

Young adults' blood lead levels linked to depression, panic disorder

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Young adults with higher blood lead levels appear more likely to have major depression and panic disorders, even if they have exposure to lead levels generally considered safe, according to a report in the December issue of *Archives of General Psychiatry*.

"[Lead](#) is a well-known neurotoxicant that is ubiquitous in the environment, found in air, soil, dust and water," the authors write as background information in the article. Eliminating lead from gasoline has led to a dramatic decline in average blood levels, but remaining sources of exposure include paint, industrial processes, pottery and contaminated water. "Research on the neurotoxic effects of low-level lead exposure has focused on the in utero and early childhood periods. In adult populations, the neurotoxic effects of lead have been studied mainly in the context of occupational exposures, with levels of exposure orders of magnitude greater than that experienced by the general population."

Maryse F. Bouchard, Ph.D., M.Sc., of the Universite de Montreal, Canada, and Harvard School of Public Health, Boston, and colleagues analyzed data from 1,987 adults age 20 to 39 years who participated in the National Health and Nutrition Examination Survey between 1999 and 2004. Participants underwent medical examinations that included collection of a blood sample, and also completed a diagnostic interview to identify major depressive disorder, panic disorder and generalized anxiety disorder.

The number of young adults who met diagnostic criteria for major depressive disorder was 134 (6.7 percent), 44 (2.2 percent) had panic disorder and 47 (2.4 percent) had generalized anxiety disorder. The average [blood lead](#) level was 1.61 micrograms per deciliter. The one-fifth of participants with the highest blood lead levels (2.11 micrograms per deciliter or more) had 2.3 times the odds of having major depressive disorder and nearly five times the odds of panic disorder as the one-fifth with the lowest lead levels (0.7 micrograms per deciliter or less).

Smoking is related to blood lead levels, so the researchers conducted additional analyses excluding the 628 smokers. Among non-smokers, the elevation in risk between the highest and lowest blood lead levels was increased to 2.5-fold for [major depressive disorder](#) and 8.2-fold for panic disorder.

Low-level lead exposure may disrupt brain processes, such as those involving the neurotransmitters catecholamine and serotonin, that are associated with depression and panic disorders, the authors note. Exposure to lead in individuals predisposed to these conditions could trigger their development, make them more severe or reduce response to treatment.

"These findings suggest that lead neurotoxicity may contribute to adverse mental health outcomes, even at levels generally considered to pose low or no risk," they conclude. "These findings, combined with recent reports of adverse behavioral outcomes in children with similarly low blood lead levels, should underscore the need for considering ways to further reduce environmental lead exposures."

[More information:](#) *Arch Gen Psychiatry*. 2009;66[12]:1313-1319.

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