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Autism Spectrum: Causes And Treatment

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ABSTRACT

Autism spectrum disorders are a group of diverse disorders characterized by difficulties in social interaction and communication. Other features of these disorders include atypical patterns of activity and behavior, such as difficulty moving from one activity to another, preoccupation with details, and unusual reactions to sensations.
The abilities and needs of people with autism vary and can evolve over time. Some people with autism are able to lead independent lives, while others suffer from severe disabilities and require lifelong care and support. Autism often affects education and employment opportunities. In addition, the burden of providing care and support on families may increase. Community behaviors and levels of support provided by local and national agencies are important factors in determining the quality of life of people with autism.

Keywords: Autism spectrum

INTRODUCTION

Autism cannot, by any means, be considered a modern-day disease; rather, it is as ancient as history itself. What is recent, however, is its discovery. There have been medical indications from ancient and medieval physicians that some children do not speak, exhibit weak interaction and communication with their parents and those around them, and display various patterns of abnormal behavior.
Autism has been labeled with numerous terminologies that have varied according to the perspectives of scientists and researchers across different fields. This disorder has overlapped with several disciplines. Despite successful efforts to identify the characteristics of autism and the considerable progress in scientific research—both in quantity and quality this disability continues to raise many puzzling questions, especially as the discovery of an effective treatment remains elusive. Autism is considered one of the most impactful developmental disorders affecting key developmental milestones. It has drawn the attention of specialists and psychological researchers. The causes of this perplexing disorder are not limited to a single factor; rather, they are multiple. Diagnosis, causes, and treatment methods for autism remain subjects of ongoing debate, and today, it is recognized as a distinct classification within the field of special education.

Definition of Autism:

The word "Autism" is derived from the Greek word "aut", meaning self, and the suffix "ism", meaning a state of being closed off. The term as a whole can be translated as "self-isolation." It suggests that these children are often absorbed or united with themselves and show little interest in the external world. The autistic child is characterized by an inability to establish social relationships, failure to use language for the purpose of communication, a strong desire for repetitive behavior, a fascination with objects, and relatively good cognitive abilities. Autistic individuals also exhibit repetitive and restricted stereotyped behaviors, and these characteristics appear before the age of thirty months. (Mustafa & Al-Sharabeeni, 2011, p. 26)
The Individuals with Disabilities Education Act (IDEA) defines autism as: “A developmental disability significantly affecting verbal and non-verbal communication and social interaction, generally evident before age three, that adversely affects a child’s educational performance.” (Al-Qaryouti & al., 2001, p. 63)
Ahmad Badawi defines autism as a type of thinking marked by subjective tendencies that contradict reality, involving deep immersion in fantasies that satisfy unmet desires. (Badawi, 182, p. 32)
Adel Al-Ashwal defines it as: A behavioral disorder characterized by the inability to communicate, beginning in early childhood, where the child exhibits meaningless speech, withdraws into themselves, and shows no interest in others. (Al-Ashwal, 1993, pp. 15-35)
Ismail Badr views autism as an emotional disorder affecting social relationships with others, resulting from an inability to understand or express emotional cues—especially facial expressions or language thus impacting social interaction and leading to stereotypical behaviors. (Abdullah M. A., 2003, p. 114)
Mohamed Adnan defines autism as a deficit that hinders the development of social and verbal/non-verbal communication skills, as well as imaginative and creative play. It results from a neurological disorder that affects how the brain processes

and interprets information, causing difficulties with interpersonal relationships, play, use of leisure time, and the ability to engage in constructive imagination and pretend play.

Operational Definition of the Autism Spectrum:

Autism is a disability that affects the normal development of cognitive growth and understanding. However, with specialized training and education, positive outcomes can be achieved that help the child become a productive member of society. The autistic child experiences a severe impairment in acquiring the skills that a typically developing child naturally gains from their mother and community. The autistic child can only acquire these skills through specialized methods of learning and training.

It is observed that a child with autism appears normal at birth, with no physical or congenital disabilities. The issue begins to emerge through noticeable weaknesses in communication, followed by an inability to form social relationships, a tendency toward isolation, language difficulties, and limited understanding of abstract ideas.

The Importance of Studying Autism:

The importance of studying autism lies in the need to understand a crucial developmental stage in a child's life one that remains largely unfamiliar. This disorder overlaps with many other conditions, making its study even more significant.

It is also essential to consider the cyclical relationship between organic and environmental factors. A child may be born with certain temperamental tendencies that provoke a specific response from the mother, leading her to treat the child differently from their siblings. This special treatment may contribute to the development of pathological traits. (Amer, 2008, p. 27)

Moreover, autism is often accompanied by several complications, most notably the onset of depression at the beginning of adolescence, as a partial awareness of the disability emerges. When exposed to psychological or social stress, the individual may exhibit rigid symptoms especially irritability or display fixed patterns of behavior, or even non-specific psychotic episodes involving delusions and hallucinations, which usually disappear once the cause is removed. (Hammouda, 1991, p. 102)

Another reason for the importance of studying autism is the increasing rate of its prevalence, as highlighted by numerous research findings. This necessitates a deeper understanding of its causes in order to reduce its occurrence and to identify the most effective therapeutic programs. Such efforts would empower parents and professionals working with these children to interact with them more effectively, support the establishment of specialized centers, and ensure they are equipped with trained experts and essential resources.

I. Historical Development and Current Status of Autism:

Autistic disorders were initially viewed as an early form of schizophrenia. The real breakthrough in identifying autism as a distinct condition came from the American psychiatrist Leo Kanner in 1943, who was the first to define the main characteristics of autism.

During the 1950s and 1960s, the focus was on identifying the symptoms that define autism as a specific syndrome. At that stage, the concern was not how to understand autism itself, but rather how to compare it with other disorders. Research at the time concluded that there are three major behavioral areas shared by the majority of children with autism:

- Failure to develop social relationships
- Language delay and disorders
- Obsessive or ritualistic behaviors linked to repetitive, stereotyped play

Studies during this period indicated that measured cognitive ability and general language competence were key indicators. Evaluating verbal and cognitive skills led to the conclusion that the sensory deficit was not in language itself, but in specific components such as abstraction, rapid comprehension, and inferencing. These findings contributed to a shift away from psychotherapy and toward behavioral and educational approaches.

In the 1970s and early 1980s, two main developments took place: (Zureikat, 2010, pp. 29-31)

1. The clinical and research-based approach: This contributed to the development of structured assessment tools, such as the autism interview and others.
2. Identification of types and levels of difficulty in autism: This allowed researchers to distinguish autism from other general developmental disorders.

Language disorders were also of major concern during this period, and it was concluded that autism is more than just a developmental language disorder it involves a wide range of cognitive deficits, including problems with language. There was increasing interest in the medical aspects of autism, and numerous studies and reports suggested that autism may be linked to specific medical conditions. What stood out most during this phase was the growing focus on identifying causes, especially evidence of the role of genetic factors in autism. Psychological studies began exploring whether cognitive impairments were caused by social deficits and whether children with autism had general cognitive impairments. Research then turned to whether these deficits were rooted in social interaction difficulties. Several theories were proposed linking

autism to perceptual systems, sensorimotor delays, or excessive attentional shifting. As a result, general cognitive deficits were seen as more important than the autism diagnosis itself.
In the 1980s, researchers began to propose that children with autism have a sense of ability and perception that allows for empathy, suggesting that the core deficits are social and emotional. Attention was directed toward the ability to understand others' actions, feelings, or perspectives. The primary issue was identified as a failure to develop social relationships and communication skills.
The early 1990s witnessed a development in genetic findings and an increasing interest in the similarities between autism and the behavioral patterns of children who had experienced severe deprivation. There was also a focus on the link between autism and disorders affecting the social aspects of language and meaning. This period was notable for efforts to differentiate between the various health conditions that may accompany an autism diagnosis. At the same time, there were major changes in therapeutic methods, with growing interest in supportive approaches that could lead to positive changes. Discussions also began about medications that could lead to behavioral improvements in most individuals with autism. Research during this phase had a real impact on the actual services provided and emphasized the importance of using evidence-based practices to support children with autism and avoiding ineffective interventions.

Causes of Autism:
The causes of autism have remained largely unknown for a long time. Scientific research conducted on autism has not reached a definitive conclusion regarding its direct cause. Nevertheless, some experts believe that the prevalence of this disorder is increasing. Despite this, several possible causes have been identified, including:

1. Genetic Factors:
Proponents of this view argue that autism spectrum disorder results from a genetic defect. Most studies point to a genetic factor with a direct influence on the development of this disorder, as the rate of occurrence is higher among identical twins (from a single egg) than among fraternal twins (from two different eggs). (Mustafa & Al-Sharabeeni, 2011, p. 28)
Autism is found in 96% of identical twins compared to 22% of fraternal twins. Furthermore, around 15% of children with autism also suffer from Rett syndrome or Fragile X syndrome, both of which are disabilities with a confirmed genetic basis. This indicates that heredity may play a significant role in the development of autism; however, this does not rule out the presence of environmental factors. (Farag, 2002, p. 61)
British researchers have also discovered that finger length may offer a clue to the cause of autism in children. They found that children with autism often have unusually long middle fingers compared to their index fingers.

2. Immune Factors:
Many studies have confirmed the presence of immune system dysfunction in individuals with autism. Both genetic factors and abnormalities in the immune system have been identified in people with autism.
Some evidence suggests that certain immune incompatibilities between the mother and the fetus may contribute to the development of autism. Additionally, the lymphocytes of some autistic children are affected by maternal antibodies—even when tested in vitro—which raises the possibility that fetal tissues may be damaged during pregnancy. (Khattab, 2009, p. 44)

3. Neurological Factors:
The average weight of the adult human brain is approximately 1400 grams, and it is composed of the occipital lobe, parietal lobe, temporal lobe, and frontal lobe.

- Occipital lobe: Associated with vision.
- Parietal lobe: Responsible for sensory signals.
- Temporal lobe: Contains centers related to hearing.
- Frontal lobe: Involved in motor control.

Autism is a neurodevelopmental condition with neurological origins. It is attributed to abnormalities in brain function. Studies and MRI scans have shown that the brain volume of children with autism is larger than that of typically developing children, although those with severe intellectual disability often have smaller head sizes. (Al-Mahdi, 2008, p. 21)
A significant portion of this increase in brain volume occurs in the occipital and parietal lobes. Neurological examinations of autistic children revealed reduced blood flow to brain areas involving the parietal lobe, which affects social interaction, normal responsiveness, and language. Other symptoms are linked to dysfunction in the frontal lobe. (Qutb, 2007, p. 59)
Studies have indicated that the neurological dysfunctions include the following: (Farag, 2002, p. 61)

- A deficiency in Vitamin B6 and certain vital elements impairs brain development and growth.
- Structural abnormalities in specific brain regions, particularly the cerebellum, temporal lobes, and areas surrounding the brain's ventricles.
- A reduction in synaptic connections between brain cells, making them more isolated from one another.

- A decrease in the number of cells forming brain regions (such as Purkinje cells), or conversely, an increase and acceleration in cell growth, resulting in compressed and immature cells unable to perform their functions.
- Using advanced imaging technology (P.E.T. scans), this reduction has been recorded, along with increased metabolic activity in the cerebral cortex.

4. Biochemical Factors:

Many studies have indicated a link between the autism spectrum and biochemical factors, particularly the increased secretion of neurotransmitters that transmit nerve signals from the five senses to the brain, or commands from the brain to various body organs, muscles, and skin. (Farag, 2002, p. 64)

Numerous studies have shown elevated levels of **homovanillic acid** in the cerebrospinal fluid this substance is the main metabolic byproduct of **dopamine**, suggesting the likelihood of increased dopamine levels in the brains of affected children. In addition, there is a rise in **serotonin levels** in the blood of one-third of children with intellectual disabilities who do not have autism. In contrast, among one-third of autistic children, there is a **decrease in serotonin levels** in the brain's cerebrospinal fluid. (Al-Mahdi, 2008, p. 18)

5. Chemical Substances:

Environmental factors have been linked to autism due to the possibility that they may contribute to its development. These include a variety of potential causes such as chemical environmental pollution, exposure of eggs or sperm to chemicals or radiation prior to conception, and food contamination resulting from the use of chemicals, which may lead to organic toxicity. Other contributing factors include the regular intake of medications by the mother during the first trimester of pregnancy, as well as alcohol consumption. (Abdullah, 2004, p. 74)

The most significant chemical substances that may affect fetal development include the following:

❖ **Environmental Pollution:**

Numerous studies have demonstrated a link between autism and environmental chemical pollution. The findings of Windham et al. revealed that elevated levels of mercury- and cadmium-polluted air in the state of California were associated with higher rates of autism. (Mustafa & Al-Sharabeeni, 2011, pp. 46-53)

❖ **Radiation:**

X-rays that target the pelvic or abdominal region of a pregnant woman especially at high doses can lead to miscarriage and physical deformities. (Zahran, 1998, p. 388)

❖ **Medications:**

Studies have indicated that several factors may jointly contribute to rising autism rates, including genetic predisposition and the cumulative effects of mercury in vaccines. An increasing number of scientists believe that the mercury contained in certain infant and child vaccines may be a key factor behind the sharp increase in autism cases worldwide. (Asaliyah, 2006, p. 268)

❖ **Alcohol and Drugs:**

Drug use can cause complications during childbirth and reduce fetal heart rate. Heroin and morphine addiction can lower oxygen levels in blood tissues, cause toxicity, and lead to premature placental detachment. Alcohol consumption, especially ethyl alcohol, the active component in all alcoholic beverages, leads to intoxication. A lethal dose of pure ethyl alcohol is approximately 150 cubic centimeters. (Al-Afifi, 1986, p. 56)

Addiction is defined as a set of physiological, behavioral, and cognitive phenomena that follow repeated use of a substance. It is characterized by intense craving, loss of control over usage, and continued consumption despite harmful consequences.

❖ **Smoking:**

When a pregnant woman smokes, toxic nicotine passes from her bloodstream to the fetus, accelerating the baby’s heart rate and negatively affecting the child’s cognitive development after birth. Studies have linked maternal smoking during pregnancy to a higher risk of autism in the child.

❖ **Maternal Infectious Diseases:**

Research shows that infections such as fever and encephalitis during pregnancy are closely associated with autism. Many autism cases involve mothers who experienced metabolic deficiencies or other complications during pregnancy or prior to delivery at a much higher rate than mothers of typically developing children. Numerous specialists confirm that such complications, especially those occurring during the first trimester, are significant risk factors for autism. (Mustafa & Al-Sharabeeni, 2011, p. 47)

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Some Theoretical Approaches Explaining Autism:

I. The Psychodynamic Theory:

a. This theory emphasizes the physical normality of the autistic child and suggests that strong influences during early development lead to severe psychological disturbance. Proponents of this theory attribute the cause of autism to deviant parental treatment, particularly by the mother. (Qutb, 2007, p. 51)
b. The mother may use the child to fill her emotional void, treating him as a possession that exists for her rather than for himself.
c. The attachment bond between autistic children and their parents is seen as disrupted or impaired.
d. The child may experience fear, withdraw from the family environment, isolate himself, and turn inward.
e. The child may be subjected to severe deprivation within the family.
f. Emotional relationships between the child and his family may be weak, leaving the child with a sensory and emotional void that encourages self-isolation and detachment from others.

However, it is now certain that the claims made by some psychoanalysts especially during the 1960s that autism is caused by parental treatment, particularly by the mother, are entirely unfounded and have no actual connection to autism . (Khattab, 2009, p. 41)

II. The Cognitive Psychological Theory:

a. Theory of Mind:

The Theory of Mind is one of the more recent and well-known approaches, extending from the cognitive theory of autism. According to this theory, autistic children are unable to predict or explain the behavior of others by understanding their mental states. In contrast, typically developing individuals have a special form of insight or intuition that allows them to "read" the thoughts of others. Autistic children, however, are unable to distinguish between what exists in their own minds and what exists in the minds of others.

This theory suggests that an individual must be able to understand another person's mental state in order to interpret and predict their behavior. The deficit in Theory of Mind is likely due to the social-behavioral impairments common in autistic children, which result in an inability to comprehend others' mental states. (Happé, 1994)

The development of Theory of Mind in typically developing children, compared to autistic children, begins early in infancy and continues throughout childhood. In typically developing children, even without formal interaction, they actively engage in social participation. By around 10 months of age, they are capable of perceiving events from the perspective of others. Joint attention is considered a key foundational skill for the development of Theory of Mind, typically emerging between 9 and 12 months of age. When a child is engaged in mutual interest with another person, they may begin to focus attention on that individual.

A critical developmental milestone during the first and second years of life is language acquisition, which allows the child to understand the feelings and desires of others. This, in turn, enables the child to comprehend others' thoughts, emotions, and perceptions. By around four years of age, the developing child understands that others have beliefs and thoughts that drive their behavior. (Khattab, 2009, p. 58)

The social deficits observed in autistic children are largely due to their inability to understand both their own and others' mental states. Social difficulties stem from a cognitive deficit that prevents the child from perceiving mental states, and thus social impairments are rooted in deficiencies in Theory of Mind. Most researchers believe that autism originates from an innate impairment that disrupts the newborn's cognitive functioning and ability to interpret stimuli and interact with the surrounding world. (Amin, 1999, p. 63)

III. Social Learning Theory:

Social Learning Theory posits that the characteristics of individuals with autism result from a failure in social learning processes. The cognitive deficit lies in encoding and in the quality of forming representations of the self and others. This low-level cognitive impairment manifests as a deficit in social imitation, and a child's inability to imitate during early developmental stages negatively affects their capacity for social growth.

In severe cases, social communication is impaired or absent altogether, and human beings may be ignored or treated as objects. Deficiencies in engaging in social exchanges such as greeting behavior, failure to establish appropriate peer relationships, and the inability to develop proper social behavior during childhood—along with ongoing abnormal social interactions into later life and language deficits, are all deeply rooted in autism. (Mustafa & Al-Sharabeeni, 2011, p. 60)

IV. Sensory Integration Theory:

This theory is based on understanding the relationship between behavior and brain function. It seeks to explain normal sensory performance, dysfunction in sensory integration, and offers practical guidance for intervention. The foundation of sensory integration and related therapeutic approaches stems from neuroscience. As neurological knowledge continues

to expand, this theory maintains that experiences the brain undergoes can modify brain structure and function, and such performance can be either adaptive or maladaptive. (Mustafa & Al-Sharabeeni, 2011, p. 61)

Treatment Methods for Autism Spectrum Disorder:

Specialists use various behavioral methods when working with individuals with autism to facilitate appropriate communication and improve their overall functional performance. Below is an overview of the most common therapeutic approaches used with children on the autism spectrum. (Al-Freir & Odeh, 2009, pp. 188-190)

a. Behavior Modification Therapy:

The art of behavior modification is based on a universal principle that has existed since the beginning of life: reward and punishment. For example, a child who exhibits misbehavior, screaming, or stubbornness may do so to attract parental attention. When parents respond to the child's demands, they unintentionally reward and reinforce the negative behavior, encouraging its repetition whenever necessary.

a.1 Steps Toward Behavior Modification:

- **Identifying the Target Behavior:**

This involves closely observing the child to select the behavior intended for change. More than one person may participate in monitoring the target behavior to ensure objectivity and accuracy in recording behavioral indicators.

- **Quantitative Evaluation of the Behavior:**

At this stage, the frequency of the target behavior is measured, including the number of times it occurs within a specific timeframe. A performance chart can also be developed to track changes.

- **Qualitative Evaluation of the Behavior:**

This refers to assessing *how* the behavior occurred and identifying the surrounding conditions at the time of the behavior.

- **Intervention:**

This step involves implementing a therapeutic program aimed at modifying the undesired behavior. The success of the behavior modification process is determined by comparing the frequency of the target behavior before and during the intervention phase.

Example: Encouraging a Child with Autism to Remain Seated in Class:

a. Verbal Correction (Not Recommended):

Yelling at the child every time they leave their seat may prompt them to return, but this method is discouraged as it creates a negative relationship between teacher and student. Many autistic children cannot distinguish between class time and playtime, leading to confusion and complicating appropriate behavior. Teachers must therefore train the child to remain seated upon request not out of fear of punishment but in response to clear instruction.

b. Conditional Rewards (Full Performance Only):

The child is rewarded only after successfully remaining seated for 20 uninterrupted minutes. However, this approach is nearly impossible to apply with young children, especially those with hyperactivity.

c. Gradual Rewards:

The child is initially rewarded for remaining seated for just 5 seconds. Over time, the teacher gradually increases the required duration before giving the reward whether material or verbal. This progressive approach ensures a smooth implementation for both teacher and student without causing frustration.

CONCLUSION

Autism is a neurological disorder that affects communication, behavior, and social interaction in individuals who have it. Although the exact causes of autism are not yet fully understood, several potential factors may contribute to the development of this disorder.

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