

ORIGINAL ARTICLE

ASSESSING THE KNOWLEDGE, ATTITUDES AND PRACTICES OF SCHOOL TEACHERS REGARDING DYSLEXIA, ATTENTION-DEFICIT/HYPERACTIVITY AND AUTISTIC SPECTRUM DISORDERS IN KARACHI, PAKISTAN

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Background: Learning impairments in children consist of a spectrum of disorders that are under diagnosed in Pakistan. Most learning disorders have long term consequences for a child and early detection is thus imperative. Teachers may be able to play a key role in such identification. The objective of our study was to survey knowledge, attitudes and practices of school teachers regarding dyslexia, Attention-deficit/hyperactivity disorder (ADHD) and autistic spectrum disorder, and assess their ability to identify learning disabilities. **Methods:** A Cross-sectional study was conducted with 233 primary school teachers from Karachi using a self-administered questionnaire. **Results:** Mean scores for the knowledge test and the ability to identify learning-impaired children were 58.8% and 53.3%, respectively. Better qualified teachers scored significantly more on the knowledge and ability to identify learning impairments sections. Most teachers believed that these students should study in mainstream schools with special educators. Majority of the teachers belonged to schools where children with learning disabilities were detected using teachers' judgment. Most teachers manage these children by involving them in discussions, seating them at the front of the class, and giving them extra time. **Conclusion:** Knowledge about learning disabilities is very low amongst school teachers, which may limit their ability to identify learning impairments.

Keywords: dyslexia, ADHD, autistic spectrum disorder, learning disabilities, teachers

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INTRODUCTION

During the 1998 census, over 3 million people with disabilities were identified in Pakistan, of which about 820,000 were of school-going age. Children with learning impairments are generally hard to identify and often missed during these surveys, especially since the data collectors focus on medically diagnosed or severe cases.

Learning impairments in children consist of a spectrum of disorders that are widely under-diagnosed. Of these, dyslexia, attention-deficit/hyperactivity disorder (ADHD) and autistic spectrum disorders (ASD) are predominant and have a great impact on society. The worldwide prevalence of dyslexia is estimated to be between 5 and 17%,¹ the prevalence of ADHD is about 5.3%^{2,3}, and about 6 children in 1000 have autism spectrum disorders⁴. However, their impact is even more extensive, as these diseases affect the families of the learning disabled, and society as a whole. During primary school years parents often face difficulties at home or on outings and due to poor sleep patterns of affected children, have little time to themselves.⁵ The cost of treatment and the hours of work lost by parents create a significant economic burden on the family and the

country as a whole.⁶ Teenagers with ADHD are seen to be at an increased risk of academic failure, dropping out of school and criminal behaviour, and as adults, are more likely to be dismissed from employment.⁵

Dyslexia is the most common of the specific learning disabilities, affecting 80 percent of all learning-disabled. Developmental dyslexia represents a disparity between the potential and ability to read. It is manifested as unexpected difficulty in reading in children and adults who are otherwise intelligent, motivated, and educated to a level considered necessary for accurate and fluent reading.⁷

Attention-deficit/ hyperactivity disorder (ADHD) is the most common emotional, cognitive, and behavioural disorder in children.⁸ Three subtypes of ADHD are now recognized as per the DSM- IV criteria, namely the predominantly inattentive, predominantly hyperactive-impulsive, and combined types.⁹

Autistic spectrum disorders refer to a range of related cognitive and neurobehavioral disorders, mainly including three features: impaired social interaction, impairments in verbal and nonverbal communication, and limited and repetitive patterns of

behaviours (American Psychiatric Association [APA], 1994).¹⁰ Additionally, children with autistic spectrum disorders are likely to score lower on IQ tests than the rest of the population.¹¹

Features of learning disabilities are usually first recognized by parents, teachers and primary care physicians¹²⁻¹⁴, although the age of identification may differ depending on the severity of symptoms. Early identification leads to an earlier diagnosis and a timely intervention. As teachers interact with a large population of children of similar ages, they are better able to recognize children with even minor learning difficulties.¹⁵ They may be superiorly equipped to identify cases that parents can miss. It is, therefore, important for school teachers to have basic knowledge about learning impairments.¹⁶

There is insufficient data available for Pakistan, perhaps due to lack of awareness regarding these issues amongst the educated masses. Studies regarding knowledge of learning impairments in Pakistan have mainly focused on paediatricians and general physicians.^{12,17} To the best of our knowledge only two studies were conducted on teachers, one comparing the attitudes of mainstream teachers with those of special education teachers towards learning disabilities¹⁸, and the other assessing the increase in knowledge of teachers about ADHD after a weeklong training program¹⁹.

According to studies from other countries, certain misconceptions regarding learning disabilities were found to be particularly common in school teachers. For example, a significant number of teachers believed that learning disabilities are caused by spoiling¹⁶, and that ADHD is related to high sugar intake¹⁷. Similarly, a considerable number of teachers were unaware that children with ADHD are at a higher risk of developing alcoholism and drug addictions in the future.^{16,17}

The objectives of our study were to assess the knowledge and attitude of primary school teachers about dyslexia, ADHD and autistic spectrum disorders in children and their ability to identify them. We also surveyed current practices and limitations faced by primary schoolteachers when children with such learning disabilities are identified. As a secondary objective, we assessed the difference in knowledge and the ability to identify learning disabilities between teachers of varying levels of qualification. We also determined whether knowledge about learning disabilities correlates with the ability to identify them.

MATERIAL AND METHODS

We conducted a cross-sectional study, targeting school teachers of classes 1-5 from government and private schools of different urban areas of Karachi.

The ethical approval of the study was obtained from the Ethical Review Committee of Aga Khan University, Karachi.

Karachi City is administratively divided into 18 towns. We selected four towns based on security issues and used convenience sampling to select government and private schools. A total of 32 schools were visited, of which 21 agreed to participate in the study. Of these, 8 were from the private and 13 from the government sector. Most refusals were from government schools on the pretext that the authority for approval of the study lies with the local education department of the government.

Written permission from the school administration and informed consent from the teachers was sought before the conduct of the study. Self-administered questionnaires were used that were available in both English and the local language, Urdu. Upon receiving the completed forms, the school administration was given informational brochures about learning impairments for educational purposes for teachers.

The school teachers of classes 1-5 from different schools of Karachi were included in the study. School teachers with a minimum of 1 year of teaching experience were included in the study. Teachers currently employed in or with a prior experience of working at an institute specifically for physically or mentally handicapped children were excluded. Of the 233 teachers who participated 32.6% (n=76) were employed in government schools and the remaining 67.4% (n=157) were teaching in private schools. The primary school teachers were predominantly female (94.9%). The mean age of the participants was 38.6 (SD 10.1) years and their mean work experience was 14.3 (SD 9.6) years. More than 58% of the teachers were graduates, almost 25% were post-graduates and the rest had either only completed their higher secondary school or had a lesser qualification. Of the teachers employed in government schools, 63.2% had graduate degrees, while 93.5% of teachers in private schools had completed graduate school education.

The self-administered questionnaire comprised of five sections. The first section was regarding demographics and included the qualification and number of years of experience of the teacher, whether they are currently employed in a government or private school. The second section had questions on knowledge of teachers regarding dyslexia, ADHD, and autism. The third section evaluated their ability to identify students with such conditions by giving scenarios and asking them to identify the learning-disabled children. These scenarios were constructed with the help of the DSM-IV criteria. The fourth section assessed their attitudes

towards managing these conditions. The last section was regarding current practices and the limitations encountered by them during the management of identified cases. The questionnaire was developed with the help of previous studies conducted^{13,20} and with a senior consultant from the Department of Psychiatry, Aga Khan University Hospital, Karachi. Written informed consent was asked from each participant.

All data was analysed using the software SPSS-17.0. A composite scoring system was developed to assess knowledge by assigning 2 marks to a correct answer, 0 marks for an incorrect answer, and 1 mark for “don’t know” or missing answers. This scoring system was employed as we believe that incorrect knowledge of these conditions is more likely to cause harm as compared to ignorance or indifference about learning disability. The score of the section that tested the ability to identify learning-impaired students, 1 mark was assigned to correct answers and 0 to incorrect or missing values. In this case, it was believed that an identification of the condition is crucial, and an indifference to the question does not deserve an intermediate mark. For determining associations between varying levels of education and ability to identify a disabled child student’s *t*-test was used. A *p*-value of less than 0.05 was considered significant.

RESULTS

The study included 233 primary school teachers from 21 schools in Karachi. The overall mean knowledge score of the participants regarding childhood learning disabilities was 28.4 (59.2%), out of a maximum of 48 points, with a corresponding mean ability score for identifying children with these disorders of 4.8 (53.3%) out of a total of 9. Less than 35% of teachers were aware that dyslexia, ADHD and autistic spectrum disorders are not caused by spoiling, and fewer than 16% correctly said that these learning disabilities are unrelated to sugar intake.

Knowledge regarding ADHD and autistic spectrum disorders was particularly deficient. Less than 12% teachers were aware that children with ADHD are at risk for developing alcoholism and drug addictions in the future. Only 24% teachers responded that the IQ levels of children with autistic spectrum disorders are lower than the general population. Around 40% teachers answered correctly that children with ASD have difficulty making friends and having conversations. The teachers generally scored better on questions regarding dyslexia, with over 60% teachers responding that these children had difficulty with reading and writing. However, only 38% responded rightly that dyslexia may also affect a child’s ability at math.

Our study revealed that many teachers were aware of their incomplete knowledge regarding dyslexia, ADHD and autistic spectrum disorders. The mean number of questions with “Don’t Know” or a missing response was 14.2 (S.E. 0.49) out of a total of 28 questions. Forty teachers were unable to answer a single question from the knowledge test conclusively.

A positive relationship was seen between knowledge of teachers and their qualification. Better qualified teachers (defined as graduate degree or higher) scored significantly more on the knowledge section as compared to lesser qualified teachers (defined as intermediate or below), ($p < 0.001$) as shown in table-1. The mean score comparing the ability against the qualification level showed a statistically significant relationship with better qualified teachers being better able to identify children with learning impairments ($p = 0.014$).

The results also demonstrated that teachers with greater knowledge regarding learning disabilities had a greater ability to identify children with learning impairments. Linear regression demonstrated that teachers that scored better on the knowledge test were also able to identify learning disabilities in children better ($p = 0.001$).

Most teachers were of the opinion that children with learning impairments should study in mainstream schools with specially trained teachers. Almost a third of the teachers thought that children with ADHD and ASD (29.9% and 33.2% respectively) should go to special schools, although a lesser percentage (17.6%) thought that dyslexic children deserved to attend special schools. Very few teachers thought that children with learning impairments should study in mainstream schools without help from specially trained teachers (Table-2).

About half (47.6%) of the teachers thought that other classmates should not know about the identity of the child with learning impairments, while 34.6% thought they had a right to know. The remaining educators were impartial. A majority (76.3%) of teachers were in favour of giving less homework to children with learning impairments.

When asked whether children with ADHD should be punished if they failed to do their homework, only 14.3% answered in affirmative. Oral exams for dyslexic students were supported by 84 teachers (36.5%) while the same number of teachers (36.5%) opposed it; 62 (27%) remained neutral.

Only 30.4%, 22.9% and 15.7% teachers believed that the discipline rules should be the same for students with dyslexia, ADHD and autism respectively, as for the rest of the pupils.

In children with learning impairments, difficulties in relationships with peers were noticed

by 180 (79.3%) teachers and 135 (59.5%) teachers were of the opinion that they struggled in their relationship with family. Many teachers (n=197, 86.8%) thought that students with learning disabilities needed psychological support, and 195 (87.4 %) teachers proposed the need of special educators for these children.

When asked if they thought the children would be able to be as successful as their peers the teachers responded positively 58.7% of the times for dyslexia (n=125), 52.9% for ADHD (n=120), and 38.1% of the times for autism (n=82).

When asked about what tools the participant’s institute used to identify children with learning impairments, 78% of the educators (n=172) responded that their schools used teacher’s judgment either purely or compounded with other tools for identification of children with learning disabilities. Thirty-eight percent of them (n=82) belonged to schools that had the facility of a special teacher who helped identify such students. Eighteen percent (n=39) used screening tests as tool to identify children with learning disabilities, and proper workshops had been organized by their schools for 40% teachers (n=87) to help them identify children with special educational needs.

Other responses suggested by the teachers included relying on parents’ judgment or a principal’s evaluation to identify such conditions, inviting a professional to screen the children and referring to specialists for an assessment.

Only 90 (42.5%) of the teachers had encountered children with some form of learning impairment in the course of their work. A majority of these teachers used techniques such as making them sit in the front of the class, giving them extra teaching time, encouraging other students to interact with them and actively involving them in discussions. The most common limitations faced by these teachers in the management of such children was being over-worked and having too many children in a class for the teachers to be able to pay individual attention to each. Table 3 shows the practices of teachers regarding the management of children with learning disabilities. Table-4 illustrates the limitations faced by teachers in the management of learning-impaired children.

Table -1: Knowledge and ability to identify learning disability in teachers of varying qualifications

	Higher qualified teachers*	Lower qualified teachers**	p-value
Mean score on knowledge test±SD (max=48)	28.8±4.3	26.7±3.0	<0.001
Mean score on identification of LD±SD (max=9)	4.9±1.2	4.2±1.6	0.014

* Graduate degree and higher, **Intermediate qualification and lower

Table-2: attitude regarding type of schooling for children with dyslexia, ADHD and ASD

	Special school	Mainstream schools with special educators	Mainstream schools without special educators
Dyslexia	17.6%	73.1%	9.3%
ADHD	29.9%	62.4%	7.6%
ASD	33.2%	61%	5.9%

Table-3: management of children with learning disabilities

Management	Percentage of positive response
Extra time given to child N= 87	74.7%
Seated at the front of the class N=90	76.7%
Encourage other students to help N= 90	75.6%
Actively involved in class discussion and activities N= 88	83.0%
Extra tuition N= 88	50.0%
Referred to special school N= 83	7.2%
Counseling/ extra encouragement of child N= 90	6.7%

Table-4: limitations faced in the management of children with learning disabilities

Limitation	Percentage of positive response
Overworked N= 80	52.5%
Too many students to give individual attention N=82	59.8%
Inadequate financial compensation N= 78	20.5%
Personal issues limit time given to students N= 88	36.7%
Lack of special counselor N= 82	31.6%
Parents disagree with suggested course of action N= 81	48.1%

DISCUSSION

Teachers play a pivotal role in identifying children with learning disabilities and managing them accordingly. In many cases, they are the first ones to recognize such conditions in an affected student.^{21,22} Probably due to lack of awareness, or due to a lack of institutions exclusively for such children, there is lack of knowledge regarding these conditions. Previous studies from Pakistan have shown inadequate knowledge about these conditions even amongst healthcare providers.^{12,17}

Our study discovered a general lack of awareness regarding learning disabilities. The mean score on the knowledge test was less than 60%, which we considered extremely inadequate. This is consistent with findings from Iran and Israel where knowledge regarding ADHD amongst school teachers was seen to be quite low.^{13,20} Additionally, we received an overwhelming number of responses marked “don’t know”, suggesting that many teachers are aware that they have insufficient knowledge regarding these issues. Similar results were seen in another study, where about 86% teachers thought their knowledge regarding ADHD was very low.¹⁶

In this study, teachers were asked to differentiate scenarios of students that fulfilled the criteria for a learning disability from students that had characteristics that were considered normal behaviour. It was seen that when teachers gave an incorrect answer, a vast majority was overly apprehensive and teachers were more likely to consider variations of normal behaviour abnormal, than to miss out children with obvious learning disabilities.

The study demonstrated that teachers with higher qualifications had more knowledge and were better able to pick out children with learning disabilities. As there are a significantly higher proportion of better qualified teachers in the private sector as compared to government schools, this may imply that teachers in government schools are less informed and therefore more likely to miss out learning-impaired children. The study also indicated that teachers with greater knowledge were better able to identify children with learning disabilities.

Most of the teachers showed a positive attitude towards incorporating children with dyslexia, ADHD or ASD in mainstream schools with specially trained educators. This was consistent with findings from earlier studies where teachers were generally in favour of inclusive teaching for children with special educational needs.¹⁸ Majority of the teachers were in favour of giving these children less homework and making disciplinary rules more lenient for them. Only about one-third of the teachers believed that dyslexic children should be offered oral exams. This was similar to the results from Iran¹⁶ but in contrast to a similar study in Israel where almost all teachers were in favour of oral exams.¹³ The reason for this difference may be explained by the deficient knowledge of school teachers regarding learning disabilities in our part of the world.

Most of the teachers recognized that such children need psychological support and that they have difficulty making relationships with family and friends. A vast majority thought that there should be specially trained educators for these children in schools.

Most of the institutes relied on the teachers' personal judgment to identify children with learning impairments; a few others had a specially trained teacher or counsellor, or conducted workshops to train their teachers. Previous studies have shown that workshops primarily aimed at teachers are successful in increasing knowledge of teachers regarding these conditions.¹⁹ Such workshops may be conducted in all schools on a regular basis to enable teachers to recognize more accurately any children with learning disabilities.

Most of the teachers who had taught a child

with learning impairments, had managed them in a number of different positive ways including giving them extra time and actively involving them in the class. Some of the strategies employed by the teachers, particularly directly questioning the students and involving them actively, have been shown to be significantly beneficial for such students.²³ Additional strategies that have been found to be useful, and are also recommended by the Learning Disabilities Association for America include breaking the students up into smaller groups for interactive tasks, segmenting the information and building up their knowledge, utilizing multimodal teaching by incorporating visual aids and having frequent feedback sessions.^{23,24} Amongst other limitations faced in the management of children with learning disabilities, the educators felt that parents were not supportive and did not agree to interventions proposed by them. This suggests that parents of learning-impaired children would potentially also benefit from learning more about these disorders, and mass awareness campaigns could help alleviate misconceptions about children with learning disorders.

Since all districts of Karachi could not be included, the sample may not be representative of all teachers in Karachi. Further studies need to be conducted in different provinces of Pakistan to account for any geographical or regional differences. Also, convenience sampling was used to select schools from different parts of Karachi. Since this study aimed primarily to assess the knowledge, attitudes and practices of school teachers, therefore the conclusions reached about the difference in knowledge and ability to identify learning disabilities between teachers of government and private sectors, as well as the correlation between the knowledge and ability to identify these students, might not be representative. Moreover, this study did not correlate the attitudes of teachers with their knowledge. Additional research might be conducted to explore whether increased knowledge about learning disabilities leads to more lenient attitudes towards such students.

RECOMMENDATIONS

Since behavioural therapy, environmental changes and at times supportive psychotherapy are essential to treat and allow mainstreaming of children with these learning disabilities, a multipronged approach is essential.⁸ According to one study done in Pakistan, a week-long training program significantly increased teachers' knowledge of ADHD.¹⁹ Such workshops and crash courses are much needed to improve the knowledge of educators regarding common learning disabilities which would enable them to deal more

effectively with such students in a classroom setting.

The teachers should not only be trained through regular workshops, but mass awareness campaigns should also be carried out to sensitize people regarding these conditions. In this respect, electronic media could be used to raise awareness regarding all three of these learning impairments as it has been used to increase awareness regarding dyslexia in the past. Furthermore, a screening mechanism should be in place to identify any child with such disabilities. The number of students assigned to one teacher should be reduced so that adequate attention can be given to each child and teachers do not feel overwhelmed.²⁶ Since learning-impaired children require special attention outside school and may be identified by parents as well, parents should be encouraged to complement the efforts of teachers.^{5,6}

AUTHOR'S CONTRIBUTION

SKL and DT conceived the study. All authors participated in data collection and entry. Statistical analysis was done by SKL and DT and interpreted by all authors. SKL and DT wrote the first draft of the manuscript, which was critically reviewed and appraised by all authors.

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