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Smoking during pregnancy may cause severe asthma for baby when in its teens

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African-American and Latino children whose mothers smoked during pregnancy are more likely to suffer from acute asthma symptoms in their teens than asthma sufferers whose mothers did not smoke, according to a new study led by a research team at UCSF.

In an analysis of nearly 2,500 Latino and African-American children with asthma, the researchers found that children between age 8 and 17 with acute asthma symptoms were far more likely to have had mothers who smoked during pregnancy, even when the team controlled for elements such as education, socioeconomic level and childhood exposure to tobacco smoke.

“If women smoked while pregnant, their children had about a 50 percent increase in uncontrolled asthma, even when we controlled for current tobacco exposure,” said [Sam S. Oh](#), PhD, MPH, a postdoctoral scholar in epidemiology at the UCSF Center for Tobacco Research and Education, who is first author on the paper. “Kids who are 17 years old still show the effects of something they were exposed to during the first nine months of life.”

The findings are significant in light of the greater proportion of women from ethnic minorities who smoke throughout their pregnancies, the researchers said, as well as the higher rates of asthma within both of those communities than in the overall U.S. population.

The results will appear in an upcoming issue of *The Journal of Allergy and Clinical Immunology* and can be found in the [advance online edition](#).

Acute asthma significantly affects the quality of life of patients and their families, costing an estimated \$56 billion per year in the United States in medical expenses, premature deaths and missed days of work and school, according to the National Institutes of Health.

While extensive research has shown the effect of smoking on asthma risk in young children, the relative contribution of smoking during pregnancy has not been well established, with even less research focused on the populations that are more likely to use tobacco during pregnancy, according to the paper.

The study found that the exact timing of tobacco exposure during pregnancy — whether it was the first trimester or third — was less important than whether they smoked at all, although children with acute symptoms were more likely to have had mothers who

smoked for all nine months.

“Most mothers tend to quit smoking as pregnancy progresses, with the majority quitting by the end of the first trimester,” Oh said. “But in African-American and Puerto Rican mothers, not only did they smoke more frequently, but they also smoked for a longer time during pregnancy.”

An estimated 13.8 percent of American women smoke during pregnancy, according to the U.S. Pregnancy Risk Assessment Monitoring System. Among African-American women, 18.8 percent smoke during pregnancy, as do 6 percent of Puerto Rican mothers and 3.8 percent of Mexican mothers. Findings such as these give a strong incentive to reduce that to zero, the researchers said.

Smoking cessation during pregnancy was uncommon among the Puerto Rican and African-American study participants, with only 35 percent and 29 percent, respectively, quitting smoking before their third trimester. In contrast, 72 percent of the Mexican mothers stopped smoking by the end of the second trimester.

“This could be part of the reason African Americans have higher mortality rates associated with asthma,” said Esteban Gonzalez Burchard, MD, MPH, a professor in the UCSF School of Pharmacy whose research focuses on disparities in asthma prevalence, severity and drug responsiveness among diverse racial/ethnic populations. “We know African Americans metabolize nicotine differently than Caucasians. This shows that *in utero* exposure leads to changes in DNA, but we don’t know how that affects asthma later on.”

The researchers said the findings highlight one of two possible causes: either the infant’s lungs are damaged during development in the womb or *in utero* exposure to tobacco smoke causes a genetic change that carries over to the next generation.

Asthma is known to be caused by multiple factors, including genetics. The study, which only assessed African-American and Latino children with asthma, found that about 5 percent of those children whose symptoms were controllable through medical treatment had mothers who smoked during pregnancy. By contrast, roughly 12 percent of the children with uncontrolled, or acute, asthma had mothers who smoked.

The study comprised researchers from 17 institutions in the United States, Mexico and Puerto Rico and tapped into two previous, large-scale research projects that Burchard led: the Gene-Environments and Admixture in Latino Asthmatics (GALA II) study, and the Study of African Americans, Asthma, Genes, & Environments (SAGE II).

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Foundation. The full list of authors and their affiliations can be [found here](#).

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