ADHD symptoms and body composition changes in childhood: a longitudinal study evaluating directionality of associations

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Abstract

BACKGROUND: Attention-deficit/hyperactivity disorder (ADHD) is linked to increased risk of overweight/obesity among children and adults. Studies have also implicated obesity as a risk factor for ADHD. However, no studies have evaluated bidirectional, longitudinal associations between childhood fat mass and ADHD symptom severity.

OBJECTIVES: We investigate bidirectional associations between ADHD symptoms and measures of body composition between ages 1.5 and 9. We further examine effects of specific eating patterns linked to ADHD on associations between symptom severity and body composition.

METHODS: The study utilized data from children (N = 3903) participating in the Generation R cohort (Netherlands). Children were enrolled at birth and retained regardless of ADHD symptoms over time. Cross-lagged and change models examined bidirectional associations between body composition (body mass index/dual-energy X-ray absorptiometry) and ADHD symptoms at four time points in childhood.

RESULTS: A child with a clinically concerning ADHD symptom z-score two standard deviations above the mean at age 6 would be expected to experience about 0.22 kg greater fat mass gain measured via dual-energy X-ray absorptiometry between ages 6 and 9, even if they displayed healthy eating patterns (95% CI: 0.11 - 0.28, p < 0.001). Conversely, fat mass at any age did not predict worse ADHD symptoms later.

CONCLUSIONS: Beginning in early childhood, more ADHD symptoms predict higher fat mass at later ages. We did not find evidence of a reverse association. Based on these and prior findings, lifestyle counselling during treatment for children with a diagnosis of ADHD should be considered, even if they are diagnosed in early childhood and do not yet have a body mass index of clinical concern.