

The Changing Prevalence of the Autism Spectrum Disorders

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Autism spectrum disorders are a group of developmental disabilities characterized by atypical development in socialization, communication, and behavior. The term autism spectrum disorders describes three of the five pervasive developmental disorders, including autistic disorder, Asperger syndrome, and pervasive developmental disorder—not otherwise specified. Symptoms of autism spectrum disorders typically are present before three years of age and often are accompanied by unusual patterns in learning, attention, and sensory processing.¹ Based on the most recent report by the Autism and Developmental Disabilities Monitoring (ADDM) Network, an average of one in 110 children was identified with autism spectrum disorders, which translates to about 1 percent of children.² For every girl, four or five boys were affected by the autism spectrum disorders. Less than one-half of the children with autism spectrum disorders also had an intellectual disability, and 47 percent were diagnosed with autistic disorder by eight years of age.

We know that the number of persons receiving services for autism spectrum disorders has increased substantially since the early 1990s,^{3,4} but are there really more children today with the cluster of behaviors that make up the autism spectrum disorders than there were in the past? Debates on this issue typically have been dichotomized to indicate that increases in the prevalence of autism spectrum disorders must be explained by changes in identification patterns or by a true increase in symptoms among children born in more recent times. We do know that the way autism spectrum disorders are defined and identified makes a difference in the prevalence estimates. From

the time autism was first described in the 1940s until the 1980s, the term primarily referred to more severely affected persons with autistic disorder and was thought to be rare, affecting approximately one in every 2,000 children (0.05 percent).⁵ Current estimates on the prevalence of autism spectrum disorders based on expanded definitions from the *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed., are approximately 10 to 20 times higher than those using earlier criteria. Some of the most recent studies have documented a prevalence of more than 1 percent of children in multiple areas of the world,^{2,6-8} with symptoms identified in 2.7 percent of children.⁹ One effort to retrospectively apply more modern criteria to an older study estimated a prevalence of about four per 1,000 children, indicating that older studies underestimated prevalence because they considered a more strict interpretation of what autism and related disorders look like.¹⁰

Few studies have tracked the same population over time to evaluate changes in the prevalence of the autism spectrum disorders. The ADDM Network reported a 57 percent increase overall in the prevalence of identified autism spectrum disorders among eight-year-old children from 2002 to 2006.² On average, the prevalence increased across all sex, racial/ethnic, and cognitive functioning subgroups. Improved identification of some subgroups was a factor but could not completely explain how the prevalence increased by more than 50 percent in such a short time. These findings raise the question of what else may be contributing to the increase in autism spectrum disorder diagnoses.

The search for a single cause accounting for the change in prevalence is likely to obscure our view of a much more complicated situation involving multiple potential biologic and environmental factors. Some progress has been reported in quantifying the effect of single factors such as reduction in age at diagnosis, inclusion of milder cases, ►

and a shift in diagnostic patterns.^{11,12} The progressive increases in the prevalence of autism spectrum disorders underscore the need to better understand the risk factors and causes of these conditions. One study estimated that about 5 percent of the increased prevalence of autism spectrum disorders in a California service system was caused by older parental age,¹³ but this appears to be only one small part of the picture. Although immunization has been the subject of great debate, studies on immunization practices have not shown a correlation with changes in the prevalence of autism spectrum disorders.^{14,15} Efforts are needed to understand the multiple, possibly overlapping factors involved in the increasing prevalence of autism spectrum disorders. In addition, improved understanding of concomitant changes in the prevalence of other childhood developmental disabilities and health conditions would help us gain a broader understanding of the changing landscape of health and development.^{16,17}

The fact that some increases in the prevalence of autism spectrum disorders are accounted for by improved identification and awareness is important and positive news for the many persons who may have better-informed intervention options and earlier access to services. However, we still have work to do to improve early identification. The ADDM Network found that although parents or professionals noted concerns about a child's development before two years of age 70 to 95 percent of the time, the median age at diagnosis of the autism spectrum disorders was four years, six months. A significant lag exists between the time that earliest concerns are expressed and when autism spectrum disorders are diagnosed, contributing to potentially significant delays in intervention. It is important to monitor the early and ongoing development of every child and to refer for further assessment and intervention if delays are suspected.^{18,19} Family physicians are particularly important in helping families navigate the complex array of health care and intervention needs. As we continue to explore the complex etiology of autism, concerted efforts are essential to address the many needs of affected persons and to provide coordinated support services that improve daily functioning and long-term life outcomes.

The findings and conclusions in this report are those of the author and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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