

Prenatal maternal smoking associated with increased risk of adolescent obesity

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Prenatal exposure to maternal cigarette smoking appears associated with an increased risk for adolescent obesity, and is possibly related to subtle structural variations in the brain that create a preference for eating fatty foods, according to a report published Online First by *Archives of General Psychiatry*.

"Prenatal exposure to maternal cigarette smoking is a well-established risk factor for obesity, but the underlying mechanisms are not known," the authors write as background information. "Preference for fatty foods, regulated in part by the [brain reward](#) system, may contribute to the development of obesity."

Amirreza Haghghi, M.D., of the Hospital for Sick Children, Toronto, Canada, and colleagues, studied 378 adolescents age 13 to 19 years who were recruited through high schools in one region of Quebec, Canada, as part of the ongoing Saguenay Youth Study. Participants were grouped as exposed to maternal smoking (n=180) or nonexposed to maternal smoking (n=198) and participants in each group were matched at recruitment by [maternal education](#) and participant's [school attendance](#) to minimize confounding influence of socioeconomic status (SES), and did not differ by sex, age, puberty stage or height.

The authors defined exposed as having a mother who smoked more than one cigarette a day during the second trimester of pregnancy, and nonexposed as having a mother who did not smoke one year before (and throughout) the pregnancy.

Exposed versus nonexposed participants weighed less at birth and were breastfed for shorter periods of time. At the time of analysis, exposed participants had a marginally higher body weight and BMI, and a significantly higher total body fat compared with nonexposed participants. These differences persisted after adjustment for age, sex, and height (when appropriate), and were still significant when adjusting for additional variables frequently associated with maternal [smoking during pregnancy](#) (i.e., lower birth weight, shorter duration [or lack of] breastfeeding, and lower SES).

Exposed versus nonexposed participants also exhibited a significantly lower volume of the amygdala (part of the brain that plays a role in processing emotions and storing memories), and the authors found that, consistent with its possible role in limiting fat intake, amygdala volume correlated inversely with fat intake.

"Prenatal exposure to maternal cigarette smoking may promote obesity by enhancing dietary preference for fat, and this effect may be mediated in part through subtle structural variations in the amygdala," the authors conclude.

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