

BMIs for Kids with Diabetic Siblings Similar to BMIs for Kids without Diabetic Siblings

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Key Findings:

- Children with a type 1 diabetic sibling have lower rates of overweight, obese, or severely obese BMIs compared to those without a sibling with diabetes, though this finding was not statistically significant.

The influence of one child's diabetes diagnosis on the BMI of other children in the household is not well understood. We aimed to understand the potential ripple effects, hypothesizing that the lifestyle adjustments required for managing type 1 diabetes in pediatric patients—such as healthier dietary habits and increased physical activity—could positively impact the BMI of non-diabetic siblings.^{1,2} These changes can foster a healthier home environment, influencing siblings' behavior and health outcomes.

We matched 1,178 children who had a sibling diagnosed with type 1 diabetes and 4,712 children who did not based on age, sex, race, ethnicity, Social Vulnerability Index quartile, and baseline BMI classification. We found that children who had a sibling diagnosed with type 1 diabetes had lower rates of overweight, obese, or severely obese BMIs compared to children without a sibling with diabetes, as seen in Figure 1. However, the decreased rates were not statistically significant.

Percentage of Children at or Above BMI Class

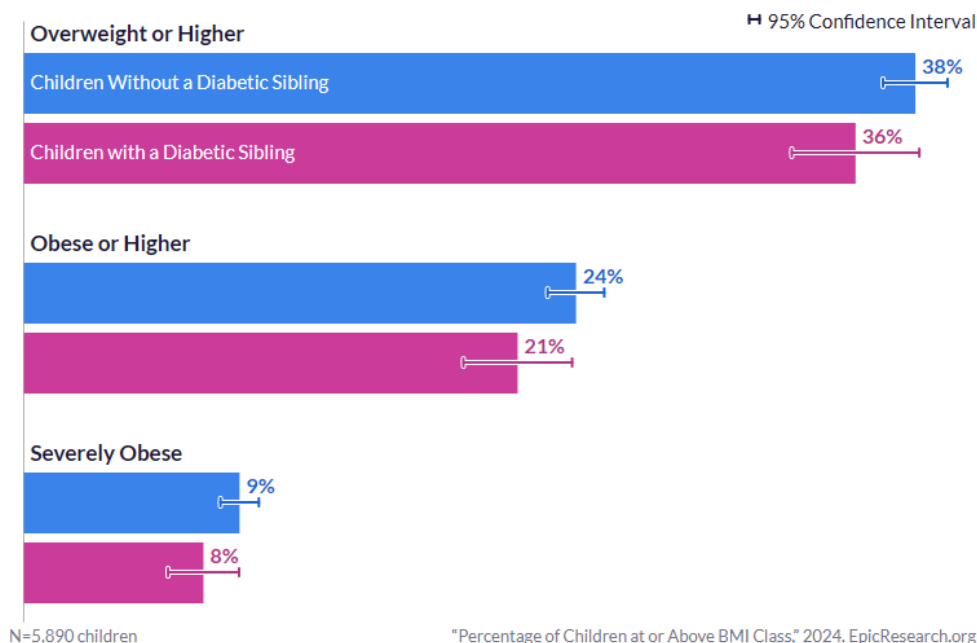


Figure 1. The percentage of children at or above an overweight, obese, or severely obese BMI classification by whether a child had a sibling diagnosed with type 1 diabetes.

These data come from Cosmos, a dataset created in collaboration with a community of Epic health systems representing more than 277 million patient records from 1,500 hospitals and more than 36,000 clinics from all 50 US states, Lebanon, and Saudi Arabia. This study was completed by two teams that worked independently, each composed of a clinician and research scientists. The two teams came to similar conclusions. Graphics by Brian Olson.

References

1. American Diabetes Association. 13. Children and Adolescents: Standards of Medical Care in Diabetes–2020. Diabetes Care. 2020;43(Supplement 1):S163-S182.
https://diabetesjournals.org/care/article/43/Supplement_1/S163/30510/13-Children-and-Adolescents-Standards-of-Medical. Accessed October 9, 2024.
2. Huang YD, Luo YR, Lee MC, Yeh CJ. Factors affecting the growth of children till the age of three years with overweight whose mothers have diabetes mellitus: A population-based cohort study. BMC Pediatr. 2021;21(1). doi:10.1186/s12887-021-02768-z

Data Definitions

Term	Definition
Study period	1/1/2000 to 8/15/2024
Study population	To be in our population, a patient must: • Not have a diabetes diagnosis anywhere on their chart. • Have at least one sibling in Cosmos. ◦ If multiple siblings are diagnosed with diabetes, we use the first sibling with a diagnosis. • Have at least two BMI readings. ◦ One within the year before the sibling's diabetes diagnosis. ◦ Another between six months and 2.5 years after the diagnosis. • Be between ages 2 and 15 at their first BMI reading.
Diabetes	A diagnosis with ICD-10-CM code E10* (type 1) or E11* (type 2) The first non-problem list diagnosis for a patient is considered their diagnosis date.
Exposures	Two groups matched 4:1 Control: Has no siblings diagnosed with type 1 diabetes Exposure: Has a sibling diagnosed with type 1 diabetes
Matching	Ages at first and second readings (The first reading is the one closest to the index/diagnosis date.) Initial BMI classification (based on age and sex) • Overweight: >85th percentile • Obese: >95th percentile • Severely obese: >=120% of the 95th percentile Legal sex

Table 1. Percentage of Children at or Above BMI Class

		Percent	Lower CI	Upper CI
Overweight	No Diabetic Sibling	38.31%	36.92%	39.69%
	Diabetic Sibling	35.74%	33.00%	38.48%
Obese	No Diabetic Sibling	23.73%	22.51%	24.94%
	Diabetic Sibling	21.22%	18.89%	23.56%
Severely Obese	No Diabetic Sibling	9.27%	8.45%	10.10%
	Diabetic Sibling	7.72%	6.20%	9.25%