Declarative title. Emotional distress associated with sleep disturbances impacts the quality of life with type 1 diabetes across the lifespan.

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Commentary on:

Carreon SA, Cao VT, Anderson BJ, Thompson DI, Marrero DG, Hilliard ME. 'I don't sleep through the night': Qualitative study of sleep in type 1 diabetes. Diabet Med [Internet]. 2021 Dec 15

Commentary

Implications for practice and research

- Poor sleep's physical and emotional burden creates a clinical need to assess typical sleep patterns, strategies, and concerns.
- Further investigations into implementing evidence-based interventions to improve sleep quality and outcomes are required.

Context. Current knowledge suggests that people with T1D and their families experience increased sleep disturbances and decreased sleep quality. Carreon and colleagues provide insight into the little-known and understood experiences of T1D-related sleep challenges.

Methods. The study (1) undertook a qualitative inquiry to understand the quality-of-life factors for people with type 1 diabetes (T1D) across the lifespan, including their families' perspectives. Data was collected through semi-structured separate individual interviews for children with T1D and their parents and separate focus group interviews for adults with T1D and their parents or partners (*total n* =82). Data collection instruments aligned with the participants' ages and positions as a person with diabetes or a family member. The researchers undertook a hybrid thematic analysis of secondary interview data to explore participant and family experiences related to sleep. An interpretive approach accords with secondary data analysis to enhance current knowledge about a little-known aspect of the quality of life with T1D.

Findings. The participants' prominent concern was their sleep disturbance experiences. The main findings are emotional distress associated with ongoing management and care of T1D and sleep disruption, leading to worry impacting sleep. Emotional distress is associated with diabetes-related activities and the potential for adverse night-time complications such as hypoglycemia. When events separate the person with T1D from their families at night, the emotional distress appears exacerbated.

Furthermore, all family members involved with an individual's T1D care and management experience night-time separation-related distress. Many factors can disrupt sleep, including glucose variability, the burden of overnight self-management, and technology to prepare for overnight management and prevent adverse events

such as hypoglycemia. Trusting technology for overnight management can alleviate sleep-associated worries. The experiences of disrupted sleep may impact daytime functioning and well-being, including mood, the capacity for diabetes self-management, and work or study activities.

Commentary: Carreon et al. argue that sleep experiences for the person and their family when living with T1D are significant but unexplored. The findings provide insight into poorly explored aspects of living with diabetes; they should be relevant to many affected by diabetes, particularly those embracing health technology. Furthermore, the study adds to the findings of a recent systematic review (2) analysing the adverse physiological and psychological effects of T1D on sleep efficiency and the potential impact of interventions. Psychological interventions such as sleep extension programmes showed a significant increase in sleep duration by >1 hour. The effects of a 1-week sleep extension programme demonstrated a significant 7.4% improvement in blood glucose levels as measured by continuous glucose monitoring (CGM) for those aged 10-16 years. In support of the Carreon et al. findings, the systematic review shows the potential of technology to both disrupt and enhance sleep for people with T1D and their families. The initial version of flash glucose monitors showed an improved self-report in sleep quality, decreased episodes of night-time hypoglycaemia, and improved HbA1c. CGM devices enable the user to share data with family members leading to perceived sleep quality. Insulin pumps can suspend and resume insulin delivery in response to blood glucose variations and minimise sleep disruption. More knowledge is required on the potential of hybrid closed-loop systems (HCL) to improve the physiological and psychological factors associated with sleep in T1D. The seriousness of the impact of sleep disturbances on the health of people with diabetes is further emphasised by von Schantz et al. (3), concluding that they were associated with an increased risk of all-cause mortality.

In summary, the importance of this study is the evidence of significant issues associated with sleep for people with T1D and their families. The implications for person-centred care are assessing and screening for perceptions of sleep quality, duration, and associated distress.

Further research recommendations concern the investigation of psychological and technological interventions to improve sleep quality.

1. Carreon SA, Cao VT, Anderson BJ, Thompson DI, Marrero DG, Hilliard ME. 'I don't sleep through the night': Qualitative study of sleep in type 1 diabetes. Diabet Med [Internet]. 2021 Dec 15

2. Zhu B, Abu Irsheed GM, Martyn-Nemeth P, Reutrakul S. Type 1 Diabetes, Sleep, and Hypoglycemia. Current Diabetes Reports. 2021;21(12).

3. von Schantz, M, Ong, JC, Knutson, KL. Associations between sleep disturbances, diabetes and mortality in the UK Biobank cohort: A prospective population-based study. J Sleep Res. 2021; 30:e13392. https://doi.org/10.1111/jsr.13392