

SERUM PERFLUORINATED COMPOUND CONCENTRATION AND ATTENTION DEFICIT/HYPERACTIVITY DISORDER IN CHILDREN AGED 5–18.

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Background and Aims: Perfluorinated compounds (PFCs) are ubiquitous, environmental pollutants used to manufacture non-stick cookware and waterproof fabrics. Perfluorooctanoic acid (PFOA) and other PFCs are found in maternal and umbilical cord blood and breast milk. Toxicology studies demonstrate the potential for PFCs to impact human growth and development. Attention Deficit/Hyperactivity Disorder (ADD) is a developmental disorder with suspected environmental and genetic etiology.

Objectives: We examined the cross-sectional association between serum PFC concentration and report of doctor-diagnosed ADD with and without current ADD medication use.

Methods: We used data from the C8 Health Project, a 2005–2006 survey in a Mid-Ohio Valley community highly exposed to PFOA through contaminated drinking water, to examine the association between serum PFC concentration and report of doctor-diagnosed ADD in non-Hispanic white children aged 5–18. This community was highly exposed to PFOA, but exposure to other PFCs reflects typical background levels. Logistic regression models were adjusted for age and gender.

Results: Of the 10,546 eligible children, 12.4% reported ADD, and 5.1% reported ADD plus current ADD medication use. The adjusted odds ratio (OR) for PFOA exposure above the 50th percentile was decreased (OR 0.80, 95% confidence interval (CI) 0.67, 0.95) for ADD plus medication as compared to exposure below the 50th percentile. Conversely, the OR for perfluorohexane sulfonic acid (PFHxS) levels above the 50th percentile was increased (OR 1.33, 95% CI 1.11, 1.59) for ADD plus medication as compared to exposure below the 50th percentile. There were no clear associations between the other PFCs and ADD.

Conclusions: It seems unlikely that PFOA protects against ADD. We suspect that the inverse association between PFOA and ADD reflects a spurious finding related to the geographic determination of PFOA exposure in this population, or to unmeasured behavioral or physiologic correlates of both exposure and outcome.