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Maternal psychosocial predictors of pediatric health care use: Use of the common sense model of health and illness behaviors to extend beyond the usual suspects

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Abstract

Determinants of pediatric health care use extend beyond the health status of the child and economic and access considerations. Parental factors, particularly those associated with the mother, are critical. The common sense model of health and illness behaviors, which was developed to account for adult health care use, may constitute a framework to study the role of mothers in determining pediatric health care use. In the common sense model, the person's cognitive representations of and affective reactions to bodily states influence health care decision-making. There is a growing literature that points to the importance of maternal psychopathology (reflecting the affective component of the common sense model) and maternal parenting self-efficacy (reflecting the cognitive component of the model) as important contributors to pediatric health care use. The implications of this conceptualization for future research and clinical practice are discussed.

Keywords

pediatric health care; common sense model; negative affect; parenting self-efficacy

The “usual suspects” of the pediatric health care use literature

Pediatric health care use is a relatively understudied area of health psychology. However, numerous variables related to the child, parents, and family (i.e., the “usual suspects”) have been examined alone and in combination to predict pediatric health care use. Child health status as measured by presence/absence of a medical diagnosis or by parent-ratings of child health is the single greatest determinant of pediatric health care use (Janicke & Finney, 2001). Many of the significant predictors of children's medical referrals reflect the importance of family characteristics such as maternal education level, maternal employment status, family size, family dysfunction, and parenting stress; Abidin & Wilfong, 1989; Mechanic, 1974; Riley, Finney, Mellits, & Starfield, 1993; Tessler, Mechanic, & Dimond, 1976; Ward et al., 2006; Wolfe, 1980). Smaller family size, for example, is positively associated with pediatric health care use perhaps due to greater parental attentiveness to children's symptoms, less parenting experience accompanied by a greater likelihood to seek advice from a knowledgeable source such as a physician, or greater income and time to seek services (Janicke & Finney, 2001). Patterns of health care use tend to be similar across siblings and within families (Shor, Starfield, Stidley, & Hankin, 1987; Ward et al., 2006), perhaps due to parental modeling of health care

use, attitudes regarding health care, propensity towards symptom focus in the family, or any combination of these factors (Janicke & Finney, 2000).

The “usual suspects” have fallen short of describing why pediatric health care use is sought. Numerous studies have determined that child health accounts for only 15–20% of the “statistical variance” in predictions of pediatric health care use (Janicke & Finney, 2001; Black & Jodorkovsky, 1994; Kelleher & Starfield, 1990; Newacheck & Halfon, 1986; Starfield et al., 1985; Wolfe, 1980). Modeling predictors of pediatric health care use has proven difficult due to 1) the use of adult models to explain child health care use, 2) a scarcity of research that examines parental characteristics, 3) small or highly selective samples, 4) recall biases when relying solely on maternal report, and 5) a general paucity of research. Further slowing the field is confusion within the literature regarding what outcome variable is studied. The meaning of the construct “pediatric health care” varies from study to study and includes visits to a general practitioner, emergency room visits, acute care or “sick” visits, well child visits, and combinations of these outcomes. As a consequence, the current review uses a broad definition of “pediatric healthcare” that includes studies examining any of these outcomes.

Maternal health care seeking for children within the common sense model

The characteristics of the child are but a few of the variables to be examined as pediatric health care is typically caregiver initiated. Therefore, the characteristics of the person making decisions for the child, often the mother, are influential in predicting whether treatment will be sought. Maternal characteristics are especially important to examine because maternal health care use is consistently found to be significantly positively correlated with pediatric use. This relationship holds whether health care use is measured dimensionally (i.e., as total frequency of use; Hankin et al., 1984; Janicke et al., 2001; Riley et al., 1993; Starfield et al., 1985; Ward, Klerk, Pritchard, Firth, D'Arcy, & Holman, 2006; Ward & Pratt, 1996) or dichotomously as use versus nonuse within a specified period of time (Newacheck & Halfon, 1986; Wolfe, 1980). In addition, mothers appear to serve as primary decision-makers with regards to their children's health care (Minkovitz, O'Campo, Chen, & Grason, 2002). For example, when maternal and paternal use of health care are examined separately as potential determinants of pediatric health care use, maternal use is twice as influential as paternal use (Shor et al., 1987).

The common sense model of health and illness behaviors (Martin, Rothrock, Leventhal, & Leventhal, 2003; Meyer, Leventhal, & Gutmann, 1985) may constitute a framework to study the role of mothers in determining pediatric health care use. In the common sense model, the person's cognitive representations of and affective reactions to bodily states influence health care decision-making. In other words, how a person perceives and interprets symptom(s) in combination with the emotional response the symptom(s) provokes determine whether treatment is sought. The common sense model is typically applied from the standpoint of seeking care for oneself based on a change in somatic activity recognized as a symptom (Cameron, Leventhal, & Leventhal, 1993). Symptoms are often ambiguous in nature with regards to whether they require medical attention. For example, a painful stomach ache may be caused by appendicitis, requiring treatment or may be caused by indigestion, easily and inexpensively treated with home remedies. Therefore, symptoms can prompt unnecessary medical visits, particularly in individuals who perceive themselves as less capable of caring for themselves on initial symptom presentation. In fact, a significant number of patients seek medical care for minor complaints that could have been more easily cared for at home (National Center for Health Statistics, 1980; Martin et al., 2003).

The symptomatic individual undergoes a process of self-diagnosis prior to seeking treatment, thereby taking on the role of a “lay physician” (Martin et al., 2003). The “lay physician”

examines symptom characteristics such as severity, chronicity, and onset in determining how best to proceed with self-care. Cognitive appraisals such as whether one feels capable of handling care for the symptom(s) independently (i.e. self-efficacy in the self-care domain) come into play in deciding whether to seek medical care. Initial health care use may be due in part to a desire to alleviate negative emotions evoked by bodily symptoms and associated cognitive appraisals. Maintenance of health care use may occur via emotional reactions to initial care seeking such as relief at being heard, anxiety reduction, and feeling supported.

In the literature regarding the affective component of the common sense model, negative emotions are commonly represented as negative affect. Negative affect refers to a broad class of related emotions such as anxiety, worry, sadness, anger, and fear (Watson & Clark, 1992) and is the common emotional component across anxiety and depressive disorders (Kendler, Heath, Martin, & Eaves, 1987). A number of potential roles of negative affect have been examined in relation to health care seeking. First, negative affect has been shown in some, but not all, studies to be positively correlated with subjective symptom reporting unrelated to objective indices of health (Costa & McCrae, 1985, 1987; Watson & Pennebaker, 1989; Watson & Pennebaker, 1991). These findings influenced the development of the symptom perception hypothesis which states that people high in negative affect may exaggerate the significance of their symptoms or may even make false symptom claims (Watson & Pennebaker, 1989). Second, negative affect has been shown to be predictive of objective health measures such as risk for heart disease (Kubzansky et al., 1998) and impaired immune system functioning (Cohen, Doyle, Skoner, Fireman, et al., 1995; Leventhal, Hansell, Diefenbach, Leventhal, & Glass, 1996). Finally, some studies have not demonstrated a significant association between negative affect and symptom reporting (Diefenbach, Leventhal, Leventhal, & Patrick-Miller, 1996). In attempting to integrate these discrepant findings, Martin et al. (2003) conclude that the key to understanding the role of negative affect in health care seeking is specifying the context in which symptom reporting is being examined.

Within the literature on pediatric health care, maternal psychopathology is often the construct of interest and is represented as negative affect, emotional distress, a diagnosis of depression or anxiety, or history of mental health treatment. We will use the term maternal psychopathology to represent all of these related constructs. The role of maternal psychopathology has not been firmly established with some studies finding support for maternal psychopathology as a determinant of pediatric health care use (Riley et al., 1993; Tessler & Mechanic, 1978; Woodward et al., 1988) and others not finding such support (Horowitz et al., 1985; Kelleher & Starfield, 1990; Ward & Pratt, 1996; Watson & Kemper, 1995). These conflicting findings may be due to both the various ways in which researchers have measured maternal psychopathology as well as the way in which pediatric health care use is assessed in individual studies. We suggest that the common sense model may be used to illuminate the role of maternal negative affect, specifically, in seeking pediatric health care. Mothers' emotional reactions to their children's experiencing of symptoms may prompt and maintain pediatric health care use via a desire to alleviate worry, fear, and stress associated with caring for children's symptoms independently.

The effects of maternal negative affect on pediatric health care use may be mediated or moderated by a significant cognitive variable, parenting self-efficacy (Janicke & Finney, 2001; 2003). Parenting self-efficacy is defined as the degree of confidence that parents have in their ability to perform the numerous and changing tasks associated with parenting (Coleman & Karraker, 1997). The construct of parenting self-efficacy encompasses both level of knowledge about child-rearing tasks and degree of confidence in one's ability to perform these tasks (Coleman & Karraker, 2003). In the context of the common sense model, parenting self-efficacy may serve as a cognitive factor important to whether health care is sought. Parents who utilize pediatric health care to a great extent may have difficulty juggling their numerous

parenting demands and general life stressors due to low parenting self-efficacy (Janicke & Finney, 2003). Mothers low in parenting self-efficacy as pertains to caring for a child's symptoms independently may entrust a knowledgeable and respected other, the child's physician, for symptom and care evaluations. Seeking care for a child's symptoms in this context is not only an attempt to maintain the child's health, but also an attempt to alleviate parental distress and perceived burden. Mothers high in negative affect may be expected to utilize pediatric care more frequently if they are low in parenting self-efficacy. The theory and research applicable to the potential interactive role of parenting self-efficacy will be discussed.

The current review will examine the impact of maternal psychopathology and self-efficacy on pediatric health care use within the framework of the common sense model of health and illness behaviors. Few studies have focused upon the affective components of treatment decision-making and even fewer on the role of cognition and affect on health care decision-making made by proxy (e.g., a mother's health care decision-making for her child). The literature pertinent to pediatric health care use for maternal psychopathology, measured variously, and parenting self-efficacy will be discussed. An integrated model of their influences on pediatric health care will then be presented. Finally, directions for future work examining this model will be provided.

Psychopathology, negative affect, and adult health care use

The current evidence suggests that a significantly greater proportion of patients seen for medical care have a comorbid mental illness than is found in the general population (Cohen, Doyle, Skoner, Fireman, et al. 1995). For example, the point prevalence of generalized anxiety disorder was found to be 6.4% in a primary medical care sample (Roy-Byrne, Katon, Broadhead, et al., 1994) compared with 1.6% in the National Comorbidity Survey (Wittchen, Zhao, Kessler, & Eaton, 1994) representative sample of the U.S. population. Additionally, the twelve-month prevalence rates of anxiety disorders were significantly greater for those patients deemed high utilizers of health care (29.3%) versus normal utilizers (11.9%; Schmitz & Kruse, 2002). Physically healthy adults experiencing depressive symptoms have been shown to utilize primary care services significantly more than nondepressed adults (Koopmans & Lamers, 2001; Mandl, Tronick, Brennan, Alpert, & Homer, 1999). In one study, patients experiencing depressive symptoms contacted their physicians more often than any other group with the exception of patients with heart disease (Koopmans & Lamers, 2001). In fact, generalized anxiety disorder and major depressive disorder, both marked by high negative affect, are two of the most common diagnoses of patients with medically unexplained symptoms (e.g., chest pain, irritable bowel syndrome, chronic pain), those diagnosed with somatization disorder, and those who frequently utilize health care (Katon & Sullivan, 1990; Roy-Byrne & Katon, 1997).

Consistent with the common sense model of health and illness behaviors, research has implicated negative affect in health care use both directly (Tessler, Mechanic, & Dimond, 1976; Kinsman, Wildman, & Smucker, 1999) and indirectly via symptom reporting (Mechanic, 1980). Moreover, individuals high in negative affect are prone to greater physical symptom reporting than individuals low in negative affect (Leventhal, Hansell, Diefenbach, Leventhal, & Glass, 1996; Watson & Pennebaker, 1989). The mechanism(s) accounting for the robust negative affect and symptom reporting correlation are currently unclear. Negative affect may lead to disease and by default, symptom reporting (Aneshensel, Freirichs, & Huba, 1984). Alternatively, physical symptoms may result in the creation of negative affect (Aneshensel, Freirichs, & Huba, 1984; Diefenbach, Leventhal, Leventhal, & Patrick-Miller, 1996). Negative affect may reallocate attention to the body's internal processes thereby increasing attention to somatic activity and resulting in increased symptom reporting (Diefenbach et al., 1996; Gray, 1982; Watson, 1988; Watson & Clark, 1984). In examining the direct relationship between

negative affect and health care use, it is possible that some individuals seek medical care for treatment of their anxiety or depressive symptoms due to unawareness of mental health resources, lack of accessibility to mental health care, stigma associated with mental health care, comfort with their general physician, or a number of other potential explanations (Janicke & Finney, 2000; 2001; 2003; Barsky, 1981).

Maternal negative affect and pediatric health care use

There is a paucity of research relating maternal negative affect in the context of the common sense model and treatment decision-making for pediatric care. In principle, symptoms or behavioral changes in a child may trigger maternal emotional responses such as fear, anxiety, discouragement, or irritation. As demonstrated when individuals seek medical care for themselves (Martin et al., 2003), the mother's emotional response may entail hypervigilance, rumination, and catastrophizing about her child's symptoms. This heightened attentiveness to and importance placed on symptoms may lead to an increased likelihood of a mother seeking medical care for her child. In addition, depressed and anxious mothers may seek pediatric treatment at least partially in an attempt to reduce personal distress, whether or not they believe it is attributable to child illness.

Alternative explanations exist for a link between maternal affective symptoms and pediatric healthcare use. Negative affect may heighten susceptibility to contagious illness in the mother (Aneshensel, Freirichs, & Huba, 1984) resulting in child illness. Ward et al. (2006) suggest that correlations between mother and child use may not be solely due to symptom perception and care-seeking propensity, but also to intergenerational morbidity, perhaps due to cross infection and/or unspecified pre and postnatal contextual variables. The impact of maternal depression on pediatric health care use may begin during pregnancy as depressed pregnant women are at a greater risk than nondepressed pregnant women of engaging in negative health behaviors (e.g. substance use, inadequate prenatal care) that are linked to adverse birth outcomes such as low birth weight and later child health complications (Zuckerman, Amaro, & Beardslee, 1987). The existence of affective disorders may predict pediatric healthcare utilization due to negative affects on children's health such as lack of vitamin administration and car seat use (Leiferman, 2002; McLennan & Kotelchuck, 2000). Alternatively, pediatric health care may be sought when emotionally distressed mothers' feel unable to cope with their children independently via low parenting self-efficacy (Janicke & Finney, 2000; 2001).

When maternal psychopathology is broadly defined as emotional distress, a link to greater children's health care use has been repeatedly demonstrated (Riley et al., 1993; Tessler & Mechanic, 1978; Woodward et al., 1988). In one study, maternal health care use, neuroticism and maternal attitudes towards preventative medical services were the most significant predictors of pediatric health care use (Newacheck & Halfon, 1986). A prospective study of factors predictive of pediatric care seeking in children ages five to eleven years determined that mothers' worry regarding child health is the best predictor of health care use when children's past use of health care is ignored (Janicke, Finney, & Riley, 2001). These findings emphasize the subjectivity of parental health care decision-making for their children.

Parental anxiety may be a specific predictor of or particularly strongly related to urgent or emergency pediatric care use. Mothers who perceive their children to be vulnerable to illness use significantly more emergency services for their children, even when their perception is deemed unwarranted by medical professionals (Black & Jodorkovsky, 1994). Studies have documented that having a parent with a history of treatment for "nerves" was shown to be significantly associated with child ambulatory care visits, but not use versus nonuse of medical care (Oberlander, Pless, and Dougherty, 1993; Woodward et al., 1988). Consistent with the affective component of the common sense model, Oberlander et al. (1993) found that parents

who utilized pediatric care for minor symptoms/illnesses reported reductions in their levels of anxiety following the visit. Although parental anxiety was reduced across groups, highly anxious parents remained more anxious than those who were not initially anxious. The parents' sustained anxiety suggests the likelihood of the maintenance of pediatric health care use as a means of reducing parental anxiety, as would be suggested by the common sense model.

In looking beyond anxiety, several studies have documented significant positive relationships between parental depression and pediatric health care use in children ages three to eighteen (Kramer, Warner, Olfson, Ebanks, Chaput, Weissman, 1998; Mandl, et al., 1999; Olfson, Marcus, Druss, Pincus, & Weissman, 2003; Weissman, Merikangas, John, Wickramaratne, et al., 1986). Children ages two to sixteen years categorized as high users of care have been shown to be twice as likely as low users to have parents that reported significant depressive symptoms (i.e. BDI score > 10; Kinsman, Wildman, & Smucker, 1999). In a low-income community sample, Chung et al. (2004) reported an increased likelihood of infant hospitalizations when mothers were experiencing depressive symptoms as measured by the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977).

In a sample of children ages 0 to 30 months, Minkovitz et al. (2005) examined medical records and maternal reports of depressive symptoms measured by the CES-D (Radloff, 1977). Acute pediatric use including hospitalizations, emergency department visits and preventive care (i.e., "well baby" visits, vaccination appointments) were examined using medical records and parental interviews conducted at 2 to 4 and 30 to 33 months of age. The researchers found that children of mothers experiencing depressive symptoms at 2 to 4 months postpartum had a greater likelihood of an emergency department visit between 1.5 and 2.5 years of age. Maternal depressive symptoms at 2 to 4 months postpartum were also predictive of decreased use of children's preventive care as measured by well-baby visits at 12-months of age and current vaccinations at 24-months of age. The specificity of depressive symptoms' impact according to nature of the visit is consistent with the common sense model. Depressive symptoms increased the likelihood of parent-initiated acute care visits, perhaps as a means of reducing maternal distress. Depressive symptoms decreased the likelihood of physician-initiated well child visits perhaps due to lack of motivation to attend or diminished ability to cope with the demands of keeping an appointment that was scheduled independent of parental desire for pediatric treatment.

In an infant sample, Mandl et al. (1999) reported a significant association between infant health care visits in primary care and/or emergency settings and level of maternal depressive symptoms based on two independent studies. One sample of 1,200 mother-infant pairs was interviewed via telephone regarding health services use at 3 and 8 weeks postpartum. An additional sample of 6,749 mothers from 48 states was taken from the National Maternal and Infant Health Survey (1988). The main independent variable for both samples was the occurrence of more than one problem-oriented primary care visit and/or emergency department visit during the newborn's first month of life. The main dependent variable across samples was the mother's CES-D score. Results from both studies indicated a significant positive relationship between maternal depressive symptoms and problem-oriented use of infant health care (i.e., more visits were associated with higher levels of depressive symptoms). In fact, mothers whose infants had more than one problem-oriented visit or any emergency department visits in the first month of life were significantly more likely to be depressed than mothers of infants without problem-oriented or emergency visits. Problem-oriented visits occurring in the second through the fifth months of life were also significantly linked to maternal depressive symptoms. However, well child visits, typically initiated by the physician rather than the mother, were not associated with maternal depression in either sample. This finding is discrepant with Minkovitz et al. (2005) and suggests that the relationship between pediatric

health care use and maternal psychopathology may be specific to mothers prone to initiating medical care for psychosocial concerns (Janicke & Finney, 2000).

Not all of the research examining acute pediatric health care use and maternal affective symptoms has demonstrated a significant relationship. In a low socioeconomic status inner city sample of one year old children, neither maternal depressive symptoms nor social support significantly predicted pediatric health care use (Watson & Kemper, 1995). The null finding may be due in part to subject selection (i.e. poor women with little access to health care) calling into question the generalizability of the results (Watson & Kemper, 1995). Additionally, in an Australian sample of children ages four to nine years and their mothers, maternal symptoms of depression and anxiety were not indicative of pediatric health care seeking (Ward & Pratt, 1996). However, power limitations due to limited sample size and shared variance with a parental stress variable, may account for the lack of significant results. Finally, in a nationally representative sample of children ages zero to three, Kahn et al. (2002) found no significant relationship between maternal depression symptoms and hospitalizations. These null findings suggest the need for further research examining the role of maternal anxiety, depression, and overall negative affect in relation to pediatric use, perhaps with the guidance of the common sense model used within the adult health care use literature.

The role of parenting self-efficacy

Perhaps some of the discrepant findings within the literature examining maternal affective symptoms and pediatric health care use reflect the influence of a third variable that has yet to be extensively studied. Seeking pediatric health care may alleviate the mother's emotional distress and perceived inability to cope with the numerous demands of parenting (i.e., low parenting self-efficacy). A variety of research suggests that parenting self-efficacy is associated with child outcomes such as infant interactive behavior, toddler adjustment, behavior problems, school performance, anxiety, socio-emotional adjustment, self-regulation, and self-worth (Ardelt & Eccles, 2001; Bogenschneider, Small, & Tsay, 1997; Bohlin & Hagekull, 1987; Coleman & Karraker, 2003; Day, Factor, & Szkiba-Day, 1994; Gross & Tucker, 1994; Hill & Bush, 2001). A number of studies have found self-efficacy to be negatively correlated with anxiety, depression, negative cognitions, demoralization, learned helplessness, maternal reported stress and passive maternal coping style (Bandura, 1991; Coleman & Karraker, 1997; Cutrona & Troutman, 1986; Donovan, Leavitt, & Walsh, 1990; Ozer & Bandura, 1990; Teti & Gelfand, 1991; Wells-Parker, Miller, & Topping, 1990). Teti and Gelfand (1991) found maternal self-efficacy to be a mediator of the relationship between maternal psychosocial variables (i.e. depression, sociodemographic status, infant temperament, social support) and maternal competence as measured by a composite score of observed maternal behaviors indicative of "good mothering" (i.e., sensitivity, warmth and appropriate engagement). Teti and Gelfand (1991) determined that "maternal self-efficacy was the factor most directly and unambiguously related to parenting behavior" (p. 926).

The implications of deficient parenting self-efficacy for health care use have been largely ignored. Parenting self-efficacy, in the domain of pediatric health care use, entails parents' beliefs regarding their ability to handle their children's symptoms independently and their ability to seek medical care when necessary. From the common sense model perspective, parents act as lay physicians when deciding whether to handle their children's symptom(s) independently or to seek aid from a physician. Individuals low in self-efficacy will seek to relinquish control over situations in which they lack self-efficacy to those considered more skilled or knowledgeable in the area (Bandura, 1982; 1986; 1997). Relinquishing control is attractive to those low in self-efficacy because it reduces performance demands and emotional distress linked to being responsible in a given situation. Low parenting self-efficacy may result

in mothers consulting their children's physicians to generate solutions for problems and to dissipate the burden of responsibility for the child.

Parenting self-efficacy may impact pediatric health care utilization via its interaction with parental stress level. Under conditions of stress (e.g. mental illness, poverty, multiple jobs, single parenthood), numerous lines of research suggest that self-efficacy mediates child outcomes (Bandura, 1995; Ozer, 1995). In general, high self-efficacy appears to act as a buffer against sociocultural stressors, whereas low self-efficacy accentuates the negative impact of external stressors on parent-child interactions (Ozer, 1995). In the only known study to test the influence of parenting self-efficacy on pediatric health care use, Janicke and Finney (2003) hypothesized that parental stress and self-efficacy would interact to predict pediatric primary health care use (i.e., parents high in stress level and low in parenting self-efficacy will have children who more frequently access health care). Primary care takers (94.3% mothers) completed self-report measures of stress and perceptions of effectiveness in the parenting role (i.e., parenting self-efficacy as assessed within the study). Children's medical records for two years prior to subjects' entrance into the study were examined for total number of primary care visits. Results indicated that neither parenting stress nor self-efficacy were significantly predictive of pediatric primary care use when examined independently. As predicted, the interaction between parent-reported stress and self-efficacy was significant. When the primary caretaker reported minimal exposure to daily hassles and stressful events, parenting self-efficacy was not associated with pediatric health care use. However, when the primary caretaker reported a high level of stressful events and hassles, low levels of parenting self-efficacy were associated with less pediatric health care use, a finding opposite to what was predicted. The interaction accounted for 11.5% of the variance in pediatric primary care use. The average difference between groups was one medical visit (i.e., 5.6 versus 6.9 visits for children of parents with below average and above average parenting self-efficacy, respectively).

The results from Janicke and Finney (2003) call into question the role of parenting self-efficacy in pediatric health care use as they are discrepant with hypothesized relations in the literature. How may we account for the surprising findings that parents low in parenting self-efficacy seek pediatric healthcare less when stressed than those parents higher in self-efficacy? The authors suggest that pediatric care use may constitute behavioral activation via a skill associated with parenting (i.e., seeking medical care for their child) thereby making confident, efficacious parents those most likely to utilize pediatric care under stressful circumstances. Whether these findings generalize to parents (mothers) experiencing depression or anxiety is unclear and remains to be tested empirically. Nevertheless, it is important to note that there was no main effect linking self-efficacy to child health care use, suggesting that parenting self-efficacy does not mediate the relation between maternal psychosocial factors and child health care use.

Conclusions & future directions

The specific nature of maternal psychosocial variables that contribute significantly to pediatric health care use is currently unclear due to scant literature specific to this question, mixed findings in the available literature on pediatric use, and differing protocols, population characteristics, outcome variables, and predictor variables included in these studies. The factors discussed in the current review are but a few of the many that should be examined for predictive value in pediatric health care. Future studies could advance the literature by examining multigenerational, comprehensive models using clear definitions of variables. Furthermore, health care use should consistently be measured using reliable and verifiable means (i.e., maternal report combined with medical record review).

The common sense model of health and illness behaviors provides guidance into predictor variables worthy of examination according to cognitive representations of and affective reactions to bodily states that influence health care decision-making. Further study of the role of the common sense model in healthcare decision-making made by proxy (e.g., a mother's health care decision-making for her child) is needed. Numerous findings from the literature linking maternal negative affect to pediatric health care use suggest the utility of the common sense model as a framework for understanding and furthering research into pediatric health care use. First, the importance of the affective domain is demonstrated by the significant findings linking use of pediatric care to parental emotional distress. Second, the common sense model can be used to describe findings positively linking maternal negative affect to acute care services and negatively linking maternal depression to preventative care. Within the model, mothers would be expected to seek health care for their children according to appraisals of their symptoms when they feel a need for help in coping with pediatric symptoms or with the burden associated with being a parent in emotional distress. Indirect associations between affective symptoms and pediatric health care use may be due to significant correlations between variables pertinent to the cognitive component of the common sense model such as parenting self-efficacy (Janicke & Finney, 2001; 2003). The cognitive component of the model is pertinent in that parenting self-efficacy may increase or decrease the likelihood of a mother initiating health care depending on whether pediatric care is sought as an active parenting tool or as a means of distributing parenting responsibility (Janicke & Finney, 2003). The common sense model and related literatures are suggestive of potential interactions of parenting self-efficacy and maternal negative affect that are in need of specification in relation to pediatric health care use.

The implications of a demonstrated relationship between mother's depressive and anxious symptomatology, parenting self-efficacy, and pediatric health care are numerous. A greater focus on the context and needs of the family in pediatric care may be warranted. Routine parental screening for affective symptoms in pediatrics clinics may promote use of mental health services when warranted. However, screening programs should be enacted under conditions of available treatment referrals within the medical setting or community. Additionally, stressed, overburdened, and depressed parents may benefit from assistance in making and keeping preventive appointments, in the form of reminder calls, appointment cards, calendars, or other means. The trend towards inclusion of psychologists within pediatrics and family care settings could facilitate such programs and referrals. Psychosocial treatments designed to enhance parenting self-efficacy and parental education programs teaching appropriate treatment seeking, the importance of preventive care, and the availability of mental health providers may encourage more beneficial patterns of use. The efficacy of such programs, should a relationship between maternal affective symptoms and/or parenting self-efficacy and pediatric health care be demonstrated, will be an interesting question for future intervention research.

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