

Study ties father's age to higher rates of psychiatric, academic problems in kids

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An Indiana University study in collaboration with medical researchers from Karolinska Institute in Stockholm has found that advancing paternal age at childbearing can lead to higher rates of psychiatric and academic problems in offspring than previously estimated.

Examining an immense data set—everyone born in Sweden from 1973 until 2001—the researchers documented a compelling association between advancing [paternal age](#) at [childbearing](#) and numerous psychiatric disorders and educational problems in their children, including autism, ADHD, [bipolar disorder](#), schizophrenia, [suicide attempts](#) and substance abuse problems. Academic problems included failing grades, low educational attainment and low IQ scores.

Among the findings: When compared to a child born to a 24-year-old father, a child born to a 45-year-old father is 3.5 times more likely to have autism, 13 times more likely to have ADHD, two times more likely to have a psychotic disorder, 25 times more likely to have bipolar disorder and 2.5 times more likely to have suicidal behavior or a substance abuse problem. For most of these problems, the likelihood of the disorder increased steadily with advancing paternal age, suggesting there is no particular paternal age at childbearing that suddenly becomes problematic.

"We were shocked by the findings," said Brian D'Onofrio, lead author and associate professor in the Department of Psychological and Brain Sciences in the College of Arts and Sciences at IU Bloomington. "The

specific associations with paternal age were much, much larger than in previous studies. In fact, we found that advancing paternal age was associated with greater risk for several problems, such as ADHD, suicide attempts and substance use problems, whereas traditional research designs suggested advancing paternal age may have diminished the rate at which these problems occur."

The study, "Parental Age at Childbearing and Offspring Psychiatric and Academic Morbidity," was published today (Feb. 26) in *JAMA Psychiatry*.

Notably, the researchers found converging evidence for the associations with advancing paternal age at childbearing from multiple research designs for a broad range of problems in offspring. By comparing siblings, which accounts for all factors that make children living in the same house similar, researchers discovered that the associations with advancing paternal age were much greater than estimates in the general population. By comparing cousins, including first-born cousins, the researchers could examine whether birth order or the influences of one sibling on another could account for the findings.

The authors also statistically controlled for parents' highest level of education and income, factors often thought to counteract the negative effects of advancing paternal age because older parents are more likely to be more mature and financially stable. The findings were remarkably consistent, however, as the specific associations with advancing paternal age remained.

"The findings in this study are more informative than many previous studies," D'Onofrio said. "First, we had the largest sample size for a study on paternal age. Second, we predicted numerous psychiatric and academic problems that are associated with significant impairment. Finally, we were able to estimate the association between paternal age at

childbearing and these problems while comparing differentially exposed siblings, as well as cousins. These approaches allowed us to control for many factors that other studies could not."

In the past 40 years, the average age for childbearing has been increasing steadily for both men and women. Since 1970 for instance, the average age of first-time mothers in the U.S. has gone up four years from 21.5 to 25.4. For men the average is three years older. In the northeast, the ages are higher. Yet the implications of this fact—both socially and in terms of the long-term effects on the health and well-being of the population as a whole—are not yet fully understood.

Moreover, while maternal age has been under scrutiny for a number of years, a more recent body of research has begun to explore the possible effects of advancing paternal age on a variety of physical and mental health issues in offspring. Existing studies have pointed to increasing risks for some psychological disorders with advancing paternal age. Yet the results are often inconsistent with one another, statistically inconclusive or unable to take certain confounding factors into account.

The working hypothesis for D'Onofrio and his colleagues who study this phenomenon is that unlike women, who are born with all their eggs, men continue to produce new sperm throughout their lives. Each time sperm replicate, there is a chance for a mutation in the DNA to occur. As men age, they are also exposed to numerous environmental toxins, which have been shown to cause mutations in the DNA found in sperm. Molecular genetic studies have, in fact, shown that sperm of older men have more genetic mutations.

This study and others like it, however, perhaps signal some of the unforeseen, negative consequences of a relatively new trend in human history. As such, D'Onofrio said, it may have important social and public policy implications. Given the increased risk associated with advancing

paternal age at childbearing, policy-makers may want to make it possible for men and women to accommodate children earlier in their lives without having to set aside other goals.

"While the findings do not indicate that every child born to an older father will have these problems," D'Onofrio said, "they add to a growing body of research indicating that advancing paternal age is associated with increased risk for serious [problems](#). As such, the entire body of research can help to inform individuals in their personal and medical decision-making."

Provided by Indiana University

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