

How Do Prenatal Factors Impact ADHD?

This research update focuses on one overarching question: How do prenatal factors impact ADHD? The first study we discuss examined the impact of birthweight on ADHD in a meta-analysis. The second study examined the impact of maternal stress and psychosocial adversity on ADHD in a prospective cohort study.

Birth weight and ADHD

The first study synthesized results from numerous prior studies that examined whether being born with low birth weight predicts the later development of ADHD symptoms in children. The authors conducted a meta-analysis of 88 unique studies with a total sample of 4,645,482 subjects to calculate an overall effect size of birth weight on ADHD symptoms across the full range of possible birth weights and levels of ADHD symptom severity. Factors that influenced the strength of the association between birth weight and ADHD symptoms (i.e., moderators) observed across studies were also examined.

The meta-analysis revealed that birth weight had a small but significant overall association with ADHD symptoms, whereby individuals with lower birth weights later developed increased symptoms of ADHD. Additionally, the following variables influenced the strength of the association observed between birth weight and ADHD symptoms in the different studies: sample type (for example, population-based vs. clinical samples), mean birth weight of the sample, geographic region, who rated the ADHD symptoms (for example, parent, teacher), how they rated the ADHD symptoms (for example, interview, questionnaire), and race.

Interestingly, gestational age and maternal smoking during pregnancy, which are both related to birth weight and ADHD symptoms, did not influence the association of birth weight with ADHD symptoms across these studies.

Given the robust evidence observed for birth weight as a key predictor of ADHD symptoms, the authors suggest that future efforts to understand the complex biological processes that lead to low birth weight and ADHD are needed to identify protective factors that may prevent the development of ADHD symptoms in children with lower birth weight.

Momany, A.M., Kamradt, J.M. & Nikolas, M.A. (2018). A meta-analysis of the association between birth weight and Attention Deficit Hyperactivity Disorder. *Journal of Abnormal Child Psychology*, 46(7), 1409–1426.

Maternal stress, psychosocial adversity, and ADHD

The second study focused on the association between child ADHD diagnosis and mothers' psychosocial stressors before and after pregnancy. A prospective cohort design was used,

which is when participants are followed over time and the development of an outcome (in this case, ADHD diagnosis) is tracked as the outcome occurs. Researchers predicted that children born into environments with high maternal stress would be more likely to develop ADHD, even after controlling for other ADHD risk factors.

In total, 2140 low-income, urban minority mothers participating in the Boston Birth Cohort Study between 1998 and 2015 responded to interviews and questionnaires postpartum. From that information, stress and psychosocial adversity before and after pregnancy was measured in the domains of general life stress, perceived stress, stressful life events, family support, employment and public assistance. Within this sample, 360 children ended up receiving an ADHD diagnosis documented by a physician in the electronic medical record.

Children with ADHD were more likely to be male, born preterm, and delivered via C-section. They also were more likely to be born to mothers who were unmarried, less educated, had reported substance use, and smoked or experienced an intrauterine infection during pregnancy.

Of most interest to the current study, the likelihood of ADHD diagnosis increased consistently as the level of early life psychosocial hardship increased, even after controlling for other factors mentioned above. Given this, the authors suggest that screening for maternal stress and enhancing resources prior to conception and during pregnancy may reduce the development of youth ADHD. 🗨️

Okano, L., Ji, Y., Riley, A. W., & Wang, X. (2018). Maternal psychosocial stress and children's ADHD diagnosis: a prospective birth cohort study. *Journal of Psychosomatic Obstetrics & Gynecology*, 1-9.

Lauren Haack, PhD, is an assistant professor and attending psychologist in the department of psychiatry at the University of California San Francisco. Her research program and clinical practice focus on accessible and culturally attuned evidence-based services for vulnerable youth and families, with a specialty in ADHD services for children in Spanish-speaking, Latinx families.

Julia Morgan, MA, is a doctoral candidate in clinical psychology at the University of California, Los Angeles, and a predoctoral clinical psychology intern in the department of psychiatry at the University of California, San Francisco. Her research program focuses on the etiology of neurodevelopmental disorders. In her clinical work, she delivers evidence-based assessment and intervention services to individuals with neurodevelopmental disorders and their families.