

# Assessment of specific learning disabilities in school students of Chittoor district: A cross sectional study

Lakshmi K<sup>1\*</sup>, Nagamani D<sup>2</sup> and Dr.Anupama<sup>3</sup>

<sup>1</sup>Chettinad School of Pharmaceutical Sciences, Chettinad Academy of Research and Education, Chettinad Healthcity, Kelambakkam – 603 103, South India.

<sup>2</sup>Sri Venkateswara College of Pharmacy, RVS Nagar, Tirupathi Road, Chittoor – 517 127, South India

<sup>3</sup>Clinical Psychologist, Tirupathi, South India

## Abstract

**A Child struggling in academic performance is of great concern nowadays. The teachers and parents may be wondering the reason for the child finding difficulties in school tasks, whereas child may become frustrated. The underachievement of a child may be any of the symptoms of cognitive, behavioral and social difficulties. The aim of this study is to assess the prevalence of learning disability among school children of Chittoor district. The study is a cross sectional observational study conducted in two schools comprising of two phases. In Phase I, screening of children was done by the teachers using a specially designed Child Behavioral Questionnaire (CBQ) comprising of demographic details, behavioral, attention parameters and academic scores. The students with lower scores in behavioral, attention parameters and academics were recruited for phase II study. In phase II, the students were assessed for learning disability individually by using Learning Disability Evaluation Scale (LDES) – Renormed which consists of questionnaire for assessment of specific learning disabilities such as dyslexia, dysgraphia, dyspraxia, and dyscalculia. Based on the results, about 10.5% of students were found to have Specific Learning Disability (SLD) whereas 13% of the students had learning difficulty.**

## Introduction

Today's academics demands a optimum school life balance among students. Learning disabilities (LD) are disorders that affects one's ability to understand or use spoken or written language, do mathematical calculations, coordiante moments or direct attention<sup>1</sup>. Learning disabilities affect one's ability to interpret what one sees and hears or to link information from different parts of the brain. These limitations can show up as specific difficulties with spoken and written language, coordination, self-control, or attention. Such difficulties extend to schoolwork and can impede learning to read or write or to do math. Learning disabilities do not reflect IQ (intelligence quotient), or how smart a person is<sup>2</sup>.

Learning disabilities can be lifelong conditions that, in some cases, affect many parts of a person's existence: school or work, daily routines, family situations, and, sometimes, even friendships and play. In some people, many overlapping learning disabilities may be apparent. Others may have a single, isolated learning problem that has little impact on other areas of their lives<sup>3</sup>.

Jitendra Kumar *et al* (2017)<sup>4</sup> have reported that the prevalence rate of students with learning disability varies from 10.76 percent to 13.41 percent with mean percentage of 12.31. Early diagnosis of learning disability

in children is critically important to identify and suggest remedial solutions to the parents. Singh Rajinder P *et al* (2017)<sup>5</sup> has identified the Prevalence of dyslexia is higher among children especially among male children. It is an invisible handicap. Early diagnosis of dyslexia at the age of 8 to 11 years with appropriate intervention or learning strategies can be started to prevent further handicap in their learning. M Veena Kumari *et al* (2016)<sup>6</sup> has carried out the post assessment of 39 (13%) students had learning disability. Association was found between low birth weight, preterm birth, and language, social and motor developmental delay. Association was also found between learning disability and attention deficit hyperactivity disorder. Anjana Negi *et al* (2016)<sup>7</sup> has concluded that though males are highly encouraged by their parents than the females but their academic achievement is less than female academic achievement. It is also concluded that parental encouragement and academic achievement are positively and significantly correlated with each other. G.Sridevi *et al* (2015)<sup>8</sup> has examined the various behavioral problems with LD. The study revealed that 19% of the students were recognized to have learning disability in the chosen school area located at Warangal, AP. Manjunadh S.N *et al* (2014)<sup>9</sup> has examined the prevalence of specific learning disability among school children in Mysore. He has also estimated that the identified students were also suffering from moderate anemia. Akhil Dhanda *et al* (2013)<sup>10</sup> has reported that number of students having learning disability was higher in higher age group. It was also noticed that with increase in number of siblings then there is a decrease in number of positive cases. When gender is considered there is no difference in prevalence of learning disorder. Priti Arun *et al* (2013)<sup>11</sup> conducted a study to determine the prevalence of specific learning disabilities (SLD) among students of class VII to XII from 10 schools of Chandigarh. The prevalence was found to be 1.58% and more boys were diagnosed to have SLD. Vijayalaxmi V. Mogasale *et al* (2012)<sup>12</sup> has estimated that prevalence of specific learning disabilities was 15.17% in sampled children, whereas 12.5%, 11.2% and 10.5% had dysgraphia, dyslexia and dyscalculia respectively. Shahzadi Malhotra *et al* (2009)<sup>13</sup> has reported that the children having learning difficulties but etiology different from learning disability also have neuropsychological deficits but the deficits are more pronounced in the learning disability group.

The need for the study is to assess the learning disability among the school children of Chittoor District which will in turn enable the teachers and parents to provide additional support for the students. This study will also help the teachers to provide appropriate care to avoid further complications.

## **Methods and Materials Used**

### **Study site and approval:**

The study entitled 'Assessment of specific learning disabilities in school students of Chittoor district: A cross sectional study' was a prospective observational study carried out for a period of four months in two schools of Chittoor district. The protocol was reviewed and approved by Institutional Ethics Committee (IEC) of RVS institute of medical sciences prior to the commencement of the study.

### **Subject recruitment and confidentiality:**

Approval from District Educational Officer (DEO), Chittoor district was obtained to conduct the study in educational institutes of Chittoor district. Permission was obtained from the Principals of the schools for conducting the study. Principals of the schools were briefed with the study to be carried out at their Institute. Subjects of both genders of classes VIII to X were recruited for the study. All the data was documented in specially designed forms to ensure confidentiality.

### **Study size:**

800 students who met the inclusion criteria were included in the study.

### **Study design:**

The study is a cross sectional observational study conducted in two schools (in order to reduce bias one private and one government school were selected), comprising of two phases. In phase I the teachers were given a specially designed Child Behavioral Questionnaire (CBQ) validated by psychiatrist (Dr. Dinesh. Panati, MBBS, MD Psychiatry) comprising of demographic details, behavioral, attention parameters and academic scores. The students with lower scores in behavioral, attention parameters and academics were recruited for phase II study. In phase II, the students were assessed for learning disability individually by using Learning Disability Evaluation Scale (LDES) – Renormed which consists of questionnaire for assessment of specific learning disabilities such as dyslexia, dysgraphia, dyspraxia, and dyscalculia. The subjects were categorised into three groups based on their LDES score i.e. normal students, students with learning difficulty and learning disability.

### **Inclusion Criteria:**

- Age: 12-15 years (8<sup>th</sup> to 10<sup>th</sup> standard)
- Meeting DSM Criteria for specific reading disorder, specific spelling disorder, specific disorder of arithmetic skills, either alone or in combination with or without disturbance of activity and attention.

### **Exclusion Criteria:**

- Specific developmental disorders of scholastic skills with co-morbid disorders like seizures, conduct and emotional disorders.

### **Data collection:**

This qualitative study utilized two constructive data collection tools, namely, semi-structured interviews and direct observations. The semi structured interviews include the data collected from teachers regarding the subjects using specially designed CBQ forms. The CBQ aims at obtaining data regarding the subject's demographics including their age, gender, class they are studying at present along with additional data regarding their behavior in class, their attention and academic performance for past two years. The direct observations are made using LDES scale.

#### **1. Semi-structured interviews**

CBQ forms were provided to respective class incharge depending on the strength of the class and were requested to fill the forms for every individual student after completely explaining every parameter and their scoring pattern. These forms were collected back after providing sufficient time for completion. It comprises of six questions on behavioral parameters, six questions on Attention parameters and Academic performance of students in all subjects for past 2 years.

#### **2. Direct observations**

The students with less academic performance scores were selected for Phase II evaluation. These direct observations were made using LDES worksheet. This worksheet comprises of five subscales namely thinking, speaking, reading, writing, and mathematical calculations.

## **RESULTS AND DISCUSSION**

### **Selection of Candidates for the study:**

As per the inclusion criteria, the students from class 8 to 10 of both genders were chosen for the study from two schools, a private labelled as School P and a government labelled as School G. A total of 800 students were selected for the study (Table 1).

### **Demographic details of the candidates:**

From the total of 800 students, the equal distribution of students were seen between the age group of 13 to 15 yrs. Less number of students were found to lie in the age of 12 and 16 yrs. As per the results obtained, the number of male students were found to be in slightly higher percentage when compared to female students (Fig 1 & 2).

### **Behavioral parameters using CBQ:**

Each question was graded with a four point scale as 0, 1, 2 and 3 representing lowest to highest. The maximum score of an individual student under behavioral parameters can be 24 whereas the minimal score is 0. The results of behavioral study as shown in Table 2 revealed the following

1. The behavioral parameters from Questionnaire 2 to 6 was found to have equal distribution of scores 2 and 3.
2. The behavioral parameters of questionnaire 1, 7 and 8 were found to have higher number of students in the maximum score of 3.
3. The behavioral parameter of questionnaire 5 was found to have more number of students with score 0, when compared to other parameters.

As per the behavioral studies, most of the students were found to be normal.

### **Attention Parameters using CBQ**

In case of attention parameters, the maximum score can be 18 and minimal score is 0. The results of attention parameters are represented in Table 3. More percentage of students were found to have a score of 2 in all the parameters. Less number of students were found to have low attention parameters.

### **Direct Observations**

Of all the 800 students recruited for the study, the overall prevalence of learning disability was found to be 10.5% (84 students) whereas those with learning difficulty was about 13% (104 students). The students were categorised as individuals and with combined parameters for LD and learning difficulty [61]. The Table 4 represents the prevalence of LD and learning difficulty.

Among 84 students, as identified with learning disability, majority of students were found to have disability with combination of all parameters (2.375%). Students with dyscalculia were found to be higher (1.375%) whereas least number of students were found to have thinking disability (0.25%) and dysgraphia (0.25%). Most of the students were found to have speaking as a part of disability in combination when compared to other disabilities. As of learning difficulty higher number of students was found to have difficulty in solving mathematical calculation (1.5%) and approximately equal number of students was reported to have writing (1.25%) and thinking difficulty (0.125%). Least number of students was identified to have reading (0.5%) and speaking difficulties (0.375%). Even in combinational difficulties majority of students were detected to have problem with mathematical calculations, writing and thinking. It was also found that students with learning difficulty inclusive of all parameters were minimal (0.25%).

The results of all the three parameters namely behavioral, attention and academic performance were compared for their significant difference between the gender and type of schools. The comparison was carried out by means of chi square test and the results were shown to have association between the gender

and behavior. No association was observed between the attention parameters and gender and the type of school.

### Conclusion:

In regard with behavioral status, attention activity of overall study population, more than three-fourth population were found to be with higher score. Correlation of individual behavioral and attention parameters with mean academic performance revealed an absolute positive correlation for all behavioral parameters whereas nervous/ clingy, thinks out things before acting and concentration were found to have partial positive correlation with academic performance. From the present study it was concluded that about 10.5% of students were found to have SLD whereas 13% of the students had learning difficulty. Comparison of behavioral, attention parameters and academic performance both gender wise and types of schools revealed significant difference between types of schools to all parameters and gender wise to attention parameters. No significant difference of behavioral parameters and academic performance to gender wise distribution. The present investigation will enable a psychologist to provide appropriate training to overcome the learning disability of identified students at these schools.

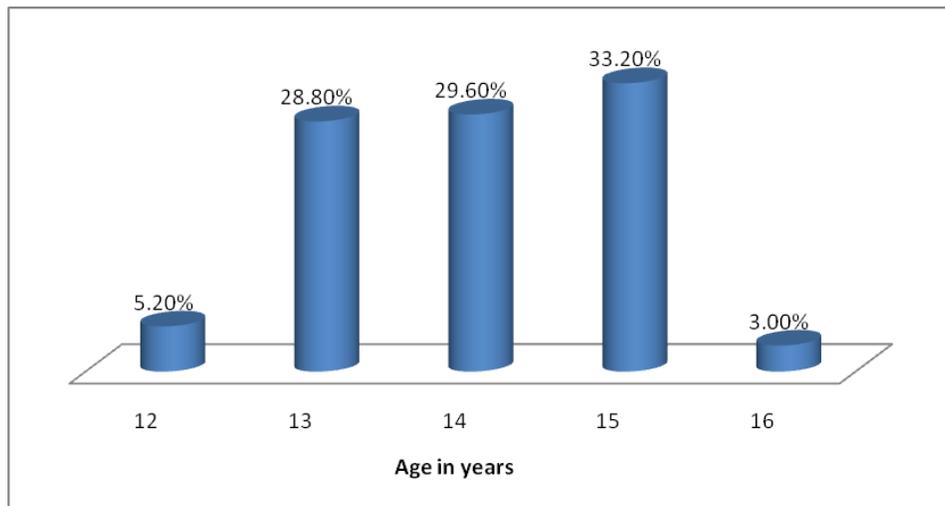


Fig 1: Age Distribution among Children

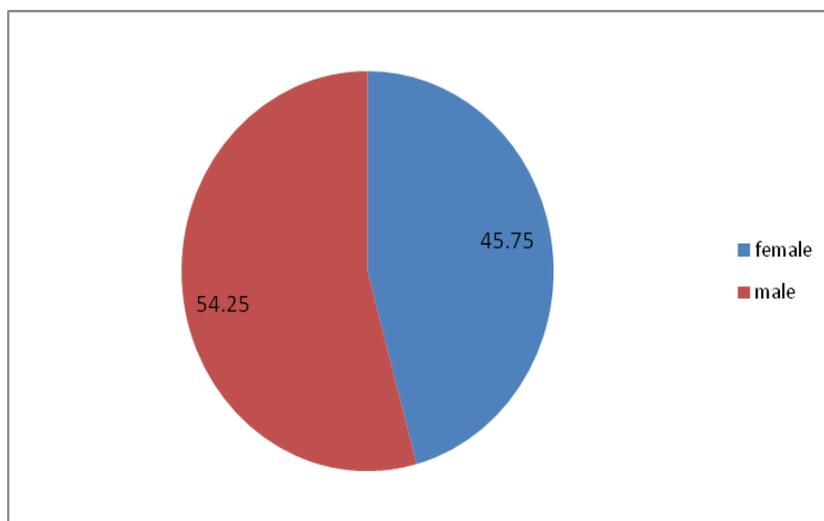


Fig 2: Gender Wise Distribution of students

**Table 1: Details of candidate selection for the study**

Class	Number of Students	
	School P	School G
8 <sup>th</sup> Standard	143	115
9 <sup>th</sup> Standard	141	134
10 <sup>th</sup> Standard	136	131
<b>Total</b>	420	380

**Table 2: Students distribution among behavioural parameters**

BEHAVIOUR	Number of Students (Percentage of students)			
	0	1	2	3
<b>SCORES</b>				
Regularity to school	16 (2)	55 (6.8)	175(21.87)	555 (69.37)
Active/hyperactive	31 (3.875)	137 (17.12)	307 (38.37)	325 (40.62)
Obedient to teachers/ elders	33 (4.12)	79 (9.87)	247 (27.12)	442 (55.25)
Mingling with classmates	19 (2.37)	96 (12.0)	245 (30.62)	439 (54.87)
Often fights with children	129 (16.12)	86 (10.75)	262 (32.75)	323 (40.37)
Often tells lies and cheats	70 (8.75)	91 (11.37)	224 (28.0)	415 (51.87)
Often complaints of headache, stomach ache or sickness	47 (5.87)	70 (8.75)	186 (23.25)	498 (62.25)

<b>Rather solitary, prefers to play alone</b>	65 (8.12)	58 (7.25)	99 (12.37)	577 (72.12)
---	-----------	-----------	------------	-------------

**Table 3: Students distribution among attention parameters**

Attention Parameters	Number of Students (percentage of students)			
	0	1	2	3
Scores				
Concentration	89 (11.12)	171 (21.37)	282 (35.25)	258 (28.50)
Thinking capacity	168 (21.01)	205 (25.62)	284 (35.5)	143 (17.87)
Mingling with others	55 (6.87)	219 (27.37)	318 (39.75)	208 (26.01)
Good Attention Span	63 (7.87)	156 (19.5)	296 (37.01)	285 (35.62)
Completion of the work	70 (8.75)	104 (13.01)	268 (33.5)	358 (44.75)
Clingy to new situations	93 (11.62)	161 (20.12)	338 (42.25)	208 (26.0)

**Table 4: Prevalence of Learning, Disability and Learning difficulty among selected subjects**

Parameter	Number of students with learning disability (percentage)	Number of students with learning difficulty (percentage)
Thinking	2 (0.25)	9 (1.125)
Speaking	5 (0.625)	5 (0.625)
Reading	4 (0.5)	4 (0.5)
Writing	2 (0.25)	10 (1.25)
Maths	11 (1.375)	12 (1.5)
<b>Combination of two</b>		
Thinking + Speaking	0 (0)	2 (0.25)
Thinking + Reading	0 (0)	4 (0.5)
Thinking + Writing	1 (0.125)	3 (0.375)
Thinking + Maths	3 (0.375)	5 (0.625)
Speaking + Reading	3 (0.375)	2 (0.25)
Speaking + Writing	2 (0.25)	3 (0.375)
Speaking + Maths	3 (0.375)	4 (0.5)
Reading + Writing	2 (0.25)	2 (0.25)

<b>Reading + Maths</b>	0 (0)	0 (0)
<b>Writing + Maths</b>	1 (0.125)	1 (0.125)
<b>Combination of three</b>		
<b>Learning + Speaking + Maths</b>	2 (0.25)	1 (0.125)
<b>Speaking + Reading + Maths</b>	5 (0.625)	1 (0.125)
<b>Speaking + Writing + Maths</b>	3 (0.375)	3 (0.375)
<b>Reading + Writing + Maths</b>	2 (0.25)	3 (0.375)
<b>Learning + Writing + Maths</b>	1 (0.125)	4 (0.5)
<b>Learning + Reading + Maths</b>	1 (0.125)	1 (0.125)
<b>Speaking + Reading + Writing</b>	1 (0.125)	2 (0.25)
<b>Learning + Speaking + Maths</b>	0 (0)	2 (0.25)
<b>Learning + Speaking + Writing</b>	0 (0)	5 (0.625)
<b>Learning + Reading + Writing</b>	0 (0)	3 (0.375)
<b>Combination of four</b>		
<b>Learning + Speaking + Reading + Writing</b>	1 (0.125)	2 (0.25)
<b>Learning + Speaking + Writing + Maths</b>	4 (0.5)	3 (0.375)
<b>Learning + Reading + Writing + Maths</b>	2 (0.25)	0 (0)
<b>Speaking + Reading + Writing + Maths</b>	4 (0.5)	2 (0.25)
<b>Learning + Speaking + Reading + Maths</b>	0 (0)	4 (0.5)
<b>Combination of five</b>		
<b>Thinking + Speaking + Reading + Writing + Maths</b>	19 (2.375)	2 (0.25)
<b>Total</b>	84 (10.5)	104 (13)

**Table 5: Association between the parameters**

<b>Parameter</b>	<b>Category A</b>	<b>Category B</b>	<b>Chi Square Value</b>	<b>Critical Value</b>
Students with Poor behavioral scores	Male	Female		
School P	5	2	0.868	3.84*
School G	30	25		
Students with poor attention scores	Male	Female		
School P	67	35	5.146	3.84**

School G	51	51		
Students with poor academic performance	Male	Female		
School P	58	29	3.416	3.84*
School G	72	61		

\*Significantly different; \*\*Not significantly different

### Acknowledgement

The authors are thankful to Cognitive Science Research Initiative Team, Department of Science and Technology, (DST-CSRI), New Delhi for providing financial support to carry out the work.

### References:

1. Annie J, Akila S, Sukumaran B, Poornima B, Neena J. David, Manickam LSS. Indian Association of Clinical Psychologists Practice Guidelines: Learning Disability. Indian Journal of Clinical Psychology. 2013; 40 (1): 65-88.
2. World Health Organisation (2007) 'ICD-10 Classification of Mental and Behavioural Disorders. Clinical descriptions and Diagnostic Guidelines: 10th Edition' World Health Organisation: Geneva accessed at <http://www.who.int/classifications/icd/en/bluebook>. pdf August 2009.
3. World Health Organisation (2007) 'International Classification of Diseases (ICD) 10th Edition' World Health Organisation: Geneva.
4. Jitendra Kumar, Singh Suman. Identification and Prevalence of Learning Disabled Students. International Journal of Scientific and Research Publications. 2017; 7(3): 317- 319.
5. Singh Rajinder P, Nijhawan Amit, Nijhawan Madhu, Preet kamal, Bhaskar Manju, Agrawal Rishika, Yadav Kuldeep S. Prevalence of Dyslexia among School Children in Western Rajasthan, Jaipur. IOSR Journal of Dental and Medical Sciences. 2017; 16(5): 59-62.
6. M Veena Kumari, Sayid M Barkiya. Children with Poor School Performance for Specific Learning Disability. International Journal of Scientific Study. 2016; 3(12): 201-205.
7. Anjana Negi. Parental Encouragement and Academic Achievement among Adolescents. Remarking. 2016; 2 (8): 80-82.
8. G. Sridevi, A. G. George, D. Sriveni, K. Rangaswamy. Learning Disability and Behaviour Problems among School Going Children. J. Disability Stud. 2015; 1(1): 4-9.
9. Manjunatha S. N, Revathi Devi M. L, Manu Suresh Sharma. Poor Scholastic Performance and its Relation to Specific Learning Disabilities among School Children in Mysore. Journal of Evolution of Medical and Dental Sciences 2014; 3 (23): 6393-6400
10. Akhil Dhanda, Tushar Jagawat. Prevalence and pattern of learning disabilities in school children. Delhi Psychiatry Journal. 2013; 16(2): 386-390.

11. Arun P, Chavan BS, Bhargava R, Sharma A, Kaur J. Prevalence of specific developmental disorder of scholastic skill in school students in Chandigarh, India. *The Indian Journal of Medical Research*. 2013; 138(1):89-98.
12. Mogasale VV, Patil VD, Patil NM, Mogasale V. Prevalence of specific learning disabilities among primary school children in a South Indian city. *Indian J Pediatr*. 2012; 79(3): 342-7.
13. Shahzadi Malhotra, Gaurav Rajender, Vibha Sharma, T.B. Singh, M.S. Bhatia. NeuroCognitive Functioning in Children with Learning Difficulties. *Delhi Psychiatry Journal*. 2009; 12 (2): 276-281.
14. Narayanan J. Grade level assessment device for children with learning problem in schools (GLAD) Secunderabad: National Institute for the Mentally Handicapped (NIMH); 1997.