

PARENTAL ADJUSTMENT AND GLYCEMIC OUTCOMES OF YOUNG CHILDREN WITH T1D: A SYSTEMATIC REVIEW

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STATE OF ART

Literature Review: The global prevalence of Type 1 Diabetes (T1D) in children and adolescents is estimated at 651,700 cases, with an annual incidence of 108,300 cases in this age group [1]. Additionally, in 2022, it was estimated that T1D affected 672 children aged 0-9 years in Portugal, and 1,184 cases were recorded among those aged 10-14 years [2]. Addressing T1D during early childhood is critical, as children have a heightened insulin sensitivity, unpredictable eating behaviors, among other factors, that often leads to significant glycemic fluctuations and severe hypoglycemic episodes [3,4]. Till the age of 10 years old, integrate children in diabetes tasks seems to be essential for parents, in order to start the responsibility transition process [5]. Research has focused on how parents cope with this responsibility, revealing that many experience significant diabetes distress (DD), anxiety, stress, and depression, which are attributed to the daily demands of managing T1D [6,7]. In this sense, there are multiple challenges in diabetes management for parents of young children and their parents, to achieve recommended levels of HbA1c and good glycemic control [8,9]. Thus, carrying out these tasks effectively and regularly is essential to ensure that the levels of HbA1c remain stable and to avoid long and short-term complications (e.g., strokes, heart attacks, kidney disease, eye issues, or even cognitive decline) [10,11,12,13]. Researchers have examined how parental psychosocial factors influence children's glycemic outcomes in T1D. Studies indicate that alleviating parental burden and enhancing caregivers' cognitive and emotional resources can positively affect a child's glycemic control [14]. On the other hand, poor glycemic control can exacerbate diabetic distress (DD), increase the fear of hypoglycemia (FH), as well as other psychosocial variables [15].

Purpose of review: Summarize the evidence, between 2019-2024, regarding the biderational relationship between parental psychosocial variables and children's glycemic outcomes, till the age of 10 years old.

METHOD

KEY TERMS FORMULA

(diabetes AND type 1) AND (parent* OR mother* OR father* OR famil* OR caregiver*) AND (longitudinal OR cross-sectional) AND (adjustment OR adaptation OR well-being OR distress OR stress OR anxiety OR attachment OR "quality of life" OR "quality of sleep" OR depression OR "fear of hypoglycemia" OR "social support" OR "emotion regulation" OR "family conflict") AND (child* OR kid OR kids) AND ("glycated hemoglobin" OR "hemoglobin A1c" OR HbA1c OR "glycemic control" OR "metabolic control" OR "glycemic outcome")

DATABASES

EBSCOhost
Clarivate Web of Science
ELSEVIER Scopus
PubMed

STUDIES ELEGIBILIY CRITERIA

I) Studies with parents (e.g., couples or single parental families) of children with T1D aged 1 to 10 years old; II) Cross-sectional and longitudinal studies; III) Quantitative articles or Mixed method (e.g., only quantitative data reported); IV) Randomized Controlled Trials or Feasibility Randomized Controlled Trials; V) Empirical peer-reviewed articles; VI) Written in English, Portuguese or Spanish; VII) Parental psychosocial variables, such as distress, fear of hypoglycemia, social support, quality of life, quality of sleep, attachment, anxiety, depression, stress, and emotion regulation; VIII) glycemic outcomes.

RESULTS

1 Case et al. [16]

2 Elhenawy [17]

3 Patton et al. [18]

4 Stanek et al. [19]

5 Youngkin et al. [20]

1

In a longitudinal study with 127 American parent-child dyads (children aged 5-9 years), in parents of children with T1D, recently diagnosed, found a negative correlation between family conflict and parent engagement in their child's T1D treatment. Conversely, a positive correlation was found between family conflict and children's HbA1c levels. Throughout the three assessment periods, there was only one change in family engagement. It was observed during the third assessment period, and it coincided with a significant increase in children's HbA1c levels between the second and third assessment points.

2

Using a sample of 54 Egyptian parent-child dyads (ages 0 to 5, n = 10), ages 5 to 10, n = 44), examined variables associated with lockdown and their impacts on children's glycemic outcomes. Results highlighted that caregiver's of younger children with T1D had more severe stress compared to the other age group with T1D (10-18 years old). The parental stress, both before and after confinement, was positively correlated with glycemic control (HbA1c).

3

In a longitudinal study with 106 parent-child dyads in the US (children aged 5-9, 58 girls and 48 boys) to examine HbA1c trajectories in newly diagnosed type 1 diabetic children and their association with parent-reported psychosocial factors. On average, children's HbA1c levels increased over time, showing significant variability between early and later stages. Higher parental fear of hypoglycemia predicted a high stable or intermediate increasing HbA1c trajectory. Immediate parental distress negatively correlated with HbA1c slope and density, while family conflict correlated with elevated HbA1c levels. Finally, long-term parental distress positively correlated with HbA1c.

4

In a longitudinal study with 128 US parent-child dyads, children aged 5-9 years), assessed the impact of stressful events in recently diagnosed children with T1D and verified caregivers psychological stressors. They found that decreased family income was linked to higher child HbA1c levels at nine and twelve months and less frequent self-monitoring of blood glucose (SMBG) at twelve months, without affecting continuous glucose monitoring (CGM). Parental job changes, at nine months, and school changes were also associated with higher HbA1c and less frequent SMBG, at twelve months, with no impact on CGM.

5

Analyzed the relationship between child glycemic levels and parental fear of hypoglycemia (FH) in 96 US parent-child dyads (children aged 5-9) with recent-onset T1D. The study found that decreased parental FH correlated with better glycemic control, measured by CGM and HbA1c, at six and twelve months after-diagnosis. According to HSF-P total scores, was observed that initial parental FH was moderate. HFS-P total scores increased significantly, from time one to time two, plateauing thereafter. Notably, parents of children who never used CGM had significantly lower HFS-P scores compared to those whose children started CGM between time one and time three.

DISCUSSION

1) The aim of this systematic review was to examine the bidirectional relationship between parental psychosocial variables and children's glycemic outcomes. Findings showed that most studies have focused on effects of parental psychosocial variables on glycemic control [16,17,18,19], with only one examining the inverse effect [20]. The results regarding FH, DD, parental stress, family conflict, parental engagement, and their impact on children's glycemic control, can serve as a catalyst for raising awareness among healthcare organizations and policymakers regarding the value of psychological research, and psychological services in the care of young children living with T1D and their parents.

2) Interventions targeting parental psychosocial variables and glycemic control could play a pivotal role in improving the quality of life for both. All studies adopted a unidirectional perspective, highlighting a significant gap in the literature. Including articles written in English, Portuguese, or Spanish, may constitutes a strength comparing to available systematic reviews. None of the three longitudinal studies included in the review addressed the interplay over time between parental psychosocial variables and children's glycemic outcomes, suggesting a need for future investigations in this area [15].

CONCLUSIONS

1) Our findings suggest that the relationship between parental psychosocial variables and children's glycemic outcomes is more common than the inverse association. However, these results have provided valuable insights into the impact of these variables on the psychological well-being of parents of children with T1D, as well as their impact on children's health outcomes. The lack of findings in Portugal and worldwide on the parental psychosocial variables evidence the importance of meticulously exploring other relevant variables. Conversely, there is limited existing literature on the effects of glycemic outcomes on parental psychological functioning.

2) Future research holds promise in achieving the following objectives:

I) Conducting pioneering studies to understand the practical and empirical interplay over time between these parental psychosocial adjustment and children glycemic outcomes;

II) Implementing interventions aimed to promoting parental psychosocial variables, in order to enhance children's glycemic control.

REFERENCES

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