

## **Prenatal Smoke Exposure during Pregnancy and ADHD Symptoms within Offspring: An Examination of Sex Differences and Mediation by DNA Methylation Markers**

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Prenatal maternal smoking has previously been associated with attention deficit hyperactivity disorder (ADHD) in children. Existing literature suggests that the mechanism by which prenatal smoke exposure may affect pathways for fetal growth and development are influenced by epigenetic changes. However, the current literature does not provide consistent evidence of sex differences in the association between smoking during pregnancy and ADHD, nor is it clear what epigenetic mechanisms are influencing this relationship. The current study utilizes data from the Newborn Epigenetic Study (NEST) to: (1) determine whether there is a relationship between maternal smoking during pregnancy and ADHD symptoms derived from the Behavior Assessment System for Children (BASC) measuring hyperactivity and attention problems, (2) assess whether this relationship is moderated by sex, and (3) examine whether this relationship is mediated by *IGF2*, *MEG3*, and *H19* methylation. Results demonstrate smoke exposure during pregnancy, measured by cotinine level, predicted attention problems ( $\beta = 1.05$ ,  $SE = 0.38$ ,  $p\text{-value} = 0.01$ ). However, this relationship is significant among males ( $\beta = 0.47$ ,  $SE = 0.19$ ,  $p\text{-value} = 0.01$ ), but not females ( $\beta = -0.11$ ,  $SE = 0.11$ ,  $p\text{-value} = 0.34$ ). However, the association between smoke exposure during pregnancy and attention problems was not mediated by *IGF2*, *MEG3*, or *H19* methylation.