



A Factor in Divorce

By
LOIS
BAKER

PARENTS of a child with attention deficit hyperactivity disorder (ADHD) are nearly twice as likely to divorce by the time the child is eight years old than parents of children without ADHD, according to a study conducted by UB researchers.

MOREOVER, among couples in the study who were divorced, marriages involving children with ADHD ended sooner than marriages with no ADHD-diagnosed children.

William E. Pelham Jr., PhD, UB Distinguished Professor of Psychology and Pediatrics and director of UB's Center for Children and Families, is senior author on the study, which is the first to look at this issue in depth. Pelham is known internationally for his ADHD treatment and research and each year conducts UB's Summer Treatment Program, a highly successful behavior-modification program that has helped hundreds of children with ADHD and has been replicated nationwide.

Brian T. Wymbs, PhD, who received his doctorate in clinical psychology at UB and is completing a postdoctoral fellow-

ship at Western Psychiatric Institute and Clinic in Pittsburgh, Pennsylvania, is first author of the study, which was published in the October 2008 issue of the *Journal of Consulting and Clinical Psychology*.

Additional findings from a subset of divorced couples with children with ADHD showed that several characteristics within the family contribute individually to the risk of divorce: age of the child when diagnosed; race and ethnicity of the parents; severity of coexisting disorders in children with ADHD, such as oppositional-defiant disorder (ODD) and conduct disorder (CD); education levels of the parents; and a father's antisocial behavior (trouble with the law).

"We believe this is the first study to find that both parent and child factors individually predict the rate and time of divorce," says Pelham. "Moreover, this is the only study to demonstrate that the severity of the child's disruptive behavior, specifically those with ODD or CD, increases the risk of divorce.

"Certainly we are not suggesting that having a child with ADHD is the only reason these marriages end in divorce," he adds. "Disruptive child behavior likely interacts over time with other existing stress in the family to spark conflict in a marriage and, ultimately, divorce."

Wymbs' research documents that when parents interact with an ADHD child, they are more distressed, argue with one another more and view one another as less supportive as compared to when they interact with a child without ADHD.

Data for the study was gathered from a subset of

participants in a larger investigation called the Pittsburgh ADHD Longitudinal Study (PALS), which is funded by grants from the National Institute on Alcohol Abuse and Alcoholism and the National Institute on Drug Abuse to Pelham and Brooke Molina, PhD, from the University of Pittsburgh.

Results showed that 22.7 percent of parents of children with ADHD had divorced by the time the child was eight years old, compared to 12.6 percent of parents in the control group. Divorce rates of parents with and without children with ADHD were not significantly different after children passed the eight-year mark.

"Families that 'survive' through that age, perhaps because they are low on all of the risk factors, apparently will make it through the rest of the child's childhood," Pelham notes.

Of the characteristics that may contribute to risk of divorce, a father's antisocial behavior proved to be the largest factor. **BP**



To learn more about this study, its methodology and findings, visit the UB NewsCenter website at www.buffalo.edu/news and search "ADHD."

Additional researchers on the study were Elizabeth M. Gnagy from UB, Brooke Molina and Tracey Wilson from the University of Pittsburgh, and Joel Greenhouse from Carnegie Mellon University.

Obesity from the Outset

Laboratory study shows obesity programmed in utero

RESEARCHERS in the School of Medicine and Biomedical Sciences have found that fetuses of obese mother rats were programmed in utero to develop obesity in adulthood.

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MOREOVER, THE RESEARCHERS HAVE SHOWN for the first time that the metabolic programming occurs in the fetal hypothalamus, the area of the brain responsible for maintaining the body's energy homeostasis (body weight) throughout life.

Levels of the hormones insulin and leptin also were elevated in fetuses of these obese mother rats, abnormalities that have been correlated with increased appetite and insulin resistance (a prelude to diabetes), as well as obesity and hypertension.

"Our earlier studies looked at newborn rats of the obese mothers in the post-weaning period, so we didn't know how early this programming occurred," says Mulchand Patel, PhD, UB Distinguished Professor of Biochemistry and senior author on the study. "Now we know it occurs in utero and specifically in the hypothalamus.

"While these studies were done with rats, there is good reason to think the mechanism would be similar in humans," he says. "The fact that more than one-third of women of child-bearing age in the United States are expected to be overweight or obese during pregnancy, based on a 2003 study, does not portend well for good health of their offspring."

The new findings were published in the October 2008 issue of the *American Journal of Physiology, Endocrinology and Metabolism*. Malathi Srinivasan, PhD, research scientist in the UB Department of Biochemistry, is first author.

Metabolic programming, sometimes called dietary patterning, isn't a new phenomenon, Patel notes. "Epidemiologic studies of malnourished mothers showed that their babies often were underweight and at increased risk for several chronic diseases as adults. Animal studies on maternal protein malnourishment or caloric restriction have shown that pre- and immediate postnatal nutritional modifications have long-term consequences on adult-onset diseases."

Patel and colleagues are pioneers in the investigation of metabolic programming effects when the composition of the diet is manipulated—changing the percentages of carbohydrates and fat, while keeping calories constant.

Patel reported evidence of metabolic programming in 2002, when his laboratory showed that in rats, consumption of a milk formula high in carbohydrates during the critical early weeks of postnatal life caused permanent changes in pancreatic islets, leading to overproduction of insulin and development of obesity in adulthood.

"Metabolic signals are reset in response to a high carbohydrate milk formula given to newborn rats during the suckling period, which induces permanent changes at the molecular level in our rat model," Patel explains. "The HC [high carbohydrate] phenotype is maintained for life and is spontaneously transmitted to succeeding generations."

Unlike many models investigating the role of maternal obesity on their offspring, the mother rats used in this study

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—MULCHAND PATEL, PhD

consumed normal laboratory chow during pregnancy, Patel points out.

"Our findings that malprogramming effects induced during fetal development in the altered intrauterine environment in obese mother rats predispose the offspring for adult-onset obesity underscore the importance of women maintaining optimal conditions during their pregnancies," concludes Patel.

Additional contributors to the study from the School of Medicine and Biomedical Sciences were Catherine Dobbs and Tao Gao, in the Department of Biochemistry; Hasam Ghanim and Paresh Dandona, in the Department of Medicine; and Peter J. Ross and Richard W. Browne, in the UB Department of Biotechnical and Clinical Laboratory Sciences.

Ghanim and Dandona also are affiliated with Kaleida Health's Diabetes and Endocrinology Center of Western New York.

Patel's research is supported in part by grants from the National Institutes of Health. **BP**

