

Child's Age a Key Factor for Accurate ADHD Diagnosis

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More evidence shows that the youngest children in a classroom are more likely to receive a diagnosis of attention-deficit/hyperactivity disorder (ADHD) than their older peers in the same classroom.

The study confirms a "relative age effect" in ADHD diagnosis and raises concern that ADHD may be overdiagnosed or misdiagnosed, the researchers, led by Kapil Sayal, PhD, Division of Psychiatry and Applied Psychology, University of Nottingham School of Medicine, United Kingdom, note.

"Teachers and parents might interpret the behavior of younger and older children within the same class differently because they might not take relative age into account. Conversely, older children in the class who might have ADHD could be missed," the investigators write.

Their study was [published online October 9 in *Lancet Psychiatry*](#).

False Positive Diagnoses

Using Finnish registry data, the researchers identified 6136 children who had been diagnosed with ADHD from age 7 years onward. In Finland, primary school enrollment begins during the calendar year in which a child turns 7, with the school year starting in mid August. Thus, the oldest children in a school year are born in January (aged 7 years, 7 months), and the youngest children are born in December (aged 6 years, 7 months). The mean age at ADHD diagnosis for the cohort was 9.4 years.

Results showed that for boys and girls in the same grade level, those born later in the year were more likely to be diagnosed with ADHD than their older peers born earlier in the school year.

For the youngest boys (born September to December), the incidence rate ratio (IRR) of ADHD was 1.26 (95% confidence interval [CI], 1.18 - 1.35; $P < .0001$) in comparison with the oldest boys (born January to April). For girls, the corresponding IRR was 1.31 (95% CI, 1.12 - 1.54; $P = .0007$).

The relative age effect was evident among children diagnosed with ADHD at age 7 to 9 years, but not among those diagnosed at age 10 or older. The finding was specific to children with ADHD and was not affected by the presence of comorbid disorders such as conduct disorder, oppositional defiant disorder, and learning (developmental) disorder. The relative age effect was most pronounced in children diagnosed in more recent years (2004-2011) vs earlier years (1998-2003).

"Our study findings extend previous research by showing that a relative age effect affects ADHD diagnosis in a country with fairly low prescribing rates for ADHD and that the strength of the association has grown in recent years," the investigators write.

"If a relative age effect contributes to a referral and diagnostic bias, then perhaps a clinical and education service system that does not account for this possibility could contribute to false-positive diagnoses, particularly because younger children in the class are more likely to be at an educational disadvantage, which might be misinterpreted as ADHD-related academic impairment," they add.

True Effect

Commenting on the findings for *Medscape Medical News*, Daryl Efron, MBBS, MD, said this is not the first study of its kind.

"A few research groups have studied the issue of the influence of relative age within school year group on the rate of diagnosis of ADHD. Most studies have found some effect, and this study from Finland adds to the weight of evidence in favor of a true effect, which has now been observed in different countries," said Dr Efron, author of an [accompanying editorial](#).

Dr Efron, from the Royal Children's Hospital and Murdoch Children's Research Institute in Melbourne, Australia, notes that teachers and parents "should consider the child's behavior in relation to their age, rather than their year level. If a child is very young for their year level, then comparisons with their classmates are not necessarily a meaningful guide to level of concern. This is particularly important in the early years of school, when age can vary between children by as much as 20%.

"Healthcare providers," Dr Efron added, "should similarly evaluate a child's developmental status and behavioral symptoms with reference to their chronological age. Psychologists do this routinely when using age-standardized measures. Pediatricians may need to be reminded of this point."

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