

Collaboration advances type 1 diabetes care research

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(Medical Xpress) -- A study found that children with Type 1 diabetes experienced less time in deep sleep than children without diabetes, resulting in higher glucose levels, reduced quality of life and lower grades.

A collaboration among University of Arizona researchers in the fields of education, diabetes and sleep has led to new insight in the impact of sleep on diabetic children.

In a new study published in the journal [Sleep](#), researchers tracked the sleep health of 50 diabetic youth. They found that patients with [Type 1 diabetes](#) spent about 5 percent less time in [deep sleep](#) than individuals without diabetes, which is equivalent to about 21 minutes over a seven hour sleep period.

Youth with lighter sleep, sleepiness and/or sleep-wake behavior problems experienced higher blood [glucose levels](#), emotional and behavioral difficulties, reduced diabetes-related quality of life, lower grades, depression and lower math and reading scores.

Patients with sleep apnea, a common disorder that affects breathing during sleep, had higher [blood glucose](#) levels as well.

According to the National Institutes of Health, Type 1 diabetes is usually diagnosed in children and young adults and was previously known as juvenile diabetes.

In Type 1 diabetes, the body does not produce insulin that lowers blood sugar by allowing it to leave the bloodstream and enter cells where it is stored and later used for energy. Everyone with Type 1 diabetes must inject insulin and manage their blood glucose several times a day and through the night.

The study brought together Michelle M. Perfect, an assistant professor at the UA College of Education School Psychology Program, and research clinicians at the UA Angel Clinic – the only pediatric clinic in Southern Arizona completely devoted to children with diabetes and other endocrine disorders.

The collaboration also involved specialists from the Arizona Respiratory Center.

Perfect's interest in sleep and its association with achievement and behavior in education goes hand-in-hand with her training as a school psychologist interested in health.

“Sleep affects everyone. Studies have found a relationship between the quantity and quality of one's sleep and many health problems and learning. When I asked students, ‘Do you feel refreshed in the morning when you wake up?’ Most students said no and I wanted to learn why.”

As she researched the topics of sleep, children and school performance, she found very limited research, and even less was known about how sleep might contribute to school-related problem in youth with diabetes.

In diabetes management, recommendations exist for diet and physical activity, but very few specifically address sleep.

For the UA's Angel Clinic, the study represented an area unexplored there with the opportunity to continuously monitor blood glucose levels

while assessing their relationships with the sleeping patterns of Type 1 diabetic children.

Dr. Mark D. Wheeler, associate professor and endocrinology section chief at the College of Medicine's Angel Clinic, offered the resources of the clinic, including glucose monitors, and Dr. Priti Patel, assistant professor of endocrinology at the clinic, aided in the recruitment and clinical analysis of the glucose levels in the youth.

"Though our research teams had differences in focus, the clinical team was interested in any revelations of glucose trends related to hypoglycemia, or low blood sugar, during sleep and during activities. We were able to come together to gain insight to the psychological aspects of school function and glucose control and gain insight into the child's experience with diabetes as a whole," Patel said.

"There is so much complexity in diabetic care and in other chronic health issues that it is difficult for one person to be able to answer all of the research questions that need to be addressed," said Wheeler. "Before I met Dr. Perfect, I hadn't thought about the sleep aspect in Type 1 diabetes care. With her expertise in sleep and education, and our expertise in the clinical management of diabetes, we were able to broach a research component that we wouldn't have done on our own."

The study's results, Perfect said, "show the need for both clinicians and school-based professionals to be aware that reports of daytime sleepiness, disrupted sleep, or poor [sleep](#) habits, may affect the patient's daytime functioning, including the possibility of interfering with their [diabetes](#) self-care, [quality of life](#), and school performance."

Provided by University of Arizona

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