
Medicaid Behavioral Health Care Plan Satisfaction and Children's Service Utilization

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This study examines associations between caregivers' satisfaction with children's Medicaid-funded behavioral health care plans and the likelihood that children with severe emotional disturbance receive mental health services. Data are from a multisite study of managed care versus fee-for-service (FFS) settings. In multivariate logistic regression analyses controlling for demographic, environmental, site, and clinical characteristics, plan satisfaction was associated with greater likelihood of subsequent service use regardless of managed care versus FFS setting. Children in managed care plans were less likely to use intensive residential and non-traditional outpatient services. Efforts to increase plan satisfaction may encourage service use, consequently, improving children's behavioral health outcomes.

INTRODUCTION

Prior studies indicate that caregivers have a strong impact on the likelihood and nature of children's mental health service

utilization. Parents play a major role in recognizing their children's needs for behavioral health services (Logan and King, 2002; Kazdin and Wassell, 2000) and in ensuring that children enter and remain in treatment (Brannan, Sonnichsen, and Heflinger, 1996; Goldston et al., 2003). At the same time, parents' satisfaction with the mental health services their children receive also has been shown to influence service utilization, with greater satisfaction linked to longer periods of service use and better relationships with care providers (Brannan, Heflinger, and Foster, 2003; Larsen et al., 1979). This is important because treatment retention is significantly associated with positive mental health outcomes among children and youth (Henggeler et al., 1996).

However, little research attention has focused on satisfaction with the managed care arrangements that are increasingly used to control costs in Medicaid-funded behavioral health care programs for low-income children and their families (Hutchinson and Foster, 2003). There is some concern that low-income children may not receive the services they need when the managed care emphasis is on controlling service costs and strict utilization review prior to service authorization (Stroul et al., 1998). For example, following managed care implementation in Massachusetts, children discharged from inpatient psychiatric care were more likely to be readmitted within 90 days and less likely to receive services in the community after emergency

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screenings (Nicholson et al., 1996; Wickizer, Lessler, and Boyd-Wicklzer, 1999). In Colorado, children in managed care had lower utilization of both inpatient and outpatient services than those in FFS (Catalano et al., 2000; Cuellar, Libby, and Snowden, 2001). This makes satisfaction with children's behavioral health plan an increasingly critical issue, especially given evidence that Medicaid recipients, particularly single mothers enrolled in managed care, report lower plan satisfaction and difficulty gaining access to needed health services (Pina, 1998).

The purpose of the present analysis was to test the hypothesized relationship between satisfaction and utilization by studying the association between prior plan satisfaction among caregivers and subsequent service utilization of children in Medicaid-funded behavioral health care plans. Service use of children with severe emotional disturbance (SED) enrolled in managed care versus FFS settings was examined at five study sites. The first research question was whether and how prior health care plan satisfaction was related to subsequent children's mental health service utilization. The second research question was whether caregiver satisfaction predicted later service utilization, controlling for managed care versus FFS plan type. Since studies of satisfaction with children's mental health services have generally focused on a single program site or multiple programs in a single State (Byalin, 1993; Godley, Fredler, and Funk, 1998; Stuntzer-Gibson, Koren, and DeChillo, 1995), this study's multisite design enabled us to examine these questions across a variety of treatment programs, managed care and FFS plans, and regions of the U.S. Even so, the study's sample cannot necessarily be considered representative of all children and youth with SED enrolled in Medicaid-financed behavioral health care

plans. In addition, in the absence of a true randomized experimental design, we could not assess causal effects from analyses of these data.

ANALYTICAL APPROACH

The theoretical framework used in this study is that of Andersen's (1968) behavioral model of health services utilization, which views utilization as a function of the individual's predisposition to use services, impeding or facilitating forces, and the level of service need. Predisposition to service use is assessed by children's and adults' demographic and social features. Enabling factors include both family resources and geographic characteristics, such as income and population density, as well as health care plan features and caregiver's level of satisfaction with the plan. Finally, children's need (for services) is measured by their level of psychiatric symptoms.

DATA AND METHODS

Data Source

Data come from the Substance Abuse and Mental Health Services Administration-funded Managed Behavioral Health Care in the Public Sector Study. The study's steering committee was comprised of principal investigators (PIs) from five sites (Pennsylvania, New York, Ohio, Oregon, and Tennessee/Mississippi), a PI from the UIC Data Coordinating Center, a Federal Government project officer, and a consumer representative from the Federation for Families. Members of the steering committee worked together to create a common protocol and data collection procedures for the study's in-person interviews. The target population consisted of children with SED who were enrolled in Medicaid

managed care or FFS behavioral health plans. Children's caregivers were interviewed about their satisfaction with the child's behavioral health care plan at baseline (time of study enrollment), the child's use of services in the interval between baseline and 6-month followup, and the child's mental health symptoms at time of followup.

Managed Care Plans Studied

While all managed care plans included risk sharing, capitation, and utilization review, specific plan features varied across the five sites. At the Pennsylvania site in the rural southwestern part of the State, managed care organizations (MCOs) were all independent practice associations delivering services as part of a carve-out. Tennessee also followed a carve-out approach in which the State's managed care entity (named TennCare) contracted with a number of behavioral health organizations. The Oregon behavioral health MCO (Greater Oregon Behavioral Health, Inc.) also used a carve-out approach in which a single program provided care to residents of 19 rural eastern and southern counties. In Ohio, managed care services were carved out while others remained the responsibility of FFS Medicaid. The managed care provider (Families and Children First) involved a collaborative between public child service systems, non-profit agencies, the private sector, and State government designed to serve the most difficult-to-treat children in a single southern county.

There was some variation in five basic features of the State's managed care arrangements including risk sharing, payor status, eligibility, enrollment choice, and covered services. Regarding risk sharing, private organizations assumed full risk at three of the study sites (Pennsylvania, New York, and

Tennessee), while a private entity with a narrower risk corridor operated in Ohio, and a quasi-governmental organization assumed full risk in the fifth site (Oregon). Regarding payor, Medicaid was the sole funder in Oregon, Pennsylvania, and Tennessee, while in New York, managed care was funded by two entities (the State Department of Health Office of Managed Care and the County Medicaid Managed Care Provider Relations Protocol), and managed care in Ohio was funded by six separate sources including: county human services, mental health, mental retardation/developmental disability (MR/DD), juvenile justice, substance abuse, and Medicaid.

Regarding the types of children covered by managed care: Oregon covered all Medicaid eligible children and adolescents; Pennsylvania covered the same group excluding those in custody with the exception of children residing in foster care; New York covered children with SED, substance abuse disorders, and those with MR/DD; Tennessee covered all Medicaid eligible children and adolescents, uninsured children, and children at up to 200 percent of the Federal poverty level; and Ohio covered the most frequent and most expensive service utilizers in the county. Regarding enrollment choice, managed care was mandatory at all of the sites, except Pennsylvania, where enrollment was voluntary and recipients could disenroll on a monthly basis. Finally, a variety of different services were covered under the different managed care arrangements: mental health outpatient treatment was covered in every State; psychiatric inpatient care was covered in every State except Ohio; substance abuse services were covered in every State except Oregon; case management was covered by all States except Pennsylvania; in-home supports were covered in all States except New York; residential treatment was covered

only in Tennessee and Ohio; and psychiatric medications were covered only in New York. (Further information about each site's managed care arrangements is available at: <http://www.psych.uic.edu/mhsrp/managedcarecc.htm>).

In order to verify that FFS condition plans did not resemble managed care condition plans, we investigated whether utilization review and risk shifting were features of the FFS plans at any of the sites. However, this was not the case with the exception of one service at one site: the Tennessee FFS condition included some inpatient services utilization review. Otherwise, no utilization review occurred or financial risk was assumed in the FFS conditions.

Sample

In order to ensure that only children and youth with SED were studied, the following inclusion criteria were used: being age 4-17 at the time of study enrollment; being eligible for Medicaid; having a diagnostic and statistical manual (DSM-IV) diagnosis of mental disorder; and use in the past year of intensive mental health services including inpatient, residential, day treatment, partial hospitalization, in-home support, rehabilitation, therapeutic foster care, special school, crisis services, intensive outpatient (at least 3-days per week), and intensive case management. Exclusion criteria for SED included: a DSM-IV mental disorder diagnosis consisting solely of the category adjustment disorder (to exclude children with transitory and/or non-severe emotional and behavioral problems); a diagnosis of MR/DD; and being served primarily through the MR/DD system. Additional inclusion criteria for the respondents were: being the child's primary caregiver and ability to give informed consent.

The child's parent was the adult informant in the large majority of cases; however, professional caregivers served as respondent if no family members were involved in the child's day-to-day care (e.g., in cases where parents were incarcerated or institutionalized or custody had been terminated). This occurred in 11.6 percent of all cases.

All sites' primary method of recruitment included letters mailed to eligible participants' homes along with followup letters and telephone calls to non-responders. The response rate across all sites was 68 percent, which compares favorably with other studies using similar methodology. For example, a comprehensive review of social science surveys found median response rates of 60-64 percent (Massey et al., 1997). This rate is also similar to that obtained in other studies of satisfaction and health care use of Medicaid enrollees such as Coughlin's (2002) 58 percent response rate in a survey of working-age disabled Medicaid beneficiaries, and Sisk's (1996) 52 percent response rate in a survey of Medicaid managed care among welfare recipients in New York City. The single biggest reason for non-response was that a participant could not be located.

Prior to data collection, project managers participated in a 1-day, train-the-trainer seminar to ensure uniformity in research procedures and interviewing techniques across sites. Convened by the UIC CC, the training covered topics such as general research interviewing techniques, screening for study eligibility, human subjects protections, and maintaining confidentiality. The group was trained to administer the study's common protocol, as well as how to handle common procedural problems that could arise. Sections of the common protocol were simulated with role-plays and audience feedback was elicited throughout. Each site then conducted

ongoing trainings for its interviewers throughout the study, based on the seminar conducted by UIC.

Of the 1,724 caregivers interviewed at baseline, 88 percent ($n = 1,517$) completed followup interviews. Followup completers were compared to non-completers ($N = 207$) in order to identify potential attrition biases. There were no differences between the group followed at time two versus those not followed in terms of: child age, sex, education, functional impairment, health status, symptomatology, and adult caregiver burden. The only statistically significant differences were the child's racial/ethnic background and juvenile justice system history. White children's caregivers were more likely to complete a followup interview than non-white children (54 percent of those followed versus 44 percent of those not followed); caregivers of children with no juvenile justice system history were more likely to complete a followup interview than caregivers of children who had juvenile justice system involvement (28 percent of those followed versus 36 percent of those not followed). These variables were controlled for in all of the multivariate analyses. However, the relative absence of statistically significant differences in background characteristics between those who were and were not followed suggests that the final sample was not significantly affected by study attrition.

Independent Variables

The child's age was measured in years, sex was coded as female, race/ethnicity was coded according to the child's membership in a racial/ethnic minority group, any prior detention, arrest or incarceration was coded as juvenile justice system involvement, and physical health was coded as scoring above the median on the general health subscale of the Child Health

Questionnaire (CHQ) parent form (Landgraf, Abetz, and Ware, 1996). The CHQ is a 50-item scale designed to measure the physical and psychosocial functioning and well-being of children, with excellent internal reliability ($\alpha = 0.93$) in studies of U.S. populations. In the present analysis, the six-item general health perceptions subscale was used to assess the caregiver's perception of the child's health. Children's need for services was measured by scoring above the median on the Child Behavior Checklist (CBCL) (Achenbach and Edelbrock, 1983), an 118-item scale covering the behavioral and mental health symptoms of children and adolescents as reported by an adult who knows the child well. In studies of clinically referred and non-referred boys and girls age 4-18, the CBCL achieved excellent internal reliability ($\alpha = 0.96$) and test-retest reliability ($r = 0.89$). Type of behavioral health care plan was operationalized as the child's enrollment in a managed care (versus FFS) plan at the time of study baseline.

The caregiver's background characteristics included formal education (coded as high school or greater), sex (female), and age (in years). Caregiver stress was assessed by the Caregiver Strain Questionnaire (Brannan, Heflinger, and Bickman, 1997), a 21-item scale designed to measure difficulties experienced by parents and other caregivers who have primary responsibility for the needs of children with SED. In studies of caregivers of a clinical child population, the Caregiver Strain Questionnaire achieved excellent internal reliability ($\alpha = 0.93$). Caregivers' physical and mental health were assessed using the 12-Item Short Form Health Survey (SF-12[®]), designed to measure an adult's perceptions of functioning and limitations due to medical conditions or emotional problems. In studies of a general outpatient population with a longer version of the SF-12[®] called

the SF-36®, good internal reliability was reported, with alphas ranging from 0.76 to 0.86. In a study of the SF-12®, test-retest reliability was excellent ($r = 0.89$).

Monthly household income was measured in dollars, and two dichotomous population density measures indicated residence in an urban or rural geographic area. For the latter variables, respondents' ZIP Codes were matched to county level census data and areas classified as more than 75 percent urban were designated as such; areas that were more than 75 percent rural were designated as such, and remaining areas were classified as mixed.

At the time of the study, no valid and reliable instrument was available that specifically assessed caregivers' satisfaction with children's behavioral health care plans. Thus, 10-items were selected, with the authors' permission, from a draft version of the Consumer Assessment of Health Plans Survey (CAHPS®) (Hays et al., 1999). This combination of likert-scaled and dichotomous items queried caregivers about their level of satisfaction with plan features such as amount of paperwork required, truthfulness of written information about the plan's benefits, ease of obtaining requested information about mental health services and providers, difficulty of obtaining a referral for mental health services, difficulty finding a provider who would accept the plan, the plan's cultural sensitivity, and whether the plan had refused to pay for needed services. Responses to all items were dichotomized, and summed, so that a higher score indicated greater satisfaction. The resulting scale distribution ranged from 0-10, with a mean of 4.7 and median of 5.0 (standard deviation [s.d.] = 2.36). Evidence for the scale's content validity was its positive and significant relationship ($p < 0.000$) with a separate, single item measure of plan satisfaction, in which caregivers were asked to rate the child's behavioral health care

plan on a scale from 0 - 10 where 0 is as bad as a health insurance plan can be, 5 is average, and 10 is as good as a health insurance plan can be. Principle components factor analysis resulted in a scale eigenvalue of 2.643 (showing that the total score accounted for 26.4 percent of item variance), and inter-item reliability analysis yielded a Cronbach's (1951) alpha of 0.66, a level of reliability satisfactory for new measures (Braunsberger and Gates, 2002). For ease of interpretability in the logistic regression analysis, the interval level satisfaction score was dichotomized at the median into a measure of high (versus low) behavioral healthcare plan satisfaction.

DEPENDENT VARIABLES

The child's mental health service use was measured by a Service Utilization Instrument (SUI). The SUI was adapted by the project steering committee from two pre-existing measures: the Service Assessment for Children and Adolescents, and the Child and Adolescent Services Assessment. Psychometric analyses of the Service Assessment for Children and Adolescents show good to excellent test-retest reliability for both lifetime service use and 12-month service use among adult and child respondents (Horwitz et al., 2001). Research on the Child and Adolescent Services Assessment found good to excellent test-retest reliability in studies of child respondents regarding both lifetime and service utilization in the past 3 months (Farmer et al., 1994). Because of its similarity to these two instruments, test-retest reliability was not evaluated for the SUI. The SUI includes 186 items comprised of sections regarding residential, non-residential, general medical, mental retardation/developmental disabilities, child welfare, school-based (school counseling, classroom aides),

medication, general, and prevention services. Respondents are asked to indicate whether the child received each service and, if so, the amount of service (in hours, visits, or overnight stays).

Four child service utilization variables were selected for analysis: (1) any psychiatric inpatient care (i.e., 1 or more overnight stays in a private or public psychiatric hospital or the psychiatric unit of a general hospital) between baseline and 6-month followup; (2) any traditional outpatient service use (i.e., treatment in the office of a psychiatrist, psychologist or counselor or at a community mental health center); (3) any non-traditional system of care service use (i.e., case management, in-home supports, day treatment, partial hospitalization, or school-based mental health services); and (4) intensive residential treatment services (i.e., any overnight stays in an inpatient, therapeutic residential, or therapeutic group home setting which were chosen because they were the most expensive and restrictive out-of-home care).

METHODS

Correlations among the independent variables were examined for potential multicollinearity problems, but all were below the moderate level (i.e., < 0.50). Then, the frequency of utilization of four types of behavioral health services was examined, as well as the service mix. Finally, multivariate logistic regression (MLR) analysis was used to test the study's hypothesized relationships.

RESULTS

Background Characteristics and Caregiver Plan Satisfaction

The 1,517 children ranged in age from 4 - 17 years (mean = 10, s.d.= 3.3) at baseline, 35 percent were female, 46 percent were members of racial/ethnic minority groups, 28 percent had a history of juvenile justice system involvement, and their mean score on the CHQ was 63. The children's mean psychiatric symptom score on the CBCL was 64, with 47 percent scoring at or above the average (score = 67) for children in a mental health clinical population, indicating the presence of serious psychiatric symptomatology. Forty-eight percent of the children were enrolled in managed care behavioral health care plans. Caregivers ranged in age from 16-83 years (mean = 41, s.d. = 9.5), 95 percent were female, 72 percent had a high school education, they averaged 2.5 (s.d. = 0.82) on the caregiver strain score, 44 (s.d. = 11.8) on the SF-12® physical health scale, and 43 (s.d. = 11.4) on the SF-12® mental health scale. The average monthly household income was \$1,936 (s.d.= \$1,337), 44 percent lived in urban counties, 10 percent in rural counties, and 46 percent in mixed geographical areas.

The majority of caregivers were more satisfied than dissatisfied on 5 of the 10 dichotomous items used in the satisfaction scale, including: availability of transportation to and from services (63 percent); the willingness of the plan to provide (55 percent) or pay for prescription medications (57 percent), and to pay for traditional

outpatient treatment (69 percent) or other outpatient therapies (58 percent). On the other hand, caregivers were less satisfied with other aspects of the behavioral health care plans, including: the availability of information about what services and providers were covered by the plan (22 percent); the number of forms that had to be filled out (25 percent); the willingness of the plan to pay for inpatient hospital or residential care (33 percent); the ability to find a treatment provider or clinician who would accept patients covered by the plan (42 percent); and the truthfulness of the written information received about the plan's benefits and services (45 percent).

Likelihood of Service Utilization and Service Mix

There was a generally high level of service utilization, with 89 percent of all children using 1 or more services, and 77 percent using 2 or more, for a group average of 35 service contacts over a 6-month period (e.g., more than one service contact per week per child on average). While only 8 percent of the children received inpatient services between baseline and followup, 70 percent received traditional outpatient services at a community mental health center or office of a mental health professional. A similarly high proportion (73 percent) received non-traditional system-of-care services, and 19 percent received intensive residential treatment services. Regarding service mix, 54 percent used both traditional outpatient and non-traditional system-of-care services, 15 percent used both traditional outpatient and intensive residential services, and 6 percent used both traditional outpatient and inpatient services.

Multivariate Analysis

Table 1 presents the results of a MLR predicting the child's likelihood of utilizing each of the four types of mental health services studied. Regarding inpatient services, those children whose caregivers report high behavioral health care plan satisfaction at baseline are over twice as likely to have been subsequently hospitalized, those with high levels of symptoms are over twice as likely, those from urban areas are three times as likely, those whose caregivers report greater strain are almost one and three-quarters as likely, and children from racial/ethnic minority groups are one-half as likely to have used inpatient services. Children in managed care plans show a trend ($p < 0.07$) toward lesser likelihood of receiving psychiatric inpatient care. Table 1 also shows results of the MLR predicting use of traditional outpatient services. Children of caregivers reporting high plan satisfaction are almost twice as likely to subsequently use traditional outpatient services. Children with high levels of mental health symptoms also are almost twice as likely to use this form of mental health service. Children residing in urban areas, and those from families with higher monthly incomes have a greater likelihood of utilization. Among child and caregivers characteristics, minority children are about one-half as likely to use outpatient care and older and healthier children are also less likely, children with juvenile justice system involvement are almost one and three-quarters as likely, and children of older caregivers are more likely to use this type of mental health service. The results of the MLR of the likelihood of use of non-traditional mental health system-of-care services

Table 1

Multiple Logistic Regression Analysis of Children’s Likelihood (Odds Ratios) of Using Four Types of Mental Health Services: 1997-1999

Variable	Mental Health Service Use Between T1 ^a and T2 ^b			
	Inpatient	Outpatient	Non-Traditional ¹	Intensive Residential ²
Child Characteristics				
Child Age T1 ^a	1.06	***0.89	0.98	*1.08
Female Child	1.16	1.01	0.79	0.89
Minority Child	**0.46	***0.53	1.14	0.87
Juvenile Justice Child T1	1.44	**1.74	***1.95	***2.51
Child Health T1	1.00	**0.99	1.00	1.00
Caregiver Characteristics				
Adult High School With T1	1.10	0.99	1.01	1.19
Female Adult	0.56	1.08	0.88	*0.45
Adult Age T1	1.02	*1.02	1.01	1.02
Caregiver Strain T1	***1.71	1.07	1.13	***2.07
Adult Health T1	0.99	0.10	1.00	1.01
Adult Mental Health T1	0.99	1.01	1.01	1.01
Household Characteristics				
Monthly Household T1	—	—	—	—
Income T1	1.00	*1.01	1.00	1.00
Urban T1	***3.00	*1.37	1.14	*1.63
Rural T1	1.07	0.82	0.74	1.37
Service Need				
High Mental Health Symptoms T2 ^b	**2.35	***1.80	***2.02	**1.97
Study Condition				
Managed Care	+0.64	1.03	***0.56	**0.60
Satisfaction				
High Health Care Plan Satisfaction T1	**2.13	***1.82	***1.81	*1.46

**p*<0.050.

***p*<0.01.

****p*<0.001.

+*p*<0.10.

¹ Non-traditional services defined as case management, in-home supports, day treatment, partial hospitalization, or school-based mental health services.

² Intensive residential treatment services defined as psychiatric inpatient, residential treatment, or therapeutic group home services.

NOTES: All analyses controlled for study site. T1^a defined as study baseline. T2^b defined as 6-month follow-up.

SOURCE: Center for Substance Abuse Prevention & Center for Mental Health Services, Substance Abuse, and Mental Health Services Administration: Data from the Managed Care in the Public Sector Study 1997-1999.

are also presented in Table 1. Children of caregivers with high levels of plan satisfaction are almost twice as likely to use non-traditional services, those in managed care settings are one-half as likely, those with a high level of psychiatric symptoms are twice as likely, and those with juvenile justice involvement are almost twice as likely to use non-traditional services. Also shown are the results of the MLR for utilization of intensive residential services. In this model, children of caregivers with high plan satis-

faction are almost one and one-half times as likely to use intensive residential services, those with high psychiatric symptoms are almost twice as likely, those in urban areas are over one and one-half times as likely, those whose caregivers report higher strain are over twice as likely, those with juvenile justice system involvement are two and one-half times as likely, and older children are also more likely to use intensive residential services. Children with female caregivers are less than one-half as likely, while those

served in managed care plans are 60 percent as likely to use intensive residential services.

In recognition of the ongoing debate about the relative importance of various active ingredients in managed care plans, we repeated the analyses on each sites' data separately, without the site control variables (results not shown). The original findings were substantially replicated in these single-site analyses, and at no site was satisfaction with plan significantly associated with a lesser likelihood of any service utilization.

SUMMARY AND CONCLUSIONS

The results of this study reveal a robust association between caregivers' prior level of satisfaction with features of Medicaid-funded behavioral health care plans and children's later mental health service utilization. Moreover, this association persists regardless of whether the child was enrolled in a managed care or FFS plan, suggesting that plan satisfaction is a critical precipitant of help seeking, regardless of type of service delivery plan. The association between plan satisfaction and service use also remained significant across multiple study sites, regardless of the children's demographic characteristics or need for services, and independent of the caregivers' medical or mental health problems or strain related to the child's illness. The persistence of this link between satisfaction and service utilization, regardless of perceived child or adult distress, highlights the critical importance of efforts to improve behavioral health plans in terms of responsiveness to customer needs. Plan improvement has the potential to enhance parents' satisfaction and thus encourage children's service use, resulting in more positive child outcomes.

In this analysis, the area of plan satisfaction that was most in need of improvement was the adequacy of the plans' information about availability of services and providers. Caregivers also were dissatisfied with other aspects of the child's behavioral health care plans, including: the number of forms that had to be filled out, the willingness of the plans to pay for inpatient hospital or residential care, difficulty finding treatment providers willing to accept the plans, and the truthfulness of the written information received about the plans' benefits and services. Thus, better communication with caregivers about the benefits and services available to their children with SED, improved choice of providers and services, and streamlined paperwork are all changes that would most likely have enhanced caregiver satisfaction.

At the same time, even controlling for plan satisfaction, children in managed care plans were significantly less likely to use intensive residential services and non-traditional system-of-care services such as in-home treatment, case management, school-based services, day programs, or partial hospitalization programs. There also was a trend toward lesser likelihood of psychiatric inpatient care among those enrolled in managed care. Once again, these associations remained significant controlling for children's level of service need as measured by symptom severity, level-of-strain reported by caregivers, residence in urban and rural counties, household income, study site, and a host of child and caregiver demographic features.

The finding that cost containment mechanisms are as significant as children's need for services and caregivers' plan satisfaction suggests that close scrutiny should be directed toward the outcomes of this vulnerable group of children and their families. Even in families where caregivers

were highly satisfied and children's need for services was high, those in managed care arrangements were still less likely to use certain services. The policy implications of these findings are especially critical given the large proportion of low-income children and their families who are currently enrolled in state- or county-wide managed care programs. Efforts to control the rising costs of health care must not occur at the expense of this vulnerable group of America's children. This suggests that public policy must be focused on the prevention of potentially harmful consequences both for children and their caregivers. Policy protections can include enhanced and closely monitored public reporting of health outcomes and quality of care among children served by these programs. Given the degree of caregiver strain reported in this study and its separate effects on some types of service utilization, another policy control is to increase family involvement in the process by which managed care arrangements are designed and implemented. Another policy provision suggested by the study's findings is to ensure that support and assistance are provided directly to parents who are coping with their child's serious emotional problems. A fourth policy protection is to involve families in all stages of the managed care quality assurance and appeals processes. Finally the Federal Government has an important role to play, with CMS in the lead, by ensuring that States with Medicaid waivers are held publicly accountable for the outcomes of children whose services are paid for with public monies. These policy protections can ensure that cost control measures do no harm to our Nation's poorest and most at-risk children and families.

There are a number of study limitations that should be kept in mind when interpreting the study's findings. First, although the

SUI was based on two valid and reliable measures of children's service use, and all service categories were queried using standardized definitions, there may have been some inaccuracy in the adult respondents' reports regarding the children's use of services. In addition, our measures of service utilization were relatively imprecise, since we counted any report of service regardless of its intensity or quality. Another study limitation concerns potential sampling biases among the children and sites included in this study, given that there were large differences in both settings and service availability within those settings, as well as between the severity of problems and demographic characteristics of the children studied. Because of this, the study's findings cannot necessarily be considered representative of all children and youth with SED enrolled in all types of Medicaid-financed behavioral health care plans.

Finally, without the benefit of a true randomized experiment, we were unable to evaluate competing explanations for the service use patterns observed in the analysis. We were also unable to show cause and effect relationships regarding the impact of either satisfaction or capitated managed care on service utilization, as well as their potentially interactive influence or common association with a latent or otherwise unspecified factor.

Unlike prior research on this topic, this study is unique in its inclusion of multiple State systems using different managed care waivers and contractual agreements, while controlling for numerous established predictors of behavioral health service use. The major finding of a positive association between caregivers' prior plan satisfaction and children's subsequent mental health service utilization calls our attention to the need to increase levels of satisfaction with all aspects of Medicaid-funded behavioral health care plans. To this end, study findings

can be used to enrich both the lives of affected families as well as the health of our Nation's, America's most precious resource—its children.

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