting possible.

CMHI was shaped by several Federal- and State-level initiatives beginning with the Child and Adolescent Service System Program in 1984 and is currently funded through the federal Substance Abuse and Mental Health Services Administration Center for Mental Health Services. The CMHI has five primary goals: (a) expand community capacity to serve children and adolescents with serious emotional disturbance; (b) provide a broad array of effective services, treatments, and supports; (c) create a case management team with an individualized service plan for each child; (d) deliver culturally and linguistically competent services for racial and ethnic populations represented in the communities; and (e) promote full participation of families and youth in service planning and development of local services. These goals emphasize the importance for community-level availability of effective services to minimize out-of-home or out-of-community placement of children who need mental health services and whose families need support services. The program is not means-tested and the funding procedures for the CMHI programs do not impose any guidelines on the demographics of youth to be enrolled.

Disparities in youth mental health and relevant services

To the extent that the youth in the CMHI programs are representative of youth with SED, it is expected that they will come disproportionately from disadvantaged families. Low socioeconomic status is one marker of family disadvantage, and the higher prevalence of SED among youth in poorer families is well documented. Sources of this documentation include analyses of the National Health Interview Survey, which includes the Strengths and Difficulties Questionnaire,[1] the National Longitudinal Survey of 1979, which includes a shortened version of the Child Behavior Checklist,[2] and a representative sample of youth from four counties in North Carolina assessed using the Child and Adolescent Psychiatric Assessment.[3] In addition, a review conducted by the Center for Mental Health Services[9] indicates that six out of seven studies found an approximately twofold higher prevalence of serious emotional disturbance for low as compared to high socioeconomic groups.

Minority status, as indicated by African–American or Hispanic heritage, is an additional marker of disadvantaged status and also predicts youth psychopathology. However, the association is not as robust as the association of psychopathology with lower socioeconomic status. Current evidence suggests that minority youth compare unfavorably to majority youth on their general mental health but not necessarily with specific disorders. For example, while analysis of serious emotional disturbance in the National Health Interview Survey indicates higher rates for African–Americans and Hispanics,[1] analysis of more specific diagnoses such as Conduct Disorder do not.[10]

Regrettably, at least in service systems other than CMHI, the higher prevalence of mental health problems among youth in disadvantaged families has not always met with a concomitant increase in service use. Youth in poorer families would be expected to have significantly higher rates of mental health services use because of higher rates of psychopathology, but many population-based studies belie this expectation and show little to no differences across socioeconomic strata.[11,12] This finding suggests that the rates of unmet need for youth mental health services are significantly higher for poorer families, a finding with empirical support.[13]

Racial and ethnic minority youth would also be expected to have higher rates of mental health services use but, in fact, do not. A recent review concludes that the current literature, as a whole, supports "an indication of racial and ethnic disparities in adolescents' use of mental health care services"[14(p. 872)], although the evidence supporting disparities is more consistent for African–American than Hispanic youth. Unmet mental health needs for youth are present both in population-based studies,[10] as well as analyses focusing on youth enrolled within public service sectors.[15,16] The consistency of the finding across studies and populations is perhaps best summed up by Angold et al. who wrote in a review article on services disparities that it is "… disconcerting to document once again that the gap between need and specialty mental health services is exacerbated in ethnic minorities"[10(p. 899)].

CMHI and disparities in mental health services

It is currently not known whether the CMHI programs help address deficiencies in the level of mental health services provided to disadvantaged youth. On the one hand, it is possible that the CMHI programs may serve as an exemplar and disproportionately serve disadvantaged youth, for multiple reasons. One reason is that the CMHI system provides mental health services to children referred from systems of care that traditionally serve disadvantaged populations, such as juvenile justice, child welfare, and special education. Another reason is that the requirement for all CMHI programs to implement a social marketing and public education outreach program[17] may heighten the awareness of the mental health services they provide to all people in the target communities. Factors such as these may make the proportion of poor and minority youth in the CMHI programs significantly higher than that of the populations they serve, consistent with the higher rate of SED among disadvantaged youth in the population.

On the one hand, the CMHI programs may be consistent with the overall trend for youth mental health service systems to underserve disadvantaged youth (reviewed above). If this finding extends to the CMHI programs, then the proportion of poor and minority youth in the CMHI programs would be the same or lower than that of the populations they serve.

To examine these two competing possibilities, we use an innovative research strategy and examine the demographic distribution of children served in CMHI communities in comparison to the demographics of the program's catchment area, as described in the program's grant application. A main advantage of this approach is that it uses program sites as the level of analysis, rather than aggregating all individual youth and comparing mean scores to national norms. Consequently, the analysis documents the extent to which sites are able to reach disadvantaged areas within the communities that they target. In addition, the analysis also documents whether the results are driven by a handful of sites that are particularly apt at recruiting disadvantaged clients or, instead, are the result of processes that have largely similar outcomes across program sites.

Methods

Data

The data for this study come from two sources: (a) the national evaluation of the Comprehensive Community Mental Health Services for Children and Their Families Program and (b) the US Census 2000. As part of the national evaluation, structured interviews were conducted with caregivers and youth. Descriptive data (e.g., race, gender, income, etc.) were collected on all children who were referred to the system of care and received services. A detailed description of the national evaluation data collection procedures can be found elsewhere.[4,18]

The current study uses descriptive national evaluation data gathered from communities that were funded between 1997 and 2000, and enrolled children between 1997 and 2005 in urban, rural, and

Native American communities across the US. Each community, through the grant application process, needs assessment, and systematic and periodic qualitative assessment provided a description of its designated catchment service area and this information was used to extract corresponding population-level race–ethnicity and household income information from the US Census 2000. "The Census 2000 Summary File 3—Sample Data", which consists of population data collected in a one-in-six sample of households and then weighted to reflect the total population, was used to obtain the racial and household income composition of each community's catchment area.[19] A more detailed description of US census data collection procedures may be found elsewhere.[19]

The sample ($n=19,189$) for the current study includes children between ages 5 and 18 years who were referred into a funded system of care community between 1997 and 2005. Children were referred into the system from a variety of sources, including mental health (29.7%), juvenile justice (15.2%), education (17.2%), child welfare (13.4%), family (10.5%), and other sources (14.0%). The sample was predominately male (66.4%) and the mean age was 12.4 years (SD=3.4).

It is a requirement of the CMHI programs for enrolled children to have an emotional, socioemotional, behavioral, or mental disorder diagnosable under the DSM-IV or its ICD-9-CM equivalent. The five most prevalent disorders among the youth in the program are ADHD (37.8%), mood disorder (32.9%), Oppositional Defiant Disorder (27.2%), Adjustment Disorder (11.7%), and Conduct Disorder (11.2%). Youth were often diagnosed with more than one disorder.

Information on the child's age, gender, race, ethnicity, and household income level was obtained by trained interviewers and service providers from the child's caregivers. Among the information gathered, caregivers were asked to identify the child's race from a list of options, which included American Indian–Alaskan Native, Asian, Black or African–American, Native Hawaiian or Other Pacific Islander, and Other. Caregivers were also asked whether the child was Hispanic. For the purposes of this study, the child's race and ethnicity were then reclassified as *non-Hispanic White*, *non-Hispanic Black*, *Hispanic*, *or Other race–ethnicity*. Caregivers were also asked to identify the gross household income of the family where the child was living using a ten-point Likert scale which ranged from less than $5,000 to over $100,000. This information was used to create a variable "*poor*", which reflects an annual household income less than $15,000.

Corresponding population-level information was obtained from the US Census 2000 data for each community. Race and ethnicity were defined as *non-Hispanic White*, *non-Hispanic Black*, or *Hispanic*. Poor was defined as *household income in 1999 less than $15,000*.

While the sample includes children referred to CMHI from 45 grantee sites, three sites did not record information on the race of the children. Additionally, some sites and their corresponding catchment areas did not have any children who were non-Hispanic White, non-Hispanic Black, or Hispanic. As a result, the total number of sites presented in the analyses varies from 36 to 45 sites.

Statistical analyses

The populations of youth receiving services within each funded CMHI system of care community was compared to the populations of the respective catchment areas. Meta-analysis was then used to combine this information across all CMHI communities to obtain a pooled estimate for all sites. While meta-analysis is commonly used to examine results across separate, published studies, the same methods and analysis are readily extended to a multisite project such as the CMHI to combine information across sites.

The main statistical estimate of this study is the risk ratio, defined as the ratio of the percentage of children in a program with a certain characteristic to the percentage of people in the catchment area with that characteristic. In mathematical terms $RR=p1/p2$, where $p1$ is the percentage of children in the CMHI program with a certain characteristic and $p2$ is the percentage of people in the catchment area with that characteristic. For example, if 30% of the children in a program are

from poor families and 25% of the catchment area residents are from poor families, the risk ratio would be 0.3/0.25=1.2. A value over 1 indicates that poor children are more represented in the program than in the population. A value of 1 would mean that the program is serving a group of children who are fully representative of the children in the community, at least with respect to the variable under consideration (e.g., poverty status).

The standard error of each risk ratio—which is necessary to compute a 95% confidence interval—is calculated using the equation:

$$\sqrt{\frac{1-p1}{p1 \times n1} + \frac{1-p2}{p2 \times (n2/6)}}$$

where $p1$ is equal to the percentage of youth at the program level, $n1$ is the sample size of the program, $p2$ is the percentage of youth at the catchment area level (from Census data), and $n2$ is the population size of the catchment area (from Census data). The value of $n2$ is divided by 6 because the weighted, population estimates from the Census used in this analysis come from a one-in-six sample, and therefore the sample size used to generate the weighted estimates is six times smaller the population size reported by the Census.

Meta-analysis allowed for the comparison and pooling of risk ratios across the programs and provided two estimates of main interest for the purposes of this study. First, it provided an estimate of the overall, pooled risk ratio for all the programs, along with an associated 95% confidence interval. Second, meta-analysis also provided Forest plots that allowed visual inspection of each risk ratio, its 95% confidence interval, and its relative contribution to the overall pooled effect. To perform meta-analysis the "meta" command available in Stata versions 7 and higher was used.[20]

Meta-analysis requires a decision whether to use a fixed or random effects model. A fixed effect model would work on the assumption of a single, "true" risk ratio that is the same across all programs, with any variation attributable to measurement error. A random effect model allows the true, underlying risk ratios to vary across programs. Our assumption is that different CHMI programs have different abilities to recruit disadvantaged populations, and consequently we chose to run and report results from a random effects model.

Results

Table 1 presents the sample characteristics of youth referred to the CMHI program. The majority of youth referred were White (51.6%). Twenty-seven percent were Black, and nearly 10% were Hispanic. The percentage of families that were poor and had an income less than $15,000 per year was just under one half (47.1%); among Whites, the percentage poor was 41%; among African–Americans, it was 57%, and among Hispanics it was 52%.

In regards to the corresponding census catchment areas (analyses not reported in the Tables), the mean percentage of Blacks residing across the 45 sites was 12.6% and the average percentage of Hispanics was 8.1%. On average, approximately 18.9% of families at the census level were living in poor households; among Whites, the percentage in poor households was 13%; among African–Americans, it was 25%, and among Hispanics it was 18%.

Table 2 presents results from meta-analysis of risk ratios comparing demographic composition of programs with demographic composition of corresponding catchment areas. The risk ratio of 2.74 for poor household income indicated that on average the household income of youth referred to the program was more than two and a half times more likely to be below $15,000 a year than the household incomes of the residents in the catchment area. The risk ratio of 2.17 for Black indicated that on average youth referred to the programs were about twice more likely to be Black than the residents of the catchment area in which the program resided. Finally, the risk ratio of 1.17 for Hispanic indicated that youth referred to the programs were slightly more likely to be Hispanic

Table 1

Sample characteristics of youth referred to the systems of care communities and the corresponding census catchment areas

	Number	Percent
Gender		
Male	12,739	66.4
Female	6,440	33.6
Race[a]		
Black	4,645	27.1
Hispanic	1,660	9.7
White	8,808	51.6
Other	1,974	11.6
Poor status in CMHI program[a]		
Below $15,000	6,405	47.1
$15,000+	7,206	52.9
Census catchment areas, mean (range)		
Percentage Black	24.5 (0–77.3)	
Percentage Hispanic	10.1 (0–42.7)	
Percentage poor	12.8 (3.9–29.1)	

[a] Numbers do not total to the total sample size due to missing data.

than the residents of the corresponding catchment area, although the 95% confidence interval for this estimate includes the value of 1 and therefore indicates that this small risk ratio could be due to sampling error alone.

Figures 1, 2, and 3 present the risk ratios and 95% confidence intervals for all program sites using Forest plots. Figure 1 presents results for risk ratios of poor household income and shows that all sites had risk ratios greater than 1 and that all but one of the 95% confidence intervals was outside the value of 1. These results therefore show that the programs were successful in recruiting youth with economic disadvantage within the catchment areas, across all areas of the country and within tribal areas. Figure 2 presents risk ratios for percentage Black and the results indicate that most programs were successful in disproportionately recruiting Black youth, although there were exceptions and for three programs the proportion of Black youth in the program was actually less than the proportion of Black residents in the corresponding catchment area. Figure 3 presents ratios for percentage Hispanic and shows that the proportion Hispanic in the programs was about equally likely to be greater than it was to be lesser than the proportion Hispanic in the catchment area.

Table 2

Results from meta-analysis of risk ratios comparing demographic composition of programs with demographic composition of corresponding catchment areas

	Number of sites	Risk ratio	95% confidence interval
Percentage poor	45	2.74	2.50–3.00
Percentage Black	36	2.17	1.88–2.50
Percentage Hispanic	41	1.17	0.99–1.37

Figure 1

Forest plot of risk ratios comparing percentage poor in program to percentage poor in target catchment area
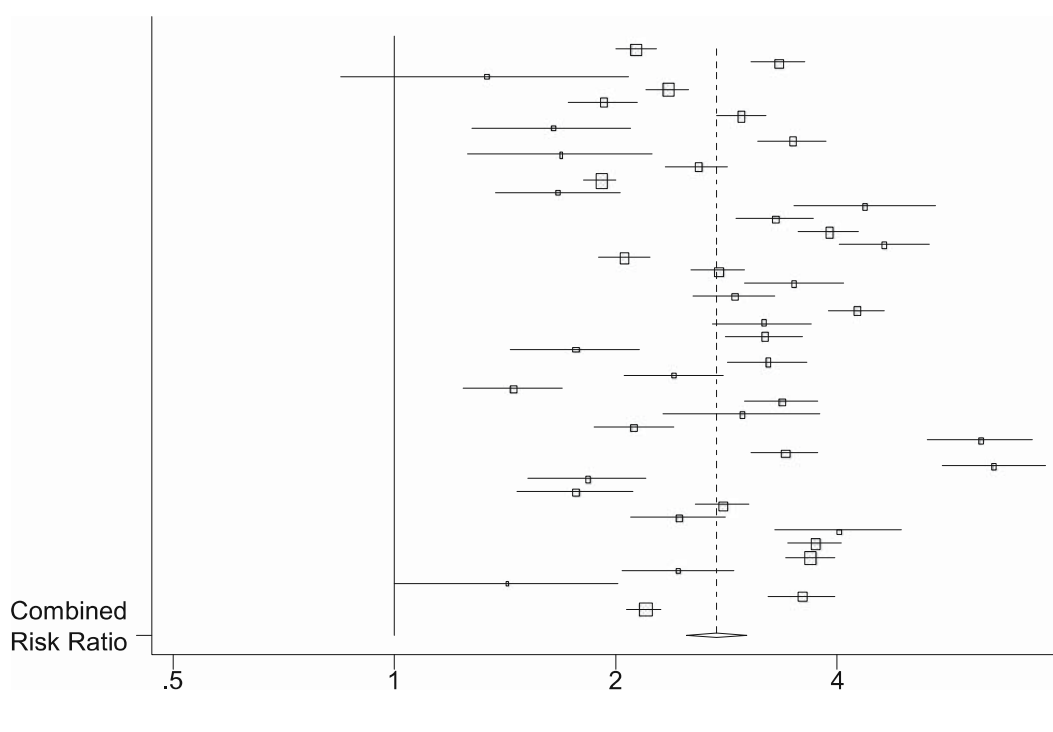
It is possible that the increased proportion of poor youth in the programs vis-à-vis the catchment areas is a result of the programs' increased proportion of Black youth and vice versa. If so, then one would expect collinearity between the risk ratios of poor household income and the risk ratios of Black youth, as indicated by a high level of correlation. This was not the case. The correlation of these risk ratios, weighted by the size of the programs, was not statistically significant at the 0.05 level; the correlation was 0.19 with a p level of 0.27. These results indicate that the high proportion of poor youth in the programs cannot be "explained" by the high proportion of Black youth and vice versa.

Discussion

The purpose of this project was to examine whether funded CMHI programs disproportionately provide services to children and adolescents who come from poorer families and minority race–ethnic groups. If so, these programs may be helping to reduce disparities in child and adolescent mental health, to the extent that they are effective. The analysis of this study is unique because it compared the sociodemographic distribution of the program enrollees to the sociodemographic distribution of the catchment area, which were coded and matched to census data.

The analyses indicate that CMHI communities are successful in disproportionately recruiting youth within their catchment areas who are poor and who are Black. In almost all sites considered in the analysis, the households of the program enrollees were more likely to be poor than households in the corresponding catchment area. On average, the families enrolled in the CHMI programs had a rate of poor household income about two and a half times higher than the rate in

Figure 2

Forest plot of risk ratios comparing percentage Black youth in program to percentage Black youth in target catchment area
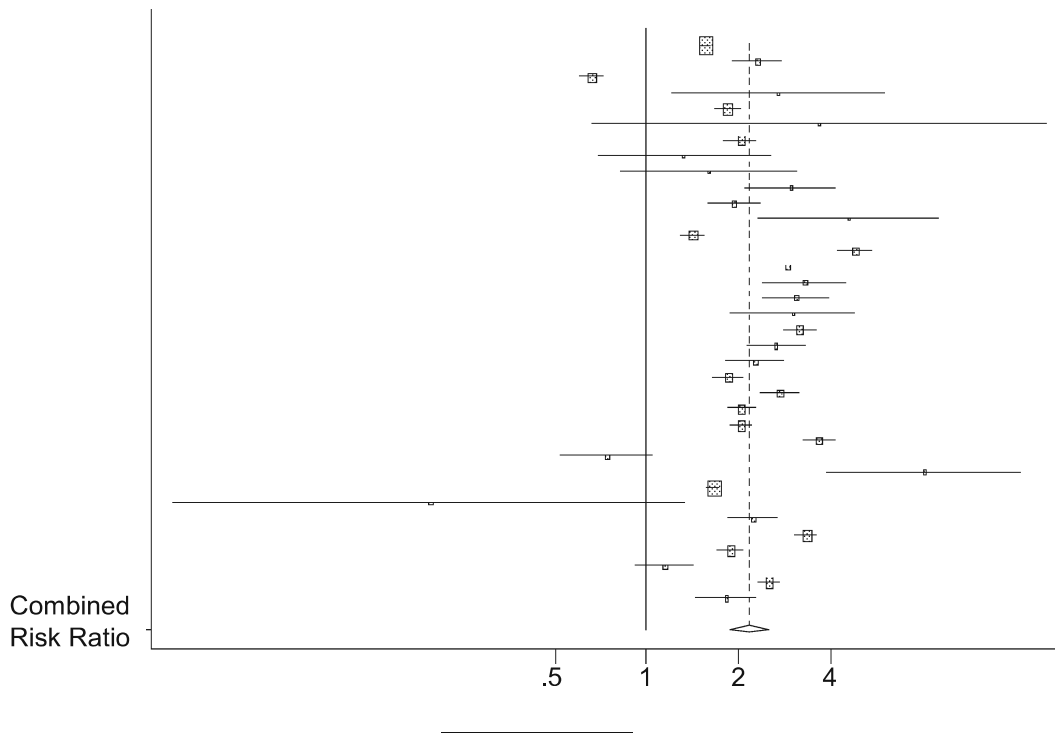
the surrounding catchment area. Almost all CMHI programs also disproportionately recruited Black children from their catchment areas, so that youth in the programs were about twice as likely to be Black in comparison to the corresponding catchment areas. The disproportional numbers of youth who were poor and youth who were Black in the sites resulted from independent processes; the high proportion of youth who were poor in the CHMI programs could not be "explained" by the high proportion of youth who were Black and vice versa.

In general, the concentration of Hispanic youth in the programs was about the same as that in the catchment areas, although some programs recruited disproportionately more and others recruited disproportionately less.

Limitations

Five limitations to the current analysis are noted. First, the CMHI programs are specifically designed to serve youth with SED and therefore the findings of this study are not necessarily generalizable to other mental health service programs and/or to programs targeted at youth with challenges other than SED. Second, this analysis does not compare the CMHI program to other public and private mental health programs that target youth with SED, and their relative success in recruiting disadvantaged youth is a topic that warrants future research. Third, the classification of youth into the simple categories of "Hispanic" and "non-Hispanic" does not take into account important heterogeneity within this ethnicity, such as Hispanics from Mexico, Central America, Cuba, etc. Future analyses with justification from theory or practice to focus on a specific Hispanic group may find results that differ from the omnibus Hispanic category used in this study. Fourth,

Figure 3

Forest plot of risk ratios comparing percentage Hispanic youth in program to percentage Hispanic youth in target catchment area
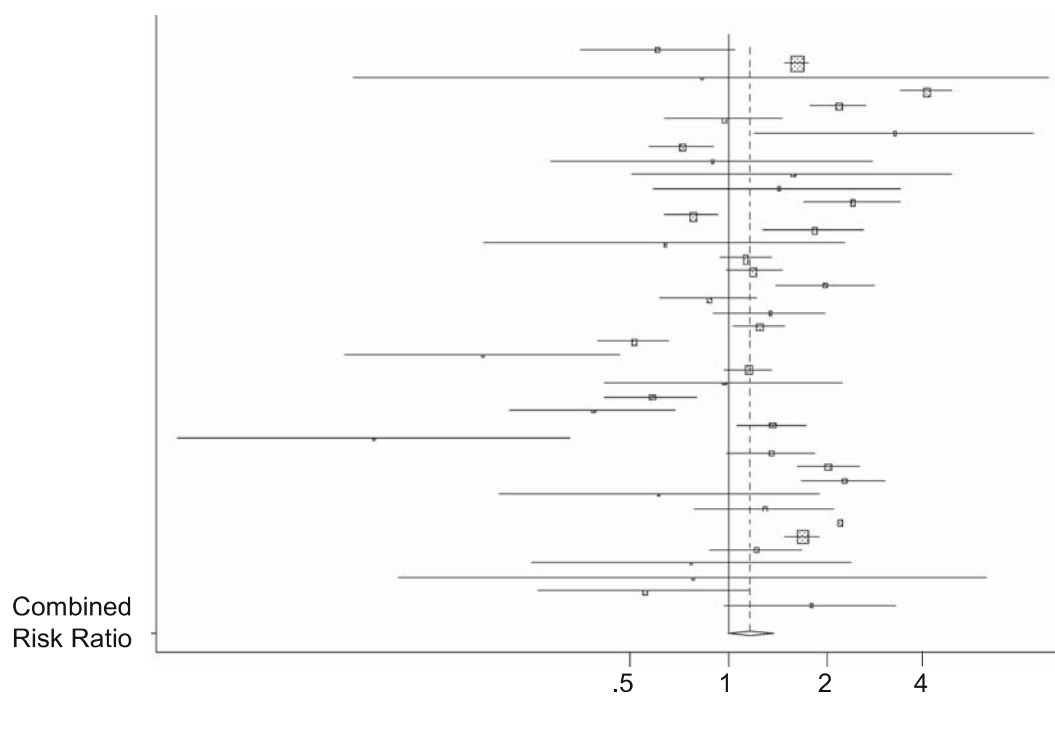
data are not available to estimate the actual prevalence of SED in the catchment area populations, although national surveys support the expectation that it is higher among youth who are disadvantaged. Consequently, the relatively higher proportion of youth who are poor and Black in the sites in comparison to the catchment areas is a good sign that sites are enrolling youth in proportion to the need for SED services in the community, but ultimately catchment area information will be needed to establish this definitively.

Finally, the analysis does not take into account changes in the catchment areas over time. The demographic characteristics of the catchment area itself may change from 1999—when the census information was collected—to the time that the CHMI program was implemented and became operational. However, large, broad-scale demographic changes in counties and cities usually take place over long periods of time, such as decades, and any short-term changes that occurred within the catchment areas of this analysis are not expected to affect the substantive conclusions of this study.

Implications for Behavioral Health

The success of the CMHI program in recruiting disadvantaged youth puts it in a position to potentially play a substantial role in the reduction of disparities in child and adolescent mental health. It is difficult to overstate the importance of the resources that the CMHI can bring to the task of disparity reduction. Some of the infrastructure it provides includes trained staff, established funding streams, a knowledge base of field-tested programs to assist youth with serious mental

disorder, and connections with local government agencies such as schools, juvenile justice, and mental health clinics. Furthermore, its centralized data collection allows ready evaluation of potential efforts to reduce disparities. It would take an enormous amount of resources and energy to create a program such as this from scratch, and the possibility of explicitly directing these resources to disparity reduction holds the promise to reduce disparities further.

Part of the promise of the CMHI to reduce child mental health disparities lies in its innovative approach to mental health treatment. As with many child mental health programs, Medicaid provides much of the funding for the actual mental health treatment. However, CMHI leverages this funding with that from other sources so that enrolled children also receive additional services that focus on the whole, interconnected set of issues that face a child, rather than just the mental health component. This approach holds the potential for a more complete and lasting reduction of mental health problems and consequently a substantial reduction in mental health disparities because the CMHI disproportionately serves youth who are disadvantaged. In addition, it is worth noting that the funding procedures for the CMHI programs do not impose any guidelines on the demographics of youth to be enrolled, suggesting that the CMHI system has been very effective in the recruitment of disadvantaged youth without mandating it.

The findings from this study clearly point in one future direction: an assessment of the effectiveness of CMHI programs in treating serious mental disorder, with particular emphasis on potential differences in treatment for disadvantaged groups. Initial work along these lines has already taken place, with results supporting a positive influence of CHMI programs on youth mental health.[21–23] It will be important for future work in this area to evaluate whether effectiveness of the CMHI programs is the same for all youth or whether it is a function of membership in a disadvantaged group.

An additional area for future study is analysis of Hispanic recruitment into the CMHI communities. These results indicate that the proportion of Hispanics in the programs is, on average, about the same as that in the corresponding catchment area. This result was unexpected and surprising in light of the finding that Hispanics, on average, appear to have higher rates of serious emotional disorder than Whites. Future investigation into this area should be sure to consider the distinct subgroups of Hispanic youth that vary by region of origination.

To date, over 70,000 children with serious emotional disorder have been served by the Comprehensive Community Health Services for Children and Their Families Program, and the results of this study suggest that the program may be playing a substantial role in reducing mental health disparities across income and race. These results warrant consideration of the CMHI program as a powerful influence to redress health disparities. Such recognition, if further justified by future research, could help to set disparity reduction as a major goal of the program and serve to facilitate discussion and reorganization to achieve this goal more effectively. It would also help link the program to related funding streams, ongoing programs, and large-scale initiatives so that it could reduce health disparities further.

Acknowledgement

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