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The Role of Parental Self-Efficacy, Capability Well-Being and Electronic Health Literacy in Pediatric Diabetes Management: Insights from a Longitudinal Analysis of Glucose Sensor Data

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OBJECTIVES

The aim of this study was to assess the sensor wearing habits of children with type 1 diabetes mellitus (T1DM) using longitudinally collected glucose sensor data and to analyse the association of disease control with parental characteristics (diabetes management, electronic health literacy and capability wellbeing).

METHODS

- Design: cross-sectional study carried out between July 2021 and November 2022
- Participants: dyads of parents and children with T1DM aged 8-15 years attending a university pediatric diabetes center in Hungary

Children's characteristics assessed:

- Sociodemographics (sex, age)
- Average glucose values were obtained for a 180-day period prior to the survey

Standard measurement tools were used to assess parents':

- Self-efficacy for their child's diabetes management (PSESDM[1])
- Electronic health literacy (eHEALS[2])
- Capability well-being (ICECAP-A[3-5])

Statistics:

- Children's 180-day average glucose value, sensor wear time (% of total time), and time spent in the therapeutic target range (TIR; 3.9-10.0 mmol/L) were calculated (Table 1)
- Parents' PSESDM, eHEALS and ICECAP-A scores were calculated (Table 2) and their association with children's 180-day glucose values, sensor wear time and TIR were assessed using Pearson correlation coefficients. (Figure 1)
- Distribution of responses on each measure are presented (Figures 2-3)

RESULTS

- Altogether, 84 children (47.6% girls) and parent (82.1% women) dyads were involved

Table 1. Children's characteristics

	Mean (SD)	Range
Age (years)	11.9 (1.8)	8-15
180-day Glucose Value (mmol/L)	9.33 (2.13)	6.89-20.59
Sensor Wear Time (%)	75.8 (21.3)	19.0-98.6
Time in Range (%)	61.6 (14.9)	26.6-84.4

Table 2. Parental characteristics

	Mean (SD)	Range
Age (years)	43.2 (5.1)	30-62
PSESDM score	33.7 (5.2)	21-40
ICECAP-A score	0.89 (0.12)	0.45-1.00
eHEALS score	31.7 (4.2)	19-40

Figure 1. Results of the correlation analysis

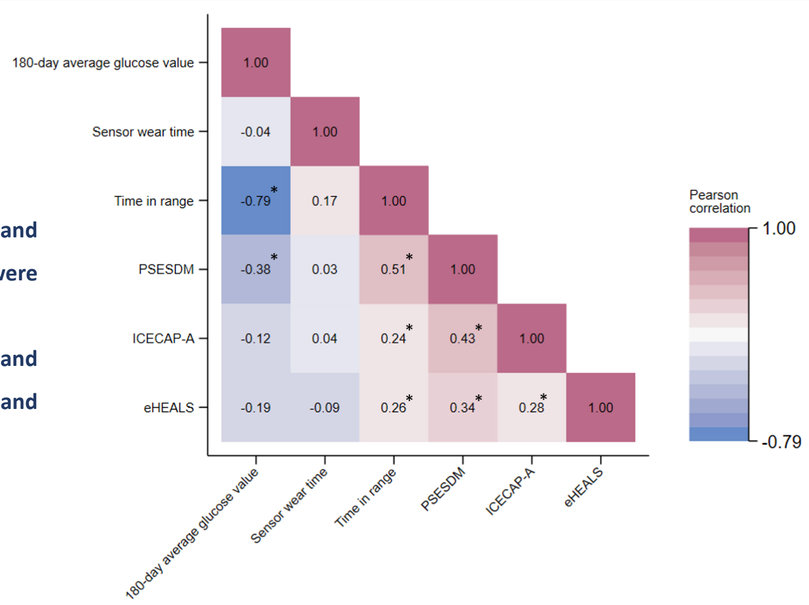


Figure 2. Distribution of parents' responses on PSESDM items

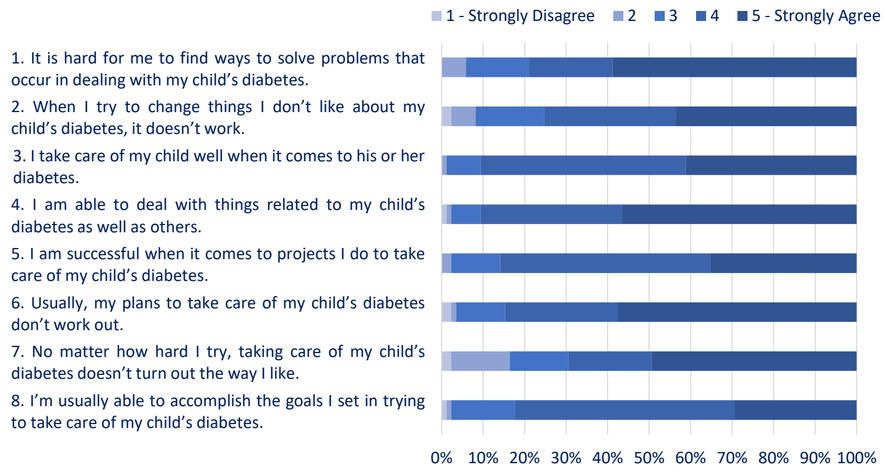


Figure 3. Distribution of parents' responses on eHEALS items

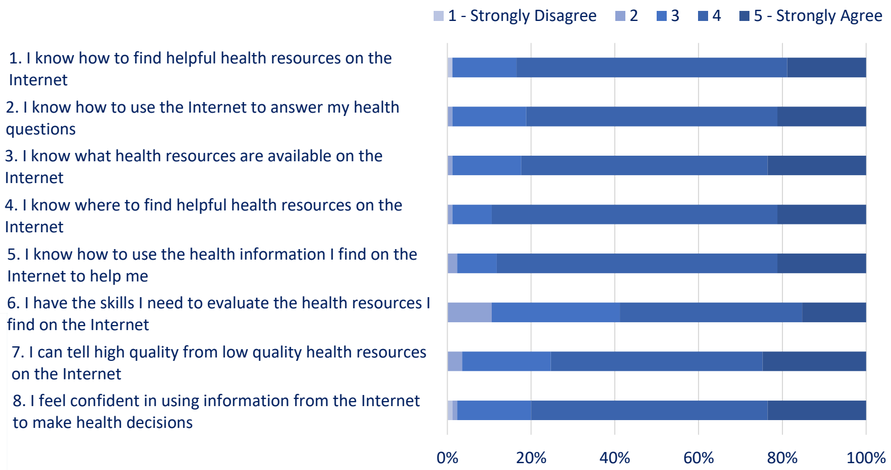
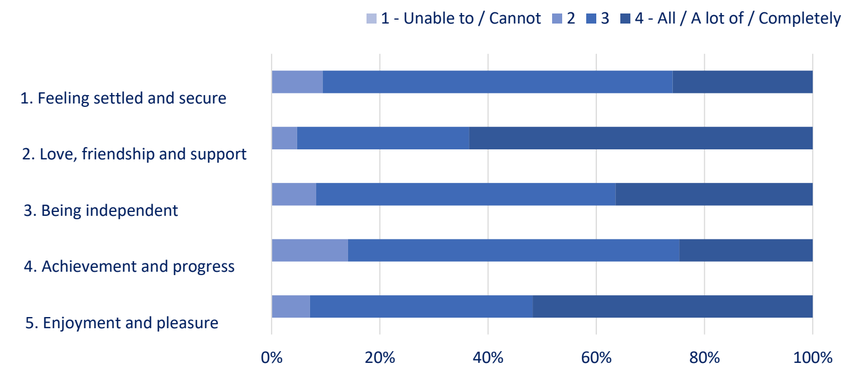


Figure 4. Distribution of parents' responses on ICECAP-A items



CONCLUSIONS: This study provides baseline data on children with T1DM using a glucose sensor. The results also highlight the key role of parents in the effective management of pediatric diabetes. Children whose parents are more confident in diabetes management, have higher electronic health literacy and generally better well-being have better disease control and outcomes.

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