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# PEDIATRIC NURSING AND HEALTHCARE

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# PERINATAL NURSING AND ADOLESCENT PSYCHIATRY

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## The role of prenatal tobacco smoke exposure in modulating the association of genetic variants with the child attention deficit hyperactivity disorder

**Yu-Kai Du**

Huazhong University of Science and Technology, China

**Objective:** Many epidemiologic studies have consistently shown that cigarette smoking during pregnancy could increase the risk for children neurodevelopmental disorders and behavioral problems, but the gene-environment interaction of smoke exposure and gene influence is numbered. The purpose of our study was to test the hypothesis that prenatal tobacco smoke exposure (including maternal smoking and secondhand smoke exposure during pregnancy) could modify the association of genetic variants with diagnosed ADHD and ADHD co-occurring ODD (ADHD-ODD).

**Methodology:** The simple effects of certain single nucleotide polymorphisms (SNPs) in the dopaminergic, serotonergic and noradrenergic pathway and of prenatal tobacco smoke exposure in association with ADHD and ADHD-ODD were estimated, the joint effects, in addition, of SNPs and prenatal tobacco smoke exposure were measured using unconditional univariate logistic regression analysis adjusting by potential influences, such as preterm birth, low birth weight, lead.

**Findings:** Prenatal tobacco smoke exposure was an important risk factor for children diagnosed ADHD even by adjusted other potential confounders. We found three SNPs in the ADRA2A, DRD2 and SLC6A4 genes were statistically associated with diagnosed ADHD, but the relationships were disappeared in some symptom domain. The risk of the genetic variants in the children ADHD symptom domains and ADHD-ODD were increased sharply when combined with prenatal tobacco smoke exposure.

**Conclusion:** The genetic variants and prenatal tobacco smoke exposure were in associated with a strongly increased risk of ADHD and ADHD-ODD. These findings suggested that the genetic risk factors for ADHD could be influenced by the presence of in-utero smoking exposure.

### Biography

Yu-Kai Du has expertise in maternal and child healthcare. He has worked in Department of Maternal and Child Health, Tongji Medical College, Huazhong University of science and Technology from 1983. He has undertaken a number of National Natural Science Funds projects on vertical transmission of hepatitis B virus in the Chinese population. He has also held a number of social positions, such as the Director of Chinese Society of Rural Health, the Director of Standing of Hubei Society of Family Education and Hubei Society of Comprehensive Development of Children Secretary-general, the committee of Chinese maternal and child experts' committee. Committee and the expert group of prevention mother-to-child transmission of HIV, China's Ministry of Health.

duyukai100@aliyun.com

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