Paediatrics

How's the family? Looking at the impact of diabetes on the parents of children with diabetes

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Developing a chronic disease at any time of life can be very challenging. A diagnosis of type 1 diabetes in childhood will not only affect the child, but will also have a significant impact on family members and family life.

We know that the parents of children diagnosed with long-term conditions will experience fear, physical and psychological distress and anxiety and are at increased risk of depression. Data also suggest that these difficulties can change over time, but are unlikely to disappear (Cohen, 1999).

A study comparing the distress experienced by parents of children diagnosed with cancer and those with children diagnosed with diabetes show that, although parents of children with cancer had higher levels of distress soon after diagnosis, their distress improved with time – probably when treatment had finished and there may be realistic expectations of cure (Boman, 2004). By contrast, for the parents of children with diabetes the expectation of a time when the condition can be overcome never occurs; parents are likely to face new challenges as their child gets older and levels of distress will fluctuate accordingly.

The study by Helgeson et al (2012) summarised alongside examines the implications of parenting stress on parent and child health. This longitudinal study was undertaken over 5 years and involved annual interviews with 132 children, while their parents filled in questionnaires at the same time. The authors assessed both "general" stress and diabetes-specific stress in parents and looked at its impact on their child's diabetes self-care, stress and glycaemic control.

The data suggest that parental emotional well-being is negatively affected by both general and diabetes-specific stress, with higher parent depressive symptoms and lower life satisfaction ($P<0.001$ for all comparisons). There was also a negative impact of general stress on child health with greater symptoms of depression in children, poorer diabetes self-care with less frequent blood glucose monitoring and poorer glycaemic control. However, high levels of diabetes-specific distress did appear to have a beneficial impact on diabetes management with more frequent blood glucose monitoring and better self-care behaviours reported by the child, suggesting that some level of parental diabetes-related stress can be a positive adaptation to their child's diagnosis of diabetes.

The authors also found that the parents who found any benefit in their child developing diabetes – measured using a positive contributions scale that assessed perceptions of family strength and closeness, personal growth and maturity – were rewarded with improved glycaemic control.

The difficulties of managing diabetes in childhood are well recognised, and Helgeson et al conclude that families with high levels of general stress need to be identified for additional support. Most paediatric healthcare professionals are well aware that some of the families we work with struggle to achieve good diabetes control for reasons that go beyond diabetes education, insulin regimen or glucose monitoring technology. Often, good control is illusive due to the overwhelming demands of intensively managing a long-term condition in a child.

Interventions that aim to support parents in achieving a healthy balance in terms of both the emotional and physical health of the whole family need to be considered to improve outcomes for everyone.

Boman KK (2004) *J Pediatr* **145**: 373–9

JOURNAL OF PEDIATRIC PSYCHOLOGY

High parental stress linked to poorer parent mental health

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 The authors undertook a 5-year longitudinal study of children with T1D and their parents to investigate the relationships between parental stress, parental and child mental health and child outcomes.

2 Children with T1D ($n=132$; enrolled at age 12 years) were interviewed annually for 5 years; one parent of each participating child – most commonly the mother – completed a questionnaire during each of these assessments.

3 Parents were assessed for general life stress, stress related to caring for a child with T1D, benefit finding, and mental health; child outcomes were depressive symptoms, self-care behaviours and glycaemic control.

4 Multi-level modelling was used to examine concurrent and longitudinal relationships.

5 Parental general stress predicted a decrease in the frequency of blood glucose monitoring ($P<0.05$) and a deterioration in glycaemic control ($P<0.001$); however, parental diabetes-specific stress predicted improvements in glycaemic control ($P<0.05$).

6 Greater parental general stress and greater parental diabetes-specific stress were both associated with poorer parental mental health ($P<0.001$).

7 The authors concluded that families with high levels of general life stress should be identified as they are at risk for both poor parent and child health outcomes.

Helgeson VS, Becker D, Escobar O, Siminerio L (2012) Families with children with diabetes: implications of parent stress for parent and child health. *J Pediatr Psychol* **37**: 467–78

DIABETOLOGIA

Nine months to 2 years of age is the key period of T1D-associated autoimmunity

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓✓

1 To better understand the relationship involved in seroconversion to islet autoantibodies that precedes T1D, the authors of this study aimed to identify periods of high seroconversion incidence based on children's age, allowing the identification of periods when prevention strategies are most likely to be needed.

2 The BABYDIAB-BABYDIET study has prospectively followed genetically at-risk children from birth for more than 20 years.

3 Incidence of islet autoantibodies was calculated in 1650 children followed with measurements of islet autoantibodies and thyroid autoantibodies at age 9 months and 2, 5, 8, 11, 14 and 17 years; peak incidence periods were confirmed in a second cohort of 150 children followed until age 6 years with 3-monthly samples up to 3 years of age.

4 Islet autoantibody incidence (per 1000 person-years) was found to be 18.5 until age 9 months, 21 from 9 months to 2 years and <10 for each interval after 2 years of age; the second cohort confirmed peak incidence to be around 9 months of age.

5 The authors concluded that the period between 9 months and 2 years of age has the highest incidence of T1D autoimmunity and represents a time during which effective primary prevention strategies should be targeted in genetically at-risk children.

Ziegler AG, Bonifacio E, the BABYDIAB-BABYDIET Study Group (2012) Age-related islet autoantibody incidence in offspring of patients with type 1 diabetes. *Diabetologia* Jan 31 [Epub ahead of print]

JOURNAL OF PEDIATRICS

Height at T1D diagnosis is above average

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 The authors sought to investigate the effect of T1D on growth and adult height.

2 Data from 22651 children (10494 females) with T1D treated at German and Austrian specialist centres were assessed; near-adult height data were available for 1685 participants.

3 The 1685 children with T1D onset <11 years of age reached a mean adult height of −0.16±1.0 standard deviation score (SDS).

4 In a multivariate regression model, adult height was positively correlated with height at onset of diabetes ($P<0.0001$) and negatively with mean HbA_{1c} ($P<0.0001$) and duration of diabetes ($P=0.0015$).

5 The authors found that height at T1D diagnosis is above average; despite intensive insulin therapy, growth and adult height remain indicators of poor metabolic control of T1D.

Bonfig W, Kapellen T, Dost A et al (2012) Growth in children and adolescents with type 1 diabetes. *J Pediatr* Jan 11 [Epub ahead of print]

DIABETES CARE

Automated BGM system lowers HbA_{1c} in <12 year olds

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 The authors sought to evaluate the use of a pervasive blood glucose monitoring (BGM) technology on glycaemic control, report of self-care behaviour, and emotional response to BGM of children with T1D and their parents during 12-month follow-up.

2 Children ($n=48$) aged <12 years (mean 8.8 years) with T1D were randomly assigned to one of two study groups: control (conventional care) or experimental (conventional care with technology, a BGM that emails parents a 21-day BG trending report daily).

3 Children in the experimental group had significantly lower HbA_{1c} level at 12 months than controls (−0.35 vs +0.15 from baseline, respectively; $P=0.01$) and became more meticulous in diabetes self-care ($P=0.04$).

Toscos TR, Ponder SW, Anderson BJ et al (2012) Integrating an Automated Diabetes Management System into the family management of children with type 1 diabetes: results from a 12-month randomized controlled technology trial. *Diabetes Care* **35**: 498–502

DIABETOLOGIA

Prediction model for MODY in people with young-onset diabetes

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

1 The authors aimed to use multiple, weighted, clinical criteria to determine an individual's probability of having MODY.

2 Two prediction models were designed using data from 1191 people with MODY ($n=594$), T1D ($n=278$) and T2D (n=319); the model discriminated between MODY and T1D and T2D using a weighted combination of the most discriminative characteristics.

3 Both models showed excellent discrimination (c-statistic=0.95 and 0.98, respectively); using the optimal cut-offs improved the sensitivity (91% vs 72%) and specificity (94% vs 91%) for identifying MODY compared with standard criteria of diagnosis.

4 The authors concluded that the MODY prediction models developed allow more rational decision-making on the need for molecular genetic testing.

Shields BM, McDonald TJ, Ellard S et al (2012) The development and validation of a clinical prediction model to determine the probability of MODY in patients with young-onset diabetes. *Diabetologia* **55**: 1265–72

"The period between 9 months and 2 years of age has the highest incidence of T1D autoimmunity and represents a time during which effective primary prevention strategies should be targeted ..."