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Autism in children

Risk factors and early intervention strategies

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ABSTRACT

The study aimed to identify the risk factors that increase a child's vulnerability to autism spectrum disorder (ASD). It focused on genetic and hereditary factors, which are considered key contributors to the development of the disorder. Research has identified over a hundred defective genes that partially influence ASD. The study also explored psychological and family-related factors, noting that issues in relationships and emotional detachment from the mother can lead to a rigid dynamic between mother and child, which negatively impacts the child's emotional and psychological development. Additionally, factors during the prenatal stage, illnesses affecting both the mother and fetus, as well as birth conditions, were discussed.

The study also emphasized the role of environmental changes and exposure to metal toxins, which can impair brain function and cause reversible changes in the child's gene expression. Furthermore, it highlighted the importance of using behavioral strategies to modify the child's behavior, with a focus on integrating the child into a comprehensive program that addresses psychological, health, and emotional needs. The study stressed the necessity of preventing other related disorders that could complicate the child's psychological well-being and make it more difficult to manage.

Key words: Autism; Early Intervention; Risk Factors .

Introduction

The importance of studying autism disorder is evident in highlighting the stages of the child's development and gains at each stage, as well as the relationship with parents and social interactions. While most children successfully progress through the developmental stages, children with autism face difficulties in understanding and adapting environmental stimuli, leading to significant challenges in communicating and expressing their emotions, to live in their own world. In addition, caring for this group of children provides them with an opportunity to be active in society and expose other aspects of this disorder.

Autism is defined as : One of the most ambiguous and complex developmental disorders due to the overlap of many factors leading to the child's infection. It is characterized by a set of symptoms predominantly characterized by the child's focus on himself and his refusal to communicate with the world around him, which leads to an imbalance in many psychological, social, linguistic, and emotional functions...

The prevalence of this disorder has increased significantly, as reports of the Autism Research Institute indicate that cases reached 60 cases per ten thousand children between the ages of 5 and 11 years, which is a high percentage compared to what was previously known , and many studies have shown a significant increase in the number of children with autism. In the United States, the prevalence of autism was as follows:

- In 1970 one case per 2,500 people.
- In 1999 the rate increased to one case for every 285.
- In 2007 the rate was 1 case per 150 children.
- In 2009 to one case per 91 children.
- In 2013 to one case for every 88 children.
- In 2014 to one case for every 68 children.
- In 2018 it rose to one case for every 59 children.

World Health Organization statistics indicate that the rate of autism globally is constantly increasing, with recent rates estimating an average global prevalence of 62 cases per 10,000, which means that 1 in 160 children has autism, and these estimates constitute an average figure, while some scientific studies have shown much higher rates.(1)

These statistics, as much as they raise concerns among every member of society, but they put us as researchers in the field in front of a great challenge, which is to know the factors that make individuals with autism and not others, and this enables us to work to reduce its prevalence, and how can we help integrate them socially, and we come to ask the following questions:

- What factors make a child more susceptible to autism than other children?
- What programs are offered to help these children overcome the challenges they face?

To answer these questions, we have prepared this study to take note of the most important factors that contribute to the occurrence of autism spectrum disorder and how we contribute to reducing its negative effects.

1. Definition of Autism Spectrum Disorder

Psychiatry used the term autism disability or disorder when it defined schizophrenia, especially schizophrenia in childhood. The term autism was used at that time as a description of the withdrawal trait in schizophrenics, and then it became used as a name to denote the entire autism disorder. The comprehensive group of developmental disorders includes four disorders: autism- Asperger - Rett - analytical developmental disorders - unlimited developmental disorders (2)

Kanner is the first to try to define autism and define it as: "A disorder that appears during the first 30 months of the child's life. Children with autism may suffer from the following qualities, focusing on the first and second traits in the diagnosis of autism: a severe lack of emotional communication with others, maintaining routines and resisting change, inappropriate attachment to things, poor imagination, and severe isolation." He indicates that children with autism may give the impression that they are intelligent. An investigation was conducted on the intelligence of children with autism, as the results showed that half of these children have an IQ of less than 50, while a quarter of them were between 50 and 70, and the last quarter has an IQ of more than 70. However, cases of adults with autism who show exceptional abilities are extremely rare.

Symptoms are still as first identified by Leo Kanner in 1943:

- ✓ Difficulties with language and social communication.
- ✓ Stick to rituals and routines.
- ✓ Cognitive inertia. (4)

Autism is not a single disorder but rather a "spectrum of related conditions," encompassing disorders with a high prevalence of autism, pervasive developmental disorder-not otherwise specified (PDD-NOS), which shares characteristics of autism without meeting all diagnostic criteria, and Asperger's syndrome.

As defined by the Fifth Statistical Manual of Mental Disorders: "Autism is a fixed deficit in communication and social interaction in multiple contexts in the current period, including attention, sensory perception, and motor development, and the purposes begin early in life." (5)

Coleman also believes that “it is a general developmental disorder characterized by a clear deficiency in the ability to interact socially, the ability to communicate, and it is characterized by a set of specific activities, interests, and stereotypical behavioral patterns, with disorders in language and speech that begin before the age of three.” (Hamdi, 2020, p.28)

Blowalls introduced the term preoccupation with oneself to describe one of the primary features of schizophrenia and preoccupation with oneself rather than with the outside world.

Among the most important references adopted in the definition of Pervasive Developmental Disorders (PDD), we find the International Classification of Diseases (CIM-10) tenth edition of it, where its definition of this type of disorder:

-As qualitative deviations in reciprocal social interactions and deviations in communication patterns. In addition to a limited range of limited and stereotypical interests and activities.

-These specific disturbances constitute what is known as the “trilogy of systemic disturbances,” a characteristic feature of an individual's function in all situations (6).

Most definitions concur that children with autism tend to display significant withdrawal behaviors and a focus on themselves rather than engaging with and learning from the outside world. This impacts multiple areas of their development, including social, communication, cognitive, and emotional aspects. Their behaviors differ from those of their peers, highlighting the importance of consistent parental support and specialized psychological and physical care.

2. Age Suitable for Diagnosis:

Early diagnosis generally begins when some of the behavioral problems associated with autism are observed by parents in a child between the ages of 12 and 36 months, and there are many factors that control the age of diagnosis, the most important of which are:

- ❖ Many severe symptoms.
- ❖ The presence of the child in the city (urban environment) and with the appropriate capabilities allows for early diagnosis.
- ❖ Standard of Living.

Advancements in research and diagnostic methods in this field have enabled the early detection of autism through a variety of programs and assessment tools. Findings indicate a continuous rise in the prevalence of affected children, influenced by societal changes such as technological

advancements, shifts in family dynamics and needs, parenting approaches, and the degradation of the ecosystem, among other factors.

3. Symptoms :

Research indicates that:

- Up to nine percent of children with autism will not develop the ability to speak; of those who do speak, 43 percent start to speak by the end of their first year.

- 35% of infected children start talking between their first and second year.

- 22 percent start talking during their third year or later.

- Only 12 percent are completely unable to speak by the age of five with appropriate interventions, there is hope that children with autism will be able to learn to speak even to a small degree.

In typical language and speech development, the child's receptive and expressive skills develop at the same time, but a child with dysarthria usually faces a large gap between his receptive and expressive abilities, so that his receptive ability to understand language is normal, but his expressive ability is weak and not very clear (8).

The most important symptoms can be summarized as follows:

- Social interaction skills:
- Social Isolation.
- Difficulties with language communication skills (verbal and non-verbal).
- Stereotyping.
- activities and interests
- Mental and cognitive capacity deficits.
- Behavioral disorders.
- Deficiency in imaginative play.
- Deficiencies in sensory integration.
- Communication disorder at the social-cognitive level.
- Poor responsiveness to others.
- Inability to understand the feelings of others.
- He has a disorder in eating, drinking and sleeping such as food on one or two types.
- Waking up at night with shaking the head and screaming or banging on the wall (9).

Children with autism often exhibit heightened sensitivity or hypersensitivity. They may feel discomfort from their clothing, become irritated by how it fits or feels, or struggle with wearing items like socks. These children may also be particular about the type and presentation of their food, often

resisting certain kinds and displaying a preference for playing instead of eating. To avoid sensations on the soles of their feet, they might walk on their tiptoes. Additionally, they may find normal lighting in a room intolerable and are highly sensitive to smells, strongly disliking intense odors. (10)

Some children are extremely sensitive to sounds, making them uncomfortable with noise or being in groups. They may withdraw from their surroundings and constantly seek to protect themselves from real or perceived threats, resulting in behavior that appears anxious or self-focused. A lack of parental awareness about this sensitivity can pose a risk to the child's mental health, as they struggle with noisy environments and exhibit symptoms of anxiety and heightened emotional responses. This sensitivity makes their behavior difficult to predict or manage.

4. classification

4.1 Classical Autism:

This condition presents clinically from birth, marked by the child's difficulty in forming emotional connections with their surroundings. Signs of the disorder typically emerge between birth and two years of age and are characterized by profound isolation, indifference, and a lack of interest in people or external stimuli. Additional features include repetitive behaviors, unpredictable actions, a lack of emotional expression, and language impairments.

4.2 Asperger Syndrome:

Asperger's syndrome shares many symptoms with autism but tends to be less severe. Both conditions involve significant challenges in social communication and exhibit repetitive, routine, and stereotypical behaviors. Individuals with Asperger's syndrome typically have normal intelligence and do not experience delays in language acquisition, including vocabulary, grammar, or self-reliance skills.

4.3 Undefined PDD:

Atypical autism, often the most frequently diagnosed condition among pervasive developmental disorders, is identified when a child exhibits some but not all the signs of autism. It is characterized by challenges in social interaction, language development, non-verbal communication, and play activities, with symptoms that are generally less severe than those of classic autism.

4.4 Childhood Disintegration Disorder:

Symptoms appear after the age of two years where verbal and non-verbal communication is normal and the child practices his social activities and play and can adapt, but these acquired skills are lost as they appear clinically (before

the age of ten), including: expressive or receptive language, social skills or adaptive behavior.

5. Risk Factors for Autism:

While no definitive answers exist on this subject, several plausible hypotheses have been proposed. Leveraging modern technology, scientists have explored various physical and psychological factors in an effort to uncover the underlying causes of this disorder, with the ultimate goal of finding a cure.

5.1 Psychological and family factors:

Significant contributions have been made to understanding the factors leading to autism. In 1949, Dr. Hans Asperger published a study in German focusing on children who exhibited unusual yet consistent traits, such as rigid adherence to routines, pronounced social challenges, abnormal visual communication, repetitive behaviors, and improper use of language. He referred to this group of children as exhibiting “infantile autism.”

In the 1960s, Bruno Bettelheim proposed a theory suggesting that autism stemmed from parents' emotional coldness, identifying "refrigerator mothers" as a key factor. He claimed that a mother's emotional detachment negatively impacted a child's psychological development, leading them to withdraw from reality. However, in 1964, Bernard Rimland challenged this view in his book *Childhood Autism*, arguing that autism is a neurological and biological disorder rather than a result of poor parenting practices.

By the late 1970s, Lorna Wing introduced a new framework for understanding autism. Through her "Wing Triad," she emphasized three core dimensions of the condition: social difficulties, impaired verbal communication, and behavioral challenges.(13)

Kanner provided an important insight about the factor causing autism by positing the hypothesis of the subjective factors surrounding the child in the early stages of development within the family, including the method of socialization, the failure to meet the child's needs of love, affection, care, the warmth of the relationship between the mother and her child, the absence of environmental stimuli, emotional neglect, especially, and disturbance in the functions of family relations, but he finally reached the conclusion that family and psychological factors are the main cause of autism in children. (14)

One of the most famous and oldest theories put forward by **Kanner** in interpreting autism as a state of escape and isolation from the painful reality that the child suffers from as a result of the inertia of the relationship with his parents, in addition to the neglect and indifference on the part of the mother towards his son, and this may be one of the consequences of the poor relationship between her and her husband, and also during pregnancy, the mother does not have any

feelings and emotions towards the fetus and does not want to have him, which leads to the birth of a child with autism, here the relationship is considered sick and unhealthy, so the behaviors adopted by the child are defense mechanisms against emotional rejection, and according to this theory, the child's position in the early stages of development is the main cause of autism.

The psychodynamic causes of autism can be summarized as follows:

- The implicit rejection by the mother of the child.
- Lack or absence of necessary care, especially in the first months.
- Disruption of family relations.
- Social isolation on the part of parents.
- A stalemate in the relationship or a child.

In studies related to family histories, it was found that ASD among siblings is repeated up to 22.3 times, and if the child with ASD is male, the risk of recurrence in siblings is 4%, and this rate rises to 7% if the case is a girl. However, when there are two affected children in the family, the risk of recurrence of the disorder is increased by 25-30% for the third child. Despite the progress in understanding the genetic, environmental, developmental and biological factors behind autism, many of the causes and symptoms of this disorder are still not understood.

As for the risk factors related to the characteristics of the parents, they include the advanced age of the mother during childbearing, as well as the age of the father, which exceeds 39 years, the age of the mother, which exceeds 35 years, the mother's high educational level, or smoking by the mother, having a psychiatric history, and having a pathological record of allergies or other autoimmune diseases. (16)

Psychological theories often emphasize the relational dimension when interpreting the causes of autism. They suggest that a lack of emotional connection and rigidity in the mother-child relationship can hinder a child's ability to develop essential social interaction mechanisms, such as language and emotional expression. This is evident in children with autism. Many theories of child development and developmental psychology highlight the importance of environmental stimuli in fostering the growth of organs and systems responsible for communication, as well as the ability to perceive and integrate environmental elements. These processes are crucial for constructing accurate cognitive frameworks aligned with the child's developmental age.

5.2 Genetic factors:

Many studies on the genetic aspect and its relationship to autism spectrum disorder have found that heredity plays a key role in its occurrence, as autism spreads by 36% for identical twins, and it did not find a relationship in identical

twins whose births are from two different eggs. In a second study, it found that autism spreads by 96% for identical twins born from one egg, and by 27% between pairs of identical twins from two different eggs. (17)

Healthy siblings who are siblings of children with autism show a range of symptoms associated with autism but not clinically. In addition, Constantino, Zhang, Frazier, Abbacchi, and Law (2010) reported that besides a prevalence rate of 10.9% in siblings, 20% of families may have another child with language delay; half of these children may exhibit language characteristics associated with autism. This means that siblings may carry potential genes for autism but with a lighter phenotype and not enough to show all symptoms. This hypothesis supports the idea that there is a set of genes that may be responsible for this disorder and talking Poirier.N, Pigeon.C (2013) On epigenetic mechanisms that control gene expression and are important for ensuring stable expression at certain developmental stages, recent studies have been able to identify risk factors associated with prenatal and birth conditions of children with autism spectrum disorder (ASD) that may be associated with epigenetic mechanisms. These studies show that there is a higher risk of autism related to specific characteristics in the child:

- Male Gender
- Multiple gestation.
- Rubella in the mother.
- Influenza in the mother.
- Abnormal prenatal immune response.
- Exposure to high levels of sex hormones as a result of fertility treatment.
- Being the first child where the risk decreases with the third child and those who come after him.
- Decrease in APGAR score 1 minute and 5 minutes after birth.
- Lack of oxygen during childbirth.
- The baby is born at a gestational age of less than 35 weeks.
- Low Birth Weight (LBW)
- Complications and dystocia during childbirth.

Studies have identified more than a hundred faulty genes that have a partial role in ASD. Among these genes are: GABA (gamma-aminobutyric acid), serotonin transporter genes, Neurexin 1, Engrailed 2, Neuroligins 3 and 4, ASMT, CNTN4, TM4SF2, CNTNAP2, IL1RAPL1, Shank 3, MECP2, WNT2, PTEN and met .

Despite the large amount of research and technological development in this field, the genetic diagnosis of autism is only between 6% and 15% of people with autism.

5.3 Biological and Neurological Factors:

Biological factors include cases of brain injury before, during or after childbirth, which means that the mother suffers from an infectious disease during pregnancy or is exposed during childbirth to problems of hypoxia or other environmental factors such as the mother's exposure to bleeding before childbirth, an accident or her age that may exceed 35 years.

The prevalence of developmentally disfiguring disorders was 10 to 15 cases per 10,000 children, and the disorder is $\frac{1}{4}$ more prevalent in males than in females, but females develop more severe and genetically transmitted behaviors than males.

On the other hand, the chemical imbalance in the brain may affect the functions of the brain parts such as the temporal and anterior lobes, as well as the brain stem and cerebellum. Serotonin is one of the main neurotransmitters in the central nervous system. It is concentrated in the center of the brain and can control many functions and behavioral processes, the secretion of hormones, the sleep process, and the control of body temperature, memory and repetitive behaviors. Specialists have examined the level of this carrier by measuring the level of cerebrospinal fluid and serotonin levels in the blood. Dopamine plays a role in the occurrence of autism disorder as a result of the formation of the amino acid phenyl nine, which is also concentrated in the middle brain, and if its levels increase, it plays a role in the emergence of stereotyping patterns and behaviors and hyperactivity.

Neurological examination of children with autism showed a decrease in blood pumping rates to parts of the brain that contain the parietal lobe, which affects social interactions, normal reactions and linguistic gains, while the rest of the widest is generated as a result of disorders in the frontal lobe.

Researchers have observed an association between cognitive and language impairment in autism and left-brain dysfunction, and many autistic children have significant abilities in right-brain functions. Because the onset of autism is at an early age, the decrease in the functions of the left part of the brain should be compensated by another in the right part. Scientists explained the reason for the hostile or abnormal behaviors in autistic children to the presence of a high level and indeterminate activity in the nervous system. These behaviors were seen as attempts to achieve continuity in over-excitation. (19)

Chemical exchanges to and from the brain are the main driver of mental and physical functions, and any imbalance or deficiency that may prolong these

exchanges will necessarily affect many of the skills that a person needs to adapt to the social environment, and this is what happens with autistic children as they perform behaviors that are difficult to explain and understand and without any clear indicator through which we can explain them.

5.4 Environmental Factors:

Numerous studies have identified a connection between autism and environmental chemical pollution, particularly its impact on expectant mothers. Many of these factors are prevalent in the modern era, where dense populations are exposed to high levels of chemical pollutants from factory emissions and industrial activities. The quality and nutritional value of food are also compromised due to malnutrition, chemical treatments, pesticide use on crops, and the lack of essential nutrients. Additionally, maternal substance abuse, including drug use, alcohol consumption, and smoking, significantly contributes to these risks.

These factors can affect children with autism, who are often organically healthy but exposed to intense stimuli early in life, leading to severe psychological and mental challenges. Toxic metal exposure, such as lead and mercury, along with the body's inability to eliminate these toxins, frequent infections like viruses, and an overgrowth of intestinal fungi and bacteria, are also critical concerns. Other risk factors include excessive antibiotic use, self-medication, weakened immunity from unhealthy environments, vitamin and mineral deficiencies, poor nutrition, increased sensitivities, a lack of antioxidants, and insufficient essential fatty acids.

In 2011, the first comprehensive investigation into the interplay of genetic and environmental factors contributing to childhood autism, known as the CHARGE research program, was launched by the MIND Institute at the University of California, San Diego (UCSD). This program focused on three key areas.

- Nutrition:
- Air Pollution
- Pesticide. (22)

The report resulted in the following results:

- The presence of a set of certain inappropriate genes as a result of the lack of nutritional supplements and vitamins in the mother before pregnancy by three months and one month after pregnancy significantly increases the risk of autism.
- Mothers living in crowded neighborhoods were more likely to have children with autism, possibly due to exposure to car exhaust.

- More than 20 percent of mothers of children with autism spectrum disorder (ASD) or developmental delay are obese.
- Children with autism are dispersed in geographical areas where services are available as toxins found in the urban environment affect children who have a genetic predisposition to autism.

5.5 Vaccines and Drugs:

The presence of a high percentage of heavy metals in the bodies of children with autism, which have environmental sources, including vaccines, gave strong support to the hypothesis that vaccinations, especially triple vaccination, given to children before the age of two years are likely to be one of the most important causes of autism, as the number of vaccinations reached 41.

However, this hypothesis is still controversial, despite the possibility of vaccination affecting a small number of children through the negative impact of viruses or mercury in them on the child's brain in early childhood and the failure of the immune system to produce sufficient antigens to eliminate vaccine viruses and thus cause neurological damage to the individual. (23)

It has been known that some children get very sick and show severe symptoms consistent with autism shortly after receiving eighteen-month-old vaccines in many of these cases, the correct diagnosis may be mitochondrial disease, a condition whose symptoms are consistent with autism. (24).

It is important to realize that vaccines by themselves do not cause autism, and this is what the World Health Organization says. Genetic research and neuroscience reveal that vaccines by themselves do not cause autism, otherwise millions of children would have autism. **Thimerosal**, an organic compound found in some vaccines, does not cause autism, but these factors may be triggers for children with a genetic predisposition to autism who have an impaired immune system.

Many scientists have talked about the trap of early diagnosis, which is that early evaluation increases the risk of misdiagnosis. Many young children can show behaviors such as autism when they are stressed. Procedures used by experts to diagnose and evaluate young children's behaviors can generate a kind of behavioral manifestation and negative ineffectiveness that makes the evaluator fall into the trap of misdiagnosis. (25)

Since autism is an early-onset developmental disorder, it is unlikely that the interaction of genetic factors with environmental factors in the prenatal and postnatal period may be the likely cause of adverse epigenetic changes. Studies indicate that environmental challenges during pregnancy affect fetal brain

development, leading to long-term effects on development, including an increased risk of ASD.

Notably, the term “epigenetics” refers to transmissible and reversible changes in gene expression as a result of the environment or individual experiences, without there being changes in the DNA sequence itself.

The etiological change of autism is the primary challenge, as it contributes to the complexity of its clinical picture. It is a complex condition that can be determined by multiple factors and pathways through the discovery of accurate biomarkers and the identification of the set of environmental factors concerned. It should lead to a better understanding of the complex nature of the autism spectrum and enhance the results of research in this field.

6. Autism Disorder Treatment and Early Intervention Programs:

Early interventions are treatments for autism that exploit the flexibility of the normal brain at an early age for children, which helps to reduce the effects of developmental delay in five general categories:

- ❖ Physical Development
- ❖ Cognitive Development
- ❖ Contact
- ❖ Social development.
- ❖ Emotional and adaptive growth.

Many interventions are available and because autism symptoms vary from child to child, each child must be carefully evaluated to determine which interventions are most appropriate for them.

6.1 Behavioral Intervention Programs:

Four studies have assessed the effects of intensive behavioral intervention programs (Lovaas, 1987; McEachin et al., 1993; Birnbrauer & Leach, 1993; Sheinkopf & Siegel, 1993; Fenske et al., 1985).

Three of these four studies relied on an "early autism" program developed by **Lovaas** and colleagues, the details of which were outlined in a therapeutic guide and instructional videos. Under this model, behavioral therapeutic gains are sought to be increased by treating children with autism most of their waking hours over many years using procedures based on the principles of operant conditioning.

In this program, all persons active in the child's social system are involved, in addition to a team of specialized therapists to help implement the treatment program. The main goal of the program is to create an intensive and

comprehensive learning environment for very young children with autism. This process is based on the principles of operant conditioning, with the aim of helping them improve their gains and be able to catch up with their normal peers by the time they enter the school.

The program conducts a comprehensive analysis of the child's development and identifies skills and deficiencies, in addition to a careful behavioral analysis of the use or weakness of skills in certain situations. Based on the information obtained, a set of precisely defined therapeutic goals and appropriate behavioral methods are identified to achieve them. We do not forget a very important point, which is the training of parents, school staff or other professionals most in contact with the child who can work within the program, such as nurses or child care workers, to help implement these programs.

In most cases, children with autism may face many difficulties in acquiring self-care and academic skills, knowing that the curriculum materials correspond to the age of the child and serve simplified communication methods verbally or visually. Large tasks are divided into smaller and more manageable tasks, which increases the likelihood of success. When children appear in the initiative, they are encouraged to choose learning materials that interest them, and the tasks are structured to increase the chances of success.

Thus, when a child is learning a new skill, the process involves combining unfamiliar learning experiences with the application of previously mastered skills. If a child resists learning a new skill, reinforcement should be provided intermittently based on a specific schedule. However, when reinforcement is given, it must be immediate, and natural reinforces that occur in everyday life should be used instead of artificial rewards like sweets or candy. One significant challenge in educating children with autism is generalizing learned skills from one domain to others.

In a 1981 study by Harris et al., 11 parents were trained to apply various behavior analysis techniques, such as shaping, data collection, sequencing, and mentoring, with an emphasis on enhancing their children's language development. The intervention took place in a group learning setting and included Behavioral Skills Training (BST) alongside video modeling. By the end of the study, notable improvements in the children's language skills were observed (28).

Behavior is also modified through reward and dissonant behavior and is done by creating a link between behavior and its consequences, such as the use of deprivation or delaying the time of an activity he loves. This strategy has

conditions if used with autistic children so that the punishment is deliberate and painless while helping him to express his emotions and needs. (29)

One of the most common treatments used with autistic children is Applied Behavior Analysis (ABA), which uses positive reinforcement to support positive behaviors in communication, play, and social interaction. Although ABA is effective as an early treatment, it is effective for older children, adolescents, and adults. ABA can take the form of "training in discrete attempts" where the child is taught a specific skill or concept through a series of simple interactions and prescribed curricula. It can also take the form of "pivotal response therapy" (PRT), which is network to improve language and social communication skills. PRT is based on the idea that communication behaviors are basic and have a greater impact on other behaviors, and reinforcements and stimuli have been used to improve communication skills.

Another effective program is the special education program called Training and Education for Children with Autism and Related Communication Difficulties (TEACCH), which relies on structured education in a classroom environment that helps children with autism learn. This strategy includes organizing activities accurately, using clear and concise language, and identifying appropriate reinforcements. [30]

Another common treatment for autism is the model based on individual differences and emotional interactions, known as Floor time, in which the therapist participates in play with the child with a focus on improvements in emotional and intellectual development, and cognitive behavioral therapy (CBT) for autism seeks to change feelings and behaviors by focusing on ways of thinking in children and adults.

6.2. Medical Treatment:

Medical treatment is used to try to overcome biological dysfunction. It is not considered a treatment for autism but is used to relieve its abnormal symptoms, and to create an environment capable of supporting proper growth and learning process. It is also intended to modify behavior.

6.3 Traditional Psychotherapy:

The work in it is to create an environment away from the pressures of parents so that the child can grow as an independent person, as it was found that the use of this type of treatment is related to the child's expressive ability and that 79% of the cases that were applied for treatment showed good or moderate progress (31).

6.4 Cognitive therapy:

The results of the study of “Hadwin et al.”(1997) ended up treating the cognitive problems of autistic people through a set of ways:

- ✓ Improve verbal expression or language skills.
- ✓ The use of terms accurately in conversations teaches children the ways of linguistic and physical expression and the use of correct facial expressions of emotions.
- ✓ Identify emotions on her cognitive side.

Moderate degrees of improvement have been observed, and with regard to educational programs, we find in the Individuals with Disabilities Education Act (idea) that the treated teams are required to form a team consisting of parents or those who take care of the child, teachers, and child development specialists, and their responsibility is to develop an individual educational program designed specifically to meet the educational needs of the child concerned, that is, they take into account individual differences and the specificity of the situation to be taken care of .

Although the law requires the treating team to place the child in a less restrictive learning environment, such as a comprehensive class with normal children, or training parents to provide these programs at home to make the child more comfortable , knowing that great efforts are being made to develop and improve learning opportunities for children with autism spectrum disorder (ASD) around the world, and these efforts are supported by organizations specialized in autism spectrum disorder such as the American Autism Society, Autism Spec the National Autism Association, and the National Autism Society.

6.4 Music Therapy:

This intervention is especially important with autistic children because of the nature of music as a non-linguistic subject, which is a type of therapeutic intervention used to help children be more effective in facing the difficulties they face, and its usefulness is embodied in the following:

- Developing social, emotional, cognitive and educational skills.
- Increased ability to pay attention.
- Modifying social behavior such as sitting in a chair quietly or being with a group of children and trying to deal with them.

6.5 Play Therapy:

Play gives the child self-confidence and provides him with the necessary skills to socialize with others and improve social interaction, and sports and motor activities help to remove the tension, introversion and isolation that distinguish him from ordinary children, and the keenness to provide meaningful games enables the child to achieve a kind of social harmony with his family, peers and classmates at school.

Play is one of the activities that help autistic children integrate with other children, express their emotions and create an atmosphere that suits the nature and psychological needs of the child, where play can reduce the tantrums and fear that affect him and those around him.

6.6 Environmental Therapy:

Environmental therapy is based on modifying the patient's living conditions or immediate environment. The term also refers to the concept that the hospital is viewed as a therapeutic community. This form of treatment is an attempt to regulate the social and physical environment in which the patient lives, which helps to significantly alleviate this disorder.

6.7 Speech and Language Programs:

They are effective tools to enhance the child's abilities and strengthen communication skills. In three studies (Harris et al. (1983) (1990), Bloch et al. (1980) evaluated the impact of speech and language training on communication skills in children with autism. These studies are especially important because of the importance of language and speech problems in children with autism. Harris and colleagues (1983) studied the impact of training parents on speech therapy techniques to improve autistic children's communication with their parents and their use of language. The program included modules addressing the following points:

- Principles of Speech Therapy for Non-Speaking Children.
- Enhance eye and body contact.
- Imitation of non-verbal movements.
- Forming sounds and teaching names.
- Teaching adjectives and verbs.
- Linguistic behavior generalization. (32)

Individual therapy sessions are also programmed with a speech therapist that helps the child improve letter exits and interaction through games and activities. The child is taught how to deal with the vocal apparatus, strengthen it, and improve pronunciation skills. There are many applications for children with autism such as "Proloquo2Go" and "Avaz", which help them learn language and pronunciation through pictures, words, and sounds. These programs give the child independence of expression and help them improve their pronunciation in interactive ways.

Conclusion

Autism disorder is characterized by specific characteristics as a result of a qualitative deficiency in two basic areas: communication and social interaction,

repetitive activities, stereotypical behaviors, the complexity of this disorder, and the behavioral, social and linguistic characteristics that distinguish it. This is reflected in the family's functional performance, especially since autistic children require special care compared to normal children. Despite progress in understanding the genetic, environmental and developmental factors that constitute autism spectrum disorder, many of its components are still not sufficiently understood. The main challenge lies in the diversity of potential causes of autism, which adds complexity to the clinical picture of the disorder. Scientific research still needs to develop its understanding of autism, as it is a complex condition that is likely to be the result of the overlap of several factors and different evolutionary pathways by discovering accurate biological indicators and understanding the range of environmental factors contributing to its occurrence.

The psychological impact of autism, particularly on mothers as the primary caregivers, cannot be overlooked. Parents face significant challenges due to the child's difficulties in performing daily tasks, limited social skills, and deficits in both verbal and non-verbal communication, which hinder social interaction with others. Supporting the child requires collective efforts from the family, the entire care team, and specialists to achieve an accurate diagnosis. This collaboration is essential for identifying the most effective rehabilitation and treatment programs, improving future outcomes for the child, and developing more effective intervention strategies.

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