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MARSLAND PRESS
Multidisciplinary Academic Journal Publisher

Autism Spectrum Disorder (ASD), its Symptoms, Causes and Epidemiology

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Abstract: "Autism Spectrum Disorder (ASD)" denotes to a collection of people that have an exceptional combination of "social communication and repetitive behaviour problems", in addition to highly narrow interests/sensory behaviours that begin in infancy. The prevalence of the disorder is estimated to be less than one percent globally, with estimates being greater in high-resource nations. Although ASD is not characterised by massive brain damage, small anatomical and functional changes have been documented in post-mortem, neuroimaging, and electrophysiological investigations of individuals with the disorder (APA, 2000). Initial expectations were that adequate assessment of behavioural traits would lead to the identification of unique "genetic subtypes"; instead, genetic discoveries have typically been applied to varied groups that are not specific to ASD. Psycho-social therapies in children may help them improve particular behaviours such as joint attention, language, and social interaction, which can help them grow more effectively in the future and lower the intensity of their symptoms. But more study is needed to discover long-term requirements, therapies, and the processes that underpin them, in order to achieve improvements in independence and quality of life over time. Families are often the most important source of support for individuals with ASD throughout the majority of their lives, and their opinions, as well as those of autistic people, must be taken into account in both study and practise.
[Kuldeep. **Autism Spectrum Disorder (ASD), its Symptoms, Causes and Epidemiology**. *Rep Opinion* 2022;14(8):1-5]. ISSN 1553-9873 (print); ISSN 2375-7205 (online). http://www.sciencepub.net/report.
01. doi:10.7537/marsroj140822.01.

Keywords: Autism, spectrum, disorder

Introduction:

During the past fifty years, this disorder has evolved after a rigidly well-defined, unusual childhood sickness to a well-publicized, championed, and explored enduring disorder that is today recognised as quite common and highly varied. The essential characteristics of Autism Spectrum Disorder (ASD), since the illness was initially recognised, the symptoms, which are classified as social communication issues as well as "repetitive and unusual sensory–motor behaviours, have not changed significantly. Autism", instead, is now recognised as a spectrum condition with mild to severe symptoms (Baron-Cohen, Leslie, Frith, 1985).

Seven disabilities were covered under the People with Disabilities Act of 1995 (PwDs, 1995). The RPwD Act covers a wide range of disabilities, including autism spectrum disorder. This has enlarged the spectrum of diseases and afflicted persons who are entitled to get reservations and benefits under the Act as a result of the amendment. It has been possible to offer additional clarity into previously ambiguous notions as a result of the 2016 Act. In the 1995 Act, a person with disability meant a person suffering from not less than forty per cent of any disability as certified by a medical authority. In the 2016 Act, this definition has been replaced by the following: a person with disability means a person with long-term physical, mental, intellectual or sensory impairment, in which interaction with barriers, hinders his full and effective participation in society equally with others"(WHO, 2011).

The PwDs Act provided incentives to private institutions in which PwDs constituted five percent of the total workforce, as mandated by the Act. In 2008, the Government of India introduced an incentive plan to encourage private sector companies to hire people with disabilities (PWDs) in their organisations. It is intended that workers with disabilities (as defined by the People with Disabilities "Act of 1995 and the National Trust for Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation, and Multiple Disabilities Act of 1999)" will be covered under this plan (National Mental Health Survey of India, 2015-2016).

The International Classification of Diseases, Tenth Revision (ICD-10) is a medical classification system that is widely used around the globe. ICD was developed and funded by the "World Health Organization (WHO)", and its major objective is classification rather than diagnosis, as is the case with the Diagnostic and Statistical Manual of Mental

Disorders (DSM). Under PDDs in the ICD-10, there are five different disorders listed: Childhood Autism, Atypical Autism, Rett Syndrome, Other Childhood Disintegrative Disorder, Pervasive Developmental Disorder, not-specified ".

This method of distinct diagnosis is somewhat close to that of the out-of-date DSM-IV-TR, although it plainly departs dramatically from the current edition of the DSM in many ways. According to the DSM-5, there is a significant disparity between the single "Autism Spectrum Disorder" and the eight separate Pervasive Developmental Disorders identified by the ICD-10. In terms of unifying the different individual conditions into a larger spectrum, it remains to be seen whether ICD-11 will go in the direction of DSM-5. Every practising clinician in the United States is now undergoing training to ensure that they are prepared to use the ICD-10 codes into their practise. Everyone in the United States who is diagnosed with a DSM-5 mental illness will also be assigned an ICD-10 number, which will include the necessary specifiers for their condition (Narayan & John, 2017). It is yet unknown how successfully this new adaption of coding will be implemented, particularly in the "neurodevelopmental disorders of the DSM-5 and the pervasive developmental disorders of the ICD-10 classification systems."

Symptoms and Signs:

Despite the fact that persons with "ASD" differ greatly from one another in many ways, the disease is defined by Institute for Health Metrics and Evaluation, (2017) "basic features in two areas: social and psychological: social communication and restricted, repetitive sensory–motor behaviours." These core characteristics are present regardless of "culture, race, ethnicity, or socioeconomic group." ASD is caused by abnormal brain development and neuronal reorganization throughout infancy. However, due to a lack of dependable biological marker, the diagnosis can only be made based on behavioural traits. DSM-5 (APA, 2013) were designed to make the diagnosis of the disorder easier. Instead of the previous autism spectrum disorders, Autism is currently classified into "two domains: social communication difficulties and repetitive, or aberrant sensory–motor behaviours. Subtypes such as Asperger's disorder and pervasive developmental disorder not otherwise specified", which were formerly used inconsistently by doctors, are now grouped together under the single diagnosis of this disorder. Apart from that, the "DSM-5 specifically recognises that ASD may be accompanied by other illnesses, including as genetic abnormalities (such as fragile X syndrome)", mental problems, also learning disabilities (MHRD, 2009).

Each of the three social communication subdomains, as well as two of the four constrained, "repetitive and restrictive sensory–motor behaviours (either in the past or present)", were shown to have difficulties at some point in their development is required to determine whether a person has a mental illness.

Causes:

"ASD is a neurobiological disorder" that is impacted by both inherited and ecological variables that have an impact on the emerging mind. While continuing investigation continues to increase our knowledge of probable etiologic pathways in disorder, no one hard reason has yet been identified as a result of these efforts. In a few cases, differences in "cerebellar architecture" and connectivity, "limbic system abnormalities, frontal and temporal lobe cortical alterations", and further minor irregularities have been detected during neuro-pathological exams. A little examining investigation of "neocortical architecture in early neonates found that the vast majority of participants had localised disruption of cortical laminar architecture, indicating issues with cortical layer creation and neuronal differentiation. Brain overgrowth has been seen in children with autism spectrum disorder, both in terms of cortical size" and, more importantly, an increase in extra axial fluid. These discoveries are still being studied, both in terms of advancing our grasp of the disorder's aetiology and as a possible biomarker.

The presence of genetic variables in autism susceptibility is demonstrated by the higher incidence of autism diagnosis among siblings of patients with ASD when compared to the general population, (Enticott, Kennedy, Rinehart, Tonge, Bradshaw, Taffe, Daskalakis, Fitzgerald,2012) as well as the significantly higher, though not total, concordance of the disorder diagnosis among "monozygotic twins" (though not in the general population). As a result of "genome-wide association studies and whole exome sequencing technology, our knowledge of ASD susceptibility genes has significantly increased, and knowing the function of these genes" may put light on probable physiological explanations for the disorder (Thresholds, 2012).

Genes that play a role in "brain development or neurotransmitter function", for example, as well as genes that regulate "neuronal excitability", are all potential candidate genes in autism spectrum disorder. Many of the genetic abnormalities linked with ASD result in the expression of transcription factors, for example, are "proteins that are crucial at the neural synapse or are involved in activity-dependent changes in neurons, among others" (Hirsch, 2009). ASD genetic risk convergence may

occur in "networks that encompass pathways involved in neurotransmission and neuro-inflammation", among other things. It is possible that dysregulation of transcription and splicing, as well as abnormalities in "epigenetic processes such as DNA methylation or histone acetylation and modification", are responsible for the condition (Aaron, Frantz, & Manges, 1990).

There has been no confirmation of whether a modest positive study of "folinic acid" in disorder may be used to prescribe supplementing more widely in the future (Bishop, Adams, & Norbury, 2004). It has been hypothesised that a mother had an autoimmune condition "such as diabetes, thyroid disease, or psoriasis", however the findings of studies have been inconsistent. According to current research, "maternal infection" or immunological "activation during pregnancy" is another topic of study, (Bishop, & Snowling, 2004)and it may be a possible risk factor for the development of the condition. It has been shown that both shorter and longer inter-pregnancy intervals enhance the likelihood of developing disease. Infants born preterm have been shown to have a greater chance of developing ASD, as well as other neurodevelopmental abnormalities, than other children (APA,2013).

Epidemiology:

"The World Health Organization (WHO) approximations the worldwide prevalence of (ASD) to be 0.76 percent; however, this only accounts for around sixteen percent of the global child population, according to the organisation. According to the Centres for Disease Control and Prevention (CDC), around 1.68 percent of children aged 8 years in the United States (or 1 in 59 children)" are diagnosed with the disorder. "In the United States, parent-reported ASD diagnoses averaged 2.5 percent in 2016, slightly higher than in 2015. According to estimates from the Autism and Developmental Disabilities Monitoring Network (ADDM), the prevalence of ASD in the United States more than doubled between 2000 and 2002 and 2010–2012. Although it may be too soon to make predictions about future trends, the incidence of autism spectrum disorders (ASD) in the United States seems to have stabilised, with no statistically significant rise from 2014 to 2016. Diagnostic criteria changes may have an influence on prevalence, and it is yet too early to tell what the entire impact of the DSM-5 criteria will be" (Institute for Health Metrics and Evaluation, 2017).

According to the "American Academy of Paediatrics, insurance mandates requiring commercial plans to cover services for ASD", combined with increased awareness, have most likely contributed to an increase in estimates of "ASD prevalence as well as an increase in the diagnosis of milder cases of ASD in the United States. Although there was only a minor increase in prevalence after the requirements, there have been gradual increases as health care professionals have gotten a better grasp of the regulatory and reimbursement systems."

It is possible that the rise in prevalence is related to changes in reporting procedures. According to one research conducted in Denmark, the bulk of the increase in disorder occurrence between "1980 and 1991 was due to changes in diagnostic criteria and the addition of outpatient data, rather than an actual increase in ASD" incidence over that time period (RTE, 2009).

People of various races, nationalities, and socioeconomic backgrounds are affected by ASD, however the diagnosis differs greatly amongst these groups. Children of Caucasian descent are routinely diagnosed with ASD at a higher rate than children of African or Hispanic descent. Despite the fact that the discrepancies seem to be reducing, the persistent divergence may be attributable to shame, a deficiency of healthcare facilities, and the fact that a patient's native language is another language than English.

Treatment Options: Despite the fact that numerous kinds of therapy for the symptoms of ASD have developed in recent decades, the variable response of persons with ASD necessitates additional investigation into the therapeutic choices available. The first treatments, which were developed in the 1940s and 1950s, focused on punishment for undesirable conduct and, in some cases, entailed physical pain.

When combined with other essential therapies, these tactics have largely been abandoned in treatment programmes that involve a kind of behaviour therapy in addition to other necessary treatments. Medicine, dietary modifications, music therapy, art therapy, and animal therapy are all examples of alternative therapies that may be used. "Applied Behavior Analysis (ABA)" is one of the most extensively utilized techniques of behaviour treatment for people with autism spectrum disorders (ASD) (DSM-TR, 2000; & DSM-5, 2013)

B. F. Skinner in the 1930s says forward, behaviour analysis rose to prominence in the field of psychology and continues to this day. To teach each phase of a behaviour, ABA employs thorough observation of the child's behaviour, as well as positive reward or prompting. When a youngster properly completes each of the stages, his or her conduct is encouraged by giving him or her a reward. Behaviours that interfere with learning and social skills, as well as those that are disruptive to learning,

are closely watched. The goal is to discover out what triggers a behaviour as well as what happens thereafter that seems to reward it. The objective is to remove as many of these triggers and reinforces as possible from the child's environment. The procedure is then repeated, with fresh reinforces being "used to teach the child a new behaviour in response to the same trigger" (Barton, Robins, Jashar, Brennan& Fein, 2013).

Conclusion:

When compared to 50 years ago, the quality of life for many people with ASD has improved. Adults with ASD are more likely than ever before to be able to communicate, "read, drive, graduate from high school, and live in the community—even when taking into account the differences" (Frazier& et. al. 2012). Differences in intelligence between those who would satisfy the analytic standards currently and those who would have met the criteria in the past, as well as between their relative degrees of intellect Families and caregivers may take heart in the knowledge it is anticipated that the situation has improved and will continue to improve, for the vast majority of persons with autism spectrum disorder. We anticipate that review will bring attention to those who are still experiencing significant challenges and will identify routes to greater inclusion and independence for a broader number of people. Science and public policy both have the potential to make substantial contributions to the development of society in the 21st century (McPartl and, Reichow & Volkmar, 2012). Clinicians have the potential to make a positive difference in the lives of individual children and adults via collaboration with families, schools, and community organisations. Clinicians have the ability to give honest and realistic information, support, and hope to those who are in need of assistance.

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8/3/2022