Spatial Variability in ADHD-Related Behaviors Among Children Born to Mothers Residing Near the New Bedford Harbor Superfund Site.

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Abstract

Attention-deficit/hyperactivity disorder (ADHD) has an uncertain etiology, with potential contributions from different risk factors such as prenatal environmental exposure to organochlorines and metals, social risk factors, and genetics. The degree to which geographic variability in ADHD is independent of, or explained by, risk factors may provide etiological insight. We investigated determinants of geographic variation in ADHD-related behaviors among children living near the polychlorinated biphenyl-contaminated New Bedford Harbor (NBH) Superfund site in Massachusetts. Participants were 573 children recruited at birth (1993-1998) who were born to mothers residing near the NBH site. We assessed ADHD-related behaviors at age 8 years using Conners' Teacher Rating Scale-Revised: Long Version. Adjusted generalized additive models were used to smooth the association of pregnancy residence with ADHD-related behaviors and assess whether prenatal organochlorine or metal exposures, sociodemographic factors or other factors explained spatial patterns. Models that adjusted for child's age and sex displayed significantly increased ADHD-related behavior among children whose mothers resided west of the NBH site during pregnancy. These spatial patterns persisted after adjusting for prenatal exposure to organochlorines and metals but were no longer significant after controlling for sociodemographic factors. The findings underscore the value of spatial analysis in identifying high-risk subpopulations and evaluating candidate risk factors.