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Specific learning disorder among primary school children of Sarai Alamgir

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Abstract

Objective: To examine the frequency of specific learning disorder among primary school children.

Methods: The cross-sectional study was conducted from January to July 2018 in Sarai Alamgir, Gujrat, Pakistan, and comprised children studying in 3rd and 4th grades of six local public and private primary schools. Data was collected using structured clinical diagnostic interviews based on the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders. Data was analysed using SPSS 16.

Results: Of the 837 subjects, 413(49.3%) were from private schools and 424(50.7%) from public schools. A total of 174(20.7%) children were found vulnerable to specific learning disorders, while 13(7.5%) of them were diagnosed as suffering from different specific learning disorders. Of these 13 subjects, 1(7.7%) child had reading impairment, 3(23.1%) had mathematics impairment, 4(30.8%) had multiple impairment in mathematics and writing, 1(7.7%) had multiple impairment in mathematics and reading, 1(7.7%) had multiple impairment in reading and writing, and 3(23.1%) had multiple impairment in mathematics, reading and writing.

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Conclusion: Specific learning disorder was found to be prevailing in public and private schools' children.

Key Words: Specific learning disorder, Diagnostic and statistical manual of mental disorder, Screening tool.

Introduction

Mental and physical health of individuals are at stake, especially in developing countries like Pakistan where basic needs remain unmet for a large portion of population. A study[1] reported that 85% population from the developing and 50% from the developed countries have mental illness receive no treatment. Mental illness problems are high in low- and middle-income countries (LMICs).[2]

Children in Pakistan are also facing crisis related to their basic needs, inlcuding health services. Research on child mental health is a neglected area in Pakistan.[3] This includes neuro-developmental issues, like specific learning disorder (SLD), which impedes the ability to learn specific educational abilities that are the basis for other educational learning.[4] SLD happens not due to lack of instructions.[5] There are different forms of SLD, such as reading, written expression, spelling and mathematical problems.[6] The Colorado Department of Education has reported eight areas of SLD.[7] The most common areas of SLD are written expression, reading and mathematical among schoolchildren and adolescents.[8-10] Individuals with SLD may perform well in one area while in other area they face some difficulties.[11] A study[12] reported that every 10th child has to face difficulties in one or more areas of school curriculum, and the most common impairment areas are spelling and reading. The American Psychiatric Association (APA) has described three SLD categories: impairment in reading called dyslexia, impairment in written expression called dysgraphia, and impairment in mathematics called dyscalculia.[4] Its severity level can range from mild to severe. Dyslexia is very common and 70-80% of SLD students suffer in this category.[4] On the other hand, dysgraphia prevalence is 1-6.5% across different countries.[8] If

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proper attention is not given, SLD creates many problems, such as low confidence level, high proportion of school expulsion, low achievement and high psychological dysfunction.[4] These three categories can be present separately and with other categories. Many studies have reported that these three categories also have relationship with each other.[13-15] One study[16] observed the prevalence of SLD among third and fourth grade students in Germany based on criterion outlined by the fifth edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-V) , and reported that the prevalence rate of arithmetic and spelling was higher than the rate of arithmetic and reading, and the association between arithmetic and reading differed from the association between arithmetic and spelling. Another study[17] reported that the ratio of reading, arithmetic and spelling deficits were four to five times higher.

In Pakistan, a study[18] explored the prevalence rate of SLD among 3rd, 4th and 5th grade schoolgirls, and found that from 200 girls, 75 had SLD. Another study[19] identified 5.37% ratio of dyslexia in students of 6th, 7th and 8th grades, and boys had higher ratio than girls. One study[20] reported that there was no difference in SLD according to gender. The current study was planned to explore the frequency of SLD among primary school students and SLD's relation to gender.

Subjects and Methods

The cross-sectional study was conducted from January to July 2018 in Sarai Alamgir, Gujrat, Pakistan. After taking approval from the institutional ethics review board of University of Gujrat, the sample was rasied using multistage stratified sampling technique from among children aged 8-9 years studying in 3rd and 4th grades of 6 private and government schools (Figure). Children with any physical or mental disorder other than SLD were excluded. After getting permission from school authorities, the students were approached in their classes, and data was collected by using proportional allocation method.

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The data-collection tool consisted of four parts. The first part was related to informed consent, while the second part gathered demographic information. The third part had screening questions to separate vulnerable cases of SLD, while the fourth part was about the diagnostic criterion of SLD. The screening tool had 10 items to measure vulnerability to reading, mathematics and writing disabilities. The items were scored Yes/No, with 'Yes' indicating vulnerability. The diagnostic tool was used to assess the diagnostic criteria of SLD on all the vulnerable cases. It consisted of 29 items based on DSM-V[4]. Each SLD sub-category was assessed by applying the diagnostic criteria relevant to the disorder. Data was analysed using SPSS 16. Descriptive data was expressed as frequencies and percentages. T-test was used to assess the gender difference in SLDs.

Results

Of the 914 students, 837(91.5%) participated; 413(49.3%) from private schools and 424(50.7%) from public schools. A total of 174(20.7%) children were found vulnerable to SLDs, and 13(7.5%) of them were clinically diagnosed as suffering from SLDs. Of these 13 subjects, 1(7.7%) child had reading impairment, 3(23.1%) had mathematics impairment, 4(30.8%) had multiple impairment in mathematics and writing, 1(7.7%) had multiple impairment in mathematics and reading, 1(7.7%) had multiple impairment in reading and writing, and 3(23.1%) had multiple impairment in mathematics, reading and writing (Table 1). Among the diagnosed cases, there were 6(46.2 %) boys and 7(53.8%) girls (Table 2). There was significant gender difference related to impairment in mathematics and writing (Table 3).

Discussion

There were 20.7% participants vulnerable to SLDs and of them 7.5% were diagnosed with SLD. The findings are similar to 7.6% prevalence reported by a study in Brazil.

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In the current study, the prevalence ratio of participants in impairment in mathematics was also high at 23.1% compared to 5% reported earlier[22] in the United Kingdom, but the UK is in the group of high-income countries (HICs). Also, the currentstudy found high prevalence of impairment in mathematics and writing at 30% which is high compared to 10% reported by a study done in Lahore[23]. Though part of Pakistan, Lahore happens to be a major city, while Sarai Alamgir is small a town, and that may explain the differenc.

In the current study, there was no difference in reading impairment related to gender. The finding is in line with a local study[20]. The current study reported high writing impairment prevalence among boys compared to girls, and the results are consistent with earlier findings[24]. Also, the finding that girls had more mathematics impairment compared to boys is supported by literature.[25]

The current study has some limitations as it was conducted only in primary schools of a small town. Despite the limitation, however, the study, which is the first one done on the subject in Sarai Alamgir town, is helpful in evaluating the prevalence of SLD in primary schools of the area.

Conclusion

Findings suggest that schoolchildren may face some problems related to their brain functioning which directly hinder their academic learning. There is a need to understand the issue and to develop some policy which may cater to such cases.

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Conflicts of interest: None.

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Table 1: Subjects and impairment profile.

Cases	**f**	**%**
Target Population (N=914)		
Screening cases (n=837)		
Vulnerable participants for SLD	174	20.7
Non vulnerable participants	663	78.9
Diagnosed cases of SLD	13	7.5
Non-diagnose of SLD	161	92.5
Impairment in reading	1	7.7
Impairment in mathematics	3	23.1
Multiple impairment in mathematics and writing	4	30.8
Multiple impairment in mathematics and reading	1	7.7

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Multiple impairment in reading and writing	1	7.7
Multiple impairment in mathematics, reading and writing	3	23.1

SLD: Specific learning disorder

Table 2: Demographic characteristics of diagnosed participants (n=13).

Variables	Categories	F	%
Gender			
	Boys	6	46.2
	Girls	7	53.8
Grade			
	3rd	7	53.8
	4th	6	46.2
Nature of School			
	Private	5	38.5
	Public	8	61.5

Table 3: Comparison of boys and girls according to the type of impairment (n=13).

Variables	Gender Category	M	SD	p
Impairment in mathematics				
	Boys	9.67	1.51	0.01
	Girls	12.57	1.90	
Impairment in reading				
	Boys	8.67	2.07	0.12
	Girls	11.14	3.02	
Impairment in writing				
	Boys	8.33	1.51	0.02
	Girls	6.57	6.57	

M: Mean, SD: Standard deviation

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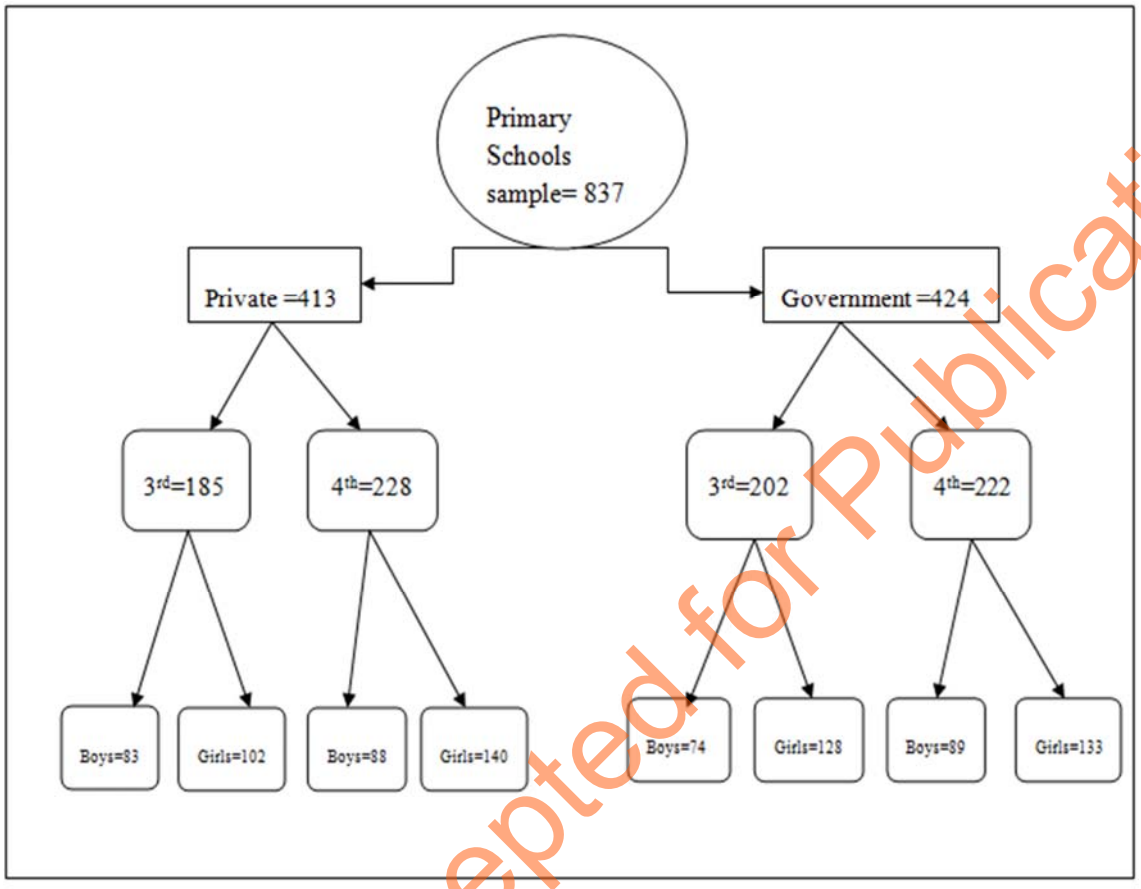

Figure: Flowchart for multistage stratified sampling.

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