A Survey on Autism Spectrum Disorder Classification

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ABSTRACT: Autism is a neurobiological developmental disorder, which means it is caused by disorders or impairments in the brain or central nervous system. In general, neurodevelopment disorders are associated with mental, emotional, and physical impairments. Autism is a neurodevelopment disorder characterized by impaired social interaction, verbal and non-verbal communication, and restricted and repetitive behavior. Parents usually notice signs in the first two years of their child's life [1]. These signs often develop gradually, though some children with autism reach their developmental milestones at a normal pace and then regress [2]. The diagnostic require that symptoms become apparent in early childhood, typically before age three [3]. Autism affects information processing in the brain by altering how nerve cells and their synapses connect and organize. The identification and classification of autism have undergone many iterative changes. It is one of three recognized disorders in the autism spectrum (ASDs), the other two being Asperger syndrome, which lacks delays in cognitive development and language, and pervasive developmental disorder, not otherwise specified (commonly abbreviated as PDD-NOS), which is diagnosed when the full set of criteria for autism or Asperger syndrome are not met[4].

KEYWORDS: Autism, Asperger Syndrome, Autism Spectrum Disorder, Pervasive Developmental Disorder,

I. INTRODUCTION

Autism is part of the five pervasive developmental disorders (PDD). These are characterized by abnormalities of social interactions and communication restricted interests' highly repetitive behavior. Autism has a wide range of severity and symptoms that is often used to classify the Autism Spectrum disorders. Each of the syndromes under ASD is different from the other. For example, people with Asperger syndrome have no substantial delay in language development.

Autism itself is often called "autistic disorder", "childhood autism", or "infantile autism". In some individuals autism may be silent or manifest only as a mental disability while in others there are repetitive movements like hand flapping and rocking.

Some autistic individuals may be normal in all factors of life except for being awkward socially. They may have narrowly focused interests, and verbose, pedantic communication. Boundaries between diagnostic categories are necessarily somewhat arbitrary because of the overlapping and myriad of features.

A. Types of Autism Spectrum Disorders

The autism spectrum disorders belong to an "umbrella" class category of five childhood-onset Conditions called pervasive developmental disorders (PDD).
They are concerning the three most common PDDs
1. Autism
2. Asperger's Syndrome
3. Pervasive Developmental Disorder - Not Otherwise Specified (PDD-NOS) Childhood disintegrative disorder and Rett Syndrome are the other pervasive developmental disorders. As results of each are extremely rare genetic diseases, they are sometimes thought of to be separate medical conditions that do not really belong on the autism spectrum.

B.Signs and Symptoms of Autism Spectrum Disorders

In every children and adults, the signs and symptoms of the autism spectrum disorders embrace issues with social interaction skills, speech and communication. The autism spectrum disorders are measured based on the presence of multiple symptoms that disrupt the child's ability to talk, make the relationships, explore, play, and to study. The method an individual communicates and relates to people. Educational data mining is an emerging field which can be effectively applied with in the field of education. The educational data mining uses many ideas and

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concepts like Association rule algorithm, classification algorithm and clustering algorithm. The symptoms of autism spectrum disorders: Social skills. Basic social interaction may be troublesome for children with autism spectrum disorders. Symptoms might include

1. Unusual or inappropriate visual communication, gestures, and facial expressions (e.g. avoiding eye contact or facial expressions that don't match what he or she is saying).

2. Lack of interest in people or in sharing interests or achievements (e.g. showing you a drawing, pointing to a bird).

3. Unlikely to approach others or to pursue social interaction; comes across as aloof and reserved; prefers to be alone.

4. Problem and difficulty in understanding individual person's feelings, reactions, and nonverbal cues.

5. Resistance to being touched. 6. Difficulty or failure to create friends with children the same age.

C. The Symptoms of Autism Spectrum Disorders:

Speech and Language Problems with speech and language comprehension are a telltale sign of the autism spectrum disorders. Symptoms might include

1. Delay in learning the way to speak (after the age of or doesn't talk in the least.

2. Speaking in abnormal tone of voice, or with an odd rhythm or in high pitch.

3. Repeating words or phrases over and over.

4. Trouble beginning a spoken language or keeping it going.

5. Difficulty communicating needs or desires.

6. Doesn't perceive straightforward statements or queries.

7. Taking what's same too virtually, missing humor, irony, and satire.

Restricted Behavior and Play Children with autism spectrum disorders are typically restricted, rigid, and even psychoneurotic in their behaviors, activities, and interests. Symptoms could include

1. Repetitive body movements (hand undulation, rocking, spinning); moving perpetually.

2. Obsessive attachment to uncommon objects.

3. Preoccupation with a particular topic of interest, typically involving numbers or symbols (maps, license plates, sports statistics).

4. A strong would like for sameness, order, and routines. Gets upset by modification in their routine or surroundings.

5. Clumsiness, abnormal posture, or odd ways that of moving.

6. Fascinated by spinning objects, moving items, or elements of toys (e.g. spinning the wheels on a motor car, rather than fidgeting with the whole car).

D. Related Signs and Symptoms of Autism Spectrum Disorders

1. Sensory issues
2. Emotional difficulties
3. Uneven psychological feature talents.

II. HELPING CHILDREN WITH AUTISM

Autism may be a lifelong disorder and there is presently no notable cure for autism. Besides several children with autism will develop considerably with early, well-planned and on individual basis tailored academic efforts in specially adapted settings. The main objectives are to assist the child purposeful communication. The educational approaches should specialize information concerning the distinctive ways in which children with autism learn. Several (Applied behavior analysis) ABA methods as well as the structured teaching method within the (Treatment and Education of Autistic and related Communication Handicapped Children) TEACCH-model are samples of such specially-tailored academic strategies for persons with autism. The first are early identification, diagnosis and assessment and next step is to give correct knowledge for parents. Specially adapted nursery school and subsequent schooling are vital demand for the child; moreover an adapted home atmosphere and also the daily actions are equally vital for the adults. Adults and adolescents might have continuing access to academic measures to more develop skills that aim to extend independence and Participation.

III. TYPES OF ASD

Being a range of disorders autism includes a wide variety of disorders of varying severity. Some of the types of ASD include:

Autistic disorder, sometimes known as "classic autism". This manifests as significant language delays, social and communication challenges, and unusual behaviors. There may be additional learning difficulties and below-average intelligence as well.

Asperger syndrome – Symptoms are milder than classic autism. There are social challenges and unusual behaviors. There may be typically no language problems or intellectual disability. However, some areas of language development may be affected. They may typically have problems with understanding humor or figures of speech. Some children have particular skills in areas that require logic, memory and creativity, such as maths, computer science and music.

Pervasive developmental disorder – not otherwise specified (PDD-NOS), also known as "atypical autism" – these individuals meet some of the criteria

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for autistic disorder or Asperger syndrome, but not all. Symptoms may be fewer and milder. There may be social and communication challenges.

Children with ASD may concomitantly also have other problems such as attention deficit hyperactivity disorder (ADHD), Tourette's syndrome or other tic disorders, dyspraxia (developmental co-ordination disorder), epilepsies etc.

Autism can also be divided into syndromal and non-syndromal autism. Syndromal autism is associated with severe or profound mental retardation or congenital features such as tuberous sclerosis. For example, those with Asperger syndrome. Aspergers syndrome, however, is different from other autism syndromes as these individuals tend to perform better cognitively than those with autism.

Autism may also be of the regressive type. In these children (for it is seen commonly in children), the diagnosis of autism is made on the basis of loss of language or social skills, as opposed to a failure to make progress, typically from 15 to 30 months of age. This could be a specific subtype.

IV. PERVASIVE DEVELOPMENTAL DISORDERS

The term Pervasive Developmental Disorders, or PDD, has been in use for many years and has been the traditionally accepted way to group disorders such as autism and Asperger's syndrome. This came about because the most common tool used for diagnosis, the Diagnostic and Statistical Manual of Mental Disorders, uses this framework. The DSM-IV has evolved over time and the fourth issue includes autism and Asperger's syndrome in a group of five disorders called Pervasive Developmental Disorders:
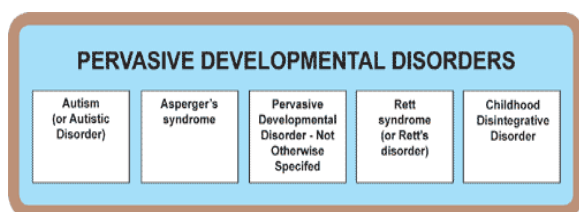

Fig: A Framework of Asperger's syndrome in a group of five disorders called Pervasive Developmental Disorder

The other four PDD forms, Asperger syndrome is closest to autism in signs and likely causes;Rett Syndrome and childhood disintegrative disorder share several signs with autism, but may have unrelated causes; PDD not otherwise specified (PDD-NOS) is diagnosed when the criteria are not met for a more specific disorder. Unlike autism, Asperger's has no substantial delay in language development.

V. AUTISM SPECTRUM DISORDERS (ASD)

There has been much discussion on this system of classification and there has been an increasing move to see some of these disorders as being placed on a spectrum. Autism is typically called Autistic Disorder under this classification, although this website still uses the term "autism" as it is the most common terminology in use. Autism is grouped with Asperger's syndrome and two other disorders as the Autism Spectrum Disorders. or Autism Spectrum Disorders:
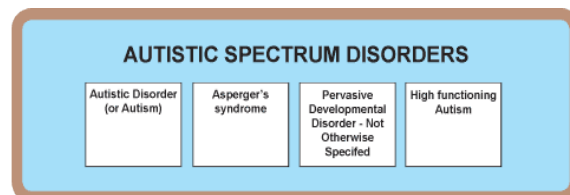

Fig: Autism is grouped with Asperger's syndrome and two other disorders as the Autism Spectrum Disorders.

While the DSM-IV does not portray this classification, it may incorporated into a future edition. The term 'Autism Spectrum Disorder' or ASD, is being adopted widely, along with referring to a child or adult as being 'on the autism spectrum'. For those who follow this system, there is some debate over whether high-functioning autism is simply Aspergers syndrome. This website is simply intended to provide practical information and tips for parents, friends, teachers, employers and the wider community, so these debates will not feature strongly on this site.

Sometimes people use the term 'autism' to refer to autistic disorders or to Autism Spectrum Disorders, or equate Autism Spectrum Disorder with PDD. Autism Spectrum Disorder, in turn, is a subset of the broader autism phenotype (BAP), which describes individuals who may not have Autism Spectrum Disorder but do have autistic-like traits, such as avoiding eye contact.

VI. CONCLUSIONS AND FUTURE DIRECTIONS

In recent years, more and more children with autism are receiving services in inclusive preschool classrooms alongside typically developing peers. Further, current research supports the inclusion of children with autism into community or public school preschools with typically developing peers based upon four sets of research findings. First, inclusive preschools provide a supportive and responsive context for implementing evidence-based practices. Second, inclusive settings occasion social

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interactions and communication among children with autism and their typically developing peers, which represent core skill deficits for children with autism. Third, the benefits of inclusive classrooms include generalization of social skills across people, which is an essential component of effective curricula for children with autism. Finally, research has documented more positive attitudes toward children with disabilities by typically developing peers when students with disabilities are included in the preschool environment. The escalating numbers of young children with autism entering schools each year have had a tremendous impact on professional development programs across a range of disciplines (e.g., education, school psychology, speech pathology). The need to train professionals to work with this population of students has required many professional development programs to evaluate their curricula and include educational assessment, programming, and collaboration for young children with autism.

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