

# Smoking While Pregnant, Lead Exposure Linked to ADHD

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Mothers who smoke while pregnant more than double the risk of having a child who will be later diagnosed with attention deficit disorder (ADHD).

The new study also estimated that if pregnant women stopped smoking, up to one-fifth of children could avoid an eventual ADHD diagnosis. The risk of ADHD is even higher if the child was also exposed to lead paint, or high levels of lead from soil or old water pipes.

The study estimated that up to 35 percent of ADHD cases in children between the ages of 8 and 15 could be reduced by eliminating both of these environmental exposures. This could translate into up to 800,000 children, or one-fifth of all children who carry an ADHD diagnosis.

“Tobacco and lead exposure each have their own important adverse effect,” says Tanya Froehlich, M.D., a physician in the Division of Developmental and Behavioral Pediatrics at Cincinnati Children’s Hospital and the study’s lead author.

“But if children are exposed to both lead and prenatal tobacco, the combined effect is synergistic.”

“Although we tend to focus on ADHD treatment rather than prevention, our study suggests that reducing exposures to environmental toxicants might be an important way to lower rates of ADHD,” says Robert Kahn, MD, MPH., a physician and researcher at Cincinnati Children’s and the study’s senior author.

The researchers found that children exposed prenatally to tobacco smoke were 2.4 times more likely to have ADHD.

Those with blood lead levels in the top third had a 2.3 fold increased likelihood of ADHD, despite levels well below the Centers for Disease Control action level of 10 micrograms per deciliter.

Dr. Froehlich and her colleagues found the risk of ADHD more than eight times higher for children exposed to both tobacco and lead compared to unexposed children.

The study is based on data of 8 to 15 years olds gathered between 2001 and 2004 from the National Health and Nutrition Examination Survey (NHANES) from the National Center for Health Statistics at the Centers for Disease Control and Prevention. NHANES is a nationally representative sample of the United State population, designed to collect information about the health and diet of people in the U.S.

Prenatal tobacco exposure was measured by maternal reports of cigarette use during pregnancy. Lead exposure was assessed using current blood lead level.

Some 8.7 percent of the 3,907 children in the study met diagnostic criteria for ADHD. The diagnosis for ADHD was based on the Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition, considered the “gold standard” for defining specific mental health conditions.

The study is to be published online Nov. 23 by *Pediatrics*.

Source: Cincinnati Children’s Hospital Medical Center