

# Microbiome study finds children with type 2 diabetes more likely to have poor oral health

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Credit: University at Buffalo

The first study of oral health in children with type 2 diabetes, including those who are obese, has found that these children tend to have poorer oral health than children who do not have type 2 diabetes.

Published earlier this month in *PLOS One*, the study of three groups of [children](#) – 19 normal weight children, 14 [obese children](#) and 16 obese children with type 2 diabetes – found that poor [oral health](#) is more common in obese children with type 2 diabetes. The age range for all groups was 10-19.

The research was funded by the Endocrine Fellows Foundation and by Colgate-Palmolive; neither funder had any role in the design, data collection, analysis or preparation of the manuscript.

"We found a trend toward more [periodontal disease](#) in obese children with type 2 diabetes," said Lucy Mastrandrea, MD, PhD, senior author, associate professor in the Department of Pediatrics in the Jacobs School of Medicine and Biomedical

Sciences at UB and a pediatric endocrinologist with UBMD Pediatrics. She also is associate chief of endocrinology at Women & Children's Hospital of Buffalo.

The idea for the study was generated by a conversation Mastrandrea and co-author Waleed F. Janem, MD, formerly a pediatric endocrinology fellow at UB and Women & Children's Hospital of Buffalo, had with Harvey Berman, PhD, associate professor in the UB Department of Pharmacology and Toxicology. Berman was initially interested in how access to [dental health](#) might impact obese adolescents with type 2 diabetes.

"It turns out that while obese adolescents with type 2 diabetes typically do have access to dental health, often through federally funded insurance, they do not routinely go to the dentist," said Mastrandrea.

The connection between poor oral health and adults with diabetes is well-known, she explained. According to the paper, oral inflammation has been detected not just in adults with diabetes, but even in adults with prediabetes.

However, to the researchers' knowledge, there haven't been any studies on the oral [health](#) of children with obesity or diabetes or on the pediatric microbiome.

"The most important finding of this research is that, like adults, children with type 2 diabetes appear more vulnerable to periodontal inflammation than normal lean or obese children," said Frank A. Scannapieco, PhD, DMD, chair and professor of the Department of Oral Biology in the UB School of Dental Medicine and a co-author. "It provides justification for the need for additional attention to oral hygiene in children with type 2 diabetes."

The work also provides an important foundation for further investigations into the microbiome of

children.

"This is the first study to look at the salivary microbiome in pediatric populations," Mastrandrea said. "We know that having inflammation anywhere in your body may influence your microbiome. At the same time, we know that having diabetes may influence your microbiome or, alternatively, that changes in the microbiome may increase your risk for diabetes."

Mastrandrea is interested in exploring in a longitudinal study, whether better dental care right after diagnosis might help mitigate the trend toward more periodontal disease in children with type 2 diabetes. She's also interested in whether the same trends hold true for children with Type 1 [diabetes](#).

The [microbiome](#) work was carried out at the UB Center for Microbiome Research in the New York State Center of Excellence in Bioinformatics and Life Sciences. The researchers isolated DNA from the saliva of children and sequenced the bacterial sequences with assistance from Maria Tsompana, PhD, co-author and senior research scientist in the Department of Epidemiology and Environmental Health, UB's School of Public Health and Health Professions.

**More information:** Waleed F. Janem et al.

Salivary inflammatory markers and microbiome in normoglycemic lean and obese children compared to obese children with type 2 diabetes, *PLOS ONE* (2017). [DOI: 10.1371/journal.pone.0172647](https://doi.org/10.1371/journal.pone.0172647)

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