Shared familial risk factors between attention-deficit/hyperactivity disorder and overweight/obesity – a population-based familial coaggregation study in Sweden

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Journal of Child Psychology and Psychiatry, 2017
DOI: 10.1111/jcpp.12686

Abstract

Background
Despite meta-analytic evidence for the association between attention-deficit/hyperactivity disorder (ADHD) and overweight/obesity, the mechanisms underlying the association are yet to be fully understood.

Methods
By linking multiple Swedish national and regional registers, we identified 472,735 index males born during 1973–1992, with information on body weight and height directly measured before they were conscripted for military service. We further identified 523,237 full siblings born during 1973–2002 for the index males. All individuals were followed up from their third birthday to December 31, 2009 for ADHD diagnosis. Logistic regression models were used to estimate the association between overweight/obesity in index males and ADHD in their full siblings.

Results
Siblings of index males with overweight/obesity had increased risk for ADHD (overweight: OR = 1.14, 95% CI = 1.05–1.24; obesity: OR = 1.42, 95% CI = 1.24–1.63), compared with siblings of index males with normal weight. The results were adjusted for birth year of the index male and sex of the sibling. After further adjustment for ADHD status of the index male, the familial coaggregation remained significant (overweight: OR = 1.13, 95% CI = 1.04–1.22; obesity: OR = 1.38, 95% CI = 1.21–1.57). The results were similar across sex of the siblings.

Conclusions
Attention-deficit/hyperactivity disorder and overweight/obesity share familial risk factors, which are not limited to those causing overweight/obesity through the mediation of ADHD. Future research aiming at identifying family-wide environmental risk factors as well as common pleiotropic genetic variants contributing to both traits is warranted.