

The Effect of Sex and Ethnicity on the Relationship between Added Sugars Exposure in the First 1,000 Days and Offspring Body Composition at 24 Months

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Introduction. Added sugars (AS) intake is positively related to obesity risk. Intake among pregnant women, infants, and toddlers exceeds recommendations. Studies have not examined how AS exposure in the first 1,000 days relates to offspring adiposity, and if relationships vary by biological characteristics.

Methods. This secondary analysis assessed data from two NIH-funded trials, a prenatal DHA supplementation RCT (ADORE) and its follow-up (GAINS). Mother-child pairs were followed from pregnancy to 24 mo. Prenatal dietary intake was collected between 12-20wk gestation and offspring 24-hour dietary recalls were collected at 2wk, 6mo, 12mo, and 24mo. To reflect AS intake during infancy and toddlerhood, offspring recalls were averaged between 2wk/6mo (Year 1) and 12mo/24mo (Year 2). DXA measured offspring body composition at 24mo. Adjusted multiple hierarchical linear regression was completed.

Results. Maternal models (n = 55) showed a positive relationship between prenatal AS intake and fat-free mass (FFM) among female offspring. Offspring models (n = 54) also showed that outcomes varied by offspring sex. Year 1 AS intake was positively related to FM and FFM measures among male offspring, whereas Year 2 AS intake was positively related to only FM measures among female offspring. Ethnicity also modified outcomes. Among Hispanic offspring, higher Year 1 AS intake predicted higher FFM while higher Year 2 intake predicted lower central FM.

Conclusions. Offspring sex and ethnicity modified the relationship between AS exposure in the first 1,000 days and offspring body composition at 24mo. Further studies are needed to confirm our findings and understand if relationships impact later obesity risk.