

# Learning difficulties in children attending a special clinic at the Lady Ridgeway Hospital

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## Abstract

**Objectives** To identify presentations of children with learning difficulties attending Child Psychiatry and Guidance Clinic (CPGC) at Lady Ridgeway Hospital (LRH) and describe their socio-demographic characteristics, health-seeking behaviour and modes of referral.

**Design** Descriptive cross sectional study.

**Method** Children diagnosed to have learning difficulties or attention deficit hyperactive disorder (ADHD), presenting to CPGC at LRH from 27 May to 10 June 2003, were included in study. Learning difficulties were diagnosed by a child psychiatrist using DSM IV criteria. A pre-tested, interviewer administered questionnaire (IAQ) was used to collect socio-demographic data, details on health-seeking behaviour and modes of referral from parents/guardians. A checklist was used to identify presentations.

**Results** 52 children with learning difficulties were identified and all participated in study. Presentations were with difficulties in reading (70%), mathematics (60%), writing (55%), communication (45%) and motor skills (50%). ADHD was found in 60% cases. 85% were males. Mean age was 9 years. 31% had deficit of schooling. 54% were urban dwellers. Caretaker was mother in 83% cases. Monthly income was greater than 3000 rupees in 92% cases. 89% children were identified by mother or teacher. Initial visits were made to a specialist unit (62%) or a primary health care service (31%).

## Introduction

For many children learning is a happy and enjoyable experience but some have learning difficulties. According to DSM IV, learning, communication and

motor skills disorders are classified under learning difficulties<sup>1</sup>. Though technically not considered a learning difficulty there is a co-morbidity rate of 10-60% between Attention Deficit Hyperactive Disorder (ADHD) and learning difficulties<sup>2</sup>. It is estimated that 5% school children and 50% children attending child psychiatry clinics in United States of America (USA) have learning difficulties<sup>1</sup>. Sri Lankan prevalence for learning difficulties is not known but a study done by Kariyawasam et al<sup>3</sup> found ADHD a significant problem in Sri Lanka.

By definition, learning difficulties exclude socio-cultural factors that may affect child's learning<sup>4,5</sup>. However, poor socio-economic conditions are associated with malnutrition, limited prenatal and postnatal care, exposure to teratogens and maternal substance abuse which can lead to subtle neuropsychiatric disturbances giving rise to learning difficulties<sup>6</sup>. Recent studies have shown that characteristics of child's immediate environment have an impact on his maturation and indirectly on learning as well<sup>7</sup>.

Recognition of the true characteristics of children with learning difficulties will lead parents and teachers to deal with them in a sympathetic yet effective manner<sup>7</sup>. DSM IV gives criteria for diagnosis of learning difficulties<sup>1</sup>. Subtle characteristics and their predictability as high, moderate and weak have been described which may help identify children with learning difficulties<sup>8,9</sup>. Unfortunately these children are often not identified till late. This delays benefits of interventional care. If doctors, teachers and parents are vigilant about these characteristics, they can be identified early.

Early intervention for learning difficulties is warranted for maximal potential outcome in these children<sup>7</sup>. In USA, where there is a proper network of interventional centres, different modalities of intervention have been studied and compared<sup>10</sup>. It has been recommended to establish regional healthcare teams that can liaise with the schools for the child neuropsychiatric disorders such as ADHD and other learning disabilities under the supervision of a paediatrician/psychiatrist<sup>3</sup>.

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## Method

A descriptive cross sectional study was carried out in the Child Psychiatry and Guidance Clinic (CPGC) at Lady Ridgeway Hospital (LRH) from 27 May to 10 June 2003. Study population consisted of all children, 5-14 years old, diagnosed by a child psychiatrist as having a learning difficulty or ADHD using DSM IV criteria with diagnosis stated in child's clinic records. Children with mental retardation, autism, visual or hearing disabilities, confirmed by written records at CPGC, and those without documented evidence of learning difficulties were excluded from study.

CPGC functions twice weekly for 3 hours and about 20 children attend clinic each day. Considering feasibility of collecting data, a sample of 50 and a study period of 2 weeks was decided upon. An interviewer-administered questionnaire (IAQ) was used to assess socio-demographic characteristics, health seeking behaviour and modes of referral of children with learning difficulties. An interviewer-administered checklist (CL) was used to identify features at presentation. CL was devised using DSM IV criteria<sup>1</sup>, child psychiatry text books<sup>6,11</sup> and related research articles<sup>8,9</sup>. Both IAQ and CL were subjected to a focus group discussion of parents and teachers from Centre for Individuals with Learning Difficulties at Narahenpita. To minimize errors, IAQ comprised both open and close-ended questions, in a simple format, relating to a sequence approach to events, to improve recall. IAQ and CL were also subjected to the retranslation technique to improve validity and assess degree of agreement. To minimise errors in data transfer, a code column was included in IAQ. Medical students involved in study administered questionnaire after a training session. Both IAQ and CL were validated by a pretest on a sample of 5 children each, with and without learning difficulties, in ward 4, LRH and Centre for Individuals with Learning Difficulties. Reading and writing were not assessed in children below 7 years of age and mathematics in children below 8 years of age, as these are the current international recommendations<sup>1</sup>.

In collecting data, CPGC records were checked in all children presenting to clinic during study period, in the order of registration. After selecting children who met required criteria, an information leaflet on the study and its potential benefits was given to each parent/ guardian and informed verbal consent obtained. To maintain privacy, IAQ was individually administered in cubicles of the clinic room. Data was entered using Microsoft Excel Spread Sheet. Chi-square test was used to study significance of difference in socio-demographic characteristics.

## Results

### 1. Presentations of children with learning difficulties

#### a. Reading

As cut-off age to assess reading is 7 years, it was assessed in only 41 children. Frequency of presentation with reading difficulties is shown in table 1

**Table 1**  
**Frequency of presentation with reading difficulties**

<i>Presentation</i>	<i>No (%)</i>
Has difficulty in spelling	32 (78.0)
Reading matter is changed by omitting, adding, distorting	32 (78.0)
Cannot read a paragraph by 8 years	22 (78.6)
Have problems in recognizing and reading written words and letters	29 (70.7)
Uses different pronunciation for letters B-P	24 (58.5)

20 (49%) children had all 5 presentations, 6 (15%) had 4 presentations, 7 (17%) had 3 presentations. 2 (5%) had 2 presentations and 2 (5%) had 1 presentation 4 (10%) children had no reading difficulties.

#### b. Mathematics

As cut-off age to assess mathematics is 8 years, it was assessed in only 28 children. Frequency of presentation with mathematic difficulties is shown in table 2.

**Table 2**  
**Frequency of presentation with difficulties in mathematics**

<i>Presentation</i>	<i>No (%)</i>
Cannot follow a sequence of 3 mathematic steps	21 (75.0)
Have difficulties in putting written problems into numbers	18 (64.3)
Poor in following multiplication table by 10 years	17 (85.0)
Cannot remember to add/carry forward	16 (57.1)
Has problems in counting objects	15 (53.6)
See thing in wrong sequence; 135 as 153	14 (50.0)
Has problems in recognizing numerical symbols	12 (42.9)

Seven (25%) children had all 7 presentations, 2 (7%) had 6 presentations, 7 (25%) had 5 presentations, 2 (7%) had 4 presentations, 2 (7%) had 3 presentations, 1 (4%) had 2 presentations and 1 (4%) had 1 presentation. 6 (21 %) children had no mathematic difficulties.

c. **Writing**

As cut-off age to assess writing is 7 years it was assessed in only 41 children. Frequency of presentations with writing difficulties is shown in table 3.

**Table 3**  
**Frequency of presentation with difficulties in writing**

<i>Presentation</i>	<i>No. (%)</i>
Difficulty in composing written words	27 (65.9)
Capital simple mixture	24 (58.5)
Letter substitution B for P, U for N	23 (56.1)
Spelling errors-Not even appropriate sound	21 (51.2)
Letter sequence mixed eht for the	19 (46.3)

Fourteen (34%) had all 5 presentations, 2 (5%) had 4 presentations, 4 (10%) had 3 presentations, 9 (22%) had 2 presentations and 5 (12%) had 1 presentation. 7 (17%) children had no writing difficulties.

d. **Communication**

This was assessed in all 52 children. Frequency of presentations with communication difficulties is shown in table 4.

**Table 4**  
**Frequency of presentation with communication difficulties**

<i>Presentation</i>	<i>No. (%)</i>
<b>Receptive</b>	
Appears to be deaf when spoken to	26 (50.0)
Gets disturbed when given instructions for exercise	26 (50.0)
Difficulty in recognizing rhyming words by age 4	23 (44.2)
<b>Expressive</b>	
Eager to communicate but has difficulty in finding the right word	29 (55.8)
By age 8, child only speaks short phrases	23 (44.2)
Does not use grammar appropriate for age	21 (40.4)
Difficulty in recalling common information fast enough	18 (34.6)
<b>Phonological</b>	
Poor articulation of later acquired speech sound. R, SH, TH	25(48.1)
Words sound like baby talk. Bu for Blue, Wabbit for Rabbit	24 (46.2)

**Receptive communication difficulties**

Thirteen (25%) children had all 3 presentations, 22 (42%) had 2 presentations and 13 (25%) had 1

presentation. 4 (8%) children had no receptive communication difficulties.

**Expressive communication difficulties**

Fourteen (27%) children had all 4 presentations, 10 (19%) had 3 presentations, 10 (19%) had 2 presentations and 9 (17%) had 1 presentation. 9 (17%) children had no expressive communication difficulties.

**Phonological communication difficulties**

Twenty one (40%) had 2 presentations and 15 (29%) had 1 presentation. 16 (31%) had no phonological communication difficulties.

e. **Motor skills**

This was assessed in all 52 children. Frequency of presentations with motor skills difficulties is shown in table 5.

**Table 5**  
**Frequency of presentations with motor skills difficulties**

<i>Presentation</i>	<i>No (%)</i>
Clumpy and messy at work	32 (61.5)
Difficulty in tying shoelaces, buttoning shirts by age 6	27 (60.0)
Has problems in model building	19 (36.5)
Has problems in playing games with hand eye coordination - Tennis, Badminton, Football as opposed to swimming, running	14(26.9)
<b>Handwriting poor</b>	
Pressing too hard on the paper	34 (65.4)
Sharpening the pencil every minute	34 (65.4)
Erasing what was written every word or 2	29 (55.8)
Difficulty in copying blackboard, text or notebook	21 (40.4)
With palmar grasp and bended wrists	14 (26.9)

**Handwriting**

Five (10%) had all 5 presentations, 10 (19%) had 4 presentations, 18 (35%) had 3 presentations, 9 (17%) had 2 presentations and 6 (11%) had 1 presentation. 4 (8%) children had no handwriting difficulties.

**Other motor skills**

Six (12%) had all 4 presentations, 8 (15 %) had 3 presentations, 17 (33%) had 2 presentations and 11 (21%) had 1 presentation. 10 (19%) had no difficulties in other motor skills.

f. **Attention deficit/Hyperactivity**

This was assessed in all 52 children. Frequency of presentations with attention deficit/ hyperactivity is shown in table 6

**Table 6**  
**Frequency of presentations with attention deficit/hyperactivity**

<i>Presentation</i>	<i>No. (%)</i>
<b>Inattention</b>	
Is easily distracted by extraneous stimuli	44 (84.6)
Fails to give close attention to details or makes careless mistakes	42 (80.8)
Does not seem to listen when spoken to directly	41 (78.8)
Has difficulty in sustaining attention in task or play activities	40 (76.9)
Avoids, dislikes to engage in tasks that require sustained mental effort	40 (76.9)
Does not follow through instructions and fails to finish schoolwork	39 (75.0)
Is forgetful in daily activities	33 (63.5)
Has difficulty in organizing tasks and activities	31 (59.6)
Loses things needed for activities	31 (59.6)
<b>Hyperactivity</b>	
Leaves seat in situation in which remaining seated is expected	38 (73.1)
Fidgets with hand or feet or squirms in seat	36 (69.2)
Runs about or climbs excessively in inappropriate situations	35 (67.3)
Is "on the go" or acts as if driven by motor	28 (53.8)
Has difficulty in engaging in leisure activities quietly	27 (51.9)
Talks excessively	25(48.1)
<b>Impulsivity</b>	
Interrupts or intrudes on others	22 (42.3)
Has difficulty in waiting for turn	19 (36.5)
Blurts out answers before questions have been completed	15 (30.8)

*Inattention*

Ten (19%) had all 9 presentations, 10 (19%) had 8 presentations, 13 (25%) had 7 presentations, 8 (15%) had 6 presentations, 4 (8%) had 4 presentations, 3

(6%) had 3 presentations and 3 (6%) had 2 presentations. 1 (2%) child had no inattention.

*Hyperactivity*

Fourteen (27%) had all 6 presentations, 14 (27%) had 5 presentations, 8 (15%) had 4 presentations, 1 (2%) had 3 presentations, 4 (8%) had 2 presentations and 4 (8%) had 1 presentation. 7 (14%) children had no hyperactivity.

*Impulsivity*

Fourteen (27%) had all 3 presentations, 10 (19%) had 2 presentations and 14 (27%) had 1 presentation. 14 (27%) children had no impulsivity.

**2. Socio-demographic characteristics**

a. **Gender**

Forty four (85%) children were male and 8 (15%) were female.

b. **Age**

Distribution of age is shown in table 7

**Table 7**  
**Distribution of age**

<i>Age Group</i>	<i>No (%)</i>
4yr 6m - 7yr 5m	18 (35)
7yr 6m - 10yr 5m	21 (40)
10yr 6m - 13yr 5m	13 (25)
<b>Total</b>	<b>52(100)</b>

The mean age was 9 years (SD 2yr 4m).

c. **Deficit of schooling**

Deficit of schooling among children is shown in table 8.

**Table 8**  
**Deficit of schooling among children**

<i>Deficit</i>	<i>No. (%)</i>
No deficit	36 (69)
1 year	05(10)
>1 year	02 (04)
Special schools	09(17)
<b>Total</b>	<b>52 (100)</b>

d **District**

Distribution district-wise is shown in table 9.

**Table 9**  
**Distribution district-wise**

<i>District</i>	<i>No. (%)</i>
Colombo	23 (44)
Gampaha	16(31)
Kalutara	04 (08)
Kurunegala	03 (06)
Kegalle	03 (06)
Negombo	01 (02)
Matara	01 (02)
Ratnapura	01 (02)
<b>Total</b>	<b>52 (100)</b>

e. *Urban/Rural*

Distribution according to residence (urban/rural) shown in table 10.

**Table 10**  
**Distribution according to dwelling**

<i>Dwelling</i>	<i>No. (%)</i>
Urban	28 (54)
Rural	24 (46)
<b>Total</b>	<b>52 (100)</b>

f. *Care-taker*

Type of care-taker is shown in table 11.

**Table 11**  
**Type of care-taker**

<i>Care-taker</i>	<i>No. (%)</i>
Mother	43 (82.7)
Father	00 (0.0)
Grandmother	05 (9.6)
Servant	02 (3.8)
Uncle	01 (1.9)
Orphanage	01 (1.9)
<b>Total</b>	<b>52(100)</b>

g. *Care-taker's education level*

Care-taker's education level is shown in table 12.

**Table 12**  
**Caretaker's education level**

<i>Maximum education</i>	<i>No. (%)</i>
No schooling	01 (01.9)
Primary education	15(28.8)
Up to ordinary level	20(38.5)
Up to advanced level	13(25.0)
Tertiary professional	03 (05.8)
<b>Total</b>	<b>52(100)</b>

h. *Job status of the family*

Number of family members who are working is shown in table 13.

**Table 13**  
**No. of family members who are working**

<i>People working</i>	<i>No. (%)</i>
Father only	32(61.5)
Father & Mother	16(30.8)
Guardian only	03 (05.8)
Mother only	01 (01.9)
<b>Total</b>	<b>52(100)</b>

Type of job of family member is shown in table 14.

**Table 14**  
**Type of job of family member**

<i>Type of job</i>	<i>No. (%)</i>
Professional, technical	04 (05.9)
Executive & management	08(11.8)
Clerical	08(11.8)
Sales personnel	12(17.6)
Service providers	19(27.9)
Agriculture & animal husbandry	03 (04.4)
Production, transport & labour	10(14.7)
Other	04 (05.9)
<b>Total</b>	<b>68 (100)</b>

i. *Monthly income*

Income level is shown in table 15.

**Table 15**  
**Level of income**

<i>Income</i>	<i>No. (%)</i>
<3,000	04 (07.7)
3000-10,000	30 (57.7)
>10,000	18(34.6)
<b>Total</b>	<b>52 (100)</b>

j. *Family Size*

Number of people living in household is shown in table 16.

**Table 16**  
**No. of people living in the household**

<i>Family Size</i>	<i>No. (%)</i>
Three	14(26.9)
Four	20 (38.5)
Five	12(23.1)
Six	02 (03.8)
> six	04 (07.7)
<b>Total</b>	<b>52 (100)</b>

k.. *Siblings*

Number of siblings of index child is shown in table 17.

**Table 17**  
**Number of siblings**

<i>Siblings</i>	<i>No. (%)</i>
None	22 (42.3)
One	20 (38.5)
Two	09(17.3)
Three	01 (01.9)
<b>Total</b>	<b>52 (100)</b>

No deficit of schooling was seen in siblings.

l. *Race*

Distribution by race is shown in table 18.

**Table 18**  
**Distribution according to race**

<i>Race</i>	<i>No. (%)</i>
Sinhala	46 (88.4)
Tamil	03 (05.8)
Muslim	03 (05.8)
<b>Total</b>	<b>52 (100)</b>

m. *Religion*

Distribution by religion is shown in table 19.

**Table 19**  
**Distribution according to religion**

<i>Religion</i>	<i>No. (%)</i>
Buddhist	40 (76.9)
Hindhu	00 (00.0)
Christian	09(17.3)
Islam	03 (05.8)
<b>Total</b>	<b>52 (100)</b>

3. **Health seeking behaviour**

a. *Who noticed the difference?*

Person who identified is shown in table 20.

**Table 20**  
**Person who noticed the difference in the child**

<i>Person</i>	<i>No. (%)</i>
Mother	33 (63.5)
Teacher	13(25.0)
Father	00 (00.0)
Other	06(11.5)
<b>Total</b>	<b>52(100)</b>

b. *Age of identification*

Age of identification is given in table 21

**Table 21**  
**Age of identification**

<i>Age of identification (yrs)</i>	<i>No. (%)</i>
0.3	02 (03.8)
0.5	01 (01.9)
1.0	01 (01.9)
1.5	05 (09.6)
2.0	03 (05.8)
2.5	01 (01.9)
3.0	05 (09.6)
3.5	01 (01.9)
4.0	05 (09.6)
5.0	08 (1-5.4)
5.5	02 (03.8)
6.0	10(19.2)
7.0	03 (05.8)
8.0	01 (01.9)
9.0	01 (01.9)
10.0	03 (05.8)
<b>Total</b>	<b>52(100)</b>

The mean age of identification was 4.53 years.

c. *Time period taken for first intervention*

Time taken for 1st intervention is shown in table 22.

**Table 22**  
**Time taken for first intervention**

<i>Time in months</i>	<i>No. (%)</i>
<3	26 (50.0)
3-6	02 (03.8)
7-12	00 (00.0)
>12	24 (46.2)
<b>Total</b>	<b>52 (100)</b>

d *Interventions*

Reasons for delay in intervention are shown in table 23.

**Table 23**  
**Reasons for delay in intervention**

<i>Reason</i>	<i>No. (%)</i>
No delay	24 (46.2)
Thought it was normal	07 (13.5)
Only gradually progressed	06 (11.5)
Thought will reduce with time	04 (07.7)
Other illnesses	04 (07.7)
Thought it was bad time	02 (03.8)
Did not recognize	02 (03.8)
Unavoidable circumstances	02 (03.8)
Family history	01 (01.9)
<b>Total</b>	<b>52 (100)</b>

First intervention is shown in table 24.

**Table 24**  
**First intervention**

<i>Action</i>	<i>No. (%)</i>
Informing someone responsible	04 (07.7)
Went to primary health care service	16(30.8)
Went to specialist unit	32(61.5)
<b>Total</b>	<b>52 (100)</b>

Health personnel involved in intervention are shown in table 25.

**Table 25**  
**Health personnel involved in interventions**

<i>Person</i>	<i>No. (%)</i>
General Practitioner	09(17.3)
Psychiatrist	36 (69.2)
Paediatrician	31 (59.6)
Speech therapist	05 (09.6)
Other	03 (05.8)
<b>Total</b>	<b>52 (100)</b>

The number of steps taken is shown in table 26.

**Table 26**  
**Number of steps taken**

<i>Number of steps</i>	<i>No. (%)</i>
1	06 (11.54)
2	21 (40.38)
3	22(42.31)
4	03 (05.77)

Type of intervention is shown in table 27.

**Table 27**  
**Type of intervention**

<i>Type of intervention</i>	<i>No. (%)</i>
LRH learning difficulty clinic	52 (100)
Paediatrician	20 (38.5)
LRH clinic	18 (34.6)
Psychiatrist (excl. clinic)	09(17.3)
Local hospital	08 (15.4)
General Practitioner	07(13.5)
Special schools	06 (11.5)
Other official/institute	06(11.5)

The order and types of intervention in sequence are shown in table 28.

**Table 28**  
**Order and types of interventions taken in sequence**

<i>Type of intervention</i>	<i>Order of steps taken</i>			
	<i>1st</i>	<i>2nd</i>	<i>3rd</i>	<i>4th</i>
Local hospital	08	00	00	00
Paediatrician	11	08	01	00
LRH clinic	11	07	00	00
LRH learning difficulty clinic	06	21	23	02
Special schools	04	01	00	01
General practitioner	05	02	00	00
Psychiatrist	05	03	01	00
Other official/institute	02	04	00	00

Non-western interventions occurred in 25 (48%) instances. Ayurveda was involved in 6 (24%) and religious/spiritual interventions in 19 (76%).

Period of intervention at CPGC is shown in table 29.

**Table 29**  
**Period of intervention at CPGC**

<i>Period of intervention in months</i>	<i>No (%)</i>
00-03	27 (51.9)
04-06	13 (25.0)
07-12	09 (17.3)
13-23	00 (00.0)
24 or >	03 (05.8)
<b>Total</b>	<b>52 (100)</b>

Source of information regarding CPGH is shown in table 30.

**Table 30**  
**Source of information regarding CPGC**

<i>Person/Institution</i>	<i>No. (%)</i>
LRH OPD	10 (19.3)
Paediatrician	10 (19.3)
Teacher	09 (17.3)
Another hospital	08 (15.4)
Relation	05 (09.6)
General Practitioner	04 (07.7)
Paramedical staff	02 (03.8)
Psychiatrist	02 (03.8)
Special institute	01 (01.9)
Television	01 (01.9)
<b>Total</b>	<b>52 (100)</b>

Association between socio-demographic characteristics and presentations are shown in table 31.

**Table 31**  
**Association between socio-demographic characteristics and presentation**

<i>Presentation vs Characteristic</i>	<i>P value</i>
Pressing too hard on paper when writing vs Income of family	P>0.05
Pressing too hard on paper when writing vs caretaker's education level	P>0.05
Difficulty in composing written words vs caretaker's education level	P>0.05
Reading matter is changed by omitting, adding, distorting vs caretaker's education level	P<0.05
Eager to communicate but has difficulty in finding right word vs presence of siblings	P>0.05
Is easily distracted by extraneous stimuli vs age	P>0.05

## Discussion

Reading difficulties were common presentations in children with learning difficulties in our study occurring in over 70% cases. Our results are compatible with those of Scarborough<sup>8</sup>. Mathematics is considered a good way of assessing learning difficulties as it objectively defines cut offs and is easily measurable<sup>1</sup>. In our study around 60% children presented with difficulties in mathematics. About 55% children presented with difficulties in writing. Difficulties in communication were presenting features in about 45% children. Around 50% presented with difficulties in motor skills. Attention deficit and hyperactivity were found in about 60% children in our study.

Many learning difficulties including ADHD have male preponderance<sup>1</sup> and the male to female ratio for ADHD in Sri Lanka is 3.6:13. In our study 85% children were male. The mean age in the study sample was 9 years. 31% children had some deficits in schooling. 75% of the children were from the Colombo and Gampaha districts, a not unexpected finding. 54% were urban dwellers. The mother was the care-taker in 83% cases. In 98% cases the care-taker had at least a primary education and in 67% instances had done their ordinary level examination. This finding is encouraging as strategies for information are delivered through the care-taker whose education level is important for the receptivity of such information. 92% of the families earned more than 3000 rupees a month. In 89% cases the family size was 5 or less and in 81% instances the sibling number was either one or none.

Association between socio-demographic characteristics and presentations was found to be significant only between a characteristic of reading (where words were added, omitted or distorted while reading) and the caretaker's education level.

In 89% cases the mother or teacher were responsible for identification of the child with the presentation disclosed. In a local study in 74% children the problems had been detected by parents or relatives<sup>13</sup>. Mean age of identification was 4.5 years. The time taken for the first intervention showed 2 peaks 50% taking less than 3 months and 46% taking more than a year. The first medically related action taken was to go to a specialist unit in 62% cases and the primary health care service in 31% instances. The psychiatrist (69%) and the paediatrician (60%) were the main people involved in the interventions. Of those who sought non-western interventions only 24% sought Ayurveda treatment before coming for medical interventions. Of those who sought treatment from CPGC only 23% attended the clinic for more than 6 months, probably implying good progress within a short time with the interventions provided at the CPGC although non-compliance with the passage of time cannot be excluded. Similar levels of satisfaction have been noted in a local study<sup>14</sup> where 165 new referrals were recruited of whom 66% expressed satisfaction with the interventions provided.

The general public, with special emphasis on primary school teachers, should be educated on the common presentations of learning difficulties. Proper education for identification and referral should be given to parents. First contact care health providers, too, need education on the presenting features and the availability of interventional centres.

## Limitations of study

- Ideal study population would have been new enrolments to clinic. However, sample size would then be significantly reduced.
- Due to time lapse between presentation and date of interview, information gathered would carry a recall bias.
- Ideally study should have been conducted in clinics of an array of consultants to represent true population. We restricted our study to a specific clinic to ensure uniform assessment.
- A larger study sample, though ideal, was not possible due to time constraints.

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