

Increasing Incidence of Autism in Children.... Is It A Result of Hereditary Factors and/ Or Due to the Excessive Use of Chemicals In the Environment.... An In Depth Study

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Abstract: *The paper attempts to closely look and analyse the reasons for the sudden surge in reported autistic children. Research has thrown up extremely interesting reasons, basically related to hereditary factors, environment, state of mothers during natal and prenatal condition. The emphasis on dealing with the disorder is related to prevention, managing, and helping the patient to lead a near normal life. Cure and reversal of the disorder has not yet seen the light of the day. But hope and faith in science could throw up possibilities in this sphere in the near future.*

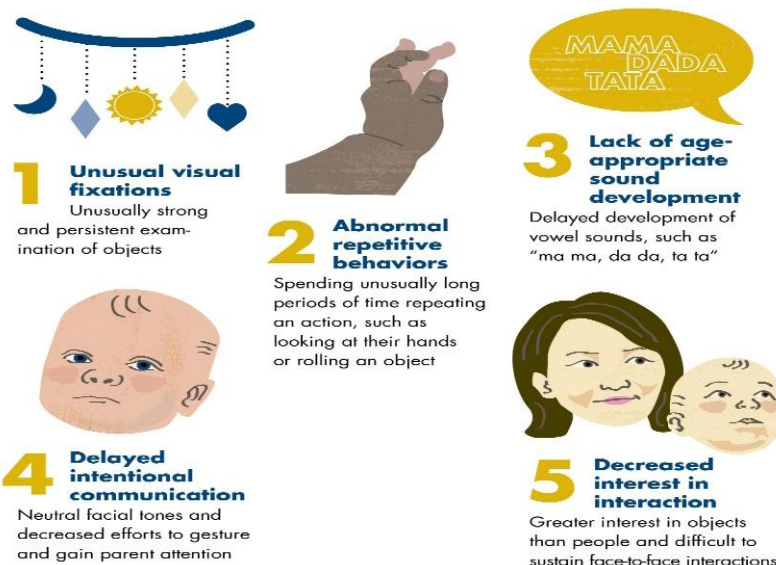
1. Research Question

In recent years there has been an increasing number of autistic children. Is this due to certain hereditary factors, or the increasing use of chemicals in our daily lives or is it just that parents are addressing and recognising the malady, and trying to grapple it with it, as well as reporting it and thus the increasing statistics. The research paper attempts to answer all the above queries, at the same time attempting to understand the various remedies that have been discovered.

2. Introduction

Autism also known as autism spectrum disorder (ASD), is basically a developmental disability, normally noticed amongst children as early as two years old. More than a disease it is a disorder. The reason that it is labelled a disorder is because autism comes under the category which is related to a "A disruption of the normal or regular functions in the body or a part of the body". This implies that there is an irregularity, disturbance or even interruption of normal function of any organ in the body, e. g., autism is a neurological and development disorder. It affects the way that people interact, communicate, or even behave with others, it may be their peers or even adults.

AUTISM EARLY SIGNS IN INFANTS



UC DAVIS
MIND INSTITUTE

Figure 1: Early Signs of an Autistic Infant

Source: UC Davis Mind Institute

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In children even at twelve months, in some others it may not show up till the child is two years or at times even older. The figure above is an example of the way an autistic disorder could be diagnosed in an infant.

3. Definition

ASD is a developmental disability which is caused due to a brain disorder. This may be noticed even at a later age. There is no real medical test that can really proclaim that a child is suffering from ASD. The disorder can be diagnosed by observing the child, his habits, and his interaction with others. It is the power of observation displayed by the child which is noticed by his parents and other care givers that indicate that there is something amiss. Parents could also compare their child's behaviour with the stated milestones. This comparison might give an indication of any disorder.

The word spectrum is used to explain the disease because there is a wide variation in the type and severity of symptoms that people experience. The severity is different for different people. The word also indicates that there is a set of specific set of behavioural and developmental challenges being faced by the child. It could also show that the child's communication, social as well as other skills involved with respect to playing are adversely affected. An

individual child who is affected by this disorder, stays with this disorder even as an adult. One of the factors could be related to the surrounding environment of the child. The symptoms could range from:

- Difficulty in understanding another individual's point of view.
- Talking in an unusual tone, this maybe of the type that does not have any expression as is it may be flat, or robot type.
- Not in a position to make eye contact.
- Continuous repetition of certain behavioural patterns, and/or phrases.
- Slow reaction to when one's name is being called.
- Having difficulty in continuing a conversation. Very often responding in mono syllables.
- Making friends is not easy for such children.
- Getting upset if there is even a slight change in routine.
- They may also have trouble in sleeping.

But this does not detract from the fact that such children could excel in some areas like mathematics, music, arts to name a few.

1) Documented Reasons



Figure 2: Behavioural Indications of Autism in an infant

Source: Google image

With increasing knowledge with respect to the incidence of the disease, research has brought out several reasons for its increasing occurrence. As Autism is a neuro developmental disorder which hinders social interaction, results in repetitive behaviour, issues in verbal and nonverbal behaviour. One of the major reasons for Autism lies in the malfunctioning of the brain. The way the information is delivered to the brain, and the subsequent way in which it is

processed and perceived is the major issue. The manner in which the nerve cells assimilate and react is where the basic problem lies. Thus, indicating that one of the causes of the disease could very well be a nerve issue. The other reason could be Asperger syndrome which is basically a delay in cognitive development as well as language, leading to a protracted development disorder. Another reason could be genetic and/ or family history.

3.1 Autism a neurodevelopment disorder

Neurological disorder is the commonest reason for ASD. This impacts both verbal and non-verbal communication. This is more prevalent in males than in females. The

scientific study of the disease is not completely clear, but recent research has indicated that there it is due to a 'complex neurodevelopment disorder'. The brain mapping in such research has indicated that there exists decreased brain connectivity between the frontal and more posterior cortical regions.

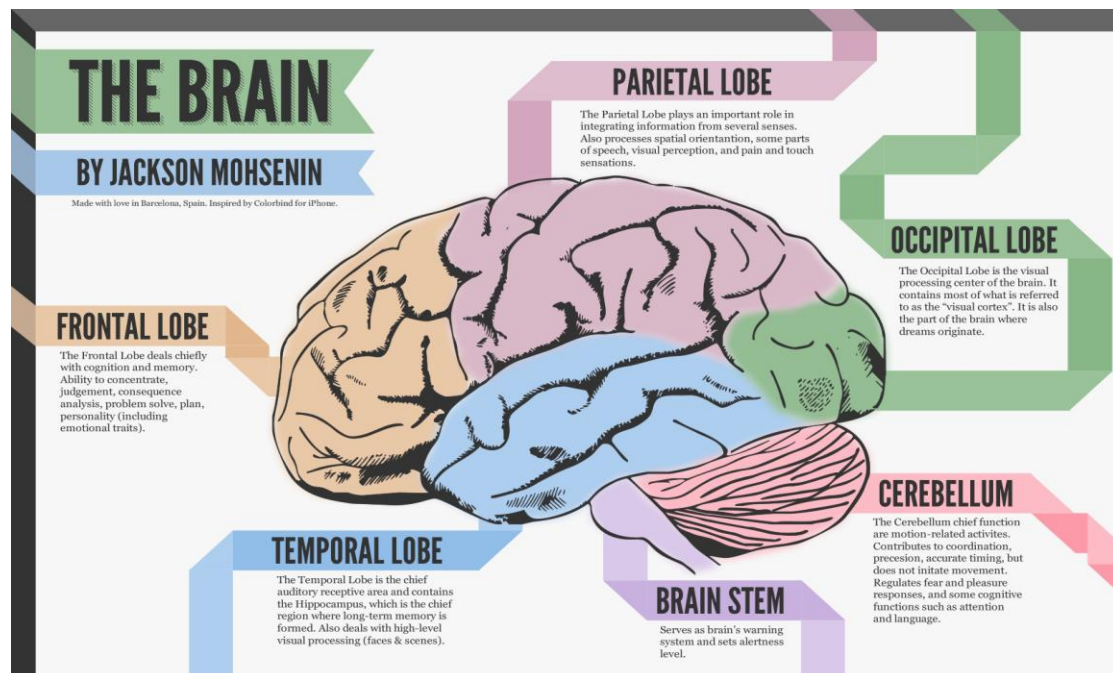


Figure 3: Diagrammatic representation of the parts of the brain

Source: Google image

Brain mapping through EEG (Electroencephalography) has indicated local over connectivity and long range underconnectivity. It is this disorderly connectivity design between the hemispheres, along with the dysconnectivity within the hemispheres, that result in issues relating to hyperactivity disorder, dyspraxia, and sensory processing disorders. Neurodevelopmental disorder is the most common reason in the scope of ASD, this in turn affects both verbal as well as nonverbal communication. The children that are affected by this disease show inclination to play solitary games. Besides this there is also abnormal facial abnormalities which is visibly apparent in such cases. These children have a small attention span and generally do not look at 'the person in the eye', for a long period, but they are most attentive to when their mother is speaking or interacting with them. The reduced connectivity between the different portions of the brain, results in the atypical face that is a clear indicator of an autistic child.

The importance of connectivity between different parts of the brain in autistic children indicate, connectivity between the two hemispheres, or else between multiple areas in the brain.

Memory, understanding, emotional expression and learning are traits that are used all the time daily. Disruptions in the central nervous system could lead to ASD as well as attention deficit hyperactivity disorder (ADHD).

What has been thrown up during the research is that both the above ailments show considerable extent of overlapping, and

they become visible at an older age anywhere between 4.7 to 6.4 years.

3.2 Asperger Syndrome

This is another variant within the autistic category syndrome. It is a type of disorder that follows the same pattern that are peculiar to autistic children namely the inability to interact with other people, extremely sensitive to noise and smell, odour, and taste. This was earlier known as a neurodevelopmental disorder and was also known as Asperger syndrome. But it has now been merged under one main heading known as ASD. This disorder is characterised by a pattern of symptoms rather than one. It exhibits issues with respect to social interaction, restricted pattern with respect to behaviour, activities, as well as interests, but what is interesting to note is that there is no noticeable delay as far cognitive development and language is concerned. These children may not exhibit the same as withdrawal system as noticed amongst other children. As this is a milder form it is very likely that those who have been diagnosed with Asperger Syndrome may have an animated one-sided conversation, but do not recognise the reactions of the listener, or that the other person may want to change the topic or even may want to end it. People suffering from this malaise may display 'selective mutism', either not speaking at all, or excessively speaking to one person, while others may choose to speak to only those who they like.

The other typical characteristics of this disease may include certain motor movements, e. g., hand movements like

flapping of hands, twisting as well as more complicated movements. Though these children do not display any delay in acquiring language skills, they do display abnormalities like verbosity, quickly moving from one conversation to another. Researchers have strongly indicated a genetic leaning with respect to this syndrome.

1) Role of Genetic Factors and Family History in the occurrence of ASD

Autism is a mysterious disorder. It involves very important abnormalities in social cognition and language. Both are very important functions to what enables us to be called 'humans.' It is only very recently that there has in fact been an explosion of genetic research in the understanding of ASD. A major change emerged with the pioneering twin studies by Rutter and Folstein, who demonstrated a genetic link in the disorder. Research has indicated that genetic factors do play a very important role in children being

inflicted by the disease. The participants who were a part of the research programme has indicated that it was quite likely that the kin of the autistic child also suffered from an autistic disorder. What was quite apparent is also the familial distance between the children i. e., were they siblings, child-parent, first cousins etc.

To understand the intricacies behind genetic factors affecting the disorder, researchers worked on identical and non-identical twins. The study concluded that this study showed the high degree of heritability, it also indicated that nongenetic factors also played an important role in ASD. Besides the role of genetic involvement there is a strong possibility of environmental factors that have a role to play in the disorder.

2) Role of other factors responsible for ASD.

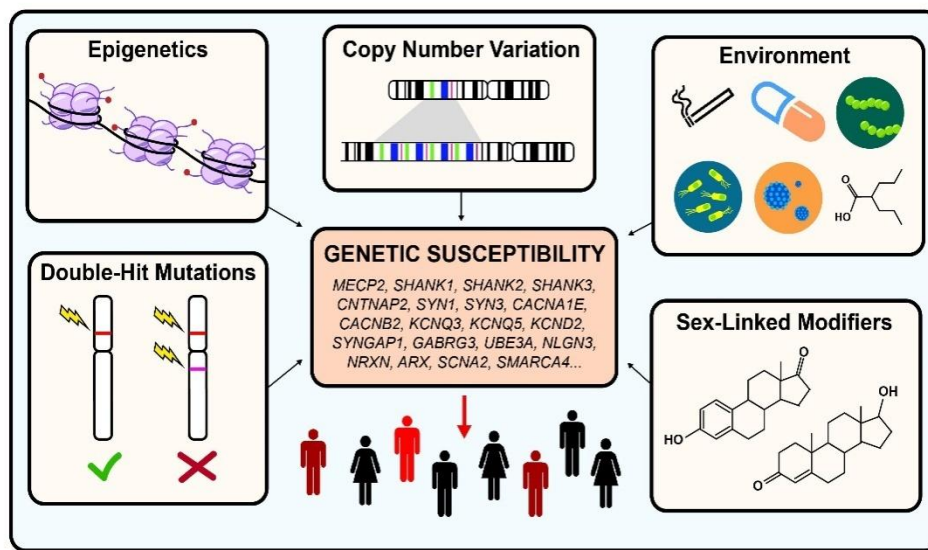


Figure 4: Causes of ASD

Source: Google image

Besides genetic factors, some of the other factors which play an important role could be parental conditions, in utero and perinatal factors that contribute to ASD. The environmental factors that are known to be responsible for this disorder could be drugs, toxic exposures, parental age, nutrition, fetal environment. Amongst the above listed factors parental age (APA) could play an important role. As the age of parents increase the risk of the disorder also increases many times, maternal nutrition is yet another factor that is important, as it is through this route that the foetus obtains its adequate supplements. Vitamin D deficiency, as also consumption of substances such as smoke, alcohol, and medicines maybe other known important reason for this disorder.

3) Remedial Measures

Most researchers are of the view that there is no real cure for Autism, as it is an extremely complicated condition whose base is a complex mesh of genes, environment as well as parental health.

The only solution to this complex issue is to realign the approach towards the disorder. The focus should be aimed towards the management of the symptoms. Besides this the

primary aim should be to develop and support skills which should encompass behavioural, psychological, as well as educational therapy.

The diverse nature of the disorder makes it hard to diagnose as well as treat the disorder. Researchers are trying very hard to group children on the spectrum, who exhibit similar characteristics. This division into various sub types may make it easier for the researcher to find some positive result.

Some of the types of therapy that are being used are:

- Speech Therapy
- Visual Schedules
- Applied Behavioural Analysis
- Social stories
- Picture Exchange Communication System
- Cognitive /Behavioural Analysis
- Music Therapy
- Floortime
- Augmentive and Alternative Communication System

The one main factor is early detection and immediate treatment thereafter. Other factors that are important include

location (home based versus center based), duration and intensity of therapy, the experience of the provider, and how involved are the parents.

But what is sure is that no single educational or behavioural approach is going to be beneficial for the child. In this disorder there must be a combination of therapies which will go a long way in reducing the dependency of such children on their care givers. What could also help in finding the right solution is to distinguish meaningful subtypes of autism. This distinction will go a long way in finding the right combination of treatment for the disorder.

4. Conclusion

Autism as it is understood today is a spectrum, which consists of several factors. There is not only one aspect of the disease, as it varies from child to child. Given the vast range that can then be labelled Autistic, it was decided by the World Health Organisation to call it Autistic Spectrum Disorder (ASD). This disorder has many reasons, ranging from neuro disorders, to hereditary and genetic, to also natal and prenatal issues that periodically come up, as well as the toxic environment, in the greater use of chemicals in every aspect of our lives.

The increasing incidence of the disorder, points to the fact that there are certain conditions which have appeared recently which did not exist earlier. The new conditions could be the environment, use of chemicals, as well as smoking, drugs etc consumed during pregnancy. Besides late parenthood may be a contributing factor, though no research has pointed in this direction yet.

At this point in time there is no real cure for the disorder, but there are numerous ways in which these children become self - sufficient and can lead a near normal life. There have been several movies that have been made in several languages on this disorder, to give hope to parents that all is not lost, such children can be an asset to society. They have achieved great heights in the field of music, art, and mathematics. There is a single - minded determination of these children on any one area, and if harnessed correctly could be their calling in life.

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