

Link Between Migraine and Family Income Among Teens

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July 6, 2007 — A new study finds that among adolescents from families with no history of migraine, those from low-income households are more likely to have migraine than those from higher-income households.

"This suggests social causation rather than social selection, highlighting the need for exploration of environmental risk factors related to low income and migraine and the search for specific comorbidities and stressors in this group," the researchers, with first author Marcelo E. Bigal, MD, from the Albert Einstein College of Medicine, in the Bronx, New York, conclude.

For those with a family history of migraine, household income did not have a significant effect on migraine prevalence, "probably because of the higher biologic predisposition," the authors note.

Their report is published in the July 3 issue of *Neurology*.

Social Causation vs Social Selection

This relationship between higher migraine prevalence and lower income and education has been observed in adults, the authors write. "The reasons for this relationship have been the subject of much debate, with 2 major alternative explanations," they write.

The "social-causation" hypothesis suggests that factors associated with low socio-economic status, such as stress, poor diet, or limited access to medical care, act to increase migraine prevalence, they write. "The opposing social-selection hypothesis suggests that disease-related dysfunction interferes with educational and occupational functioning, which in turn would lead to low income," Dr Bigal and colleagues write.

The social-causation hypothesis would predict that migraine prevalence in adolescence would be similar to that pattern seen in adults. "Since adolescents make at most a modest contribution to household income, if the social-selection hypothesis is correct, income and migraine prevalence should not be related in adolescents."

To find out, the researchers surveyed 120,000 households using a validated headache questionnaire as part of the longitudinal American Migraine Prevalence and Prevention project.

A total of 32,015 adolescents were identified and of these 18,714 returned a questionnaire, a 58.4% response rate.

They found that the 1-year prevalence of migraine was 6.3% — 5.0% in boys and 7.7% in girls. The prevalence was higher in girls than boys in those older than 12 years and higher among whites than African Americans.

Among adolescents who lived in households where the income was lower than \$22,500, the prevalence of migraine was higher than in adolescents who came from households with an annual income of \$90,000 or more, but only if no family history of migraine was present. Among those with a family history of migraine, there was no relationship with household income, supporting the social-causation hypothesis.

**Adjusted Prevalence of Migraine by Household Income Level in Adolescents
With and Without a Family History of Migraine**

Prevalence of Migraine by Group	Household Income < \$22,500 (%)	Household Income ≥ \$90,000 (%)	Odds Ratio (95% CI)
No family history of migraine	4.4	2.9	0.49 (0.38 – 0.63)
Family history of migraine	8.6	8.4	0.97 (0.81 – 1.15)

"Possible factors associated with low socio-economic status, such as stress, poor diet, or limited access to medical care, may be responsible for this increase," Dr Bigal said in a statement from the American Academy of Neurology. "We plan to further investigate the role of nutrition, stress, and treatment patterns, since migraine may interfere with education, making it a public health concern."

He cautioned, though, that there are limitations to their study. "Psychiatric factors, such as depression, anxiety, and substance abuse, were not measured in this study. It may be that these factors could explain the association between migraine and low income, which is why we need to better explore these factors," he said.

"Nature vs Nurture"

In an editorial accompanying the paper, Andrew D. Hershey, MD, PhD, from the Children's Hospital Medical Centre and the University of Cincinnati College of Medicine, in Ohio, points out that previous work has shown that migraine has a genetic basis but is significantly modified by environmental factors.

"The expression of migraine clearly involves a complex interaction of genetics and environment," Dr Hershey concludes. "Bigal et al, in this large population-based study, have clearly demonstrated that the interplay between socio-economic status and genetics contributes to this complexity. As the pathophysiology of migraine continues to evolve, these contributions will undoubtedly play a role."

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