

About School Breakfast and Blood Sugar a Study of 802 Teens Raises Questions

Researchers investigated associations between school meal participation, [dietary intake](#), and prediabetes prevalence among American adolescents.

The team analyzed data from 802 adolescents (ages 12 to 18 years) enrolled in the National Health and Nutrition Examination Survey (NHANES; 2017-2023 survey cycles) to examine relationships between school [nutrition](#) programs, dietary factors, and markers of impaired glucose regulation.

School breakfast participation (at least once per week) was associated with a 30% higher prediabetes prevalence compared with nonparticipation. The association was no longer statistically significant after correction for multiple comparisons. School lunch participation showed no statistically significant relationship with adolescent [prediabetes](#).



Study

To investigate these relationships, the researchers examined associations between school [meal consumption](#), overall nutrient intake, and laboratory markers of prediabetes among adolescents.

The researchers pooled nationally representative data from the 2017–2020 and 2021–2023 NHANES waves. The adolescents had a mean age of 14.5 years; approximately half were male, and all had complete fasting plasma glucose (FPG) and [glycated hemoglobin](#) (HbA1c) measurements.

The study compared adolescents with normal-range and prediabetes-range laboratory results after excluding those with reported diabetes or laboratory values in the diabetes range, based on the [American Diabetes Association](#) (ADA) criteria.

Prediabetes-range results included an impaired FPG of 100 to 125 mg/dL, an HbA1c of 5.7% to 6.4%, or both. Because classification relied on a single assessment, these results indicate laboratory values within the prediabetes range rather than a [clinical diagnosis](#).

The researchers examined school breakfast and lunch participation (none versus at least once weekly), along with overall dietary intake assessed through two 24-hour recalls. The dietary

assessment covered major food groups and nutrients, including [carbohydrates](#), total sugars, dietary fiber, different types of fat, and selected vitamins.

The researchers used survey-weighted statistical models to assess associations, accounting for demographic and socioeconomic characteristics. Additional adjustments considered energy intake, [physical activity](#), or school meal participation, depending on the analysis.

The analysis also assessed whether the associations differed by [obesity](#) status, defined as a body mass index (BMI) at or above the age- and sex-specific 95th percentile.

Results

The analysis found that 33.8% of adolescents had laboratory results within the prediabetes range, while 20.96% had obesity. After multivariable adjustment, participation in [school breakfast](#) at least once weekly was associated with a 30% higher prevalence of prediabetes-range laboratory results than nonparticipation. Nonparticipation in school breakfast did not necessarily mean that adolescents skipped breakfast altogether.

[Sensitivity analyses](#) suggested that sporadic breakfast participation (1 to 3 days weekly) was associated with the highest relative prediabetes prevalence, while participation on 4 to 5 days showed no statistically significant association.

The analysis found no statistically significant association between school lunch participation and prediabetes. In initial analyses, higher intakes of [vitamin E](#) and vitamin B6 were each associated with lower prediabetes prevalence. Total sugar intake was not significantly associated with prediabetes, and the researchers could not assess added sugar consumption separately.

Higher [fruit consumption](#) was associated with lower prediabetes prevalence only among adolescents with obesity. Across the analyses, none of the reported associations remained statistically significant after correction for multiple comparisons.

Conclusion

The findings suggest that school breakfast quality warrants further investigation as a possible factor in adolescent metabolic health, alongside the [dietary factors](#) examined.

The authors hypothesize that morning school offerings may contain more added sugars, juice, and [ultra-processed foods](#) than lunch menus, but the study did not directly assess school meal composition. They recommend that future school nutrition policies consider balanced, nutrient-dense breakfast options, while their effects on metabolic health remain uncertain.

The cross-sectional design, reliance on self-reported dietary data, possible unmeasured confounding, and [pandemic](#)-related disruptions to school meals limit interpretation. The findings do not show that school breakfast causes prediabetes. Longitudinal and intervention studies are needed to establish whether improving school meal quality influences adolescent metabolic outcomes.

Source:

<https://www.news-medical.net/news/20261022/A-study-of-802-teens-raises-questions-about-school-breakfast-and-blood-sugar.aspx>