

Conception date affects baby's future academic achievement

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Does the time of year in which a child is conceived influence future academic achievement? Yes, according to research by neonatologist Paul Winchester, M.D., Indiana University School of Medicine professor of clinical pediatrics. Dr. Winchester, who studied 1,667,391 Indiana students, presents his finding on May 7 at the Pediatric Academic Societies' annual meeting.

Dr. Winchester and colleagues linked the scores of the students in grades 3 through 10 who took the Indiana Statewide Testing for Educational Progress (ISTEP) examination with the month in which each student had been conceived. The researchers found that ISTEP scores for math and language were distinctly seasonal with the lowest scores received by children who had been conceived in June through August.

Why might children conceived in June through August have the lowest ISTEP scores? "The fetal brain begins developing soon after conception. The pesticides we use to control pests in fields and our homes and the nitrates we use to fertilize crops and even our lawns are at their highest level in the summer," said Dr. Winchester, who also directs Newborn Intensive Care Services at St. Francis Hospital in Indianapolis.

"Exposure to pesticides and nitrates can alter the hormonal milieu of the pregnant mother and the developing fetal brain," said Dr. Winchester. "While our findings do not represent absolute proof that pesticides and nitrates contribute to lower ISTEP scores, they strongly support such a hypothesis."

"I believe this work may lay the foundation for some of the most important basic and clinical research, and public health initiatives of our time. To recognize that what we put into our environment has potential pandemic effects on pregnancy outcome and possibly on child development is a momentous observation, which hopefully will help transform the way humanity cares for its world," said James Lemons, M.D., Hugh McK. Landon Professor of Pediatrics at the IU School of Medicine. Dr. Lemons is director of the section of neonatal-perinatal medicine at the IU School of Medicine and at Riley Hospital for Children of Clarian Health in Indianapolis.

Nitrates and pesticides are known to cause maternal hypothyroidism and lower maternal thyroid in pregnancy is associated with lower cognitive scores in offspring.

"We have now linked higher pesticide and nitrate exposure in surface water with lower cognitive scores. Neurodevelopmental consequences of exposure to pesticides and nitrates may not be obvious for many decades," said Dr. Winchester.

Source: Indiana University

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