Up All Night? Sleep In Parents Of Young Children Newly Diagnosed With Type 1 Diabetes

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Parents of young children with type 1 diabetes (PYC-T1D) may be susceptible to poor sleep due to the 24/7 demands of diabetes care and concerns about overnight hypoglycemia.

Little is known about the sleep patterns of PYC-T1D shortly after T1D diagnosis.
Our hypothesis:

1. PYC-T1D would report poor sleep quality (PSQI scores $\geq$ clinical threshold of 5) and short sleep duration at an early stage after diagnosis

2. PYC-T1D whose children use CGM technology would have better sleep quality (i.e., lower PSQI scores and higher % PSQI scores < 5)

Our study aimed to:

1. describe the sleep of PYC-T1D (ages 1-6 years) in the first 2 months post-diagnosis

2. explore any differences in sleep patterns with CGM use

CGM = continuous glucose monitor. PSQI = Pittsburgh Sleep Quality Index
Methods

**PYC-T1D**
(Participants at baseline of a behavioral RCT, within 2 months of T1D diagnosis)

- **90% Mothers**
- **Diverse Race/Ethnicity**
  - 61%
  - 14%
  - 14%
  - 11%

- **Mean Child age** = 4.5 ± 1.6 years
- **Mean T1D duration** = 27 ± 15 days
- **20% of children used CGM**

Parents self-reported about sleep (Pittsburgh Sleep Quality Index, PSQI), T1D-specific sleep disruptions, and child’s use of CGM.
Results

80% of PYC-T1D had PSQI ≥ 5 indicating clinically significant sleep disturbance (Mean PSQI scores = 8.3 ±4.1)

Mean parental sleep duration was 5.9±1.4 hours per night
Parents' sleep disruptions related to T1D

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<tr>
<th>CGM Users</th>
<th>Vs.</th>
<th>CGM Non-Users</th>
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<td>(n=31)</td>
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<td>(n=122)</td>
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| % of Clinically significant sleep disruption (PSQI ≥ 5) | 93.5% | 77.0% |
| Mean Sleep Duration (Hour/night)             | 5.6 ± 1.2 | 6.0 ± 1.4 |
| Mean PSQI score                               | 9.4 ± 3.7 | 8.0 ± 4.2 |

- $x^2 = 4.3 \times (p=0.04)$
- $t = -1.3 \times (p=0.18)$
- $t = 1.6 \times (p=0.10)$
CGM Non-Users (n=126) vs. CGM Users (n=31)

Reporting sleep disruption due to

- Diabetes caregiving (at least 1 night/week)
  - CGM Users: 87.1%
  - CGM Non-Users: 67.5%
  - \( x^2 = 4.7 \) *(p=0.03)*

- Stress-related to diabetes caregiving (at least 1 night/week)
  - CGM Users: 74%
  - CGM Non-Users: 62.7%
  - \( x^2 = 1.4 \) *(p=0.23)*

- Overnight blood glucose (BG) checks
  - CGM Users: 87.1%
  - CGM Non-Users: 76.2%
  - \( x^2 = 1.7 \) *(p=0.48)*
CGM Users  
(n=31)  
Vs.  
CGM Non-Users  
(n=126)  

Reporting nighttime BG checks  

On every night of the week  
63.3%  

At least twice per night  
48.4%  

Most common reported reasons for nighttime BG checks  

• (74%) Routine BG checks  
• (39%) Low BG at bedtime  
• (16%) CGM alarm/failure  
• (13%) Restless  

• Routine BG checks (87%)  
• Low BG at bedtime (24%)  
• Refusing to eat (6%)  
• Bedtime snack  

χ² = 0.00  (p=0.99)  

χ² = 6.8 *(p=0.01)
Conclusion

Sleep disruption is a pervasive problem among PYC-T1D soon after diagnosis, with the majority of parents not meeting recommendations for sleep duration and having clinically elevated sleep disturbances.

Though some aspects of parental sleep disruption were higher in CGM users, we cannot infer causality and poor sleep was prevalent regardless of CGM use.