Caregiver, Child, Family, and Service System Contributors to Caregiver Strain in Two Child Mental Health Service Systems

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Abstract

Children's mental health researchers are increasingly recognizing the importance of caregiver strain (i.e., the impact on families of caring for children with emotional and behavioral disorders). This study examined the caregiver, child, family, and service variables associated with caregiver strain with special attention to the role of barriers to care. These relationships were compared across enrollees in a managed care Medicaid and a traditional fee-for-service system. Findings indicated that severity of child problems was the most consistent predictor of caregiver strain. Although there was considerable similarity in the variables associated with caregiver strain across the two systems, important differences were also evident. Caregivers in the managed care setting were significantly more likely to report provider/payer-related barriers to care. Provider/payer barriers predicted strain in the managed care sample. In the fee-for-service system, barriers related to family perceptions and inconvenient location and appointment times were significant predictors.

Introduction

Several studies have documented that parents and other caregivers of children with emotional and behavioral disorders experience a variety of strains as a result of their caregiving responsibilities. These can include financial strain, disruption of family relationships and social life, interruptions at work, limits on personal freedom and time, fatigue, sadness, guilt, parenting stress, and other negative effects.[1–4] That negative impact has become known as caregiver strain, but has also been referred to as family burden, or burden of care. The field broadly recognizes both the objective (i.e., observable events and occurrences) and subjective (i.e., emotional or psychological impact) aspects of caregiver strain.[5,6]

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A growing body of evidence indicates that caregiver strain influences how children use mental health services beyond what can be explained by severity of child symptoms and psychosocial functioning. Across a variety of samples, greater global caregiver strain has been associated with the increased likelihood that children will use mental health services, after controlling for child clinical status.[7–9] Once in treatment, greater caregiver strain has been found to increase the risk for use of psychiatric hospitals, medication, and more restrictive levels of care.[10–14] In addition, different dimensions of caregiver strain (i.e., objective vs. subjective) are associated with different patterns of service use including gaps in care, sequencing of services, amount of services received, inpatient length of stay, use of medication, and costs of care.[11–16] Although little is known about how caregiver strain impacts child mental health outcomes, recent evidence indicates that reducing parental stress can improve the effectiveness of evidence-based treatments for children with behavioral disorders.[17]

Given caregiver strain's demonstrated influence on children's service use and, potentially, outcomes, it is important to understand what factors contribute to strain. Previous research has shown that caregiver strain is strongly related to the severity of the child emotional, behavioral, and substance abuse disorders.[1,4,7,18–22] Caregiver's educational level, employment status, and income have also been found to be associated with caregiver strain.[22,23] Racial differences in caregiver strain have also been documented, with African American caregivers typically reporting less objective and global strain.[21,23] Evidence suggests that kinship caregivers (e.g., grandparents, aunts, siblings) experience caregiver strain at levels similar to biological parents.[24] Research has found that caregivers with more social support report less global caregiver strain.[7,21,23]

Caregivers seeking treatment for their children have long described hardships related to navigating often disorganized and, at times, hostile service systems.[25,26] Findings that caregivers were less satisfied with their children's mental health managed care plans compared to fee-for-service plans suggest that service system characteristics may exacerbate those difficulties.[27] However, little is known about how service systems and the help-seeking process impact caregiver strain. In one study, higher caregiver strain was associated with poor service coordination.[4] Beyond that, the extent to which negative experiences with the service system exacerbate caregiver strain remains unexplored.

As another factor that influences child mental health service use, researchers are increasingly considering barriers to care and their role in unmet need and treatment incompletion. Some commonly reported barriers are transportation problems, lack of providers or service options, long waits, inconvenient appointment times and locations, child care problems, appraisal that the child's problems are not serious, mistrust of professionals, fear of stigma, and lack of financial resources or insurance.[28–31] Studies have found barriers to care to be positively associated with child psychopathology, parenting difficulties, parent psychological symptoms, and economic hardship.[28,30,31] Racial differences in report of barriers to child mental health care have also been documented with minorities reporting fewer barriers.[32] A search of the literature found no articles that examined the relationship between barriers to child mental health treatment and caregiver strain.

The purpose of this study is to examine the child, caregiver, family, and service factors associated with caregiver strain. Of particular importance is the extent to which barriers to care are associated with caregiver strain, after controlling for other variables. In addition, the study compared findings across enrollees from two statewide Medicaid programs to understand better how these relationships vary across different service systems.

This study tested several hypotheses. In keeping with previous research, caregiver strain was expected to be positively related to child symptom severity, especially externalizing problems, and functional impairment. Also, following the literature, White caregivers were expected to report greater objective strain. It was further expected that family resources such as healthy family interactions, caregiver education, and income would be associated with lower caregiver strain. This study adds to the knowledge base by examining whether barriers to care provide a unique contribution to caregiver strain above that accounted for by child, caregiver, and family variables. Given differences in these two mental health service systems, relationships among caregiver strain and barriers to care were expected to differ across systems. Specifically, caregivers in the managed care system were expected to be more strongly influenced by provider and payer barriers.

Methods

Data for this study were collected from 1997 through 2000 as part of the Impact of Medicaid Managed Care Study (IMMC) designed to assess the effect of a shift to Medicaid managed care on children with emotional and behavioral challenges and their families. The IMMC included Tennessee, where the Medicaid program operated under managed care (i.e., TennCare), and Mississippi, where a traditional fee-for-service Medicaid system was in place. Under Tennessee's TennCare "carve-out" program, children's mental health services were provided by specialty behavioral health organizations (BHOs) on a capitated basis. Cost containment mechanisms included subcapitation, preauthorization requirements, and lower reimbursement rates. A capitated case rate was paid to community mental health centers for services delivered to children with severe emotional disturbance. These services included individual therapy, group therapy, case management, and medication management. More intensive services that were not included in the case rate (e.g., inpatient hospitalization, day treatment) required prior authorization and reimbursement was paid at a lower negotiated rate. These cost containment mechanisms also applied to other specialty mental health providers including public and private hospitals, residential treatment centers, clinics, and private practitioners. In Mississippi, the Medicaid program continued as a traditional fee-for-service system.

Sample

Children and their families were selected for the study from Medicaid rolls in each state using a stratified random sampling method. The aim of the original study was to examine the impact of a change to managed care on children with emotional and behavioral disorders and their families. To ensure a sufficient sample of children with emotional and behavioral disorders, the sampling strategy purposefully oversampled children who had previously used mental health services as indicated by Medicaid claims data. Only one child per family was selected. The full sample included 1,012 children, ages 5 through 17. Each child was assigned to one of three groups based on their previous service use: nonusers of mental health services, low users, and high users. As caregiver strain pertains to the extent to which the child's emotional and behavioral challenges are a problem for the family, strain was not assessed for caregivers of children without those challenges. Interviewers were instructed to administer the caregiver strain instrument if the child was in the low- or high-user study groups, had received mental health services in a residential setting during the past 6 months, or if the caregiver reported substantial behavior problems during the data collection interview. Of the 1,012 caregivers in the sample, 676 met at least one of these criteria and completed the caregiver strain assessment. Among those, 619 (92%) had complete data and were included in this study. Families included in the study did not differ statistically from those excluded for any of the variables examined in the study including child gender [χ^2 (1, $N = 676$) = 0.244, $p = 0.62$], race [χ^2 (1, $N = 676$) = 1.17, $p = 0.28$], child's age [t (1, $N = 676$) = 1.16, $p = 0.25$], or proportion of caregivers with at least high school education [χ^2 (1, $N = 676$) = 1.41, $p = 0.24$].

Procedures and instruments

Participant recruitment and data collection procedures complied with established ethical standards and were approved by the appropriate Institutional Review Board. Face-to-face structured interviews were conducted with the identified child's primary caregiver by using a standard data collection package. After completing the informed consent process, trained interviewers administered the baseline interview that covered experiences over the previous 6 months. Although follow-up data were collected 6 and 12 months after baseline, only baseline data were used in this study.

Caregiver variables

Caregiver strain was assessed with the Caregiver Strain Questionnaire (CGSQ).[2] The CGSQ has 21 items that assess the extent to which caregivers and families were affected in the past 6 months by the special demands associated with caring for a child with emotional and behavioral problems. Caregivers rate items on a 5-point scale with response options ranging from 1 (not at all a problem) to 5 (very much a problem). Previous research on the CGSQ identified three dimensions of caregiver strain.[2,23] Objective strain is calculated as the mean of 11 items and refers to the observable negative events that result from the youth's problems (e.g., financial strain, disrupted family relations, difficulty with neighbors or police). Subjective externalized strain is scored as the mean of four items and involves outwardly directed negative feelings about the child's problems such as anger, resentment, and embarrassment. The subjective internalized strain score is the mean of six items and refers to inwardly directed feelings experienced by the caregiver such as worry, guilt, and fatigue. The CGSQ and its subscales have good internal consistency with alpha coefficients ranging from 0.73 to 0.91.[2] The construct validity of the CGSQ has been demonstrated in multiple studies that have found that the CGSQ correlates with child symptoms, family wellbeing, and caregiver psychological distress.[2,19,23] The mean CGSQ subscale scores for both samples are reported in Table 1.

Caregiver's satisfaction with family life was assessed with the Family APGAR.[33] The Family APGAR contains five items that assess the extent to which respondents feel: (1) they can turn to the family for help when feeling troubled, (2) they can talk things over with the family and share problems, (3) their desire to pursue new activities or directions is supported by the family, (4) the family expresses emotions well, and (5) the family shares time together well.[33] Items are rated on a 3-point scale ranging from 0 (i.e., almost always satisfied) to 2 (i.e., hardly ever satisfied). The scale score is calculated as the sum of the items with scores potentially ranging from 0 to 10. For this study, items were reverse coded such that high scores indicated greater satisfaction. Previous research indicated that the Family APGAR correlated with measures of family functioning, distinguished families in treatment from families who were not, and demonstrated good internal consistency (alpha = 0.86).[33]

Caregiver education and race were included as control variables. Caregiver education is a continuous variable ranging from 0 (i.e., no formal education) to 21 (i.e., doctoral degree). The caregiver race variable compares White caregivers to minority caregivers (the reference category). Monthly household income from all sources (e.g., wage, social security, TANF/AFDC, workman's compensation) was categorized into 13 brackets ranging from less than \$100 to more than \$3000 per month. Table 1 shows income distribution for this sample with categories collapsed for simplicity.

Child variables

Severity of child clinical symptomatology was assessed by using the Child Behavior Checklist (CBCL).[34] The CBCL contains 114 symptoms rated by caregivers on a 3-point scale ranging from 0 (i.e., not true) to 2 (i.e., very true or often true). The CBCL is widely used in research and clinical practice and has demonstrated reliability and validity in a variety of studies.[34] This study uses the internalizing (e.g., problems with mood, worry, fear) and externalizing (e.g., problems with conduct, delinquency, hyperactivity) total scores. *T*-scores are standardized for child gender and age, and scores above 63 are in the borderline or clinical range. The raw internalizing and

Table 1
Sample descriptive statistics

Variables	Mississippi (N = 315)		Tennessee (N = 304)	
	N	*(%)*	*N*	*(%)*
Child was a girl	101	(32.06)	95	(31.25)
Caregiver education				
Less than high school	107	(33.90)	84	(27.63)
High school or GED	111	(35.13)	104	(34.21)
More than high school	98	(31.01)	116	(38.16)
Caregiver race***				
African American	212	(67.09)	67	(22.04)
White	98	(31.01)	225	(74.01)
Other	6	(1.90)	12	(3.80)
Monthly household income**				
<$700	73	(23.10)	65	(21.39)
$700–1099	86	(27.22)	75	(24.67)
$1100–1499	83	(26.27)	72	(23.68)
≥ = $1500	74	(23.41)	92	(30.26)
Barriers to care (% that endorsed any)				
Location/time	146	(46.35)	132	(43.42)
Provider/payer*	114	(36.19)	137	(45.07)
Family perceptions	103	(32.70)	99	(32.57)
	M	(SD)	M	(SD)
Child age	11.44	(2.75)	11.49	(2.89)
Externalizing behavior *T*-score	67.08	(11.79)	67.26	(11.41)
Internalizing behavior *T*-score	65.03	(11.57)	64.20	(12.41)
Child psychosocial functioning score	24.33	(10.42)	25.10	(10.96)
Family APGAR	6.76	(3.06)	6.59	(2.90)
Objective caregiver strain**	2.08	(0.97)	2.32	(1.03)
Subjective externalized strain	1.93	(0.95)	2.01	(0.83)
Subjective internalized strain	3.07	(1.12)	3.18	(1.12)

****$p < 0.0001$, ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.

externalizing total scores are used in the analyses, but the *T*-scores appear in Table 1 for ease of interpretation.

Child psychosocial functioning was also included as a measure of child clinical severity by using the Columbia Impairment Scale (CIS).[35] Caregivers rated the child's functioning on 13 items ranging from 0 (i.e., no problem) to 4 (i.e., a very big problem). Scores can range from 0 to 52 with scores greater than or equal to 15 indicating impairment severe enough to warrant intervention.[35] The CIS correlates highly with clinician ratings on the Children's Global Assessment Scale and has demonstrated good reliability and validity.[37]

In addition to the clinical variables, child age and gender were included as control variables. Child age (in years) was entered as a continuous variable. For the child gender variable, males are the referent category.

Barriers to care

Caregivers reported whether, in the previous 6 months, they had experienced 15 possible barriers to care in their efforts to seek help for their child (i.e., 0 = did not experience the barrier, 1 = did experience the barrier). The barriers fall into the following three categories: location/time barriers, provider/payer barriers, and family perceptions. For each category, scores were calculated by summing the endorsed barriers. Location/time barriers included the following: transportation problems; inconvenient location; inconvenient appointment times. Provider/payer barriers included the following: no program available or no space in an existing program; provider would not help or would not take Medicaid; long waiting time until service could be received; Medicaid did not cover the service; and family did not have money to pay for services. Barriers relating to family perceptions included the following: fear that the child would be labeled; expectation that treatment would not help; not knowing where to go; concern that the child would refuse to go; fear of what family and friends would think; and thinking that the problems were not serious enough.

Analyses

Analyses were designed to test the previously listed hypotheses. First, the analyses examined whether previously demonstrated relationships among caregiver strain and child, caregiver, and family variables replicated in samples of Medicaid-enrolled families. In keeping with previous research, it was expected that caregiver strain would be positively related to child symptom severity, especially externalizing problems. It was further expected that family resources such as healthy family interactions, caregiver education, and income would be associated with lower caregiver strain. As demonstrated in other samples, White caregivers in this sample were expected to report greater objective strain.

Analyses also examined whether barriers to care provide a unique contribution to caregiver strain above that accounted for by child, caregiver, and family variables. Because of differences in these two mental health service systems, families served by the managed care system were expected to demonstrate a stronger relationship between caregiver strain and provider/payer barriers. Other relationships among barriers to care and caregiver strain were explored, although no hypotheses were formulated for those relationships.

Descriptive statistics

Differences across samples were tested by using t-tests (for continuous variables) and χ^2 tests (for categorical data). Because of dissimilarities in the two Medicaid systems, differences in barriers to care were expected across samples, especially provider/payer barriers. Other differences in the sample (e.g., race) make it possible to distinguish findings that are likely to generalize more broadly from those that might be specific to the local community or service system.

Model-building to predict caregiver strain across systems

Two sets of models were tested by using standard regression analyses (1) to determine what child, caregiver, and family variables were associated with caregiver strain, and (2) to examine whether the addition of the barriers to care variables significantly improved the overall explanation of variance. The first set of models included the child, caregiver, and family variables. The barriers to care variables were entered in the second set of models to test whether they contributed unique predictive power after controlling for the presence of the child, caregiver, and family variables. The incremental F ratio test was used to assess whether adding the barriers to care variables significantly improved R^2.[36]

Caregiver education, satisfaction with family life, and monthly household income were included as continuous variables. For the race variable, White caregivers were compared with caregivers from minority backgrounds (the reference category). Child clinical variables (i.e., externalizing and internalizing symptoms, psychosocial functioning) were entered as continuous variables with higher scores indicating more problems and impairment. Child age was also entered as a continuous variable. The gender variable compared the impact of being a girl to being a boy (the reference category).

Because previous research indicated that the three subscales of the CGSQ have different correlates and relate differentially to service use variables,[2,12,15,16] separate tests were conducted for each subscale. Analyses were conducted separately for the fee-for-service and managed care samples to examine differences in the relationships among the predictor and outcome variables. Similarities and differences among contributors to caregiver strain across samples were identified.

Examining the influence of service system and "barriers by system" interactions

Additional regression analyses were conducted to examine whether the service system (i.e., managed care vs. fee-for-service) influenced the degree to which barriers to care impacted caregiver strain after controlling for other variables. Analyses regressed the three caregiver strain dimensions on the predictor variables described above. For these analyses, the two samples were combined and the service system variable was added as a dichotomous predictor variable (i.e., fee-for-service arrangement was designated as the reference condition). Three system by barriers to care interaction terms were also added (i.e., family perceptions barriers by system; location/time barriers by system; and provider/payer barriers by system). The interaction terms examine whether the barriers to care variables exert differential influence on caregiver strain across service systems. Having demonstrated in the separate analyses that barriers to care significantly improved overall model fit, all predictor variables were simultaneously entered into the analyses.

Results

Descriptive statistics

Table 1 provides descriptive information on the variables used in this study and compares the fee-for-service and managed care samples. In both samples, the majority of the children were boys. For both samples, children's scores on externalizing and internalizing symptom and psychosocial functioning were, on average, at or above the clinical cutoff. The majority of caregivers in both sites had finished high school. There were no differences across samples in the following areas: caregiver education; location/time and family perception barriers; child clinical variables, child gender or age; family APGAR scores; or the two subjective strain scale scores.

Several differences, however, were apparent across sites. The Mississippi fee-for-service sample had a larger proportion of African American caregivers (67%) compared to the Tennessee managed care sample (22%). This reflects racial differences in the populations of the two states. The household incomes of the fee-for-services caregivers tended to be lower; 23% of families in the fee-for-service sample had monthly incomes above $1500 compared to 30% among families in the managed care sample. Managed care caregivers (45%) reported more provider/payer-related barriers to care than those in the fee-for-service sample (36%). This stands to reason as the managed care system was using various methods to contain costs and reduce use of restrictive services.[11] Managed care families also reported greater objective caregiver strain, on average. This is likely attributable to the greater proportion of African American caregivers in the fee-for-service sample; African American caregivers typically report lower objective caregiver strain than caregivers from other racial/ethnic groups.[21,23] The differences in these samples provide an opportunity to examine the robustness of findings and to illuminate what relationships are likely to replicate across a variety of samples.

Model building to predict caregiver strain across systems

For the most part, findings replicated well across the two samples. However, some interesting differences were also evident and warrant discussion. For each of the caregiver strain dimensions, adding barriers to care significantly improved the model's explanation of variance in caregiver strain as evidenced by significant incremental F ratio tests. Results findings are shown in Table 2 and are summarized by caregiver strain dimension.

Objective caregiver strain

Recall that objective caregiver strain refers to the observable disruptions and negative events that result from children's emotional and behavioral disorders. Variables in the model accounted for a significant proportion of variance in objective caregiver strain for both the fee-for-service ($R^2 = 0.42$, $p < 0.0001$) and managed care ($R^2 = 0.59$, $p < 0.0001$) samples. In both systems, White caregivers reported more objective caregiver strain than caregivers of minority backgrounds after controlling for other variables in the analysis. More problems with child externalizing symptoms and psychosocial impairment were associated with increases in objective caregiver strain in both samples, as well. Findings from both samples indicated that more location/time barriers were associated with greater objective caregiver strain.

There were also some differences across samples. In the managed care sample, caregiver education and child internalizing symptoms were both positively related to objective caregiver strain. The more satisfied the reported being with family life, the less objective strain caregivers in the managed care system experienced. Among caregivers in the managed care system, experiencing more provider/payer barriers was associated with greater objective caregiver strain. With the fee-for-service sample, a positive relationship was found between family perception barriers to care and objective caregiver strain.

Subjective externalized strain

Subjective externalized strain pertains to caregivers' outwardly directed negative feelings about their children's problems such as anger, resentment, and embarrassment. The subjective externalized strain regression models fit the data sufficiently well for both the fee-for-service ($R^2 = 0.25$, $p < 0.0001$) and managed care ($R^2 = 0.30$, $p < 0.0001$) samples. However, the predictor variables generally explained less variance for this subscale than for the other two. Child externalizing problems and child age were positively related to subjective externalized strain in both the managed care and fee-for-service samples.

Several differences across systems were also observed. In the fee-for-service sample only, subjective externalized strain was positively associated with child psychosocial impairment and negatively associated with child internalizing symptoms. Greater satisfaction with family life was associated with less subjective externalized strain in the managed care sample, but not in fee-for-service sample. Among the barrier to care variables, only the location/time dimension was significantly related to subjective externalized strain, and only for the managed care sample. However, the relationship was not in the expected direction. Having more location/time-related barriers was associated with less strain.

Subjective internalized strain

The subjective internalized dimension of caregiver strain captures inwardly directed negative feelings about the child's problems such as sadness, worry, guilt, and fatigue. The proportion of the variance in subjective internalized strain explained by the regression model was significant for both the fee-for-service ($R^2 = 0.30$, $p < 0.0001$) and managed care ($R^2 = 0.42$, $p < 0.0001$) samples. All three child clinical variables were positively related to subjective internalized strain in both samples.

Table 2

Predicting caregiver strain dimensions by state

	Caregiver strain dimensions											
	Objective				Subjective externalized				Subjective internalized			
	Fee-for-service[a]		Managed care[b]		Fee-for-service[c]		Managed care[d]		Fee-for-service[e]		Managed care[f]	
Predictor variables	***B***	**SE**	***B***	**SE**	***B***	**SE**	***B***	**SE**	***B***	**SE**	***B***	**SE**
Caregiver variables												
Satisfaction with family life	−0.025	0.015	−0.033*	0.014	−0.031	0.016	−0.038**	0.015	−0.036	0.019	−0.063***	0.018
Education	0.013	0.017	0.035*	0.017	0.002	0.019	0.014	0.018	0.020	0.021	−0.005	0.022
White	0.249**	0.098	0.183*	0.090	−0.118	0.109	−0.137	0.094	0.067	0.124	0.091	0.117
Monthly household income	−0.005	0.015	0.010	0.013	−0.008	0.016	−0.017	0.013	0.013	0.019	−0.000	0.016
Child variables												
Internalizing symptoms	−0.002	0.005	0.011*	0.005	−0.017**	0.006	−0.008	0.005	0.013*	0.007	0.016**	0.006
Externalizing symptoms	0.020****	0.005	0.021****	0.005	0.020****	0.005	0.028****	0.005	0.013*	0.006	0.015**	0.006
Psychosocial functioning	0.026****	0.006	0.028****	0.006	0.021***	0.006	0.010	0.006	0.026***	0.007	0.023***	0.007
Age	0.011	0.016	−0.020	0.014	0.044*	0.018	0.034*	0.015	0.010	0.020	−0.008	0.018
Girl	−0.087	0.094	0.042	0.087	−0.040	0.105	0.110	0.091	−0.080	0.120	−0.062	0.113
Barriers to care												
Family perceptions	0.115**	0.043	0.002	0.039	0.085	0.048	0.034	0.041	0.108*	0.055	0.011	0.051
Location/Time	0.158**	0.056	0.120*	0.051	0.073	0.063	−0.154**	0.053	−0.008	0.071	0.003	0.066
Provider/Payer	0.051	0.051	0.166****	0.037	−0.032	0.057	0.028	0.039	0.089	0.065	0.159***	0.048
Intercept	0.643*	0.329	0.469	0.303	0.912	0.369	1.09***	0.317	1.55***	0.420	2.30****	0.394

****$p < 0.0001$, ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.

Coefficients are unstandardized regression estimates.

[a] $N = 315$; $R^2 = 0.42$, $p < 0.0001$, adding barriers to care significantly improved model fit ($F_{\text{inc}} = 11.90$, $p < 0.0001$).

[b] $N = 304$; $R^2 = 0.59$, $p < 0.0001$, adding barriers to care significantly improved model fit ($F_{\text{inc}} = 13.31$, $p < 0.0001$).

[c] $N = 315$; $R^2 = 0.25$, $p < 0.0001$, adding barriers to care significantly improved model fit ($F_{\text{inc}} = 2.06$, $p < 0.05$).

[d] $N = 304$; $R^2 = 0.30$, $p < 0.0001$, adding barriers to care significantly improved model fit ($F_{\text{inc}} = 2.86$, $p < 0.01$).

[e] $N = 315$; $R^2 = 0.30$, $p < 0.0001$, adding barriers to care significantly improved model fit ($F_{\text{inc}} = 3.88$, $p < 0.001$).

[f] $N = 304$; $R^2 = 0.42$, $p < 0.0001$, adding barriers to care significantly improved model fit ($F_{\text{inc}} = 4.57$, $p < 0.001$).

Table 3

Predicting caregiver strain dimensions controlling for state

	Caregiver strain dimensions					
	Objective		Subjective externalized		Subjective internalized	
Predictor variables	***B***	**SE**	***B***	**SE**	***B***	**SE**
Caregiver variables						
Satisfaction with family life	−0.030***	0.010	−0.037***	0.011	−0.050****	0.013
Education	−0.165**	0.063	−0.010	0.069	−0.156	0.081
White	0.227****	0.066	−0.014	0.072	0.069	0.085
Monthly household income	0.002	0.010	−0.013	0.010	0.003	0.012
Child variables						
Internalizing symptoms	0.004	0.003	−0.012***	0.004	0.015***	0.004
Externalizing symptoms	0.020****	0.003	0.023****	0.004	0.014***	0.004
Psychosocial functioning	0.028****	0.004	0.016***	0.004	0.024****	0.005
Age	−0.002	0.011	0.039	0.011	0.003	0.013
Girl	−0.016	0.064	0.031	0.069	−0.067	0.081
Barriers to care						
Family perceptions	0.103**	0.040	0.081	0.043	0.098*	0.051
Location/Time	0.147**	0.053	0.069	0.057	−0.005	0.067
Provider/Payer	0.048	0.048	−0.030	0.052	0.090	0.061
Managed care system	0.058	0.082	0.206*	0.089	0.027	0.105
Interaction terms						
Family perceptions by system	−0.085	0.056	−0.042	0.061	−0.078	0.072
Location/time by system	−0.030	0.075	−0.220**	0.081	0.010	0.095
Provider/payer by system	0.014*	0.061	0.072	0.066	0.071	0.078
Intercept	0.814	0.174****	1.01****	0.189	2.072****	0.222

****$p < 0.0001$, ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.
Coefficients are unstandardized regression estimates.

Across systems, differences were also evident. Among managed care caregivers, satisfaction with family life demonstrated a negative relationship with subjective internalized strain. Two barriers to care variables were positively associated with this dimension of caregiver strain, but they differed across samples. In the fee-for-service sample, increases in family perceptions were related to subjective internalized strain, whereas the provider/payer dimension was a significant predictor in the managed care sample.

Examining the influence of service system and interaction terms

The relationships among caregiver strain and the predictor variables did not change appreciably when the service system variable (i.e., fee-for-service vs. managed care) and the interaction terms were included in the analyses (see Table 3). As in the separate analyses, child clinical variables and caregiver satisfaction with family life were the most consistent predictors of caregiver strain. Among the barriers to care variables, the family perception barriers were positively related to objective and subjective internalizing strain, whereas location/time barriers were associated only with objective strain. Service system predicted only subjective externalized strain; being in the managed care system was positively related to this type of caregiver strain. When the analyses controlled for service system, provider payer variables were no longer predictive of any caregiver strain dimension.

Two of the system by barriers to care interaction terms were significantly related to caregiver strain. Although provider/payer barriers alone were not significantly related to caregiver strain, the system by provider/payer barriers interaction term exhibited a significant positive relationship. This finding indicates that as provider/payer barriers increased, families in the managed care system experienced steeper increases in objective caregiver strain than did fee-for-service families. The system by location/time barriers interaction term was negatively associated with subjective externalized strain suggesting that families in the managed care system experienced a slower increase in subjective externalized strain as location/time barriers increased compared to families in the fee-for-service system.

Discussion

Findings replicated well across the two samples. In both samples, a larger proportion of the variance in objective strain was explained than in the other two dimensions of strain, and the poorest fit was for subjective externalized strain. The models explained more of the variance in caregiver strain in the Tennessee managed care sample than in Mississippi's fee-for-service sample. This was most consistently attributable to the significant contribution that caregivers' satisfaction with family life made to the prediction of all three caregiver strain dimensions in the managed care sample; this relationship did not appear in the fee-for-service sample. As predicted, the addition of the barriers to care variables improved the explanatory power of the models in both samples for each of the caregiver strain dimensions. The combined analyses that controlled for service system and the interaction terms (i.e., service system by barriers to care variables) largely replicated the primary findings in the separate analyses.

The findings generally supported the expected relationships. As hypothesized, child clinical variables were the most consistent predictors of caregiver strain. This was true in both systems, and the relationships were in the same direction. Most notably, more severe externalizing behavior was associated with increases in all three types of caregiver strain in both systems. Externalizing behavior is disruptive and difficult to manage, makes the caregiving role more challenging, and clearly places considerable stress on the caregiver and family. Similarly, more impaired psychosocial functioning also exacerbated all three dimensions of caregiver strain with one exception; in the managed care system, no relationship was found between psychosocial functioning and subjective externalized strain. In keeping with the literature, White caregivers in both systems reported more objective strain; race had no impact on the other types of caregiver strain. In neither system did household income predict caregiver strain.

Age was the only child demographic variable to predict strain and only for the subjective externalized strain dimension; that finding was the same in both systems. With increases in child age, caregivers experienced more anger, resentment, and embarrassment related to their child's problems.

In both systems, location/time barriers were associated with greater objective strain. Included in the objective strain subscale are missed work, interruption of personal time, and disrupted family routines; all of these would be exacerbated by inconvenient appointment times and locations.

Although child internalizing symptoms, caregiver characteristics, and other barriers to care demonstrated some power to predict caregiver strain, their influence differed across systems. These disparate findings are discussed below by system.

In the managed care system, greater internalizing symptom severity was related to greater objective and subjective internalized strain. The relationship between caregiver strain and satisfaction with family life was also significant in the managed care system. When caregivers in the managed care system felt more supported by, and got along well with, their families, they reported less strain across all dimensions. These findings mirror those of other studies that positive family relationships and social support were negatively correlated with caregiver strain.[21,37,38] Also, in the managed care system, caregivers with more education reported more objective strain.

As expected, the provider/payer barriers to care were more potent predictors in the managed care system. Greater provider/payer barriers increased objective and subjective internalized strain. The one counterintuitive finding was the negative relationship between location/time barriers and subjective externalized strain for the managed care sample. Perhaps, as caregivers feel more anger and resentment, they increasingly disengage from pursuing services for their children and therefore have fewer barriers to report. Findings from previous research that elevated subjective externalized strain was related to children being less likely to receive residential services and have lower costs of care provide some support for this possibility.[12,16] Youth with parents who are experiencing subjective externalized strain may leave the mental health service system altogether and shift to juvenile justice or child welfare involvement.

In the fee-for-service system, child internalizing symptoms were negatively related to subjective externalized strain. When children exhibited symptoms related to worry, sadness, and fear, caregivers reported feeling less angry, resentful, and embarrassed. This finding suggests that caregiver feelings of anger, resentment, and embarrassment were more closely related to disruptive symptoms. Barriers to care in the fee-for-service system influenced caregiver strain differently than in the managed care system. Family perceptions appeared to be more salient in the fee-for-service system contributing to both objective and subjective internalized strain.

Differences across systems regarding the impact of barriers to care on caregiver strain may partially be explained by service system characteristics. The Tennessee managed care Medicaid program created supply-side incentives to contain costs. Consequently, a greater proportion of managed care families reported provider/payer barriers compared to the fee-for-service sample. These findings echo previous research that found that families were less satisfied with their managed care Medicaid plans. The analyses that included system by barriers to care interaction terms support this conclusion by demonstrating that in the managed care system, increases in provider/payer barriers resulted in steeper climbs compared to the fee-for-service system. Differences in local community characteristics may also explain cross-sample differences in the impact of barriers to care on caregiver strain. Families in Mississippi's fee-for-service system experienced greater increases in subjective externalized strain at a given increase in location/time barriers. This may be related to the fact that Mississippi families lived in more rural areas where location/time barriers are more likely. Additional research is needed to explore this possibility.

It is curious that after controlling for all the other variables in the model, being in the managed care system was associated with greater subjective externalized strain. It may be that the greater provider/payer barriers experienced by managed care families increases parental frustration that manifests itself as anger, resentment, and embarrassment.

Limitations

Some limitations to this research warrant discussion. The data presented here are cross-sectional and do not imply causality. The data do not conclusively demonstrate that barriers to care contribute to strain. It may be that experiencing more caregiver strain enhances caregivers' perception of barriers. In any case, this study demonstrates that there is a relationship between caregiver strain and barriers to care. To the extent that barriers to care and caregiver strain impact whether and how services are used, this relationship justifies further examination. In addition, because the samples were drawn from Medicaid enrollees, the findings may not generalize to other populations.

Implications for Behavioral Health

Research with multiple samples has consistently shown that after controlling for child clinical variables, children of caregivers with greater caregiver strain are more likely to receive mental health treatment, receive more services overall, be placed in more restrictive levels of care, and have higher costs associated with treatment.[1,7,8,11,12] These previous findings indicate that service systems should offer interventions to reduce caregiver strain in order to maximize the use of community-based services, reduce residential placements, and contain costs.

Having learned more about how caregiver strain relates to child, caregiver, family, and system variables, efforts are now needed to learn how to ameliorate caregiver strain. Observers have noted that systems should build caregiver and family support programs such as family, behavior management training, and in-home support into existing service arrays.[39,40] Findings from the current study suggest that reducing barriers to care may also be helpful. Although areas of needed support have been identified, no longitudinal studies have yet been published that empirically demonstrate the effectiveness of efforts to reduce strain among caregivers of children with emotional and behavioral disorders. Additional research is needed to develop and test intervention programs and system improvement efforts that could lead to reduced caregiver strain.

Findings that there are racial differences in caregiver strain suggest that interventions need to be culturally appropriate and geared for the intended population. In addition, improving service systems in general, and reducing barriers to care in particular, may help reduce caregiver strain. That the relationship between types of barriers and dimensions of caregiver strain differ by service system suggests that intervention should also be tailored to the community and service system context.

These findings also raise questions. The conventional wisdom is that barriers to care compromise access to services and reduce service use. This study found that barriers to care are related to objective caregiver strain, which is typically associated with increased use of services. This suggests an opposite relationship between caregiver reported barriers to care and service use than would be expected. It is possible that caregivers whose children have more serious problems will feel the impact of barriers more strongly and are more likely to remember and report those barriers. Caregivers of children with less severe problems feel less caregiver strain, and obtaining services for the child may not feel as urgent. They may, therefore, feel less stressed by barriers to care. Yeh and colleagues[32] have suggested that cultural factors may also impact endorsement of barriers. Their study found that youth from minority backgrounds were more likely to have unmet mental health need, but their parents reported fewer barriers to care. It is notable that there also appear to be racial differences in caregiver strain.[21,23]

Future research is needed to understand better how to alleviate strain among families caring for children with emotional and behavioral problems. Research is also needed to examine the extent to which child problems, caregiver strain, and barriers to care interact to shape help seeking processes and service utilization. Research is also needed on how help seeking evolves over time as children age and caregiver strain changes. Those efforts should explicitly examine the role of cultural factors.

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