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Maternal Depressive Symptoms When Caring for a Child with Mental Health Problems

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Abstract

As primary caregivers of children with mental health problems, mothers face challenges that put them at risk for depression, which is rarely identified or addressed. The aims of this paper were to (a) identify mean differences among demographic, stressor, threat, and resource variables specified in a theoretical model and thought to be associated with maternal depressive symptoms and (b) determine how much variability in depressive symptoms is explained by these variables. High levels and prevalence of depressive symptoms were found within a quality of life study that these data were drawn from. Of 139 mothers participating in this study, 58% had a score of 16 or greater on the CES-D indicating moderate to high levels of depressive symptoms. Significant differences were found between mothers with higher versus lower levels of depressive symptoms for 11 of the 18 variables. Hierarchical regression was used to examine the variance explained in depressive symptoms based upon the conceptual model with 4 composite variables. Income (step 1), behavioral problems (step 2), threat appraisal (step 3), and resource appraisal (step 4) combined explained 42% of the variance.

Keywords

Maternal depression; Child mental health problems; Quality of life; Factors related to maternal depression

Introduction

Mothers are usually the primary caregiver of a child with mental health problems (Gerkenmeyer et al. 2008). As such, mothers are responsible for caring for and obtaining services for their child. Acquiring the knowledge, skills, and resources necessary to raise a child with a chronic health condition such as mental health problems creates many challenges for mothers and claims a significant portion of family resources (Ray 2002). Difficulties experienced by mothers caring for a child with mental health problems have a strong likelihood of negatively influencing mothers' well-being. If these mothers experience high levels of distress and problems in functioning related to the challenge of caring for their child with mental health problems, they will likely have more difficulty providing that care. Mothers need to be functioning as well as possible to enhance the well-being of their child and to assure their own well-being (Bode et al. 2000; Kazdin and Wassell 2000).

Approximately one out of five children in the US experiences mental health problems (National Institute of Mental Health 2002; US Public Health Service 2000). Mental health problems in children and maternal depression are common health conditions that co-exist in families and impose a significant burden on society (Elgar et al. 2003, 2004). Depressive symptoms have been cited as having the highest disease burden of all health conditions in women, impairing social and physical functioning and being associated with suicide, increased health care costs, morbidity, and mortality (World Health Organization 2001). Although depressive symptoms are common in primary caregivers of children with mental health problems, they frequently go unrecognized and unaddressed in the clinical setting (Downey and Coyne 1990; Elgar et al. 2004).

In another population of mothers at risk for depression, providers such as obstetricians and pediatricians have begun to more routinely assess and refer individuals that positively screen for post-partum depression during follow-up OB-GYN visits and well-baby visits (Baker-Ericzen et al. 2008; Harrington and Greene-Harrington 2007; Heneghan et al. 2006; Olson, et al. 2005; Mayberry et al. 2007; Rishel et al. 2006). It would seem that addressing depression among mothers who are primary caregivers of a child with mental health problems would be an even more feasible approach in mental health settings in which providers are better prepared to offer mental health services to these mothers.

Besides improving the quality of life and well-being in mothers of children with mental health problems, attention to maternal depression in mothers of children with mental health problems is also important because findings show that mental health problems in children of depressed mothers improve with reductions in maternal depression (Modell et al. 2001). Consequently, it is important to examine how caring for a child with mental health problems is associated with maternal depressive symptoms. Despite a growing literature describing the quality of life and well-being of primary caregivers of children with physical or intellectual problems, little has been published about the well-being of parent caregivers of children with mental health problems. This gap suggests a need for further research.

Despite high rates of depression among mothers of children with mental health problems, only a few studies have investigated variables associated with maternal depression in this context. The aims of this study were to: (a) identify mean differences among variables specified in a theoretical model and thought to be associated with maternal depressive symptoms and (b) examine how much variability in depressive symptoms is explained by these variables. Answering these questions can assist providers and researchers in assessing maternal depression by being increasingly aware of variables found to be related to their depression. Further, identifying underlying correlates of depression will enhance efforts to

decrease maternal depression among these caregivers by targeting those areas for therapeutic interventions.

Conceptual Model

The conceptual model for this study (Fig. 1) is based upon Lazarus and Folkman's transactional theory of stress and coping (Lazarus 2000; Lazarus and Folkman 1984). According to this theory, stress results when demands of a specific transaction between an individual and her/his environment are appraised by the individual as exceeding available resources to cope with the demands and, therefore, viewed as a threat to her or his well-being. When appraising a potential stressor (e.g., child's behavior problems), an individual can categorize it as irrelevant, positive or non-harmful, or as a potential threat (primary appraisal). The individual's perception of her/his ability to change the situation or to manage emotional reactions to the situation, based upon available resources to cope with the demands of the situation, is also assessed (secondary appraisal).

It is assumed that caring for a child with mental health problems can be challenging at times and constitute a stressor. In this study, primary appraisal/threat variables included perceptions of subjective distress, objective distress, role disruption, stigma, feeling blamed, and threat. Secondary appraisal/resource variables included empowerment (family, community, and child services), social support (tangible, intangible, help at home, family support, and services helping), perceived personal control, and the mother's perception that the child's problem could change. Within the larger quality of life (QOL) study from which these data were drawn, high levels and prevalence of depressive symptoms (a measure from the psychological QOL domain) were found among primary caregivers, providing the impetus for this study (Gerkenmeyer et al. 2008). According to Lazarus (2000), emotions such as depression are a response to appraisal.

Depression has been shown to be two to three times more common among mothers whose children exhibit emotional and behavioral problems than in mothers of healthy children (Barkley et al. 1992). Mothers of a child with attention-deficit hyperactivity disorder (ADHD), for example, have been found to have higher depression levels, alcohol consumption (Cunningham et al. 1988), and parenting stress (Baker and McCal 1995; Mash and Johnston 1983) than mothers of children without such problems.

Factors Associated with Maternal Depression

Compared to parents of children without mental health problems, higher levels of depression have been found among parents of children with mental health problems such as autism (Sharpley and Bitsika 1997), ADHD (Chronis et al. 2003; Cunningham et al. 1988), oppositional defiant and conduct disorders (Chronis et al. 2003; Pelham et al. 1997), and externalizing behavioral problems (Gartstein and Sheeber 2004). Following are examples from the literature of threats that are positively associated with depression and resources that are negatively associated with depression. Increased role disruption would be an example of a threat positively associated with depression, and increased social support would be an example of a resource negatively associated with depression.

Stressor/Child Behavior Problems

Child behavior problems have consistently been identified as a stressor for parents of children with mental health problems (Cunningham et al. 1988; Gartstein and Sheeber 2004; Sharpley and Bitsika 1997; Tomanik et al. 2004). Common sources of stress for parents of children with autism, for example, include child behavioral problems (Sharpley and Bitsika 1997; Tomanik et al. 2004) poor child social skills, and inability of the children to care for themselves (Tomanik et al. 2004).

Primary Appraisal/Threats

Consistent themes emerged in the literature that validated the model in Fig. 1. Threat and a lack of resources have been associated with more depression among caregivers of children with mental health problems. For example, Sharpley and Bitsika (1997) identified feeling stretched beyond personal limits and Asarnow and Horton (1990) described lack of supportive relationships as contributing to increased depression among these caregivers. Webster-Stratton and Hammond (1988) found that role disruption, role restriction, self-blame, social isolation, and a low sense of competence were associated with parenting stress and predicted depression among mothers of children referred for conduct problems.

For parents of children with autism, depression has been associated with an external (versus internal) locus of control, the use of distancing and escape as coping mechanisms, and failure to use a problem-focused style of confrontive coping (Dunn et al. 2001). Among mothers of children with ADHD, Cunningham et al. (1988) found maternal depression to be linked to problems in family functioning and child behavior. Similarly, Gartstein and Sheeber (2004) found that over time, child externalizing behaviors predicted both disruption in family functioning and decline in maternal self-perceived parenting competence, which in turn contributed to an increase in maternal depression.

Child impairment and the lack of supportive relationships were associated with increased role restriction in mothers of children hospitalized with severe depressive and schizophrenia spectrum disorders (Asarnow and Horton 1990). Although role disruption has predicted depressive symptoms in mothers of chronically ill children (Silver et al. 1999), few studies have examined its relationship to depression among mothers of children with mental health problems.

Secondary Appraisal/Resources

Social support and self-efficacy have been identified as mediating distress experienced by caregivers of adult family members with mental illness (Solomon and Draine 1995). Specifically, increased social support, family members' sense of confidence in their ability to manage the consequences of their relative's illness, and caregivers' beliefs that they handle difficult situations well were associated with lower levels of caregiver distress.

Among parents of children with autism, consistently lower scores on depression, anxiety, daily level of stress, and frequency of feeling stretched beyond limits were found for parents who had access to family members for child care (Sharpley and Bitsika 1997). These parents also reported higher levels of confidence in their own ability to handle their child's major difficulties. Furthermore, parents who believed that the family members who provided assistance for their child had a clear understanding of the child's difficulties and needs reported relatively less anxiety, less depression, and higher levels of confidence.

This study was conducted to better understand the extent to which particular factors are associated with maternal depression in mothers who are the primary caregivers of children with mental health problems. A review of the literature identified numerous factors associated with maternal depression in this context, including both threats and resources. This study examined the extent to which the presence of perceived threats and resources differed between mothers with higher versus lower levels of depressive symptoms. Further, it examined how much variability in mother's level of depressive symptoms was explained by each of these domains.

Methods

Procedure

A secondary analysis was conducted with data from a larger study that employed a cross-sectional design to investigate variables associated with quality of life among primary caregivers of children with mental health problems ($N = 155$). Data were collected from a convenience sample of parents identified as the primary caregivers of a child between 2 and 19 years of age who were receiving community health services in one Midwestern state and who had been living at home with the caregiver for at least 20 of the past 24 months. The study was approved by the Institutional Review Boards through both the University and one of the hospitals. Participants learned about the study through information shared by co-investigators who were providers at a mental health agency or flyers distributed to mental health agencies and advocacy groups. Upon agreeing to participate and signing for their informed consent and authorization for release of information forms, most of the parents completed the survey packet and returned it by mail. If a completed survey was not received after approximately 2 weeks, a follow-up phone call was made to see if the parent had received the survey, had questions, or wanted to be interviewed over the phone. Twelve completed the survey over the phone. Once a parent completed the survey, the community mental health agency was contacted to obtain information about the child from the medical record, including diagnoses and functional assessment. Each parent received \$25 for a completed survey.

Sample

Only mothers ($N = 139$) who were the primary caregiver of a child with mental health problems were in this study including biological (89.9%), adoptive (8.6%), and stepmothers (1.4%). These mothers ranged in age from 23 to 62 years ($M = 36.3$, $SD = 7.2$); 46.8% were married, 23.0% divorced, 15.1% single, 9.4% living with a partner, and 5.8% separated. Most participants were Caucasian (80.6%), with 17.3% African American, 1.4% Native American, and 0.7% other. A majority of participants were employed full-time (25.9%) or part-time (16.5%), with 30.9% being homemakers, 12.9% unemployed, and 11.5% other. The median household income was between \$20,000 and \$30,000.

Most children (66.2%) were males, and the age range was from 2 to 19 years ($M = 9.8$; $SD = 3.9$). Children were predominantly Caucasian (72.7%), with 16.5% African American, 0.7% Native American, and 10.1% other. Diagnosis from the child's mental health record was obtained for the majority (70%) of the children in the sample using the first diagnosis listed, with the other 30% missing because no diagnosis was assigned, the diagnosis was not gathered by the research assistant, or the child's chart was not available to the research assistant. Of known diagnoses, the most common were disruptive behavior disorders (30% of the total sample), including Attention Deficit Hyperactivity Disorder, Oppositional Defiant Disorder, and Conduct Disorder. The diagnoses of mood disorders (13% of the total sample) and autism (13% of the total sample) were the next most common, followed by anxiety disorders (9% of the total sample). Physical and sexual abuse, schizophrenia, disorders classified as "other" (e.g., learning and communication disorders) made up the remaining 5% of the total sample. Half of the children (49.6%) were enrolled in special education classes. The average age at which the child's mental health problem had arisen, according to the mother, was 4.5 years (range = birth to 16).

Instruments

Depressive Symptoms—Symptoms of depression were measured by the 20-item Center for Epidemiological Studies Depression Scale (CES-D; Radloff 1977) with items rated on a 4-point Likert response scale from 0 (*rarely or none of the time*) to 3 (*most or all of the*

time), for a total score of 0–60. The CES-D has demonstrated strong internal consistency and high test–retest reliability and validity. Coefficient alpha for the CES-D in this study was 0.93. A score of 16 or greater, the commonly used cut-off point for depression, was used to indicate a higher level of depressive symptoms (Prescott et al. 1998; Radloff and Locke 1986).

Income—Total household income was measured on an incremental range increasing by \$10,000 from “less than \$10,000” (1), “\$10,000 to \$19,999” (2), “\$20,000 to \$29,999” (3), up to “greater than \$100,000” (11). A mean of 2.9 therefore would fall in the \$20,000 to \$29,999 range.

Stressor/Child Behavior Problems—Child behavior problems were rated by parents on the Child Behavior Checklist (CBCL). Two CBCL versions were utilized, ages 1.5 to 5 years and ages 6 to 18 years. The CBCL has a long history of psychometric testing and strong support for validity and reliability (Achenbach, 1991). The internalizing and externalizing *T* scores on the CBCL were used to represent major categories of child problems, with a higher score indicating more problems.

Primary Appraisal/Threats—Maternal distress was defined as maternal burden related to caring for a child with mental health problems. It was measured by the 19-item Parent Experiences Scale (PES), adapted by Gerkenmeyer (1999) from Reinhard’s Burden Assessment Scale (1994). Coefficient alpha in a study by Reinhard (1994) was 0.87. Factor analysis by Reinhard of the Burden Assessment Scale found subjective and objective factors. Factor analysis of the PES in this study revealed a 13-item subjective distress factor, including items such as guilt and worry, and a 6-item objective distress factor, including items such as disrupted work and leisure activities. Item responses were rated as 1 (*not at all*) to 4 (*a lot*), with 0 (*not applicable*). Coefficients alpha for subjective and objective distress in this study were 0.88 and 0.79, respectively.

Similar to objective distress, role disruption was measured by the 6-item SF-36 Health Survey-Adapted, using a 5-point Likert response scale from 1 (*not at all*) to 5 (*a great deal*). Adapted by Gerkenmeyer, Scott, et al. (2006b) from the SF-36 (Ware and Sherbourne 1992), the scale assessed disruption of mothers’ work and social activities within the past month. Coefficient alpha in this study was 0.90.

The Parent Attribution Scale (PAS; Gerkenmeyer, Austin, et al. 2006) measures how parents perceive and explain their situation of having a child with mental health problems. The PAS consists of 21 items rated from one to five and anchored by two opposite statements beginning with “My child’s mental health problem is something that.” Mothers circle a number for each item that reflects their perception of the direction and strength of the item. The higher the number, the more positively or optimistically the parent rated the item. Factor analysis with varimax rotation, in this study, resulted in 5 factors: Stigma (alpha = 0.89), Threat (alpha = 0.80), Services Helping (alpha = 0.69), Problem Can Change (alpha = 0.68), and Feeling Blamed (alpha = 0.61). Stigma, Threat, and Feeling Blamed were viewed as threat appraisals and reverse coded so that higher means were worse. Stigma included items indicating that the family or child was thought less of or treated badly because of the child’s mental health problem. Feeling Blamed included items related to mother’s self-blame and perception of others blaming the mother. Threat included items related to mother’s reported seriousness of their child’s mental health problem, how much the child’s problem caused the parent to experience anxiety, and caused family tension.

Secondary Appraisal/Resources—Social support was measured by the 40-item Inventory of Socially Supportive Behaviors (ISSB) that uses a 5-point Likert response scale

from 1 (*not at all*) to 5 (*about every day*), to determine how frequently parents receive social support (Barrera et al. 1981). This scale has high test–retest reliability and strong internal consistency (Barrera et al. 1981). Factor analysis with varimax rotation resulted in two factors with data from this study, including tangible (i.e., goods, services, and information) and intangible (emotional) support. Alpha coefficients in this study were 0.92 and 0.95, respectively.

In addition, Home Helper was measured by one item, developed by the author, rating how much help was received from someone living with the caregiver on a scale from 1 to 5, with higher scores indicating more help (Gerkenmeyer, Austin, et al. 2006). When a home helper was not identified, it was not rated (88 out of 139 [63%] reported having a home helper).

Family Support was yet another measure of social support, reflecting mothers' satisfaction with how their family supported them. It was measured by the 5-item Family APGAR (Smilkstein, 1978) with items rated from 1 (*not at all*) to 5 (*a great deal*). A couple examples of items includes: (a) I am satisfied that I can turn to my family for help when something is troubling me, and (b) I am satisfied that my family accepts and supports my wishes to take on new activities or directions. Alpha in this study was 0.92.

Empowerment refers to mothers' appraisal of their ability to appropriately care for their child with mental health problems by being able to act on their own behalf and have more control over their lives. It was measured using the 34-item Family Empowerment Scale (FES), which uses a 5-point Likert response scale from 1 (*never*) to 5 (*very often*) (Koren et al. 1992). In this study, factor analysis with varimax rotation resulted in three factors: Child (alpha = 0.90), Community (alpha = 0.91), and Family Services (alpha = 0.89). In addition, the 7-item Pearlin Mastery Scale (PMS) was used to measure parents' perceived personal control, defined as the belief in their ability to manage their situation (Pearlin and Schooler 1978). Unlike the FES, which is situation-specific to parenting a child with mental health problems, the PMS measures the general concept of perceived personal control using a 4-point Likert response scale from 0 (*strongly agree*) to 3 (*strongly disagree*). For this study, coefficient alpha was 0.75.

The factors, Services Helping (alpha = 0.69) and Problem Can Change (alpha = 0.68), from the Parent Attribution Scale were viewed as resources.

Data Analysis

Analyses were carried out using SPSS Version 15.0 (SPSS, Inc.; Chicago, IL, 2006). Internal reliability for all scales was assessed using Cronbach's alpha. To assess differences between depressed and non-depressed mothers, mothers were first categorized as having or not having a high level of depressive symptoms, that is, they had a CES-D score of 16 or greater versus less than or equal to 15. Next, two-sample *t*-tests (for income, child's age, and length of problem) and MANOVA (multivariate analysis of variance—for the domains of child behavior, threat appraisal, and resource appraisal) were conducted to test for mean differences in depressed versus non-depressed mothers for the domains of variables defined in the conceptual model (Fig. 1). Because the variable home helper was only rated in 63% of the participants, we conducted an additional MANOVA for resource appraisal that omitted this variable. The results did not substantively change. For domains in which the overall MANOVA test for depression (yes/no) was significant, post hoc *t* tests were conducted for each variable adjusting the Type I error for each domain using the Bonferroni method.

To assess how much variability in depressive symptoms was explained by the two domains of appraisal (threat and resource), controlling for behavior and demographic variables, first

composite scores were calculated within each appraisal domain by standardizing the variables significantly related to depressive symptoms after Bonferroni adjustment (reverse ordering Stigma, Feeling Blamed, and Threat so that higher values indicated higher threat appraisal) and then calculating the mean of these standardized variables within each domain. This was done because of the high level of collinearity among the variables within each domain, making inclusion of individual variables in subsequent hierarchical regression models infeasible. For child behavior problems, we included the Total Behavior Score from the CBCL as the composite measure. Next, hierarchical regression was used with these composite predictors to investigate the variance explained in depressive symptoms by threat and resource appraisal controlling for behavior problems and other relevant demographic predictors.

Results

Mean Differences Among Variables Associated with Depressive Symptoms

A high mean level of depressive symptoms was found (CES-D, $M = 20.3$) among mothers of children with mental health problems. The percentage of mothers having a score of 16 or greater (58%) was clinically high. With respect to demographic variables, only income was related to depressive symptoms, with lower levels of income reported for mothers with more depressive symptoms (Table 1). Child's age and length of problem were not significantly different between the two groups. Based on the Wilk's Lambda statistics, there were overall differences in means between depressed and non-depressed mothers for each of the three domains of child behavior, threat appraisal, and resource appraisal.

Unadjusted post-hoc t test analyses revealed significant differences between mothers with higher versus lower levels of depressive symptoms for over half of the behavioral and appraisal variables (Table 1). Using Bonferroni adjustments within each domain of the conceptual model, mothers with more depressive symptoms reported more internalizing and externalizing behavioral problems in their children. In addition, in the threat appraisal domain, mothers with higher levels of depressive symptoms also reported significantly higher levels of both subjective and objective distress and role disruption, and increased likelihood of perceptions of stigma and feeling blamed. Finally, in the resource appraisal domain, mothers with more depressive symptoms reported less family empowerment, intangible support, satisfaction with family support, and perceived personal control than mothers with fewer depressive symptoms.

Variance Explained in Depressive Symptoms

Hierarchical regression was conducted to explore the additive contribution of income and the three composite variables (behavioral problems, threat appraisal, and resource appraisal) in explaining the variance associated with depressive symptoms. Based on the conceptual model, income was entered in Step 1, behavioral problems in Step 2, threat appraisal in Step 3, and resource appraisal in Step 4. The four variables combined explained 42% of the variance (Table 2). In addition, the R-square significantly improved at each step.

As can be seen in Table 2, the R^2 nearly doubled from 7 to 18% with the addition of Total Behavior Problems to Income in Step 2, and nearly doubled again from 18 to 34% after adding Threat Appraisal in Step 3. The final addition of Resource Appraisal in Step 4 increased the R^2 another 8%. Income was statistically significant at each step, although the beta weights became more attenuated as additional variables were added to the models. Total Behavior Problems was highly statistically significant at Step 2, but not in Steps 3 or 4 after including the appraisal variables in the models. Threat Appraisal was highly statistically significant in both Step 3 and 4, as was Resource Appraisal in Step 4. Parameter

estimates were in the expected direction, with higher levels of income and resource appraisal associated with fewer depressive symptoms and behavioral problems and higher threat appraisal associated with more depressive symptoms.

Discussion

Consistent with previous literature (Chronis et al. 2003; Gartstein and Sheeber 2004; Pelham et al. 1997; Sharpley and Bitsika 1997), high levels of depressive symptoms were found among these mothers. Considering the challenges that these mothers face in caring for a child with mental health problems, it is important to identify factors that contribute to their depression and develop evidence-based interventions to address their needs and decrease their depression.

Consistent with the conceptual model (Fig. 1), overall differences in means between depressed and non-depressed mothers for each of the three domains (behavior problems, threat appraisal, and resource appraisal) were found. Further, unadjusted post-hoc analyses revealed significant differences between mothers with higher versus lower levels of depressive symptoms for behavioral and appraisal variables in the expected direction.

Mothers with more depressive symptoms reported significantly lower incomes. Although the impact of income on maternal depression became less influential once resource appraisal was added to the regression equation, it remained a statistically significant variable throughout the analysis. This is not surprising considering that higher rates of maternal depression exist among low-income families in general (Elgar et al. 2004). Although the links between mental health and socioeconomic conditions are quite complex, in general low income families are relatively more isolated from their communities, have fewer extrafamilial social support resources, and have greater difficulty accessing child care and mental health services (Elgar et al. 2004; Hashima and Amato 1994). Therefore, level of income may well influence maternal depression because fewer support resources are available to these mothers.

Although there was initial support for child behavior problems playing a role in maternal depression, once Threat Appraisal was added to the regression equation, it dropped out as an influential variable. How mothers appraised the degree of threat of their situation of being a primary caregiver of a child with mental health needs may be more important than their perception of the child behavior problems per se. The appraised degree of threat was very predictive and may have overshadowed their perception of child behavior problems.

Threat Appraisal

Mothers who appraised their environment as more threatening because of perceived stigma and feeling blamed for their child's mental health problems also reported significantly more depression. The threat was personalized more often as these mothers also endorsed more worry, guilt and shame, which were associated with increased levels of depression. As their level of distress increased, their lives became more affected through missed days of work, disruption of social relationships, and stigma over having a child with a mental health concern. When individuals see the world as less hospitable, they might begin to curtail their contact with individuals and organizations outside of their home (i.e., work, social networks, leisure pursuits). This may simply intensify the cycle of distress, with withdrawal leading to more distress.

Resource Appraisal

Mothers with more depressive symptoms reported less perceived personal control, family-focused empowerment, and intangible social support. These findings are consistent with past

research finding more maternal depression in mothers with less social support and a decreased sense of empowerment (Sharpley and Bitsika 1997). In other words, higher levels of empowerment (including perceived personal control and family-focused empowerment) and increased social support were associated with fewer depressive symptoms in mothers caring for children with mental health needs.

Using hierarchical regression to examine the additive contribution of income and the three composite variables (child behavioral problems, threat appraisal, and resource appraisal), 42% of the variance associated with depressive symptoms was explained, with R-square significantly improving at each step. The parameter estimates for each of the composite variables were also in the expected direction, further validating the proposed model (Fig. 1).

Limitations

Use of a convenience sample of mothers caring for a child receiving community mental health services limits the generalizability of findings because non-respondents might have differed from those who chose to participate. In this exploratory study, the cross-sectional design could not control for the mental status of these mothers as they progressed through their caregiving experience. Another limitation was the wide age range for children, however, child's age was not significantly associated with depressive symptoms. Additionally, data for this study were solely obtained from maternal reports and did not include data from other sources; therefore, the findings may have been biased. Finally, results were correlational in nature and were not intended to infer causality.

Practice Implications

Modell et al. (2001) found that improvement in children's behavior is influenced not only by child-focused interventions, but also by reductions in their mother's depression, pointing to a multifaceted equation of improvement. For too long, the predominant focus has only been on the child side of this equation without addressing parents' mental health concerns. In their own practice, clinicians may recognize the need to not only focus on the identified patients, the children, but also to address the needs of their caregivers, primarily mothers. Clinicians may feel helpless once referrals to mental health providers for these mothers go unheeded. Clinicians may also be reluctant to assess these mothers for depressive symptoms. For example, Heneghan et al. (2006) found 39% of pediatricians stated that the pediatrician's office was not the best setting to ask about maternal mental health issues. Perhaps mental health professionals feel the same way. Because other professionals such as pediatricians may not be comfortable or have the time to assess the well-being of these parents, screening them within mental health settings is even more imperative.

Other groups of professionals who see mothers regularly are including screening for depression as a routine part of their care. It has been found that screening for maternal depression during follow-up OB-GYN visits is efficient and cost-effective and that mothers follow through with referrals (Baker-Ericzen et al. 2008; Dennis and Ross 2006; Harrington and Greene-Harrington 2007; Mayberry et al. 2007). In one study, women who screened positive for depression were contacted by a mental health professional within 48 hours with 96% of women then being treated for their depression (Baker-Ericzen et al. 2008).

Results of this study help to clarify that clinicians need to be assessing and addressing maternal depression. According to our sample, many of these mothers bring with them not only high levels of depressive symptoms but also significant role disruption, low perceived personal control, lack of confidence in their ability to address their child's and family's needs, and high levels of distress. Once effective screening has identified those with depressive symptoms, then viable treatment options must be explored. Interventions known

to be effective, feasible, and affordable in this context need to be made available to these mothers and tailored to their individual needs. Additional information on evidence-based interventions for depression, specifically for mothers caring for a child with mental health problems, is needed to guide providers in making treatment choices.

Research Implications

Within the current mental health service system, distress experienced by mothers of children with mental health problems often remains undetected and, therefore, unaddressed. In future research, diagnosis of depression among these caregivers is needed using assessment techniques acceptable to clinicians and considered appropriate for diagnosing depression in this context. Further, building on the results of this study, a scale could be developed to guide interventions and monitor outcomes by screening these mothers for specific factors found to be associated with depression in this context, such as role disruption, perceived personal control, intangible support, empowerment, and family support.

There is evidence that interventions such as cognitive behavioral therapy and/or medications can decrease depressive symptoms and distress (DeRubeis et al. 1999; DeRubeis et al. 2005; Mynors-Wallis et al. 1995). Webster-Stratton and Hammond (1988) have recommended a thorough assessment of parents of children with conduct disorder and an intervention program for parents with depression that not only involves parent training, but also treatment for their depression, including cognitive therapy and stress reduction.

Innovative ways to effectively address the distress of these mothers within the current mental health arena need to be developed and tested. Variables associated with mothers' depressive symptoms in this study provide potential areas to target in future interventions. Examining maternal needs and wants with regard to personal and community resources could further contribute to development of effective interventions that would be acceptable to these parents. Along with research examining interventions to address these mothers' needs, exploration of potential strategies that would be feasible within the service setting for providers would strengthen the evidence needed to guide practice. Our research team is examining use of a telephone problem-solving intervention for these caregivers.

In summary, our results shed light on the association between child mental health problems and maternal depressive symptoms. Over half of the mothers in this study experienced high levels of depressive symptoms, with significant differences found between mothers with higher versus lower levels of depressive symptoms on a multitude of independent variables. Without question, there is a need to systematically assess mothers of children with mental health problems for depression and to develop and test interventions to address their depression. Ultimately, it is very likely that both mothers and children will benefit from efforts to improve the well-being of maternal care-givers of children with mental health needs.

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Fig. 1.
Conceptual model

Table 1

Differences between mothers with higher versus lower levels of depressive symptoms

Score	MANOVA	Depressive symptoms		t value	Cohen's d	p value
		Equal or greater than 16 on CES-D (n = 81)	Equal or less than 15 on CES-D (n = 58)			
		Mean	SD	Mean	SD	
<i>Demographics</i>						
Income		2.9	1.9	4.2	3.1	-2.7 -0.53 0.008*
Child's Age		9.5	3.8	10.1	4.0	-0.8 -0.15 0.418
Length of problem		5.8	3.8	5.6	3.4	0.3 0.05 0.768
<i>Child behavior problems</i>						
CBCL internalizing	0.909 ^a	69.0	9.4	64.9	8.6	2.8 0.45 0.006**
CBCL externalizing		70.9	9.1	65.3	9.2	3.6 0.61 <0.001**
<i>Threat appraisal</i>						
Subjective distress		2.7	0.7	2.2	0.6	4.5 0.76 <0.001***
Objective distress		2.6	0.9	2.0	0.7	4.3 0.73 <0.001***
Role disruption	0.721 ^a	3.1	1.0	2.1	0.8	6.8 1.08 <0.001***
Stigma		3.2	1.0	2.7	1.0	3.0 0.50 0.004***
Feeling blamed		2.7	1.1	2.0	1.0	3.7 0.66 <0.001***
Threat		3.9	0.9	3.6	0.7	2.6 0.36 0.009
<i>Resource appraisal</i>						
Empowerment						
Family		3.7	0.6	4.0	0.5	-3.4 -0.53 0.002****
Community		2.5	0.9	2.8	1.0	-2.2 -0.32 0.006
Child service		4.1	0.6	4.3	0.6	-2.0 -0.33 0.015
<i>Social support</i>						
Tangible support		1.7	0.5	1.9	0.8	-2.0 -0.31 0.246
Intangible support	0.635 ^a	2.2	0.8	2.9	1.0	-4.0 -0.79 0.003****
Help at home		3.4	1.2	4.0	1.1	-2.9 -0.52 0.005
Family support		2.6	1.1	3.7	1.1	-6.1 -1.00 <0.001****
Services helping		3.9	0.9	4.1	0.8	-1.4 -0.23 0.159

Score	MANOVA	Depressive symptoms		t value	Cohen's d	p value		
		Equal or greater than 16 on CES-D (n = 81)					Equal or less than 15 on CES-D (n = 58)	
		Mean	SD				Mean	SD
Perceived personal control		1.8	0.5	2.3	0.4	<0.001 ****		
Problem can change		2.8	1.0	3.0	0.9	0.496		

^aMANOVA Wilk's lambda value, all are significant at $\alpha < 0.05$

* Significant at $\alpha = 0.05$

** Significant using Bonferroni adjusted significance level of $\alpha = 0.05/2 = 0.025$

*** Significant using Bonferroni adjusted significance level of $\alpha = 0.05/6 = 0.008$

**** Significant using Bonferroni adjusted significance level of $\alpha = 0.05/10 = 0.005$

Table 2Results from hierarchical regression models predicting depressive symptoms ($n = 136$)

Variable	Step 1	Step 2	Step 3	Step 4
Income	-1.30 (0.42)* $t = -3.09$ $p = 0.002$	-1.16 (0.40) $t = -2.93$ $p = 0.004$	-1.13 (0.36) $t = -3.18$ $p = 0.002$	-0.84 (0.35) $t = -2.43$ $p = 0.017$
Total behavior problems		0.48 (0.11) $t = 4.23$ $p < 0.001$	0.10 (0.12) $t = 0.78$ $p = 0.436$	0.05 (0.12) $t = 0.46$ $p = 0.646$
Threat appraisal			8.04 (1.39) $t = 5.80$ $p < 0.001$	5.39 (1.47) $t = 3.67$ $p < 0.001$
Resource appraisal				-5.86 (1.47) $t = -3.98$ $p < 0.001$
R ²	0.07	0.18	0.34	0.42
Adj-R ²	0.06	0.17	0.33	0.40
Change in R ²	0.06	0.11	0.17	0.07
F Change	9.524	17.90	33.64	15.86
Degrees of freedom	1,134	1,133	1,132	1,131
p value	0.002	0.000	0.000	0.000

* Estimated beta value and standard error