The most recent data available indicate a prevalence of autism spectrum disorder (ASD) of one in every 68 children by age 8 (Centers for Disease Control and Prevention [CDC], 2014b). As recently as 2004, the estimate was one in 158 children by age 8 (CDC, 2014a). Although it is likely that the increasing numbers of cases is partly explained by elevated public awareness and better diagnoses, discrepancies between states exist and may be explained by states’ lack of resources and treatment, resulting in an underreporting of ASD (American Association for the Advancement of Science, 2014). In addition, two other factors contribute to the haze surrounding ADS diagnosis and treatment: (a) changes in diagnostic nomenclature with the advent of the Diagnostic and Statistical Manual of Mental Disorders (DSM)-5 (American Psychiatric Association [APA], 2013); and (b) the complexities of understanding current research on molecular and brain science. The current article reviews historical perspectives and recent findings regarding ASD and its historical, erroneous association with vaccines. This controversy includes the latest anti-vaccine movement that caused a recurrence of the almost vanquished measles and mumps diseases. The history of ASD, complexities of research involving ASD genetics, and benefits of social skills training are explored. [Journal of Psychosocial Nursing and Mental Health Services, 53(4), 27-30.]

Historically, Leo Kanner (1943) (i.e., a Viennese psychiatrist who emigrated from Austria to the United

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Update on Autism Spectrum Disorder
Vaccines, Genomes, and Social Skills Training

ABSTRACT
Despite making significant progress in understanding autism spectrum disorder (ASD) and its genetic underpinnings, controversy remains regarding ASD and its historical, erroneous association with vaccines. This controversy includes the latest anti-vaccine movement that caused a recurrence of the almost vanquished measles and mumps diseases. The history of ASD, complexities of research involving ASD genetics, and benefits of social skills training are explored. [Journal of Psychosocial Nursing and Mental Health Services, 53(4), 27-30.]
Autism spectrum disorder has moved toward a continuum model that recognizes that, although there is heterogeneity in symptoms, the core diagnostic impairments of social communication and restricted/repetitive behaviors remain.

The next year, Hans Asperger (working in Vienna, Austria) described Asperger’s disorder as being characterized by relatively normal language development, but with significant social difficulties that could also be seen in autism (Frith, 1991a,b). The Nazis, who ruled at the time of Asperger’s work, believed children with these characteristics were misfits, whereas Asperger believed they had brain disorders—which was a brave stance based on the Nazis’ treatment of individuals with disabilities (Frith, 1991a). Kanner (1943) did not note how often autism was associated with intellectual disability at the time of his initial description. Indeed, Asperger’s disorder spared cognition; however, other disorders on the autism spectrum might experience profound intellectual disability (Volkmar et al., 2012). In fact, intellectual disability has been noted in approximately 30% of those affected by ASD (Wang, Qin, Guo, Samuels, & Shugart, 2013). Over decades, researchers and clinicians came to recognize that autism was not a single condition, but rather multiple conditions sharing similar characteristics (Wang et al., 2013).

EVOLUTION OF UNDERSTANDING AUTISM SPECTRUM DISORDER

Prior to the publication of the DSM-5 (APA, 2013), the family of conditions associated with autism was known as pervasive developmental disorders (PDDs). PDDs comprised a diverse group of five distinct disorders characterized by a wide range of social and communication difficulties, as well as restricted and repetitive behaviors (APA, 1994). The constellation of PDDs included autism disorder, Asperger’s disorder, childhood disintegrative disorder, Rett syndrome, and PDDs not otherwise specified. The biggest change in the DSM-5 (APA, 2013) was the singular diagnosis of ASD incorporating the multiple diagnoses of PDDs.

The DSM-5’s (APA, 2013) proposed criteria for ASD include (a) persistent deficiencies in social interaction and communication across settings; (b) restricted and repetitive behaviors, interests, or activities; (c) symptoms present early in childhood, which may not be recognized until a later age when social demands exceed the limits of the child; and (d) symptoms that limit and impair daily functioning. Thus, ASD diagnosis has moved toward a continuum model that recognizes that, although there is heterogeneity in symptoms, the core diagnostic impairments of social communication and restricted/repetitive behaviors remain.

GENETICS

In the years since Kanner’s (1943) initial description, ASD came to be understood as a neurobiologically based condition that is highly heritable. Genetic factors play a strong role in the development of ASD, but few specific genes account for any substantial percentage of how the disorder is expressed (Willsey & State, 2015). However, research on the genetic underpinnings of ASD is growing and offers hope. The Autism Genome Project was founded in 2004 as a research partnership with the National Institutes of Health and scanned the human genome, searching for genes that increased or decreased susceptibility to ASD. It is now an international public/private research partnership involving 50 academic and research institutions in 11 countries; they have pooled thousands of DNA samples in a collaborative approach to ultimately develop methods for earlier diagnosis and personalized treatment of ASD.

Nevertheless, challenges remain. Recent evidence estimates the percentage of risk attributable to genetic factors to be 80% or higher (Ronald & Hoekstra, 2011), making ASD the most heritable psychiatric disorder. Although genetic causes (e.g., chromosomal abnormalities) are implicated in some cases of ASD, no single gene accounts for more than 1% to 2% of cases (Glessner et al., 2009). Thus, the remarkable degree of genetic heterogeneity and tremendous complexity of the human brain make genetic causes of ASD difficult to translate into treatment options.
THE ERRONEOUS ASSOCIATION OF AUTISM WITH VACCINES

In early 2015, the CDC reported an outbreak of measles in California. At the root of the outbreak is the anti-vaccine movement, which largely began as a result of a paper in *Lancet* (Wakefield et al., 1998) that erroneously reported a link between vaccines and autism, spawning anti-vaccine sentiment persisting to the present day (Healy & Paulson, 2015). Despite the paper’s retraction (Editors of *Lancet*, 2010), the rates of immunizations have not returned to prior levels. There is no evidence that ASD is associated with vaccines, but a child with ASD who is not vaccinated faces significant health risks. All children should be vaccinated because vaccines represent one of the biggest advances in modern health care, saving untold millions of lives and preventing suffering around the world.

SOCIAL SKILLS TRAINING

Federal mandates (e.g., Individuals with Disabilities Act [U.S. Department of Justice, 2011]) require that students with ASD be educated alongside peers in regular education environments to the greatest extent possible. Students with ASD commonly have social deficits that can make integration into school and the community difficult. To achieve this aim of school integration, interventions for treating social deficits have been studied and continue to evolve (Reichow, Steiner, & Volkmar, 2012). These school-based interventions may include video modeling, social skills groups, and cognitive-behavioral therapy and are conducted by therapists who have received training in delivering the intervention. These interventions are delivered due to the mandate that all children have a right to education, as established by the Education of All Handicapped Children Act in 1975 and later replaced with the Individuals with Disability Education Act in 1990 (U.S. Department of Education, 2007); before these legislative changes, few young individuals with ASD received any school-based service (Reichow et al., 2012).

Reichow et al. (2012) conducted a review of five social skills interventions that were rigorous, randomized clinical trials. Outcome measures included social competence and communication, quality of life, and emotion recognition. Their review included 196 participants with ASD who were ages 6 through 21; most had average or above average intelligence. Reichow et al. (2012) found that the treatment groups demonstrated improved social competence and abilities to make friends compared to those who received no treatment or usual treatment. Further, treated participants showed less loneliness. Unfortunately, communication skills did not improve. Reichow et al. (2012) concluded it is likely that the magnitude and timing of social skills interventions are important—the earlier the better (younger children may benefit more in the long term), and longer duration of treatment with careful focus was associated with better social competence outcomes.

PSYCHIATRIC NURSING IMPLICATIONS

Psychiatric nurses can offer optimism to parents of children with ASD by conveying an understanding of the potential for genetic break-throughs through the efforts of the Autism Genome Project. However, the proliferation of genetic research may be challenging for parents to grasp. Psychiatric nurses should seek to understand genetic advances and share new information with parents. The frequently updated section of the Autism Speaks® (2014) website entitled, “What We’ve Learned About Autism,” is essential in framing advances that families will want to know (access https://www.autismspeaks.org/news/news-item/autism-study-advances-understanding-gene-environment-interactions).

In addition, there is no evidence of a relationship between vaccines and ASD. Psychiatric nurses should be ready with statements that the erroneous conclusion made in 1998 was given unwarranted media attention; indeed, the paper was retracted based on its poor science. The truth is far simpler: vaccines save millions of lives and prevent serious complications from childhood diseases that took innocent lives in the past.

Psychiatric nurses should also be advocates for social skills training and other services via school districts for children with ASD because it is key to future development; the sooner the training is made available, the better for the children. Social skills training assists children being educated in the mainstream (i.e., with their peers) and offers practical experience in social interaction to make post-secondary education possible. In fact, earlier intervention is now considered a hallmark in improving chances for independence in adulthood (Volkmar & Wolf, 2013).

To keep abreast of ASD research and download free materials on topics related to ASD, visit the CDC webpage about ASD (access http://www.cdc.gov/ncbddd/autism/articles.html).

REFERENCES


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