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CHILDREN'S MENTAL HEALTH SERVICE USE AND MATERNAL MENTAL HEALTH: A PATH ANALYTIC MODEL

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Abstract

Objective—This observational study explores pathways towards any past year use of child mental health services.

Methods—Data from the 2002 National Survey of American Families were used to explore the relationship between past month maternal mental health and past year child mental health services use. Observations were limited to the 8072 most knowledgeable adults who were the mothers of target children aged 6–11. Logistic regressions were performed to determine the odds of any child mental health service use followed by path analyses using Maximum Likelihood estimation with robust standard errors.

Results—Multiple factors were associated with odds of any child mental health service use. In the path analytic model poor past month maternal mental health was associated with increased aggravation which in turn was associated with increased use of mental health visits. Negative child behaviors as reported by the mother were also associated with increased maternal aggravation and increased service use.

Conclusions—Parental perception of child behaviors influences treatment seeking, both directly and indirectly through parental aggravation. Parental mental health influences tolerance for child behaviors. Findings are consistent with other studies. Interventions should address the entire family and their psychosocial circumstances through collaboration between multiple service sectors.

Keywords

Child Mental Health; Service Use; Maternal Mental Health

Numerous studies point to the risk of developmental and psychosocial problems in children of parents with mental illnesses (Beeber & Miles, 2003; Chronis et al, 2003; Dipietro, Novack, Costigan, Atella, & Reusing, 2006; Field, Diego, & Hernandez-Reif, 2006; Murray & Cooper, 2004; Vostanis et al., 2006; Weissman et al., 2006). Mental illnesses impact maternal parental functioning and bonding between mother and child (Boyd, Zayas, & McKee, 2006; Diego et

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al., 2004; Moehler, Brunner, Wiebel, Reck, & Resch, 2006; Yonkers et al., 2001). Children of parents with major depression are themselves at risk for higher rates of psychopathology (Lieb, Isensee, Höfler, Pfister, & Wittchen, 2002).

The literature has also shown that parental concern about child mental health influences the identification of mental health problems in primary care and subsequent mental health related referrals (Angold et al., 1998; Dulcan et al., 1990; Olfson, Marcus, Druss, Alan Pincus, & Weissman, 2003). For example, when the parent proactively brings a problem behavior to the pediatrician's attention, the pediatrician is more likely to identify a mental health problem (Dulcan et al. 1990). The factors underlying parental help seeking for mental health treatment for their children are not as well known. Information regarding these factors will be useful for targeting resources and services for families.

Several studies address how parental perception of child behaviors is influenced by their own mental health. These authors found that mothers with schizophrenia, bipolar disorder, depression, and anxiety, were more likely to report their children's behavior negatively as compared to reports by outside evaluators (Hennigan, O'Keefe, Noether, & Russell, 2006; Mowbray, Lewandowski, Bybee, & Oyserman, 2006). The exact processes by which this negative report takes place remain in some dispute. Distortion caused by the parent's mental illness is one hypothesized reason that parental rating of child behavior is not always concordant with ratings by others, such as teachers (Richter & Pellegrini, 1989). Maternal ratings of their children's behavior improved significantly once their depression was treated (Modell et al., 2001). These studies' findings are suggestive of support for the distortion hypothesis. Distortion, however, may not be the sole reason for lack of concordance between parental and teacher ratings (Brown et al., 2006). Maternal depression has also been shown to be associated with increased children's externalizing behavior as rated by objective observers (Foster, Garber, & Durlak, 2008).

Stressful situations have also been hypothesized to affect parental rating of child behavior (Middlebrook & Forehand, 1985). Perceived parental burden of child symptomatology has been shown to be highly predictive of child mental health service use (Angold et al., 1998). Financial and other stresses may also impact maternal mental health and the sensitivity of mothers' approaches to her infant's cues (van Doesum, Hosman, Riksen-Walraven, & Hoefnagels, 2007).

There is also a growing literature that supports the role of socioeconomic deprivation and stress on developmental and mental health outcomes of children themselves (Johnson, & Wang, 2008; Larson, Russ, Crall, & Halfon, 2008).

To summarize, the literature to date has shown that parental mental health impacts child mental health and that parental mental health also impacts on parental perception of child behavior. The distortion effect has been hypothesized to influence the severity with which parents rate their child's behavior, while increase in perceived burden has been hypothesized to decrease tolerance for behaviors.

The current study steps beyond the distortion and perceived burden hypotheses to elucidate the multiple factors associated with child mental health service use through examination of data from the third round (2002) of the National Survey of America's Families (NSAF; Urban Institute, 2002). This nationally representative data set contains measures of parental mental health, perceived burden, and parental rating of child mental health as well as parental report of service utilization and demographic data. Thus, we are able to pursue a multidimensional analysis of factors associated with child mental health service use.

Methods

Data from the Public Use files of the 2002 National Survey of America's Families (NSAF) Focal Child File were used for these observational analyses. This data set has been used to examine child mental health utilization differences by state (Strum, Ringel, & Andreyeva, 2003). As a nationally representative data set, NSAF uses a complex survey design with multi stage sampling to provide estimates that are representative of the national non-institutionalized adult population (Abi-Habib, Safir, & Triplett, 2002). Weights were assigned to produce nationally unbiased estimates. Random Digit Dialing (RDD) and alternate methods for those households without phones were used for sampling. Interviews were conducted through computer assisted telephone interviewing. Data were collected from mid to late October 2002. A detailed description of sampling methods is described in Abi-Habib, Safir, & Triplett (2002). For the RDD segment a screener was used to decide if the household was eligible. The response rate for the screener was 66%. The non telephone sample for the 2002 NSAF used a sub sample of primary sampling units from previous NSAF rounds. There was an 83.5% response rate amongst all eligible households for the actual interview.

Sample

For the purposes of this study cases were only included if the most knowledgeable adult (MKA) was the focal child's mother. Because different questions from the CBCL were asked of 6–11 year olds and 12–18 year olds we only included cases where the focal child was 6–11 years of age. This left a sample size of 8279.

Measures

The dependent variable for our analyses was the past year use of any mental health visits for the focal child. This was measured through the following survey question: "During the past 12 months, how many times has your child received mental health services, including mental health services from a doctor, a mental health counselor or therapist? (Do not include treatment for substance abuse or smoking cessation.)" The variable was then transformed into a binary variable coded as zero for no past year visits and 1 if the child had any mental health visits.

Past month maternal mental health was measured by five 4-level questions adapted from the Medical Outcomes Study MHI-5 (Ehrle & Moore, 1997; Stewart, Hays, & Ware, 1988; Ware & Sherbourne, 1992). These questions were: "How much time during the past four weeks... "Have you been a very nervous person; Have you felt so worn down in the dumps that nothing could cheer you up; Have you felt calm and peaceful; Have you felt downhearted and blue; Have you been a happy person?" The 20 point raw score was converted into a 100 point scale. The Cronbach's alpha for the scale was .81 (Ehrle & Moore, 1997). Then the variable was recoded as 1 if the women's score was 67 or below, which is the cut off for poor mental health on the MHI-5. The variable was recoded as 0 if the score was greater than 67.

Child behavioral and emotional problems were measured by six questions adapted from the Child Behavior Checklist Parent Report Form (Achenbach, 1966) which have also used in the National Health Interview Survey (Ehrle & Moore, 1997). These questions were: "For each item please tell me if it has been often true, sometimes true, or never true for [the child] during the past month: He/she feels worthless or inferior; Has been nervous or tense; Acts too young for his age; Has trouble sleeping; Lies or cheats; Does poorly at school work." The Cronbach's alpha for the questions for 6–11 year olds was .73. We used the dichotomous form of the variable. The variable was coded as 1 if the scale score was 11 or below which is the cut off for significant behavioral or emotional problems in the child. Otherwise, the variable was coded as 0.

The Maternal Aggravation Scale was developed with questions adapted from the National Evaluation of Welfare to Work Strategies (Ehrle & Moore, 1997). The scale is composed of the following four questions: “How much time during the past month have you: Felt your child is much harder to care for than most; Felt your child does things that really bother you a lot; Felt you are giving up more of your life to meet your child’s needs than you ever expected; Felt angry with your child?” These questions were converted to a 16 point scale with a Cronbach’s alpha of .69 (Ehrle & Moore, 1997). For ease of interpretation we rescaled the scale so that a higher score represents higher levels of aggravation.

We also included a variable for functional impairment. This is a binary variable coded 0 for no and 1 for yes in response to the question “Does (Child) have a physical, learning, or mental condition that limits his/her participation in the usual kinds of activities done by most children his/her age or ability to do regular school work?” The variable was coded as 1 if the child was enrolled in a special school (for the blind, deaf, physical or mental disabilities) or if the child was enrolled in special education classes.

Other independent variables, gathered through survey questions, included the number of months in the past year with any insurance coverage and whether or not the mother had graduated high school or received a GED. Demographic data were also collected through survey questions. Race was coded as African American, Asian, American Indian, and White, with White as the reference variable.

Analyses

All analyses were performed to account for the complex survey design and weighting of the data, thus producing corrected standard errors (MPlus, 2007). Analyses began with frequencies and bivariate statistics. Following bivariate analyses we performed multivariate logistic regressions for the dependent variable of past year use of child mental health treatment. In these logistic regressions child gender, maternal education, and race were added to the model as statistical controls. Finally, we conducted path analyses for categorical and continuous dependent variables using maximum likelihood estimation with robust standard errors. The final model presented here includes only those paths that were statistically significant at $p < .05$. To describe model fit, we calculated the Nagelkerke R Square.

All confidence intervals presented at the 95th percentile. All coefficients presented are unstandardized.

Results

The mean child age for the sample was 8.5 years. Approximately 15% of respondents went at least one month without any insurance for their child. Ninety two percent of mothers reported that their child had used no mental health services in the past year. Over seventeen percent of mothers reported that they had significant mental health symptoms in the past month. Seven percent of mothers also reported that their child (focal child) had significant behavioral and emotional problems in the past month. Almost 18 percent of respondents reported that the CPS family income was at or below the federal poverty level. The variables of interest are almost all significantly correlated (See table 1). Of note, poor maternal mental health and higher maternal aggravation were both significantly correlated with the mother’s rating of her child’s behavioral and emotional problems. Use of a child mental health visit in the past year was significantly associated with all variables with the exception of race. A higher score on maternal aggravation was significantly correlated with poor maternal mental health and rating of significant behavioral and emotional problems in the child.

In our multivariate logistic regression for any child mental health service use in the past year, poor self rated maternal mental health was significantly associated with increased odds of their child having a mental health visit in the past year (OR=1.49, $p<.05$, CI 1.05–2.11). Significant child behavioral and emotional problems in the past month was associated increased odds of the child having a past year mental health visit (OR=3.19, $p<.001$, CI 2.10–4.84). In cases where the child's functioning was impacted by his or her own health the odds of a past year child mental health visit increased by a factor of (OR=5.96, $p<.001$, CI 4.29–8.29). Number of months with insurance had a small but statistically significant impact on odds of child mental health service use as did maternal aggravation. Female children were less likely to have had a past year mental health visit. The child's race and mother's education were not associated with increased odds of the child having any mental health visit in the past year. The c statistic for the final model was .79.

Figure 1 shows the final path analytic model for a past year child mental health visit. All paths presented are significant at the .05 level or below. Because the path analytic model includes both continuous and categorical dependent variables, numbers reported include both coefficients and odds ratios. If the dependent variable is categorical odds ratios are reported. Slope coefficients are reported where the dependent variable is continuous. As can be seen in Figure 1, poor mental health in the mother is associated with significant child behavioral and emotional problems in the past month as reported by the mother. Significant past month child behavioral and emotional problems as reported by the mother, are associated with greater maternal aggravation. There is an implied feedback loop between child behavioral and emotional problems and maternal aggravation. We were not able, however, to identify an appropriate instrumental variable from within the data set. Therefore, we were unable to show this feedback loop in the model. Accordingly, we chose to present what we consider to be the more relevant path for the current analyses. Presence of significant child behavioral and emotional problems in the past month as reported by the mother is associated with significantly increased odds of the child having used mental health services in the past year (OR=3.187, SE. 213). The model shows the association between increased income and lower odds of poor self reported maternal mental health (OR=.590, SE.042).

Discussion

Our study findings are consistent with other studies that have shown that maternal mental health distorts the mother's perception of her child's behavioral and emotional problems. They are also consistent with findings from studies that have examined the relationship between maternal stress and distress and help seeking for their child. This study adds to the literature by examining the complex array of factors that impact parental help seeking for behavioral health problems in their children.

The effects of maternal mental health on the parent's rating of the child's behavioral and emotional problems, as well as upon her aggravation with the child's behavior, deserve further study. Specifically, it will be important to unpack maternal aggravation to explore specific components of distress. These can then be specifically targeted with interventions. In fact, our findings explain, in part, why parent training and support interventions (Taylor & Biglan, 1998; Woolfenden, Williams & Peat, 2002) are effective, as they may reduce such aggravation by providing parents with effective tools to address child behavior.

It has been long known that poverty is a risk factor for poor maternal and child mental health (Boothroyd et al., 2006; Moses-Kolko & Roth, 2004; Samuels-Dennis, 2006). Our findings suggest that poverty acts in complex ways on the mother's mental health, her report of the child's behavioral and emotional problems, and her aggravation with the child. Further exploration here is warranted. The findings of this study provide further support for the need

for a more holistic approach to addressing child problem behaviors. We know that primary care providers most often identify a child's mental health problem after the parent brings their concern to the physician's attention (Olfson et al., 2003; Author, 2007). In such cases, it may be best advised to identify maternal and family psychosocial stressors and mental health issues in order to prescribe the appropriate family focused interventions. Such response can not be left solely to the primary or specialty care provider but must include collaboration with schools, families, and social services (Author, 2006).

Limitations

The study has several limitations. The cross sectional nature of the data limits the ability to make causal inferences. The data set, however, is nationally representative. The fact that this is secondary analysis limited our ability to identify an instrumental variable to show the assumed feedback loop between child behavior and maternal aggravation. Therefore, directionality cannot be definitively established. Our model is, however, well grounded in theory (Angold et al., 1998; Dulcan et al., 1990; Foster, Garber, & Durlak, 2008; Middlebrook & Forehand, 1985; Olfson, Marcus, Druss, Alan Pincus, & Weissman, 2003; van Doesum, Hosman, Riksen-Walraven, & Hoefnagels, 2007). The data set does not include independent ratings of child or maternal mental health status, or mental health visits. Parent self reported mental health utilization data may be subject to some false negative reporting (Hoagwood, Horwitz, Stiffman, Weisz, Bean, Rae, et al., 2000). The self-reported nature of the mental health questions may also introduce bias. The general nature of the question on mental health visits does not allow us to examine any differences between factors associated with visits to primary care or mental health specialty care. We did not have a measure of co-morbid substance abuse. Another limitation of the data set is that measurement of maternal mental health as well as child behavioral and emotional problems is for one time point (past month) and child mental health service use is for the past year. Therefore, we may have missed mothers or children that may have presented with symptoms at another point in time. While this is not ideal, other studies have used the MHI-5 as a covariate in studies of health outcomes (Chung, Garfield, Elliott, Carey, Erickson, & Schuster, 2007; Strodl & Kenardy, 2008) as have other depression screeners (Minkowitz, Strobino, Scharfstein, Hou, Miller, Mistry, & Swartz, 2005). Recall bias plays a major factor in recall of symptoms. Therefore, most scales of symptomatology use past week, past two week, or past month time frames. Still, our findings make a significant contribution to the literature in that we were able to explore a wide variety of socioeconomic covariates with a nationally representative sample of mothers and children.

Maternal distress or distortion alone do not account for the maternal rating of her child's behavioral and emotional problems, or for the child's mental health services use. The factors that bring child behavioral and emotional problems to the attention of providers are complex and should be treated as such. Child's functional disability, as rated by the mother, had the largest impact on the odds of any mental health service use.

Conclusion

Distortion caused by a mother's mental health issues does impact upon her assessment of her child's behavioral and emotional problems. Such distortion alone does not account for child mental health utilization. Child mental health service use is impacted by a complex web of child functioning, income, insurance status, as well as child behavioral and emotional problems and maternal mental health. Child behavioral and emotional problems as reported by the mother impact mental health service utilization both directly and indirectly through maternal aggravation. Such information can give providers multiple leverage points with which to engage the mother, child, and family in intervention. Findings also speak to the need for services targeted to the entire family and coordinated amongst multiple health, mental health,

educational, and social service providers. Further research should address the most efficient and effective ways to access and coordinate mental health services between pediatricians and ancillary providers.

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$P < .05$ for all paths. Nagelkerke $R^2 = .46$

Odds ratios shown by ++ and solid line. Dotted line represents coefficients. (SE)

Figure 1.

Correlations

Table 1

	1	2	3	4	5	6	7	9	10	11	12	13
Child Mental Health Visit in Past Year	1											
Poor Past Month Maternal Mental Health	.121***	1										
Significant Past Month Child Behavioral and Emotional Problems	.288***	.196***	1									
Months with Any Insurance	.056***	-.077***	-.017	1								
Maternal Aggravation	.144***	.245***	.281***	.021	1							
Child Has a Health Condition that Limits Activity	.321***	.140***	.358***	-.016	.135***	1						
Mother HS Grad	-.045***	-.013**	.020	-.052***	.032	.014	1					
Black Child	.001	.060***	.018	-.001	.123***	-.019	-.071***	1				
White Child	-.010	-.055***	-.034**	.000	-.123***	.020	.050***	-.860***	1			
Asian Child	-.008***	-.002	-.000	.041***	.027**	.028	.023*	-.083***	-.355***	1		
American Indian Child	.042	.003	.063***	-.030	.000	-.052***	-.017	-.052***	-.223***	-.022	1	
CPS Family Income as % of Poverty	-.034*	-.256***	-.070***	.226***	-.067***	.135	.030	-.221**	.184	.038***	-.057***	1

* p<.05

** p<.01

p<.001 Correlations corrected for weighting and stratification of the data

Table 2

Logistic Regression for Any Child Mental Health Visits in Past Year

N=8072	-2 Log Likelihood 8033069.5	
Variable	Odds Ratio	95% CI
Poor Past Month Maternal Mental Health	1.491 [*]	1.054–2.109
Significant Child Behavioral and Emotional Problems in Past Month	3.188 ^{***}	2.102–4.835
Functioning Impacted by Health	5.961 ^{***}	4.286–8.290
Number of Months with Insurance	1.113 [*]	1.043–1.187
CPS Family Income	.999	.886–1.127
Greater Maternal Aggravation	1.107 [*]	1.020–1.202
Asian	.879	.326–2.374
Black	.881	.564–1.374
American Indian	1.787	.772–4.139
White (reference)		
Female	.736 [*]	.554–.978
Mother Graduated High School	.790	.667–.935

*
p<.05**
p<.01***
p<.001