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CLINICAL FEATURES, TYPES, CAUSES AND COMORBIDITIES OF INTELLECTUAL DISABILITY

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ABSTRACT

Diagnostic and statistical manual of Mental disorders (DSM-5) defines intellectual disabilities as neurodevelopmental disorders that begin in childhood and are characterized by intellectual difficulties as well as difficulties in conceptual, social, and practical areas of living **[2]**. Intellectual disability is a condition characterised by limitations in Intellectual functioning like reasoning, memory, problem solving and adaptive behaviour. Intellectual disability is a developmental disability and generally refers to the substantial constraints in present functioning reflected in inappropriate or immature reactions to one's environment and below average performance in academic, psychological, physical, linguistic and social domains. People with Intellectual disability have difficulties in symbolic capacity, limitations of their own body and space limitation. There are four types of Intellectual disability on the basis of Intelligence quotient range. Mild Intellectual disability (IQ 50-69), Moderate Intellectual disability (IQ 36-49), Severe Intellectual disability (IQ 20-35), Profound Intellectual disability

(IQ Below 20). Associated conditions of Intellectual disability includes Autism Spectrum disorder, Cerebral palsy, Epilepsy, Attention deficit hyperactivity disorder (ADHD), Impulse control disorder, depression and anxiety disorders. Two- thirds of the children with Intellectual disability with unknown causes. The possible causes of Intellectual disability include Genetic disorders, problems during the prenatal, Natal and post-natal phase.

This paper will highlight the fundamentals of Intellectual disability condition, various features, causes and the associated conditions of Intellectual disability.

Keywords: Disability, Rehabilitation science, Intellectual Disability

INTRODUCTION

A person with Intellectual disability is someone who has a markedly decreased capacity to comprehend novel or challenging concepts, information, to learn new skills, or cope on one's own (impaired social functioning) – which began before adulthood and can have a long-term impact on the person's development **[1]**. A state of functioning known as intellectual impairment (mental retardation) that starts prior to turning 18 is marked by considerable limits in both intellectual performance and adaptive behaviour. Over past few decades, the concept of intellectual impairment has undergone several revisions in response to shifting social, political, and professional factors as well as changes in how people perceive the disease. The AAIDD's definition of intellectual disability is the one that is most commonly accepted: Cognitive functioning and adaptable behaviour, as shown by conceptual, social, and practical adaptive skills, are both significantly limited in people with intellectual impairments. Prior to turning 18, this handicap first appears **[2]**. Rights of persons with disabilities act 2016 defines Intellectual disability a condition characterized by significant limitation in both intellectual functioning (reasoning, learning, problem solving) and in adaptive behaviour which covers a range of everyday social and practical skills. Sub average general intellectual functioning which originates during the developmental years and is associated with impairment in adaptive behaviour Severity of intellectual disability is based on the levels of intellectual quotient: Mild (IQ =55-69), moderate (IQ=40-54), severe (IQ =25-39), profound (IQ below 25) **[29]**.

Literature review

People with intellectual disabilities range widely in terms of their physical characteristics, emotional states, and views. They may appear to learn slowly because of their delayed rate of cerebral growth. (Wehman, 1997). Learning can occur at an

adequate rate and volume for persons with intellectual disabilities when they focus on the right parts of the learning stimuli rather than the wrong parts. (Vakil, 1997) (Werts, 1996). People with intellectual disabilities acquire their learning sets more slowly than their peers who are not disabled, and they struggle to apply knowledge to novel contexts. (Bernie-Smith, J.R, & S, 2006. Intellectually disabled children that have a variety of biological causes may also have coexisting issues like physical, motor, orthopaedic, visual, auditory, and health issues. (Hallahan, 2006) **[4-10]**.

Clinical Features of Intellectual Disability

General Cognition

People with intellectual disabilities range widely in terms of their physical characteristics, emotional states, and views. They may appear to learn slowly because of their delayed rate of cerebral growth. (Wehman, 1997). Learning can occur at an adequate rate and volume for persons with intellectual disabilities when they focus on the right parts of the learning stimuli rather than the wrong parts. (Vakil, 1997) (Werts, 1996) **[4]**.

Language delay

One of the first signs of Intellectual Disability may be language delays, including expressive language (speech) and receptive language (understanding). Red flags include no mama/dada/babbling by 12 months, no two-word phrases by the age of 2 years, and parents reporting they are concerned that the child may be deaf.

Fine motor/adaptive delay

- Significant delays in activities such as self-feeding, toileting, and dressing are typically reported in children with Intellectual Disability.
- Prolonged, messy finger feeding and drooling are signs of oral-motor incoordination.

Cognitive delay

Children with Intellectual Disability have difficulties with memory, problem-solving and logical reasoning. This may be expressed early on with preacademic difficulties or difficulty following directions particularly multipart directions.

Social delays

Children with Intellectual Disability may display lack of interest in age-appropriate toys and delays in imaginative play and reciprocal play with age-matched peers. Rather than their chronological age, play reflects their developmental levels.

Gross motor

- Delays in gross motor development infrequently accompany the cognitive, language, and fine motor/adaptive delays associated with ID unless the underlying condition results in both Intellectual Disability and cerebral palsy.

- Subtle delays in gross motor acquisition, or clumsiness, may be identified in the developmental assessment.

Behavioural disturbances

Even before an age at which psychopathology can be identified, infants and toddlers who go on to have ID may be more likely to have difficult temperaments, hyperactivity, disordered sleep, and colic.

- Associated behaviours may include aggression, self-injury, defiance, inattention, hyperactivity, sleep disturbances, and stereotypic behaviours.
- Neurologic and physical abnormalities

Prevalence of Intellectual Disability is increased among children with seizure disorders, microcephaly, macrocephaly, history of intrauterine or postnatal growth retardation, prematurity, and congenital anomalies. In the process of addressing somatic problems, assessment of a child's cognitive abilities is often overlooked **[11-15]**.

Types of Intellectual Disability

Mild to Moderate Intellectual Disability

The majority of people with Intellectual Disability are classified as having mild Intellectual disabilities. Individuals with mild Intellectual Disability are slower in all areas of conceptual development and social and daily living skills. These individuals can learn practical life skills, which allows them to function in ordinary life with minimal levels of support. Individuals with moderate Intellectual Disability can take care of themselves, travel to familiar places in their community, and learn basic skills related to safety and health. Their self-care requires moderate support **[16]**.

Severe Intellectual Disability

Severe Intellectual Disability manifests as major delays in development, and individuals often have the ability to understand speech but otherwise have limited communication skills (Sattler 2002). Despite being able to learn simple daily routines and to engage in simple self-care, individuals with severe Intellectual Disability need supervision in social settings and often need family care to live in a supervised setting such as a group home **[16]**.

Profound Intellectual Disability

Persons with profound intellectual disability often have congenital syndromes (Sattler 2002). These individuals cannot live independently, and they require close supervision and help with self-care activities. They have very limited ability to communicate and often have physical limitations. Individuals with mild to moderate disability are less likely to have associated medical conditions than those

with severe or profound Intellectual Disability **[16]**.

Causes of Intellectual Disability

1. Medical conditions.
2. Brain injury.
3. Genetic conditions

Medical conditions

Medical conditions that lead to intellectual disabilities fall into three groups.

1) prenatal exposure to alcohol and other drugs;

2) exposure to certain toxins; and

3) some types of infections.

Prenatal exposure to alcohol and drugs is entirely preventable. Even drinking Alcohol during pregnancy can cause foetal alcohol syndrome (FAS). Foetal alcohol syndrome is a leading cause of intellectual disabilities. Therefore, most doctors recommend pregnant women do not drink. Other drugs also harm a developing foetus. This includes nicotine, cocaine, and heroin. A pregnant woman should tell her doctor if she uses alcohol or drugs. Her doctor may be able to help her reduce the risks to her unborn child. Pre- and post-natal exposure to toxins can cause intellectual disabilities. Of particular concern are lead, mercury, and radiation. Avoiding exposure to these toxins reduces the risk of developing an intellectual disability. Large fish such as shark, mackerel, and swordfish contain higher amounts of mercury. Low mercury fish include shrimp, salmon, and Pollack. Lead based paints are present in pre-1970s homes and in the soil surrounding older homes. Families can find lead abatement programs through their county and state public services. High radiation exposure is associated with intellectual disabilities. Fortunately, modern radiation equipment has drastically reduced the amount of radiation exposure. However, it is uncertain what a safe level of exposure is. For this reason, women who may be pregnant should speak up before receiving any radiation procedures. Certain types of infections can also lead to intellectual disabilities. Pregnant women can take simple steps to reduce these risks. Pregnant women should avoid any contact with cat faeces. Cats can carry a parasite that causes Toxoplasma infection. This infection is known to cause intellectual disabilities. Pregnant women should not handle cat litter boxes. They should not garden in places where cats may have defecated. Several sexually transmitted diseases can lead to intellectual disabilities if a foetus or infant is exposed to these diseases. These include Hepatitis B, syphilis, and herpes simplex II. Pregnant women should practice safe sex and use condoms to reduce the risk of exposure. Children should receive immunizations for infections known to cause intellectual disabilities. These immunizations and

protocols are constantly evolving. Parents should ask their child's doctor for recommendations **[3, 4]**.

Brain injury is another cause of intellectual disability. Many brain injuries are preventable. Children should always ride in an approved child safety seat. The seat must be installed and used correctly. Follow the manufacturer's instructions for installation and use. If a family cannot afford a safety seat, there are agencies that can provide them. Ask your healthcare provider for information. Children should always wear helmets when riding bikes, skateboards, etc. Brain injury also occurs when infants are shaken or dropped. This unfortunate situation often occurs when caregivers are frustrated. Caring for infants can be extremely stressful. It is natural to feel frustrated. Ask your healthcare provider to refer you to someone who can teach you better ways to cope stress.

There are many genetic causes of intellectual disability. The two most common are Down syndrome and fragile X syndrome. Genetic causes of intellectual disability cannot be considered preventable. Lastly, certain psychiatric conditions are associated with intellectual disabilities. The most common disorder is called autism spectrum disorder (ASD). Like genetic abnormalities, there is no known way to predict or prevent ASD **[28]**.

Comorbidities of Intellectual Disability

Fragile X syndrome

This is a genetic condition caused by a mutation in the X chromosome. It is the most common type of associated condition among them which is inherited intellectual disability. Clinical features include speech problems, sensory issues, and behavioural challenges **[27]**.

Down syndrome

Down syndrome is one of the most common forms of Intellectual disability. The condition causes a person to develop an extra chromosome which changes how the brain and body develop. People with Down syndrome have distinct physical features that are a marker of the condition. They might have a flattened face and nose, small ears, hands and feet, a short neck, and almond-shaped eyes. They typically have lower than average IQs and experience developmental delays **[27]**.

Prader-Willi syndrome (PWS)

This is a rare genetic condition that affects mental and physical development. A key feature of this disorder is hyperphagia, otherwise known as chronic eating. This causes many children with the condition to develop obesity. Other symptoms include weak muscle tone, behavioural problems, and intellectual delays **[27]**.

Fetal alcohol spectrum disorders (FASDs)

Fetal alcohol spectrum disorders refer to a range of conditions caused by alcohol abuse while pregnant. Common symptoms of FASDs include visual or hearing problems, abnormal facial features, lower IQ, and cognitive difficulties **[27]**.

Autism Spectrum Disorder

Autism is a complex neurobehavioral condition that includes impairments in social interaction and developmental language and communication skill combined with rigid and repetitive behaviours. The ability of children with ASD to communicate and use language depends on their intellectual and social development. Some children with ASD may not be able to communicate using speech or language and some may have very limited speaking skills **[28]**.

Cerebral palsy

Cerebral Palsy can be defined as a disorder of movement or posture due to deficit abnormality of the brain which initially becomes evident in childhood. The abnormality of the brain responsible for the condition does not change and does not become more sever. The pattern of the movement disorder does change with time. In addition, there may be abnormalities of sight, hearing. speech and sensation. Many factors may be responsible for the condition. The causes or causes, in any given case, may be factors acting or occurring before, during or after birth **[26]**.

CONCLUSION

Significant cognitive and adaptive behaviour impairment is a hallmark of intellectual disability. Loss effects of those with intellectual disabilities and those who are usually developing. However, because to their communicative and cognitive needs, this demographic requires special consideration. Due to subsequent loss, communication difficulties, and difficulty or incapacity to find meaning in the loss, intellectually disabled people are more likely to experience the traumatic grief. India as a country of diversity, always see these diversities as an opportunity similarly now it's time that the mindset of people to change and see every disability as a special ability. That is to focus on what these children can do better rather than merely focusing on things that they cannot do. From segregation to inclusion, the inclusive education system in India goes through several hurdles. To look at the disability as a special ability, it's required a change in the mindset.

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Conflict of Interest

we declared that there is no potential conflict of interest with respect to this research study.

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