

Diet quality, and objectively measured physical activity and sleep are intercorrelated with flash glucose monitoring (FGM)-measured glycemic control among children with type 1 diabetes: A mixed-methods, cross-sectional study

Diet, sleep, exercise, and type 1 diabetes

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Abstract

Aims: We examined the intercorrelation between diet quality, objectively measured physical activity (PA), sleep duration, and subjectively measured sleep quality with flash glucose monitoring (FGM)-measured glycemic control among young patients with type 1 diabetes (T1D). **Methods:** Following cross-sectional design, Fitbit[®] accelerometers were used to objectively assess PA, while the validated questionnaires Pittsburgh sleep quality index and Mediterranean diet (MD) adherence were used to subjectively assess sleep and diet quality, respectively. Glycated hemoglobin (HbA1c%) and FGM-reported glycemic control components among children with T1D were assessed as well. **Results:** Of the 47 participants surveyed (25 boys, 22 girls, 9.31 ± 2.88 years), the majority reported high HbA1c%, good sleep quality, intermediate daily steps (10426 steps), spent < 60 minutes/day on PA, and reported high adherence to the MD. However, only one-third of the participants reported a healthy sleep duration. Only the sleep latency was associated ($P < 0.05$) with the Time above Range Level 2 and Time below Range Level 2 ($P = 0.048$) components of the FGM. A positive correlation ($r = 0.309$, $P = 0.035$) was reported between adherence to MD and Time in Range of the FGM. **Conclusions:** Diet quality, PA, and sleep quality are variably intercorrelated with FGM-measured glycemic control among young patients with T1D, and suggest to be considered influential factors in FGM-monitored diabetes research on this age group.