New Research Says Diet Plays the Bigger Role in Stopping Autism

Researchers examined the differences in dietary habits and gut microbiota between children with autism spectrum disorder (ASD) and their non-ASD family members.

While gut microbial diversity appeared to be remarkably similar between the two groups, distinct dietary patterns emerged. Children with ASD ate fewer vegetables and more sweets, suggesting that in this cohort and design, ASD behaviors could shape the microbiome rather than vice versa.

Study

ASD is a complex neurodevelopmental condition involving social and behavioral difficulties and has become increasingly prevalent, now affecting roughly 1 in 31 children in the U.S.

Alongside its core symptoms, ASD is often associated with gastrointestinal problems, selective eating, anxiety, and immune irregularities, which together reduce quality of life.

This study was designed to disentangle the various confounding factors by combining dietary analysis with microbiome sequencing in children with and without ASD. Researchers aimed to determine whether dietary habits or gut microbial diversity better explain behavioral features of ASD, hypothesizing that diet-driven differences would be the primary factor.

The pilot study examined 17 children with ASD, 9 non-ASD siblings, and 27 parents recruited from an Italian clinical center. Dietary analyses encompassed a larger within-family sample of 79 individuals (26 children with ASD, 12 non-ASD siblings, and 41 parents).

Findings

The analysis showed no significant link between gut microbiome composition and autism diagnosis. Bacterial diversity, measured through both α-diversity and β-diversity, was similar among children with ASD, their siblings, and their parents.

Heatmaps and principal component analyses revealed that microbial community structures and species abundances were broadly comparable across all groups. Similarly, the fungal (mycobiome) analysis found no significant group differences. Only two fungal species showed statistical variation, and these differences were between children and parents rather than between ASD and non-ASD siblings.

In contrast, clear group-level distinctions emerged in dietary patterns. Children with ASD consumed significantly more sweets and sugary foods and fewer vegetables than both siblings and parents. This finding aligns with the statistical results. No differences were found between siblings and parents.

Smaller differences were also seen in fruit and processed food intake, but these mainly distinguished parents from children.

However, the authors note that some of these dietary associations weakened or lost statistical significance when more complex linear mixed-effects models were applied to account for family clustering, likely due to the small sample size.

They also emphasize that the absence of significant microbiome differences may partly reflect limited statistical power rather than a definitive lack of effect.

Overall, the findings suggest that dietary preferences, rather than gut microbial composition, differentiated children with ASD from non-ASD family members, highlighting selective eating behaviors as a defining feature of the ASD group.

Conclusion

This study found that dietary habits, not gut microbiome composition, best explained group differences in children with ASD. Both bacterial and fungal communities showed minimal variation across participants, indicating that prior inconsistencies in ASD–ASD microbiome studies may stem from small sample sizes, diverse methods, and unaccounted dietary factors.

Children with ASD showed strong preferences for sweet foods and limited vegetable intake, consistent with selective eating behaviors often seen in autism. These habits may contribute to nutritional deficiencies and metabolic issues.

The study's strengths include its within-family design and integration of bacterial, fungal, and dietary analyses. However, limitations such as the small sample size, cross-sectional nature, and lack of metabolomic data restrict causal interpretation. Differences between child and adult diets also complicate comparisons.

Overall, the findings support a behavior-to-diet-to-microbiome pathway in this cohort; however, causality cannot be inferred from the cross-sectional data. The authors further conclude that larger, multi-omic studies with greater statistical power are required to confirm whether subtle microbiome differences might emerge under more robust analytical conditions.

Source:

https://www.news-medical.net/news/20251105/Do-gut-microbes-cause-autism-New-research-says-diet-plays-the-bigger-role.aspx