

Diet Quality Trajectories in Early Childhood

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Introduction: It is widely accepted that childhood obesity is correlated to significant morbidity and mortality, yet evidence for the dietary determinants of obesity in children is limited. Leveraging a convenience sample of 372 healthy 3-year-old children from the Greater Cincinnati area, this study examined diet quality trajectories within the cohort from ages 3-7.

Methods: Participants' height, weight, body composition, and 3-day diet diaries were collected every 4 months at in-person clinical visits, for a total of 13 visits between 2001 and 2006. Data from each of the 3-day diet diaries were entered into the Nutrition Data Systems for Research system (NDSR) and analyzed for nutrient composition. The NDSR files were then used for the calculation of Healthy Eating Index scores (HEI).

Results: The yearly average HEIs for the cohort were consistently worse than the United States Department of Agriculture national averages, with most component HEI sub-scores ("total fruit", "whole fruit", "total vegetables", "whole grains", etc.) lower than national scores. None of the participants had "good" quality diet at any point in the study, defined as HEI > 80. Furthermore, the average HEI showed a significant yearly decline from ages 3-7. While most of the component sub-scores in the sample followed similar worsening patterns, there were notable differences; total protein foods, total vegetables, and fatty acid sub-scores improved between ages 3 and 7 in the cohort.

Conclusions: Based on the average HEI scores of the cohort, our local sample had poor baseline diet quality that became gradually worse throughout early childhood, which could be an important determinant of childhood obesity. Our next steps include grouping participants into pattern-specific cohorts using growth trajectory modeling, and applying linear regression techniques to examine how certain diet quality trajectories predict or are predicted by other covariate clinical data.

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