

health & pregnancy

Stress in Pregnancy May Make Kids Vulnerable to Stress

Study Suggests Stress in Pregnancy Is Linked to Changes in Genes That Affect Stress

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July 19, 2011 -- Children born to mothers who are highly stressed during [pregnancy](#) exhibit genetic changes that may make them more vulnerable to [stress](#) themselves, new research finds.

The study found that children and [teens](#) whose mothers had been victims of [domestic violence](#) during pregnancy had altered expression of a gene that has been linked to stress response and behavioral problems.

Researchers say the finding suggests that alterations in gene expression in the womb that result from exposure to maternal stress can persist through childhood and into adulthood.

Helen Gunter, PhD, of Germany's University of Konstanz, says the study is the first to link stress during pregnancy to sustained changes in DNA methylation, a process involved in turning genes on and off.

"This is a potential mechanism to explain how exposure to prenatal stressors could influence psychological function throughout life," she tells WebMD.

The study included 25 children and teens between the ages of 10 and 19 and their mothers.

The mothers completed a questionnaire designed to screen for intimate partner violence upon entering the study; eight mothers were found to have experienced such violence during pregnancy.

The researchers then analyzed the methylation status of the children, specifically focusing on the stress-response-mediating glucocorticoid receptor (GR) gene.

Stress Exposure in Womb

The analysis revealed that prenatal exposure to intimate partner violence was associated with alterations in the methylation of the GR promoter indicative of an impaired ability to cope with stress.

"This is the first demonstration that gestational exposure to psychological stressors can have a lasting impact on methylation status in human offspring," the researchers write. "Our results provide a potential mechanism -- methylation of the GR promoter -- upon which prenatal stress could act to influence psychological function."

Gunter says the next phase of the research will involve behavioral testing to determine if children with these alterations actually have impaired coping skills.

The study is published online in *Translational Psychiatry*.

Thomas Elbert, PhD, who is a professor of neuropsychology and clinical psychology at the University of Konstanz, says revolutionary developments in the field of gene sequencing should lead to a much better understanding of how prenatal exposures alter gene expression, behavior, and even susceptibility to disease.

"Now that we can sequence full genomes relatively cheaply there is no telling what we will find," he says. "I do believe we will know a lot more in the next two or three years than we know today."

He says the findings also emphasize the importance of domestic violence interventions that target women in their childbearing years.

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SOURCES:

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News release, Nature Publishing Group.


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