

POOR SCHOOL PERFORMANCE : DYSLEXIA

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Joey, a 9 yr old child studying in 4th standard in ICSE school gets 45% marks. He has not failed or repeated any grade. While reading he uses his finger to trace words and has many mispronunciations. He does many spelling mistakes and leaves his books incomplete. His writing is untidy. His oral work is better than written work and does answer in the class. His maths marks are average. According to his mother he does not concentrate in studies and also daydreams in school. He has history of primary enuresis. There is no other medical history. His father faced similar academic problems.

What is dyslexia ?

It is a neurodevelopmental disorder related to information processing with significant unexpected, specific and persistent difficulties in the acquisition and use of reading (dyslexia), writing (dysgraphia) or mathematical (dyscalculia) abilities, despite conventional instruction, normal intelligence, proper motivation and adequate socio-cultural opportunity



What are the probabilities of the child having dyslexia?

SpLD afflicts almost 5–15% of school-going children in various studies. Although previously it was believed that dyslexia affects boys primarily, recent data indicate that boys and girls are affected equally. The earlier male preponderance has been attributed to a referral bias in school-identified children. 30% of children with Dyslexia also have at least a mild form of ADHD.

Is Dyslexia same as Learning Disabilities?

Three basic types of learning disabilities that are commonly described are as follows:

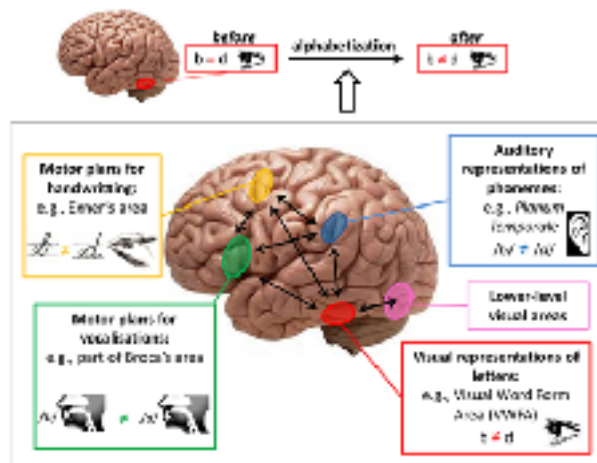
1. Dyslexia: The word Dyslexia is derived from the Greek word “dys” meaning difficult and “lexia” meaning words or vocabulary, it denotes a language disorders affecting reading, spelling, speaking and listening.
2. Dysgraphia: The term refers to unexpected difficulty in learning to write.
3. Dyscalculia: The term refers to a disorder affecting mathematical reasoning and calculations.

What exactly happens in dyslexia?

Multiple theories have been proposed to understand the etiology of SpLD. The cause is multifactorial and includes structural, functional as well as genetic influences.

Neurobiological basis : Various studies have postulated structural changes such as agenesis of the angular gyrus in the dominant hemisphere, minor migration cell defects and tiny scars located selectively in the perisylvian areas of the left hemisphere in dyslexics.

Rumsey and colleagues (1997) also in a later study found that dyslexic readers demonstrated reduced blood flow in temporal cortex and inferior parietal cortex, especially on the left, during pronunciation and decision making tasks. On the other hand, the angular gyrus takes part in the verbal processing of certain tasks called arithmetical facts (for instance, multiplication tables and additions of small quantities). Prefrontal cortex, posterior part of temporal lobe, cingulate cortex and several subcortical regions are also involved in number processing.



Genetic basis

Dyslexia is found to be familial as well as heritable. A strong positive family history of academic concerns is seen in a significant number of children. At least four major genes have been implicated which are related to cell migration and adhesion and axonal guidance. Replicated linkage studies of dyslexia implicate loci on chromosomes 1, 2, 3, 6, 15, 18 for the transmission of phonologic awareness deficits and subsequent reading problems.

Phonologic basis

Substantial evidence has established that the children with dyslexia have deficits in phonologic awareness, which consistently distinguish them from those who are not reading-impaired. According to the "phonologic-deficit hypothesis", children with dyslexia have difficulty developing an awareness that words, both written and spoken, can be broken down into smaller units of sound and that; in fact, the letters constituting the printed word represent the sounds heard in the spoken word.

How do these children present in our clinical practice?

Children with specific learning disability usually present during school years as the difficulties in learning start surfacing with formal education. The clinical presentation is varied and depends on factors like age of the child, standard in school, type of disability, associated behavioural concerns, co-morbidities etc. Most parents would complain about children having failures or poor grades. They may come with school refusal or phobia. On inquiry parents

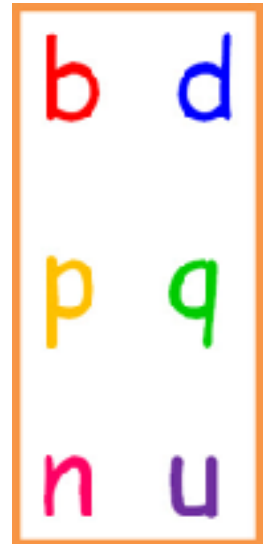
may report difficulties in reading or written work. They may also have poor concentration and inattention. Severe tantrums or Aggression may be reported when the child is asked to study. Parental stress or anxiety may be the cause of referral in few cases. This disorder affects academic areas primarily and causes severe discrepancy between academic achievement and the child's intellectual ability.

What are the Red Flag Signs of dyslexia that can be spotted in a child?

The signs could be spotted as early as when the learning process begins and severe cases may present in pre-primary level also.

Early signs seen in pre-primary level are as follows:

- Significant delay in development of speech and language development
- Delay in development of fine motor skills such as tying shoelaces, eats with excessive spilling etc.
- Awkward pencil grip.
- Lack of dominant handedness till late. The child may switch from right hand to left hand between tasks or even while doing the same task and
- Trouble learning the alphabets, numbers, days of the week, colors or shapes.
- Difficulty to rhyme by age 4 years and recalling the poems in the proper sequence.
- Trouble in pronouncing difficult words.
- Confusion in words and space concepts, left versus right, over versus under, before versus after etc.



Early signs as in Primary & Secondary School Level

- Reading becomes affected and the child may avoid reading aloud.
- Difficulty with spellings with mirror writing of b/d, p/q, w/ m and u/n.
- Written expression is also affected and child presents with poor handwriting and refusal to write or incomplete written work.
- The child may continue using an awkward pencil grip (fist, thumb hooked over finger, etc.) if not corrected earlier.
- Difficult answering open-ended questions on test, prefers objective type of questions.
- Trouble recalling and has poor memory skills. The child usually relies heavily on memorizing without understanding.
- Problems in comprehension.
- Trouble learning to tell time, calendar, money concepts etc. The child also has difficulty with planning and time management.
- Difficulty with word problems in mathematics and basic calculation skills.



- As the child progresses in school his academic difficulties worsen and secondary behavioural concerns start to surface.

What investigations are needed for diagnosing Dyslexia?

A thorough evaluation is needed for an accurate diagnosis of a child presenting with learning problems. A routine ophthalmic check up with vision acuity needs to be done and a hearing evaluation along with an audiogram has to be done in all the children with poor school performance.

The clinical evaluation consists of the following:

- Medical history & examination - A detailed medical history including antenatal history, events at birth, developmental milestones, significant chronic medical history is a must
- School & academic history - Analysis of school performance, school reports, history of failures, change of school and assessment of the child's behavior in school.
- Intelligence testing - Assessment of General Cognitive Functioning as measured on standardized tests for intelligence.
- Educational testing - Assessment of Achievement Level in the various areas of formal learning as measured on educational tests.
- Behavioral evaluation - Assessment of associated behavioral and social problem if any.

What is the treatment for dyslexia?

Medicines have no role in management of Dyslexia alone. Early multidisciplinary rehabilitation with the help of special educator, occupational therapist and counselor is the mainstay of management. Proper evaluation includes IQ, detailed educational assessment helps to find out strengths and weaknesses which is needed at the initiation of treatment plan. The special education and various therapies take few years to show results, our role as Clinicians is to guide them for supportive services and encourage them to stay in the therapy. Medications in cases of associated ADHD and aggression may be needed.

TAKE HOME MESSAGES

- Specific Learning Disabilities are an important cause for poor school performance.
- They usually present during formal education in school, the awareness amongst Pediatricians, teachers and parents is equally important.
- SpLD needs to be suspected by school authorities & Clinicians early, when the child is in primary school and conclusively diagnosed at least by the age of 8 years for corrective measures.