Research Article

ACADEMIC PROBLEMS OF DYSLEXIC CHILDREN AND PARENTS AWARENESS AND KNOWLEDGE ON DYSLEXIA - AN ASSESSMENT STUDY

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ARTICLE INFO	ABSTRACT
	A study on academic problems of 380 dyslexic children studying in 5th to 7th standard revealed that, phonemic segmentation was highly and negatively correlated to risk quotient indicating lower scores on phonemic segmentation and spoonerisms will lead to higher risk of dyslexia. There was negative and significant relationship between two minute spelling and one minute writing risk quotient. Lower scores on two minute spelling lead to higher risk of dyslexia. Risk indices of semantic fluency and verbal fluency showed negative and significant relation indicating lower the scores higher risk of dyslexia.
	Results on parents' awareness and knowledge on child's dyslexic problem reveal that, 77 per cent were aware that there are some problems in child and hence the child is lagging in academics. About 14 per cent of parents knew since childhood, 13 per cent have known from past 3 years. About 23 parents reported they identified problem only after the assessment carried out by researcher.

INTRODUCTION

Literacy is one of the competencies necessary for effective participation in modern life and is a prerequisite for the achievement of many other essential competencies, both generic and specific. It underpins access to all learning areas across the curriculum. The inability of the person to read and write not only makes him frustrated but he will also lose his self confidence.

Dyslexia or reading disability refers to severe reading problems that cannot be attributed to sensory, intellectual, emotional, or to socioeconomic handicaps or to other known impediments to learning to read. According to Dyslexia International's experts (2013), Dyslexia is a neurologically-based condition, which is often hereditary. It results in problems with reading, writing and spelling and is usually associated with difficulties in concentration, short term memory and organization. It is not caused by poor schooling, poor home background, and poor motivation for learning and clinically manifests poor sight, hearing or muscle control - although it may occur with these conditions. The association estimates that nearly 1 in 5 people suffer from dyslexia, a learning disability that makes reading difficult.

According to WHO (2003), Dyslexia is the term associated with specific reading disabilities in reading. Although features of LD in reading vary from person to person, common characteristics include: difficulty with phonemic awareness (the ability to notice, think about, and work with individual sounds in words), phonological processing (detecting and discriminating differences in phonemes or speech sounds), difficulties with word decoding, fluency, rate of reading, rhyming, spelling, vocabulary, comprehension and written expression.

Evidences for origin of dyslexia have been increasingly accumulating during the last two decades. Although multiple etiologies are proposed for this complex trait, the exact cause still remains unknown; but substantial evidence from genetic and neurological studies suggests that dyslexia is a disorder which is influenced by genetic factors and the underlying deficit is in the language areas of the brain. Many theories are put forward to explain the etiology of dyslexia.

Researchers have found that dyslexia is caused by a difference in the way the dyslexic brain processes information. Experts do not know precisely what causes dyslexia, but several recent studies now indicate that genetics plays a major role. Children

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with dyslexia are at serious risk of developing emotional problems -- not because of the condition itself, but because of the daily frustration and sense of failure they meet in the school environment.

If dyslexia remains undetected, then with each passing year, as academic demands increase, the dyslexic child's limitations prevent him/ her from successfully meeting academic expectations. They are likely to begin to fail in school, and may act out, or stop trying altogether. Teachers and parents may assume that these children are simply not trying and even punish them. The child may begin to internalize the message that he or she is stupid or bad. This can become a fixed part of his or her identity, undermining self-confidence. It is not surprising, then, that children with dyslexia are at higher risk for behavior problems and depression.

There is no cure for dyslexia. But early intervention can give children with dyslexia the encouragement and tools they need to manage in school and compensate for their disability. Most children with dyslexia can learn to read, and many can remain in a regular classroom, but they will need help to do so. Hence, there is a need in our country to increase awareness of this invisible handicap and develop centers for its proper assessment and accurate diagnosis. Pediatricians, educators, counselors, and psychologists in our country should join hands for this noble educational cause. With all these views in mind, an attempt has been made to conduct an assessment study on "Academic problems of dyslexic children and parents awareness and knowledge on dyslexia" with the objectives on to assess the academic problems of dyslexic higher primary school children and to study the awareness about dyslexia among parents.

MATERIAL AND METHODS

Research design of the study: It is an exploratory study on assessment of academic problems among dyslexic high school children.

Population and sample of the study: The population of the study was children studying in higher primary schools. The sample of the study was children studying in 5th to 7th standard from private English medium schools of Dharwad urban and rural area.

Variables considered for the study: The variables studied were dyslexia, academic problems and awareness and knowledge on dyslexia.

Tools used for the study

Standard Progressive Matrices: Standard Progressive Matrices is developed by Raven (1998), used to screen children for their intellectual abilities. The tool consists of 60 problems divided into 5 sets of each (A, B, C, D and E), all of which involve completing a pattern or figure with a part missing by choosing the correct missing piece from among six or eight alternatives. Obtained raw scores converted to a percentile ranking by using age appropriate norms. Based on percentiles, children were categorized as follows.

Category	Percentile
Intellectually Impaired	<5
Intellectually Below Average	10-25
Intellectually Average	25-75
Intellectually Above Average	75-95
Intellectually Superior	>95

Dyslexia Screening Test-Junior (DST-J): The Dyslexia Screening Test - Junior (DST-J), developed by Angela and Nicolson (2004), is used to identify dyslexia in children aged between 6.6-11.5 years.

Dyslexia Screening Test-Secondary (DST-S)

The Dyslexia Screening Test - Secondary (DST-S), developed by Angela and Nicolson (2004), is used to identify dyslexia in children aged between 11.6-16.5 years.

Both tools consists of 13 subtests, considering only the tests related to child's academics, the following tests were considered for the further study

Scoring Pattern

After the administration of the test, the reports were prepared according to the norms and scoring pattern. The raw scores are obtained for each test and the manual is referred to know the At Risk Indices (ARI) on each test. ARI scores are +, 0, -, --, --- (1, 0, -1, -2, -3) for each test. Then the ARI are multiplied to get the At Risk Quotient (ARQ) of Dyslexia. -3 numbered scores are multiplied with 3, -2 numbered scores with 2 and -1 numbered scores are kept as it is. These multiplied scores are then added and divided by 11 in case of DST-J and divided by 12 in case of DST-S.

The ARQ (At Risk Quotient) categorizes the children as follows:

Category	Range
Normal	<0.6
Mild Risk	0.6-0.8
High Risk	0.9 and above

Statistical analysis: The collected data was calculated, tabulated and analyzed by using the Frequency, percentages and t -test and correlation test were employed for comparison and to assess the degree of relationship between the dyslexia and academic problems.

Procedure for data collection: The approval of Block Education Officer, School authorities and teachers of respected school of Dharwad city was taken. There were 73 private English medium schools in Dharwad city and two schools were randomly selected for study purpose. During the 1st day of visit, 380 children were selected randomly from single section studying in 5th, 6th and 7th and were administered with SRPM test of intelligence. During the second visit, about 113 children who were found to have below average intelligence level were kept out of the study as they were having other problems along with reading and writing problems. The remaining 267 children with average intelligence level and above average intelligence level including intellectually superior child were administered for DST-J or DST-S according to their chronological age. The testing procedure went as per the rules and regulations of the tool, with clear instructions given to the child.

Awareness and knowledge of parents about dyslexia: It refers to the parent's awareness about the child's problem and the strategies they use to combat with the child's problem. This was obtained using the Interview Schedule which consists of 16 questions out of which four are qualitative. These qualitative answers are noted and qualitative analysis was done.

Test	Name of test	Procedure
Test 1	**Rapid naming** Min-Max score- 13-185 Time given- 1 minute	The names of pictures in 1st part of the card were told to the child and child was asked to read it exactly how the examiner read and should be as fast as possible
Test 2	**One minute reading** Min-Max score- 0-75 Time given- 1 minute	The child was given to read the card - 4 columns of 30 words. Both Form A and Form B were given to the child, and the form where in child could read more number of words with fewer errors and less passes was considered for the scoring
Test 3	**Phonemic segmentation** Min-Max score- 0-12 Time given- 3 minutes	The examiner told words and asked the child to break those words and tell it by deleting a syllable or a consonant. There are 12 words that were tested for the child. Ex: Eyelid – say without Eye – Lid
Test 4	**Spoonerisms (DST-S)** Min-Max score- 0-14 Time given- 30 seconds	The examiner said two words and the children were asked to interchange the first alphabets of both the words and give the answer in the same order. Ex: Red Hat – Interchanged as – Hed Rat
Test 5	**Two minute spelling** Min-Max score- 1-25 Time given- 2 minutes	Word to be dictated are given in the manual according to the child's age for 2 minutes and the hand used for writing is to be noted. A total of 24 words in DSTJ and total of 28 words in DSTS are to be dictated
Test 6	**One minute writing** Min-Max score- 14-35 Time given- 1 minutes	The child was given a passage to write according to his age and he was asked to write neatly as well to finish the passage in one minute. The total numbers of words completed were counted
Test 7	**Verbal fluency (S)** Min-Max score- 0-20 Time given- 1 minute	The child was given a passage to write according to his age and he was asked to write neatly as well to finish the passage in one minute. The total numbers of words completed were counted
Test 8	**Semantic fluency** Min-Max score- 4-20 Time given- 1 minute	The child where in the child was asked to say how many particular type of thing he can say in one minute. Ex: say vegetables

RESULTS AND DISCUSSION

Classification of children according to intelligence level: The intelligence level of children is represented in Table 1. It is clear from the table that among 380 children highest numbers of children (67.36%) were in intellectually average category. Around 2.89 per cent of children were in the category of intellectually above average, 1.31 per cent of children were in the category of intellectually superior. In the category of intellectually below average 28.42 per cent of children were observed.

Table 1 Classification of children according to intelligence levels

(N=380)

Category	N	Percentage
Intellectually Below Average (IBA)	113	29.74
Intellectually Average (IA)	251	66.05
Intellectually Above Average (IAA)	11	2.89
Intellectually Superior (IS)	5	1.32
Total	380	100.00

Distribution of children according to at risk quotient (ARQ) of dyslexia: The number of children classified with ARQ of Dyslexia is depicted in Table 2. It is clear from the table that, around 66.66 per cent of children were found to be at high risk of Dyslexia 14.60 per cent of children were found to be in mild risk of dyslexia and 18.74 per cent of children were in normal category having no risk of dyslexia.

Table 2 Classification of children with dyslexia

(N=267)

Sl. No	Category	N (%)	Mean	SD
1	Normal (<0.6)	50 (18.74)	0.34	0.152
2	Mild Risk (0.6-0.8)	39 (14.60)	0.72	0.092
3	High Risk (>0.9)	178 (66.66)	1.64	0.584
4	Total	267 (100.0)	1.27	0.72

For further analysis, 217 children with only mild and high risk of Dyslexia were considered.

Distribution and comparison of children according to the sub-tests of dyslexia screening test: Results presented in tables from 3 to 9 indicate the distribution of children at risk of dyslexia on various tests related to academics. Among 118 children in DST-J, 12.72 per cent were at mild risk and 87.28 were at high risk. Among 99 children with DST-S, 24.25 per cent were from mild risk quotient and 75.75 per cent were from high risk quotient.

Distribution of children according to at risk indices (ARI) of rapid naming test, with DST-J a glance at the risk quotient of children, 50 per cent of children were in the category of high risk indices for rapid naming that included 2.54 per cent of mild risk quotient children and 30.50 per cent of high risk quotient children. Around 30.50 per cent of children in were under the category of mild risk indices for rapid naming which covered 4.23 per cent of mild risk quotient children and 26.27 per cent of high risk quotient children.
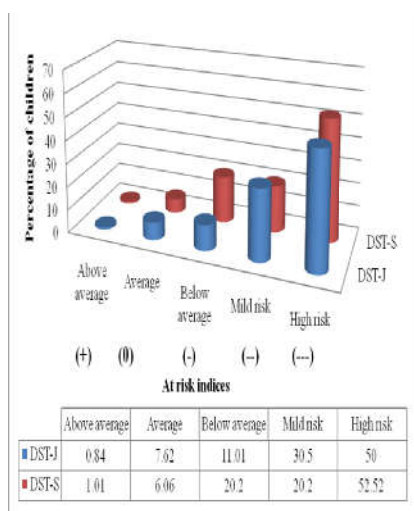
In children with DST-S, The highest number of children were seen in high risk indices of rapid naming (52.52%), which comprised of 7.07 per cent of mild risk quotient children and 45.45 per cent of high risk quotient children, followed by 20.20 per cent of children in mild risk indices of rapid naming which constituted 4.04 per cent of mild risk quotient children and 16.16 per cent of high risk quotient children.

The correlation analysis showed a positive significant relationship between mild risk quotient and high risk quotient children (r=0.21*) in DST-J and (r=0.27**) in DST-S indicating that higher scores on rapid naming will lead to higher risk of dyslexia.

Table 3 Percentage distribution of children at risk of dyslexia by rapid naming test

(N=217)

At risk indices	DST-J			DST-S		
	Mild	High	Total	Mild	High	Total
+	-	1 (0.84)	1 (0.84)	1 (1.01)	-	1 (1.01)
0	2 (1.69)	7 (5.93)	9 (7.62)	2 (2.02)	4 (4.04)	6 (6.06)
-	5 (4.23)	8 (6.77)	13 (11.01)	10 (10.10)	10 (10.10)	20 (20.20)
--	5 (4.23)	31 (26.27)	36 (30.50)	4 (4.04)	16 (16.16)	20 (20.20)
---	3 (2.54)	36 (30.50)	59 (50.00)	7 (7.07)	45 (45.45)	52 (52.52)
Total	15 (12.72)	103 (87.28)	118 (100.00)	24 (24.25)	75 (75.75)	99 (100.00)
'r' value	0.213*			0.268**		

	Above average	Average	Below average	Mild risk	High risk
■DST-J	0.84	7.62	11.01	30.5	50
■DST-S	1.01	6.06	20.2	20.2	52.52

Figures in parenthesis indicate percentages, * Significant at 5%,
** Significant at 1%

Higher the scores on rapid naming higher is the risk of dyslexia

These results are line with study of Ferrer *et.al* (2014) who observed on reading related cognitive deficits in Spanish development dyslexia, where in developmental dyslexia showed deficits in naming speed. Similar result have been found by Thaler *et al.* (2009) which revealed that children with dyslexia had problem in naming speed. Karin and Heinz (2000) reports that, rapid naming deficits are more persistent in dyslexic children.

Distribution of children according to at risk indices (ARI) of one minute reading: Results **o**n the factor of risk level, With DST-J, among 35.59 per cent of children 2.54 per cent of children were at mild risk quotient for dyslexia and 33.05 per cent of children were at high risk quotient for dyslexia. About 25.42 per cent of children observed under high risk indices for reading all of them were from high risk quotient of dyslexia.
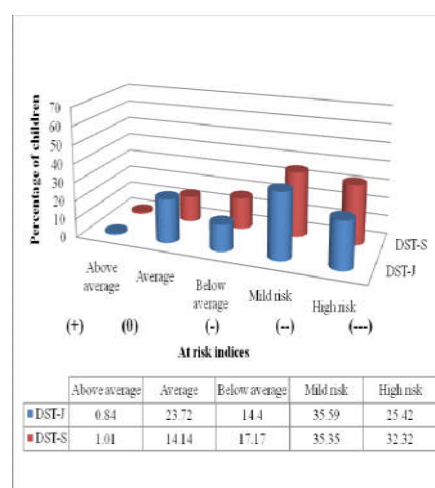
With regard to DST-S, out of 99 children 24.25 per cent of children had mild risk of dyslexia. There were 35.35 per cent of children in mild risk indices which comprised of 29.29 per cent of high risk quotient children and 6.06 per cent of mild risk quotient children. There were 32.32 per cent of children in high risk indices of reading which constituted of all children from high risk quotient and none of mild risk quotient children were in category of high risk of reading.

The correlation test showed a negative and significant relationship between risk level of dyslexia and one minute reading both in case of DST-J (r= -0.466**) and DST-S (r= -0.521**) at 1 per cent which is an evidence that low scores on one minute reading would lead to higher risk for dyslexia.

Table 4 Percentage distribution of children diagnosed at risk of dyslexia by one minute reading test

(N=217)

At risk indices	DST-J			DST-S		
	Mild	High	Total	Mild	High	Total
	1 (0.84)	-	1 (0.84)	-	1 (1.01)	1 (1.01)
0	10 (8.47)	18 (15.25)	28 (23.72)	11 (11.11)	3 (3.03)	14 (14.14)
-	1 (0.84)	16 (13.55)	17 (14.40)	7 (7.07)	10 (10.10)	17 (17.17)
--	3 (2.54)	39 (33.05)	42 (35.59)	6 (6.06)	29 (29.29)	35 (35.35)
---	0 (0.00)	30 (25.42)	30 (25.42)	0 (0.00)	32 (32.32)	32 (32.32)
Total	15 (12.72)	103 (87.28)	118 (100.00)	24 (24.25)	75 (75.75)	99 (100.00)
'r' value	-0.466**			-0.521**		

	Above average	Average	Below average	Mild risk	High risk
■ DST-J	0.84	23.72	14.4	35.59	25.42
■ DST-S	1.01	14.14	17.17	35.35	32.32

Figures in parenthesis indicate percentages, * Significant at 5%,
** Significant at 1%

Lower the scores on one minute reading higher is the risk of dyslexia

Distribution of children according to at risk indices (ARI) of phonemic segmentation: The table clearly represents that 52.54 per cent of children were in average category of phonemic segmentation, among which 10.16 per cent of children were from mild risk level and 42.37 per cent of children were from high risk level. Around 16.94 per cent were seen in below average category that constituted 0.84 per cent of mild risk children and 16.10 per cent of high risk children.

The results on DST-S about 50.50 per cent of children were seen in average indices for phonemic segmentation which constituted of 20.20 per cent of mild risk quotient children and 30.30 per cent of high risk quotient children. These were followed by 22.22 per cent of children in high risk indices who were all from high risk level quotient of dyslexia. Children with mild risk for dyslexia were not seen in the high risk indices of phonemic segmentation.
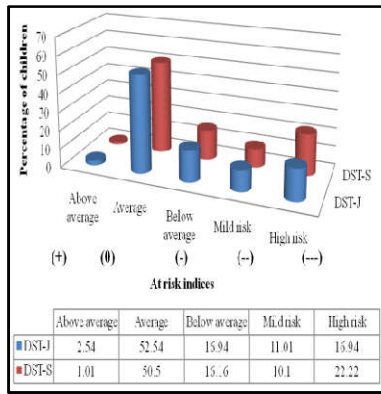
The correlation test shows a negative and significant relationship between mild and high risk children with respect to phonemic segmentation(r= -0.29** at 1 per cent and r= -0.372** at 5 per cent) which implies that lower scores on phonemic segmentation shows a higher risk for dyslexia.

Ferrer *et.al* (2014) concludes in his study that, children with developmental dyslexia have problems with phonological memory and phonemic awareness. Similar results have been found by Vaughn *et al.* (2010), where in children with developmental dyslexia revealed significant problem with phonemic fluency.

Table 5 Percentage distribution of children diagnosed at risk of dyslexia by phonemic segmentation test

(N=217)

At risk indices	DST-J			DST-S		
	Mild	High	Total	Mild	High	Total
+	2 (1.69)	1 (0.84)	3 (2.54)	1 (1.01)	-	1 (1.01)
0	12 (10.16)	50 (42.37)	62 (52.54)	20 (20.20)	30 (30.30)	50 (50.50)
-	1 (0.84)	19 (16.10)	20 (16.94)	-	16 (16.16)	16 (16.16)
--	-	13 (11.01)	13 (11.01)	3 (3.03)	7 (7.07)	10 (10.10)
---	-	20 (16.94)	20 (16.94)	-	22 (22.22)	22 (22.22)
Total	15 (12.72)	103 (87.28)	118 (100.00)	24 (24.25)	75 (75.75)	99 (100.00)
'r' value	-0.286**			-0.372**		

	Above average	Average	Below average	Mild risk	High risk
DST-J	2.54	52.54	15.94	11.01	15.94
DST-S	1.01	50.5	15..6	10.1	22.22

Figures in parenthesis indicate percentages, ** Significant
Lower the scores on phonemic segmentation higher is the risk of dyslexia

Distribution of children according to at risk indices (ARI) of spoonerisms: This test assesses the ability of the child to detect phonemes and the ability to interchange words. Since this test is only for older children, the factor of risk quotient depicts that amongst 99 children, 24.25 per cent were from mild risk quotient and 75.75 per cent were from high risk quotient. About 52.52 per cent of children were at high risk indices for spoonerisms including 5.05 per cent of children with mild risk quotient and 50.50 per cent of children with high risk quotient of dyslexia.
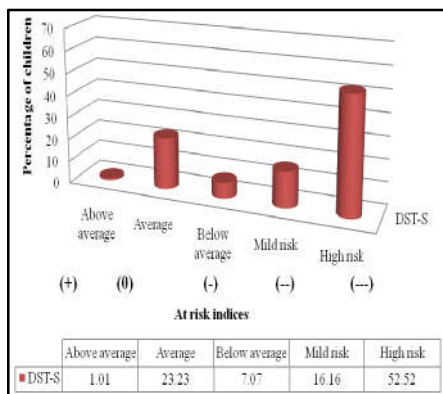
With 23.23 per cent of children in average indices of spoonerisms, there were 14.14 per cent of children from mild risk quotient and 9.09 per cent of children from high risk quotient of dyslexia.

The correlation analysis showed a negative and significant relationship between mild and high risk children with respect to spoonerisms (r= -0.548**) at 1 per cent that depicts lower the score on spoonerisms higher will be the risk of dyslexia.

Table 6 Percentage distribution of children diagnosed at risk of dyslexia by spoonerisms

(N=99)

At risk indices	DST-S		
	Mild	High	Total
+	1 (1.01)	-	1 (1.01)
0	14 (14.14)	9 (9.09)	23 (23.23)
-	2 (2.02)	5 (5.05)	7 (7.07)
--	5 (5.05)	11 (11.11)	16 (16.16)
---	5 (5.05)	50 (50.50)	52 (52.52)
Total	24 (24.25)	75 (75.75)	99 (100.00)
'r' value	-0.548**		

	Above average	Average	Below average	Mild risk	High risk
DST-S	1.01	23.23	7.07	16.16	52.52

Figures in parenthesis indicate percentages, ** Significant at 1%
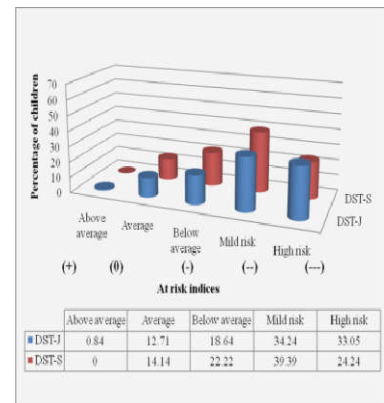Lower the scores on spoonerisms higher is the risk of dyslexia

Distribution of children according to at risk indices (ARI) of two minute spelling: The dimension of risk level clarifies that around 33.05 per cent of children from DST-J and 24.24 per cent of children from DST-S belonged to high risk indices. About 34.34 per cent of children from DST-J and 39.39 per cent of children from DST-S were from mild risk indices. 18.64 per cent of younger children and 22.22 per cent of older children were on the below average indices of two minute spelling. 12.71 per cent of children in the DST-J group and 14.14 per cent of children from the DST-S group belonged to the average indices. Only one child from DST-J performed to above average level on the indices of two minute spelling.

In both DST-J and DST-S the correlation analysis showed a negative but significant relation between risk level and two minute spelling (r= -0.438** and r= -0.543**) at 1 per cent. This denotes that lower scores on two minute spelling would make up higher risk of dyslexia.

Table 7 Percentage distribution of children diagnosed at risk of dyslexia by two minute spelling test

(N=217)

At risk indices	DST-J			DST-S		
	Mild	High	Total	Mild	High	Total
+	-	1 (0.84)	1 (0.84)	-	-	-
0	8 (6.77)	7 (5.93)	15 (12.71)	11 (11.11)	3 (3.03)	14 (14.14)
-	5 (4.23)	17 (14.40)	22 (18.64)	9 (9.09)	13 (13.13)	22 (22.22)
--	2 (1.69)	39 (33.05)	41 (34.74)	4 (4.04)	35 (35.35)	39 (39.39)
---	-	39 (33.05)	39 (33.05)	-	24 (24.24)	24 (24.24)
Total	15 (12.72)	103 (87.28)	118 (100.00)	24 (24.25)	75 (75.75)	99 (100.00)
'r' value	-0.438**			-0.543**		

	Above average	Average	Below average	Mild risk	High risk
DST-J	0.84	12.71	18.64	34.24	33.05
DST-S	0	14.14	22.22	39.39	24.24

Figures in parenthesis indicate percentages, * Significant at 5%,
** Significant at 1%
Lower the scores on two minute spelling higher is the risk of dyslexia

With regard to association of dyslexia with two minute spelling, similar reports have been revealed by Priti *et al.* (2013), which impressed that dyslexia children have problems with spelling. According to Pierce *et al.* (2013) more than problem of reading and writing, anxiety is seen in children with dyslexia that lead to problem with spelling. Maria and Cornoldi (2015) also revealed that dyslexia children make more error when they are asked to write diction, which is in line with results of present study.

Distribution of children according to at risk indices (ARI) of one minute writing: In DST-J according to risk level, around 47.45 per cent of children were at average level on one minute writing which included 8.47 per cent of mild risk quotient children and 39.98 per cent of high risk quotient children. About 18.64 per cent of children were seen under high risk for

one minute writing that included 0.84 per cent of mild risk children and 17.79 per cent of high risk children.

The correlation analysis showed a negative and significant relationship between risk level and one minute writing (r= -0.277**) at 1 per cent implying that lower scores on one minute reading will lead to higher risk of dyslexia.

On the aspect of DST-S, among 99 children 24.25 per cent of children were from mild risk level and 75.75 per cent of children were from high risk level. About 57.57 per cent of children were on above average category of one minute writing that included 16.16 per cent mild risk children and 41.41 per cent of high risk children. Amongst 32.32 per cent children in category of average level there were 7.07 per cent of mild risk children and 25.25 per cent of high risk children. However, the correlation test was not significant with risk level and one minute writing on DST-S (r=-0.180).

Table 8 Percentage distribution of children diagnosed at risk of dyslexia by one minute writing test (N=217)

At risk indices	DST-J			DST-S		
	Mild	High	Total	Mild	High	Total
+	2 (1.69)	5 (4.23)	7 (5.93)	16 (16.16)	41 (41.41)	57 (57.57)
0	10 (8.47)	46 (38.98)	56 (47.45)	7 (7.07)	25 (25.25)	32 (32.32)
-	-	13 (11.01)	13 (11.01)	1 (1.01)	7 (7.07)	8 (8.08)
--	2 (1.69)	18 (15.25)	20 (16.94)	-	2 (2.02)	2 (2.02)
---	1 (0.84)	21 (17.79)	22 (18.64)	-	-	-
Total	15 (12.72)	103 (87.28)	118 (100.00)	24 (24.25)	75 (75.75)	99 (100.00)
'r' value	-0.277**			-0.180		
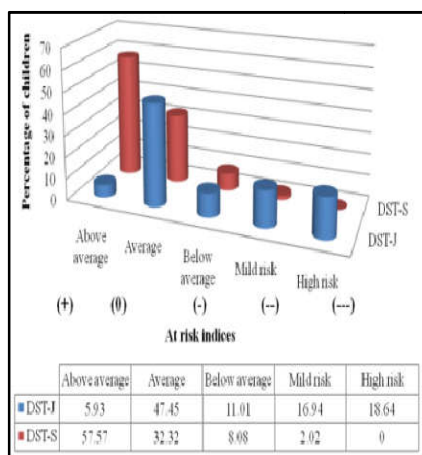
Figures in parenthesis indicate percentages, ** Significant at 1%
Lower the scores on one minute writing higher is the risk of dyslexia

Distribution of children according to at risk indices (ARI) of verbal fluency

On the risk level, about 37.28 per cent of children were at high risk for verbal fluency who were all solely from high risk of dyslexia. None of the mild risk children were at high risk of verbal fluency. Around 29.66 per cent of children were at average level on verbal fluency which comprised of 10.16 per cent of mild risk children and 19.49 per cent of high risk children.

On the category of DST-S, Around 41.41 per cent of children were seen at high risk of verbal fluency which comprised of 6.06 per cent of mild risk children 35.35 per cent of high risk children. About 20.20 per cent of children were seen at mild risk level of verbal fluency that comprised of 1.01 per cent of mild risk children and 19.19 per cent of high risk children.

The correlation showed a negative and significant relationship between risk level and verbal fluency (r= -0.352** and r= -0.318**) at 1 per cent indicating that lower scores on verbal fluency may lead to higher risk of dyslexia.

Table 9 Percentage distribution of children diagnosed at risk of dyslexia by verbal fluency test

(N=217)

At risk indices	DST-J			DST-S		
	Mild	High	Total	Mild	High	Total
+	2 (1.69)	3 (2.54)	5 (4.23)	1 (1.01)	1 (1.01)	2 (2.02)
0	12 (10.16)	23 (19.49)	35 (29.66)	8 (8.08)	11 (11.11)	19 (19.19)
-	1 (0.84)	23 (19.49)	24 (26.31)	8 (8.08)	9 (9.09)	17 (17.17)
--	-	10 (8.47)	10 (8.47)	1 (1.01)	19 (19.19)	20 (20.20)
---	0 (0.00)	44 (37.28)	44 (37.28)	6 (6.06)	35 (35.35)	41 (41.41)
Total	15 (12.72)	103 (87.28)	118 (100.00)	24 (24.25)	75 (75.75)	99 (100.00)
'r' value	-0.352**			-0.318**		
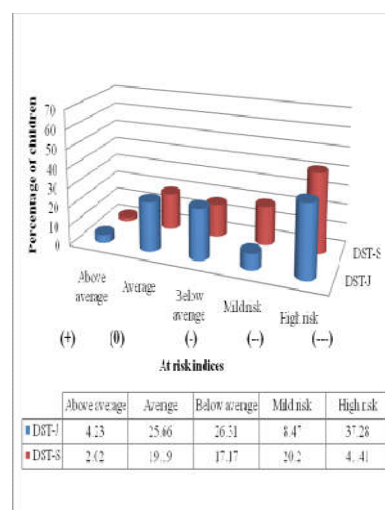
Figures in parenthesis indicate percentages, ** Significant at 1%
Lower the scores on verbal fluency higher is the risk of dyslexi

Thaler *et al.* (2009) reported that children with dyslexia showed expected fluency impairment. These results are in line with study of Moura *et al.* (2014) on executive functioning in children developmental dyslexia which revealed that verbal fluency decreased with significant differences between groups. Similar results have been found by Ghani nad Gathercole (2013) which signified that student's with dyslexia performed significantly more poorly on measure of verbal fluency and memory.

Distribution of children according to at risk indices (ARI) of semantic fluency: In DST-J, on the dimension of risk level, among 38.98 per cent of children is the category of high risk there were 0.84 per cent of children from mild risk and 38.13 per cent children from high risk. On DST-S dimension among 33.33 per cent of children in the category of average level on semantic fluency 2.02 per cent of children were from mild risk level and 21.21 per cent were from high risk level. Around 28.28 per cent of children were observed at mild risk on semantic fluency that comprised of 3.03 per cent of children from mild risk level and 25.25 per cent of children from high risk level.

The correlation analysis showed a negative and significant relationship between risk level and semantic fluency (r= -0.210* and r= -0.260**) at 5 and 1 per cent respectively with DST-J and DST-S depicting lower scores on semantic fluency would lead to higher risk of dyslexia

Table 10 Percentage distribution of children diagnosed at risk of dyslexia by semantic fluency test

(N=217)

At risk indices	DST-J			DST-S		
	Mild	High	Total	Mild	High	Total
+	-	1 (0.84)	1 (0.84)	2 (2.02)	4 (4.04)	6 (6.06)
0	5 (4.23)	20 (16.94)	25 (21.86)	2 (2.02)	21 (21.21)	33 (33.33)
-	4 (3.38)	9 (7.62)	13 (11.01)	7 (7.07)	12 (12.12)	19 (19.19)
--	5 (4.23)	28 (23.72)	33 (27.96)	3 (3.03)	25 (25.25)	28 (28.28)
---	1 (0.84)	45 (38.13)	46 (38.98)	-	13 (13.13)	13 (13.13)
Total	15 (12.72)	103 (87.28)	118 (100.00)	24 (24.25)	75 (75.75)	99 (100.00)
'r' value	-0.210*			-0.260**		
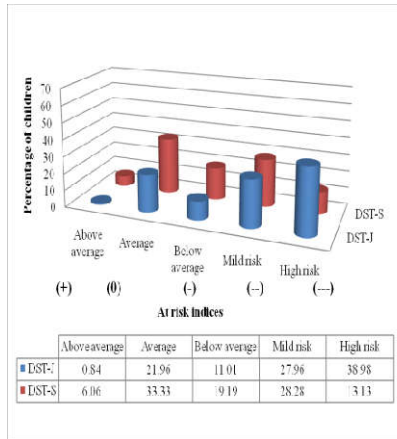
Figures in parenthesis indicate percentages, * Significant at 5%, ** Significant at 1%
Lower the scores on semantic fluency higher is the risk of dyslexia

Qualitative analysis of parents' awareness about child's problems (analysis with 100 parents)

Parents' knowledge on child's problem is depicted in Table 10. Results reveal that among 100 parents, 77 per cent of parents know that there are some problems in child and hence the child is lagging in academics.

Nearly 14 per cent of parents have identified problems since childhood, 13 per cent have known from last 3 years. About highest number of parents (27%) know the problem from last year and 23 parents reported they identified problem during present year.

Parents reported that they have tried to sort out the problem among which all of them send their children to tuition. Around 41 parents changed he school thinking changing school would improve them. 17 parents sent children to extra coaching on brain training session and classes like abacus. 8 parents reported that they repeated the previous classes though their child passed with minimum scores. 2 parents consulted psychiatrist and provided counseling to their child.

About 41 responses were obtained from parents who reported that their child is having problems with reading and 61 responses reported child having problems of writing. 55 responses reported that child is interested only in playing. 48 respondents reported that their child is engaged in distractive talks and all parents reported that their child is unable to solve simple mathematical calculations.

Table 11 Qualitative analysis of parents' awareness about child's problem

(N=100)

Sl. No	Questions	Yes	
		N	%
1	Do both the parents know about the child's learning problem?　　Yes / No	77	77.00
1 a	If Yes, since when?		
	From childhood (before 2nd standard)	14	14.00
	From last 3 years (2nd to 5th standard)	13	13.00
	From last year (4th to 6th standard)	27	27.00
	The present year (present standard)	23	23.00
2	Have you tried to know the problem of the child?　　Yes/ No	77	77.00
2a	Did you try to sort out the problem?	77	77.00
2b*	If yes what measures have you taken?		
	Sending to tuition	77	77.00
	Changing school	41	41.00
	Extra classes (Abacus, Brain training)	17	17.00
	Repeated the previous classes though child passed	8	8.00
	Counseling	2	2.00
3*	What are problems that you have noted in your child among the following		
3a	Reading	41	41.00
3b	Writing	61	61.00
3c	Identifying alphabets	7	7.00
3d	Framing words using alphabets	11	11.00
3e	Framing sentences	11	11.00
3f	Difficulty in Explaining the things that he/she knows	27	27.00
3g	Being more friendly with elders	-	-
3h	Interested only in Playing	55	55.00
3i	Distractive talking	48	48.00
3j	Doesn't talk at all	9	9.00
3k	Writes only when his/her friends write	-	-
3l	Identifying numbers	7	7.00
3m	Solving mathematical problems	77	77.00
3n	Others	-	-
4	Apart from learning activity are there any behavioral deviations in your child? Yes /No	-	-

CONCLUSION

- The intelligence level of children selected for study depicted that, 28 per cent of children have below average intelligence because though child has problems parents or society doesn't consider it seriously. During study we could observe some children in normal schools who had Down's syndrome, problems with vision and hearing. Parent's do not consider these as serious and are mislead that as child grows he/she will be normal. Due to this reason they are kept in normal schools and hence we could see, more per cent of children with in below average level of intelligence

- Children with mild risk can manage with little attention by teachers, but children with high risk of dyslexia need more attention by teacher or itinerant teacher to reach their maximum potential.

- Since a higher percentage of children were found to be on the higher risk for the tests of rapid naming, bead threading, one minute reading, spoonerisms, two minute spelling, verbal fluency and semantic fluency, the children should be regularly provided with these

tasks in order to facilitate child's abilities which could reduce the high risk probabilities among children.

- Mothers were unaware the nature of problem existing in their children. So this needs to be considered seriously and there is a need to create proper awareness programmes to the parents of young children so that problem could be identified at the early age.

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