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Association between birth-related factors and migraine occurrence in adulthood: findings from a prospective birth cohort study

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Introduction
Migraine is one of the most prevalent and disabling neurological conditions. Although its pathophysiology has been increasingly characterized, the contribution of perinatal and early-life exposures to long-term migraine risk remains poorly understood. Birth cohort studies offer a robust epidemiological framework for addressing this question.

Objective
To investigate the association between early-life birth-related factors and the occurrence of migraine in adulthood using a prospective birth cohort.

Methods
This prospective cohort study pooled data from two independent birth cohorts, totaling 2,474 participants followed from birth to adulthood (mean age 32.5±7.5 years). Migraine diagnosis was established according to the International Classification of Headache Disorders, 3rd edition (ICHD-3) criteria. Birth-related variables included maternal age, paternal age, number of prenatal visits, maternal smoking during pregnancy, prematurity, socioeconomic status, birthweight classification, and mode of birth. Associations with migraine were assessed using multivariable binary logistic regression with backward stepwise selection (likelihood ratio method), adjusting for sex.

Results
The prevalence of migraine was 47.8%. In the final backward stepwise logistic regression model, female sex (OR=3.93; 95%CI 3.29–4.70; p<0.001) and maternal smoking during pregnancy (OR=1.28; 95%CI 1.05–1.57; p=0.017) were independently associated with migraine occurrence. Other birth-related variables, including maternal age, paternal age, number of prenatal visits, prematurity, socioeconomic status, birthweight classification, and mode of birth, were not retained in the final model.

Conclusion
Female sex and maternal smoking during pregnancy were independently associated with migraine occurrence in adulthood. Other birth-related factors showed limited contribution to migraine in later life. These findings point to the intrauterine environment as a potential determinant in the early origins of migraine.

Keywords:
Migraine disorders
Epidemiology
Prenatal exposure delayed effects

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