



Published in final edited form as:

Fam Syst Health. 2009 December ; 27(4): 314–324. doi:10.1037/a0018191.

Stress among Fathers of Young Children with Type 1 Diabetes

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Abstract

Although fathers' stress has been shown to have important implications for children's health and well-being, few studies of children with type 1 diabetes have considered paternal parenting stress. The current study contributes to the literature by exploring correlates of fathers' pediatric parenting stress in a sample of young children with type 1 diabetes. Forty-three fathers of children 2–6 years old with type 1 diabetes completed self-report questionnaires examining pediatric parenting stress, child behavior, participation in diabetes management tasks, and parental psychological resources. Results of multiple regression show that fathers' pediatric parenting stress is positively associated with state anxiety and mother-reported difficult child behavior. These findings suggest that fathers may experience parenting stress differently than mothers, and that their experiences may have implications not only for their own level of anxiety, but also for their children's behavior.

Keywords

fathers; parenting stress; type 1 diabetes; early childhood

Stress among Fathers of Young Children with Type 1 Diabetes

Type 1 diabetes is one of the most prevalent chronic illnesses diagnosed in childhood. Recent estimates indicate one of out every 400–600 American children are diagnosed with type 1 diabetes (SEARCH, 2007), and the annual incidence rate is rising most rapidly among children younger than 4 years old (Green & Patterson, 2001; Vehik et al., 2007). Given young children's limited self-care abilities, parents of young children with diabetes bear nearly all of the responsibility for illness management (Mednick et al., 2007). Specifically, children's inability to express symptoms of high or low blood glucose and their unpredictable eating behaviors and physical activity levels all contribute to the challenges of diabetes management in this age group. Thus, it is not surprising that both mothers and fathers of young children with type 1 diabetes experience significant stress related to their child's diagnosis (Chaney et al., 1997; Landolt, Vollrath, Laimbacher, Hanspeter, & Sennhauser, 2005), more so than parents of older children (Stallwood, 2005; Streisand, Swift, Wickmark, Chen, & Holmes, 2005).

While fathers' stress may be particularly relevant to children's psychological well being (Chaney et al., 1997), most research on parental stress related to caring for children with diabetes has focused on mothers and older children (Dashiff, Morrison, & Rowe, 2008). The

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current study extends this research by investigating the experiences of fathers of 2–6 year-olds recently diagnosed with type 1 diabetes.

Pediatric Parenting Stress

Pediatric parenting stress refers to the stress experienced by parents of children with chronic illness (Streisand, Braniecki, Tercyak, & Kazak, 2001), distinguished from general parenting stress and caregiver burden by its reference to (i) child health, (ii) parental roles, responsibility, and burden, and (iii) psychological and behavioral response and adaptation to illness (Streisand & Tercyak, 2001). Transactional (Sameroff, 1975) and family systems (Cox & Paley, 1997) theories propose that experiences of one family member or subsystem (e.g., parent-child) reciprocally influence the others. Thus, these theoretical frameworks would suggest that the impact of a child's illness on his/her parents' mental health and behavior likely plays a role in how the child adapts to the illness. Indeed, previous research finds that pediatric parenting stress is associated with low child engagement in self-care (Bourdeau, Mullins, Carpentier, Colletti, & Wolfe-Christensen, 2007), medical regimen nonadherence (Fredericks, Lopez, Magee, Shieck, & Oipari-Arrigan, 2007), greater illness severity and healthcare utilization (Barakat et al., 2007), poorer metabolic control (e.g., Auslander, Bubb, Rogge, & Santiago, 1993; Stallwood, 2005), and worse emotional and behavioral adjustment (Anderson, Loughlin, Goldberg & Laffel, 2001; Drotar, 1997; Ohleyer et al., 2007) among children and adolescents with chronic illness.

As is widespread in child psychology research more broadly, pediatric psychology research has primarily focused on mothers, leaving the experiences of fathers largely unexamined (Dashiff et al., 2008; Drotar, 1997; Phares et al., 2005). Those studies examining both mothers' and fathers' adjustment to children's diabetes present mixed findings (Dashiff et al., 2008), with higher rates of post-traumatic stress reported among mothers than fathers (Landolt et al., 2005) yet equivalent levels of general distress (Chaney et al., 1997). Although the implications of fathers' well being for parenting a child with a chronic illness have only begun to be studied, initial findings suggest that fathers' psychosocial functioning is likely important for their children's physical and mental health outcomes. For example, Chaney et al. (1997) found that increases in fathers' general distress (e.g., anxiety, depression, anger) over the course of one year predicted psychological functioning among children and adolescents with diabetes more strongly than did mothers' distress. Of note, maternal and paternal general distress scores were inversely related, suggesting that parents might compensate for each other's maladjustment. The potential implications of fathers' stress on children and families calls for more research focused on fathers' pediatric parenting stress, particularly among fathers of young children with chronic illness.

It is necessary to understand the correlates of fathers' pediatric parenting stress in order to develop targeted interventions to help fathers cope with their children's illness. To the best of our knowledge, predictors of fathers' pediatric parenting stress have not been specifically investigated. However, studies drawing primarily, although not exclusively from mothers' data have identified several covariates of pediatric parenting stress: parents' psychological resources (e.g., depressive and anxious cognitions, parenting self-efficacy, hope), demographic characteristics (e.g., gender, socio-economic status, marital status), and children's social-emotional and behavioral functioning (Mash & Johnston, 1990; Streisand et al., 2005). Streisand and colleagues (2005) found that, among parents of older children and adolescents with diabetes, maternal self-efficacy for diabetes management, a sense of responsibility for children's health care, and fear about diabetes-related complications are significant associates of pediatric parenting stress. On the other hand, parental thinking characterized by high levels of hope may be protective against the development of negative psychosocial outcomes among

parents of children with type 1 diabetes, as it has demonstrated an inverse relationship with parenting stress and anxiety (Horton & Wallander, 2001; Mednick et al., 2007).

Consistent with Kazak's social-ecological framework (1989), a child's illness itself appears to influence parents' stress responses. Indeed, parents of children with diabetes in poorer metabolic control (A1C) and on conventional insulin regimens (2–3 injections per day) report more stress (Streisand et al., 2005). Moreover, stress tends to be highest during the weeks immediately after a child's diagnosis, then declines but does not necessarily diminish entirely over the subsequent year (Chaney et al., 1997; Gravelle, 1997; Northam, Anderson, Adler, Werther, & Warne, 1996). This growing body of research on predictors of pediatric parenting stress has identified a number of parent and child factors across psychosocial, medical, and demographic domains. However, it is uncertain whether these findings accurately represent the experiences of fathers, particularly those with younger children.

Current Research

In light of the gaps in existing research, the current study aimed to describe pediatric parenting stress among a sample of fathers of young children with type 1 diabetes. The associations of child disease characteristics, mother-reported child behavior problems, and fathers' psychological resources with their experiences of pediatric parenting stress were explored, with the ultimate goal of informing the development of family-based interventions for young children with type 1 diabetes. It was hypothesized that mother-report of more child behavior problems, less father self-reported hopefulness, and more father self-reported psychosocial difficulties (i.e., fear of child's hypoglycemia, low diabetes-related self-efficacy) would significantly contribute to fathers' pediatric parenting stress, over and above demographic and medical variables. Guided by transactional and family systems theories, this study can expand our understanding of fathers' experiences of pediatric parenting stress in the context of children's type 1 diabetes.

Method

Participants

Participants in the current study included a subset of 43 fathers who participated in a larger descriptive study of parents ($n = 76$ mothers, 43 fathers) of 78 young children with type 1 diabetes. Fathers in this study were between 29 and 56 years of age ($M = 38.3$, $SD = 5.4$). The majority of the fathers were high school graduates (84%, M years of education = 16.3, $SD = 2.4$) and reported an annual family income of over \$75,000 (78%). Nearly all fathers were married (98%) and worked outside of the home full-time (98%).

The 43 children of the participating fathers ranged in age from two to six years ($M = 4.5$ years, $SD = 1.1$) and were primarily female (58%) and Caucasian (77%). At the time of data collection, all children had been diagnosed with type 1 diabetes for at least six months (range = 6 months – 3.7 years, M duration = 1.3 years, $SD = 1.0$, skew = 1.3). The children's average A1C was 7.5% ($SD = 0.9$), and most (70%) were on a conventional treatment regimen of two to three insulin injections per day (25%, basal bolus regimen via multiple injections; 5%, insulin pump).

Procedure

Eligibility requirements for participation in the study were: (a) child age between 2.0 and 6.0 years at time of questionnaire completion, (b) at least six month duration of child's diagnosis of type 1 diabetes, (c) absence of other chronic illness or developmental diagnosis, and (d) parent fluency in English. A list of children in the targeted age range was obtained from the diabetes clinic at a children's hospital in a large mid-Atlantic city. Parents of identified children were contacted by mail and a follow-up telephone call by a trained research assistant who

introduced the study, answered questions, and determined eligibility. Research assistants described the informed consent forms and obtained verbal consent from interested and eligible families. Then, questionnaires and consent forms were mailed to participants, most of whom (93%) returned their signed informed consent forms and completed questionnaires by mail or completed them in person at their child's next clinic visit. Three families preferred to complete questionnaires by telephone (and mailed their signed informed consent forms). In addition to completion of questionnaires, two brief telephone interviews were conducted with the primary caregiver within one week of questionnaire completion. Families received a \$10 gift card and a children's book about diabetes in appreciation of their time. The hospital's institutional review board approved this study.

Of the 114 eligible families successfully contacted for the larger descriptive study, at least one parent from 100 families (88%) agreed to participate, and complete data were collected from 76 families (89% married). Secondary caregivers were also invited to participate, and 42 married couples had two parents participate. In 43 families, the child's father completed questionnaires, resulting in a sample size of 43 fathers (1 primary caregiver) for the current analysis¹. The major difference in this subsample of families with father-report is that all of primary caregivers were married versus 74% of the primary caregivers in the larger study for whom there was no secondary caregiver participating.

Measures

Pediatric parenting stress—Respondents' experiences related to parenting a child with a medical condition was assessed using the Pediatric Inventory for Parents (PIP; Streisand, Braniecki, Tercyak, & Kazak, 2001). The PIP asks parents to rate the frequency and perceived difficulty of 42 events commonly reported by parents of children with a chronic illness. Responses are scored using two 5-point Likert scales ranging from 'never' to 'very often' (frequency scale) and 'not at all' to 'extremely' (difficulty scale). The PIP has demonstrated strong internal consistency and construct validity when utilized with parents of children with diabetes (Lewin et al., 2005; Streisand et al., 2005). Father-reported frequency and difficulty of pediatric parenting stress were highly correlated in this sample ($r = .91$); the current analyses involve the difficulty scale to address the magnitude of stress. In this sample, the internal consistency was excellent ($\alpha = .95$).

Child behavior—Parent perception of difficult child behavior was measured using the Eyberg Child Behavior Inventory (ECBI; Robinson, Eyberg, & Ross, 1980). The ECBI asks parents to rate the frequency of 36 child behaviors on a 7-point Likert scale ranging from 'never' to 'always' and to indicate whether or not they consider each behavior to be a problem (yes/no). Adequate reliability and validity have been demonstrated (Robinson et al., 1980). Mother-report on the ECBI problem scale was used in the current analyses to reduce shared variance due to reliance on only father-reported scales. In the current sample, the ECBI problem scale displayed excellent internal consistency ($\alpha = .90$).

Diabetes management tasks—Parental completion of diabetes management tasks including insulin injections and blood glucose monitoring was assessed using the 24-hour Recall Interview (Johnson, Silverstein, Rosenbloom, Carter, & Cunningham, 1986). Good reliability and validity have been reported for this measure (Freund, Johnson, Silverstein, & Thomas, 1991). For the current study, the recall interview was administered to the identified primary caregiver (95% mothers) on two occasions following questionnaire completion, and responses were averaged across the two interviews. The respondent indicated who (child,

¹One father did not complete the Pediatric Inventory for Parents and is thus excluded from regression analyses ($n=42$).

mother, father, other adult caregiver) completed each insulin injection and instance of blood glucose monitoring, and the percentage of tasks completed by the child's father was calculated.

Parent psychological resources—Parent confidence in managing their child's diabetes was assessed using an adapted version of the Self-Efficacy for Diabetes Scale (SED; Grossman, Brink, & Hauser, 1987). The SED is a 22-item self-report measure that assesses respondents' confidence in performing daily diabetes management tasks. Participants respond using a 5-point Likert scale ranging from 'very sure I cannot' to 'very sure I can'. The original SED was designed for adolescent self-report and has demonstrated good internal consistency (Grey, Davidson, Boland, & Tamborlane, 2001). The current study used a modified version that was adapted to measure parents' beliefs about their ability to manage their child's diabetes, accounting for advances and variations in regimen type, and their willingness to leave their child with other caregivers. This modified version has been used in previous studies and has demonstrated strong psychometric properties as well as significant associations between self-efficacy and parenting stress (Streisand et al., 2005). In the current study, the internal consistency was good ($\alpha = .83$).

The Hypoglycemia Fear Survey (HFS; Cox, Irvine, Gonder-Frederick, Nowacek, & Butterfield, 1987) was used to assess parents' fear or worry regarding their child experiencing hypoglycemia. Respondents rate the frequency with which they worry about 11 aspects of their child experiencing a hypoglycemic event on a 5-point Likert scale ranging from 'never' to 'always'. Acceptable internal consistency has been demonstrated, and parents' fear has been linked to pediatric parenting stress (Streisand et al., 2005). The internal consistency in this sample was excellent ($\alpha = .92$).

Parents' current levels of general anxiety were measured using the State-Trait Anxiety Inventory – State scale (STAI; Spielberger, Gorsuch, & Lushene, 1983), a 20-item measure of transitory anxiety in which respondents rate current anxiety-related feelings on a 4-point Likert scale ranging from 'not at all' to 'very much so'. The full STAI (i.e., state and trait scales) has sufficient reliability (Spielberger et al., 1983); the internal consistency for the state scale in the current sample was excellent ($\alpha = .93$).

Parental hopeful attitude was assessed using the Hope Scale (Snyder et al., 1991). This 12-item measure asks respondents to rate statements describing their feelings and behaviors related to hope on an 8-point Likert scale from 'definitely false' to 'definitely true'. The measure has demonstrated adequate internal, convergent, discriminate, and incremental validity (Snyder, et al., 1991). The internal consistency in this sample was acceptable ($\alpha = .79$).

Demographic and medical information—A background questionnaire was used to obtain demographic and medical information, including child age and ethnicity, family income, parent employment and education history, date of diagnosis, and current medical regimen (i.e., conventional [2–3 injections/day], basal/bolus via multiple daily injections, or continuous subcutaneous insulin injections [insulin pump]). Medical data were verified by medical record review completed by a trained research assistant. Metabolic control was determined via blood assay (glycosylated hemoglobin A1C, or HbA1c) taken at regular diabetes clinic visits. Children's HbA1C values were extracted from the medical record; on average, HbA1C was measured within one month of participation ($M = 23.6$ days, $SD = 22.8$).

Analytic Strategy

First, descriptive statistics were examined for all variables of interest in this study: fathers' engagement in diabetes care tasks and psychological resources, mother-ratings of difficult child behavior, and fathers' pediatric parenting stress. Next, bivariate associations among the variables were estimated using Pearson product-moment correlations and one-way ANOVAs

(for regimen type). Finally, a linear multiple regression was conducted to examine the associations of fathers' pediatric parenting stress with mother-reported child behavior problems and fathers' psychological resources.

Results

Fathers' perceived difficulty ($M = 82.8$) of pediatric parenting stress was mild, falling slightly below the mid-point of possible scores on this measure (scale range 42 – 210). As for fathers' psychological resources, they reported relatively high self-efficacy ($M = 92.0$, scale range 22 – 110) and hope ($M = 72.1$, scale range 12 – 96). They also reported low levels of fear of child experiencing hypoglycemia ($M = 16.7$, scale range 0 – 44) and state anxiety ($M = 35.4$, scale range 20 – 80). Mothers' ratings of child difficult behavior were also relatively low ($M = 10.5$, scale range 0 – 36). Based on primary caregivers' recall interviews, fathers completed fewer than 20% of daily instances of glucose monitoring and insulin administration. See Table 1 for a summary of mean scores.

Greater paternal pediatric parenting stress was correlated with fathers' psychological resources, including lower self-efficacy about diabetes management, more fear of child experiencing hypoglycemia, more state anxiety, and less hope. Fathers' pediatric parenting stress was also significantly correlated with maternal ratings of more difficult child behavior (See Table 2). No significant associations emerged between fathers' pediatric parenting stress and demographic characteristics (age, education, employment, income; results not shown), child metabolic control ($r=.13$), or child regimen type, $F(1,40)=1.81$, thus these variables were not included in subsequent analyses.

Significantly correlated psychological resources and difficult child behavior were included in a multivariate linear regression model predicting father's pediatric parenting stress. The full model accounted for 61% of the variance in fathers' pediatric parenting stress (see Table 3), and state anxiety and children's difficult behavior independently predicted greater pediatric parenting stress.

Discussion

This exploratory study of pediatric parenting stress experienced by fathers of young children with type 1 diabetes indicates that fathers experience relatively mild stress that is associated with their concurrent state anxiety and their child's difficult behavior (as perceived by mothers). While the difficulty of pediatric parenting stress reported in this sample of fathers is notably lower than what has been reported among mothers (Lewin et al., 2005; Streisand et al., 2005), there is evidence that fathers' stress has important implications for child health and behavioral outcomes as well as maternal mental health and family functioning (Chaney et al., 1997; Cummings, Keller, & Davies, 2005). Families may be particularly sensitive to paternal stress such that even mild pediatric parenting stress experienced by fathers affects mother and child adjustment (Cummings et al., 2005; Ramchandani et al., 2005).

In comparison to previous studies with mothers (e.g., Streisand et al., 2008), the results of this study suggest that child disease characteristics may have weaker associations with fathers' than mothers' pediatric parenting stress. This difference in findings may reflect the relatively low percentage of diabetes management tasks (i.e., blood glucose monitoring, insulin administration) completed by the fathers in this study. While other research has indicated that mothers take primary responsibility for the completion of daily diabetes management tasks (Mednick et al., 2006), there is also evidence that fathers compensate for mothers' increased burden by taking more responsibility for other household and family management tasks (Sullivan-Bolyai et al., 2006). Thus, it may be that the psychological impact of childhood illness

on fathers is more strongly influenced by their increased burden in terms of other non-illness related family management tasks. Future research should consider a broader array of factors impacted by child health that may contribute to fathers' mental health and thus affect family functioning.

These findings also suggest that fathers who experience more state anxiety and whose children display more behavior problems report higher levels of pediatric parenting stress than those with lower anxiety and fewer child behavior problems. This corroborates Streisand and colleagues' (2008) previous findings from a sample of parents of older children with diabetes that mothers' and fathers' pediatric parenting stress were associated with greater anxiety. The association with difficult child behavior is consistent with research with healthy populations indicating that child behavior may be more closely linked to fathers' parenting stress than mothers' (McBride, Schoppe, & Raine, 2002).

Limitations and Future Directions

While this study represents an important first step in understanding the experiences of fathers of young children with type 1 diabetes, there are several limitations that must be considered when drawing conclusions from the findings. First, this sample of 43 fathers is small and limited with regard to ethnicity as well as marital and socioeconomic status. Therefore, the findings are not expected to generalize to all fathers, especially single fathers, who are likely responsible for a much greater share of the parenting burden associated with childhood illness. Of note, the ethnic/racial breakdown of this sample is representative of the population from the clinic at which the study took place and of the incidence of type 1 diabetes more generally (SEARCH, 2007). Also, much of the data in this study were collected via self-report, and thus associations are likely inflated by shared variance. Multiple reporters were included when possible to reduce this risk. Furthermore, the cross-sectional design of this study precludes any inferences as to causal or longitudinal relationships among the independent and dependent variables. Finally, over time standard treatment regimens for young children with type 1 diabetes are updated, thus it is important for future research to consider how differences in treatment intensity may influence fathers' pediatric parenting stress.

More research is needed that explicitly focuses on the fathers' role in child health, which can best be understood by recruiting diverse samples of fathers. A larger sample of fathers would allow for analyses of child gender differences in the effects of fathers' parenting behavior on children's outcomes, which previous research on father involvement has suggested (Harris & Morgan, 1991). Moreover, following from a family systems perspective, such research should consider direct and indirect effects of fathers on child health through other family and environment interactions. For example, research could elucidate the influence of secondary caregivers on primary caregivers' pediatric parenting stress and how this interplay affects child adjustment. Such research would be strengthened by a longitudinal design that would enable analyses of potential developmental changes in parents' experiences with stress related to child health over the course of childhood.

Conclusion and Implications

This study represents an initial exploration of the correlates of pediatric parenting stress experienced by fathers of young children with type 1 diabetes. The current study suggests that fathers experience relatively low levels of pediatric parenting stress but that the correlates of fathers' stress are unique and may have implications for fathers' general functioning and children's behavior. Because fathers' stress has important implications for child and family adjustment, our findings call on healthcare professionals working with parents of young children with diabetes to assess not only mothers' but also fathers' psychosocial experiences with parenting and managing the illness. The results of the current study may be informative

for the development of supportive counseling programs targeted to fathers' experiences, with the goal of promoting paternal involvement while maintaining or improving fathers' overall positive experiences in terms of stress, diabetes management, and parenting.

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Table 1

Descriptive statistics for fathers' engagement in diabetes management, psychological resources, perceptions of child behavior, and pediatric parenting stress.

	Mean (SD)	Range
<i>Diabetes Management Tasks</i> (n = 42)		
Paternal completion of insulin administration	.19 (.23)	0 – 0.83
Paternal completion of blood glucose monitoring	.15 (.19)	0 – 0.75
<i>Parent Psychological Resources</i> (n = 43)		
Self-efficacy for diabetes management	92.00 (8.33)	71 – 110
Fear of child's hypoglycemia	16.74(7.25)	1 – 32
State anxiety	35.44 (10.99)	21 – 66
Hopefulness	72.09 (9.71)	50 – 92
<i>Difficult child behavior</i> (mother-report, n = 42)	10.50 (7.86)	0 – 29
<i>Pediatric Parenting Stress</i> (n = 42)	82.81 (26.74)	44 – 135

Bivariate associations among disease characteristics, fathers' diabetes care, psychological resources, perceived difficult child behavior, and pediatric-related parenting stress

Table 2

	2.	3.	4.	5.	6.	7.	8.	9.
1. Duration	-.17	-.12	-.39**	.23	.03	-.13	-.24	.05
2. Paternal completion of insulin administration		.49***	.14	-.28	-.20	.08	.41**	-.10
3. Paternal completion of blood glucose monitoring			.25	-.11	-.23	.01	.44**	.01
4. Self-efficacy for diabetes management				-.37*	-.37*	.52***	.01	-.46**
5. Fear of child's hypoglycemia					.42**	-.16	.10	.43**
6. State anxiety						-.62***	.26	.67***
7. Hopefulness							-.19	-.60***
8. Mother-reported difficult child behavior								.39**
9. Pediatric parenting stress								

 $p < .001$,

**
 $p < .01$,

*
 $p < .05$

Table 3

Predictors of fathers' pediatric parenting stress

	<u>Pediatric Parenting Stress</u>		
	<i>B</i>	<i>SE</i>	β
Self-efficacy for diabetes management	-.43	.43	-.14
Fear of child's hypoglycemia	.70	.46	.19
State anxiety	.82	.38	.33*
Hopefulness	-.64	.43	-.23
Mother-reported difficult child behavior	.90	.39	.25*
	<i>R</i> ²	.61***	
	<i>F</i> (5, 37)	11.15***	

p < .001,

**
p < .01,

*
p < .05