Prevalence of Dysgraphia among the Secondary School Students

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***Abstract*: Learning of academics is the core component of any school curriculum. For success in academic endeavors one has to acquire the basic component i.e. reading, writing, speaking, listening and spelling and in the formative stage the child acquires these components of leaning. Sometimes there are apparently inexplicable blocks to learning which prevent intelligent children from reaching their potential in the classroom. In India, approximately 13 to 15 percent of school age population suffers from some form of learning disorder. Dysgraphia is one of the important types of learning disability. Students with dysgraphia have difficulties in writing process. It is the impaired ability to express ideas in writing (Gaddes, 1980). But due to lack of research work in area of dyscalculia and lack of awareness it is difficult to quantify the students who have dyscalculia. In this paper, we will discuss dysgraphia and its prevalence at the primary level.**

***Keywords*: Prevalence, Dysgraphia, Learning Disability**

An overview of Learning Disability- Dysgraphia

A Learning Disability (LD) is a neurological disorder that affects the brain's ability to receive process, store and respond to information. The term learning disability is used to describe the seeming unexplained difficulty a person of at least average intelligence has in acquiring basic academic skills. Although a student with LD may have performance difficulties in one or more areas, such as reading, writing, spelling, arithmetic, listening, talking and social perception, these individuals generally have normal cognitive abilities (Culbertson & Edmonds, 1996; NCLD, 2002).

There are a number of students who have difficulty in written, but good in other academic subject. These students have high IQs, and they are excellent reader and learner quickly. But when they come to any subject that required writing process, they fail.

Dysgraphia is one of the important subtypes of learning disabilities. It also means writing is not quite well and not good enough and unable to put the thought in the written form. Like "dyslexia" (impaired reading), the term "dysgraphia" (impaired writing) is used differently by different people. Handwriting disability has undergone many changes in nomenclature over the years. Some synonyms includes: motor agraphia, developmental motor agraphia, special writing disability, specific handwriting disability, specific learning disability in handwriting and more recently, dysgraphia is a problem with writing process. Dysgraphia is the impaired ability to express ideas in writing (Gaddes, 1980). Children who have acquired a limited vocabulary, have poor reading skills, and have difficulty using grammar and syntax usually are unable to organize and translate their thoughts in to writing. Written sentences tend to be short and concrete. Words are frequently omitted or poorly organized in the sentences; verbs and pronouns are misused, errors in grammar, capitalization, and punctuation are displayed (Johnson and Myklebust, 1967). Poor writers are more likely to produce shorter and less interesting essays; and they produce poorly organized text at the sentence and the paragraph levels. Furthermore, they are less likely to revise spelling, punctuation, grammar, or the substantive nature of their text to increase the clarity of their communication. Students with LD often experience difficulty when asked to plan, write, and revise an essay. In general, these students lack a basic knowledge about how to approach writing and the writing process as a whole. Scardamalia and Bereiter (1986) identified five areas of competence that are particularly problematic for students with LD when developing an essay: (a) generating content, (b) creating and organizing structure for compositions, (c) formulating goals and higher plans, (d) quickly and efficiently executing the mechanical aspects of writing, and (e) revising text and reformulating goals. Students with LD also experience difficulty when attempting to generate content and organize a structure for compositions (Graham, 1990). This problem may be attributed to their under-utilization of strategies for retrieving useful information. Thus, these students frequently view a writing assignment as a question/answer task involving little preparation. When students with disabilities are given an opinion essay, they simply responded by writing "yes" or "no" (to agree or disagree), followed by a few brief reasons, and ended with no concluding statement. Graham's study demonstrated that, once students with disabilities believe they have answered a question, they often abruptly end their composition without a summation of their point of view. The end result is that very little content is generated. Barenbaum, Newcomer, and Nodine (1987) noted a similar finding: that student with LD produced substantially shorter and lower-quality stories than students who achieve typically. In most essays that Barenbaum et al. examined, the students with LD failed to frame their stories to include all of the basic elements. Instead, they generated relevant information from memory without any self-regulation, resulting in essays that are generally less coherent and organized than those of their peers without disabilities (MacArthur & Graham, 1987). These problems can interfere with a student's ability to express ideas. According to Individuals with Disabilities Act (IDA) Fact Sheet "expressive writing requires a student to synchronize many mental functions at once: organization, memory, attention, motor skill, and various aspects of language ability. Automatic accurate handwriting is the foundation for this

juggling act. In the complexity of remembering where to put the pencil and how to form each letter, a dysgraphic student forgets what he or she meant to express. Dysgraphia can cause slow classroom productivity, incomplete homework assignments, and difficulty focusing attention".

Symptoms of dysgraphia can include poorly spaced and shaped letters; a child's handwriting getting worse instead of better with practice and effort, poor pencil grip, complaints of pain while writing, letter reversal, a strong aversion to writing, and, of course, illegible or very messy handwriting. A child with dysgraphia is also very likely to have dyslexia. Because of this, it's long been believed by the medical community that dysgraphia is also caused by the types of visual processing issues that cause the dyslexic brain to see letters incorrectly. This theory is supported by the fact that students with dysgraphia often have other fine motor delays, such as problem with tying their shoes.

Dysgraphia Prevalence:

Research related to the prevalence of learning disability among the school going children is relatively sparse. One major issue with learning disabilities is how to determine its prevalence rate because there is lack of consensus among psychologists and educationalists to define the term learning disabilities. Researches on understanding the concept of writing learning disability among the school going children lagged behind similar work being done in the area of reading disability or say dyslexia. Compared to research based on dyslexia, early difficulties in written and identification of children with this disability in later years are less researched and understood. Fortunately, now the attention paid to students who struggling with different kind of learning disability like dysgraphia.

In today world scenario, writing ability is not less important than knowledge, skills and reasoning and reading ability. The effect of written failure during schooling as well as it illiteracy in adult life, can severe handicap in both daily living and vocational prospects. Recently, focused increase on the students who show challenges in written skills that are taught during school life. Beginning as early as preschool, parents, educators and researcher are noticing that students seem perplexed simple math skills that many take for granted.

Many researches revealed that the prevalence rate of learning disability ranges between 5-16%. In United State, approximately 6 to 10 percent of school going children is learning disabled. Nearly 40% of the children enrolled in the nation's special education classes suffer from learning disability. In countries like India these difficulties are associated with others factor such as parental illiteracy and lack of adequate exposure to literacy related skills in the home environment. In India context, the estimate prevalence of learning disability ranges from 9-39%. The incidence of dyslexia in primary school children in India has been reported to (2-18%), of Dyscalculia (6%) and of Dysgraphia (14%). According to **Ramma (1990)** study the prevalence of dysgrapha in India is 16 percent.

Of the world's approximately 14-20% population suffering from dysgraphia, but it is extremely unknown. Most of the students having dysgraphia know that this exists- even fewer get help they need to succeed in school, job and real life.

The writing problems of children with learning disabilities are commonly prevalent in every classroom and constitute approximately 15 per cent of the school population in India. If the problems of learning disabled children continue to persist and are not properly addressed at the appropriate stage, their achievement would lead to academic retardation and maladjustment, which in turn may result in constant fiasco in academic endeavor and professional field in later life and resulting in stagnation and consequent high dropout rate. Thus, this leads to wastage of human resource and country's national and economic development would go downwardly.

Objective of the study:

- To identify the children with dysgraphia
- To check the prevalence rate of dysgraphia

Method to be used:

Sample:

In present study, VII grade students of 4 Public schools of Sonepat district will be included in sample. Purposive sample method will be used by the researcher for this study.

Tools:

Following measures were used to collect data. (1) Teacher's Observation Checklist (2) General Mental Ability Test for Children (Srivastava and Saxsena, 1985) (3) Test of Written Language (ToWL). The brief description of measures is as under:

(1) Teacher's Observation Checklist:

An observation checklist developed by National Council of Educational Research and Training (NCERT) had been used in the second phase. The checklist comprised sixteen items with Yes/No type and instructed the teachers to put tick mark if they found any observational and functional behavioral problems relatedto writing skill deficits among children in English language. English teachers who usually had been teaching the Grade VII were asked to fill the checklist of students who had poor and unsatisfactoryperformance in English or failed in English subject in school consistently. The checklist was used as a screening test.

Screening is a process that identifies children who needfurther assessment. The initial screening was done by English subject teachers in the classroom. Then observed the child over aperiod of time and framed a judgment about the child.

(2) General Mental Ability Test for Children (GMATC):

It is developed and standardized by R.P. Srivastava and Kiran Saxsena. This test measures the general intelligence of 7 to 11 years old children. This test is in both form Verbal and Non- Verbal, each of form has five subtests- Analogy, Classification, Number Series, Reasoning Problems and Absurdities. These five subtests are common in both the forms having equal numbers of items. It consist 50 items in each form. The fixed time limit is 10 minutes for non-verbal and 15 minutes for verbal form of the test. One mark is provided for each correct answer. The students whose IQ lies in range 90-110 (Average) were considered for next Diagnostic Test of Learning Disability (DTLD).

(3) Test of Written Language (ToWL):

The Test of Written Language (TOWL) was developed by the investigator for the present study with a view to assess thewriting skill deficits in English language of learning disabledstudents of class VII studying in public schools . Thetest is individually administered test or can be given in group withthe time limit of one and a half hour. The test comprise 28 questions i.e. 5 in handwriting, 8 in spelling, 10 in written expression and 5 in notes taking**.**

Description of the tool

The test was designed comprehensively and meticulously inorder to identify the students with dysgraphia on the basis of which intervention programme was developed. The test mainly evaluates four components of writing skill viz. Handwriting, Spelling, Written expression and Notes taking.

The first component of Test of Written Language i.e., Handwriting is the graphomotor skill by which children express their ideas in written form. It combines visual perceptual, visualmemory and the motor coordination necessary for executing the act. This component has six sub-components i.e., (i) Alignment (ii) Letter spacing, (iii) Word spacing, (iv) Letter size,(v) Slant,(vi) Line quality, with five questions of various types that measure holistically.

The second important component of Test of Written Language i.e., Spelling is the ability to produce writing materials without committing error and word analysis skill. This component has two sub-components i.e., (i) Correct words and (ii) Incorrect words with eight questions of various types.

The third component of Test of Written Language i.e., Written Expression is the ability to express thought in written form in an organized and coherent manner. This component has seven sub- components i.e., Organization, Cohesion, Originality, Mechanics, Language, Narrative text structure, Expository text structure, with ten questions of various types intended to measure those aspects. Again the seven sub-components have many additional components i.e., (i) In Organization: is there a good beginning sentence? is there aclear ending? is there a logical sequence of sub topic or events? useof measure details, highlight important ideas or main concepts anduse appropriate words to link ideas together, (ii) In Cohesion: doesthe student use key words that clue the reader the direction ofdiscourse (first…, then…., therefore…., on the other hand)? (iii) In Originality: does the student attempt humor and does the students present unique point of view?(iv) In Mechanics: end sentence with correct punctuation, use internal punctuation correctly, capitalization, spell regular words correctly, spell exception words correctly and paragraphing,(v) In Language: subject verb agreement, use of simple sentence, use of complex sentence, and correct use of grammar (vi) In Narrative text structure: provide setting(time, place),sequence ideas logically, highlight important events, include major details, use appropriate words to link ideas, combine sentence into cohesive paragraph, and describe ending or outcome (vii) InExpository text structure: highlight important ideas and main concepts, sequence ideas logically, include major details, use appropriate words to link ideas, and combine sentences into cohesive paragraph.

The last component of Test of Written Language i.e., Notes taking is the ability to take notes when someone dictates. This component has four sub components i.e., incorrect letters, incorrect words, missing words and correct sentences with five questions.

Identification of students with dysgraphia in English language:

In this phase, researchers surveyed 4 Public schools of Sonipat city and screened out low dysgraphia students in class-VII. The identification was done from two perspectives i.e. teacher and students. The data pertaining to the identification of dysgraphia in English language is given in Table-1.

The table-1 presents the identification of class VII students with dysgraphia in English language through the administration of diagnostic tools in phased and sequential manner. It also describes the number of students tested and number of students identified.

Table-1

Phase	Identification Tools	No. of Students Tested	No. of Students Identified
I	General Mental Ability Test for Children (GMATC)	240	180
II	Teacher's Observational Checklist	180	150
III	Test of written Language	150	40

It is observed from Table-1 that for identifying students with dysgraphia in the first phase, the preliminary information was collected by intelligence test i.e. General Mental Ability Test for Children (GMATC). The test was administered upon 240 students in order to identify average or above average intelligence students because Learning Disabled (LD) students have average and above average intelligence. In all, 180 students were identified having average intelligence say IQ 90-110.

After that in the second phase, Teacher's Observational Checklist was administered upon 180 students. For this purpose checklist were given to English teachers of those students about individual students' information who had problems related to writing or students who performed poorly in English instead of good verbal response. Through the checklist 150 students were identified for further assessment.

Finally in the third phase, a Test of Written Language (ToWL) was administered upon 150 students and finally 40 students in the lowest extreme group were screened as having dysgraphic symptoms.

Prevalence of students with dysgraphia in written English language:

The Table-2 reflects the prevalence of students with dysgraphia of grade seven in English language from four public schools. It also depicts the number of students in three schools. Hence, the prevalence of students is identified in term of figure and percentages.

Table-2 Prevalence of Dysgraphia

Sr. No	Name of the School	No of Students in Grade VII	Number of students with Dysgraphia	Percentage of Students with Dysgraphia
1.	Shiva Shiksha Sadan	75	12	16.00
2.	Rishikul Sr. Sec School	60	11	18.33
3.	Shiv Modern Public School	55	09	16.36
4.	Vikas Shiksha Sadan	50	08	16.00
Total		240	40	16.66

Interpretation and Discussion of Results:

The table-2 delineates that the prevalence rate of students with dysgraphia in public school of grade VII varies from 16.00 percent to 18.33 percent with mean percentage 16.66.

The result shown that the prevalence rate of dysgraphia among the Grade VII students is 17% which is in the range of prevalence of dysgraphia found most of the related research studies. Many studied are conducted in India as well as in abroad which show the prevalence rate of dysgraphia is about 14-20%. **Mohanty and Prasanta Kumar (2012)** in a large scale survey of school going children found that the prevalence of these children is approximately15%.

However, there is some evidence that show consistency with the result of the present study concerning the prevalence rate of dyscalculia among students at primary stage. In a study conducted by **Wong Ken Keong, Vincent Pang, Chin Kin Eng and Tan Choon Keong (2019)** found that dysgraphia is a specific learning difficulty that affect 17 percent of population which is nearest to the finding of the research in hand.

Different studies show different result so it is hard to quantify the exact prevalence rate of students having dysgraphia. The main reason for this is that different studies have used different measures and criteria. They have used different IQ test; different test for written language which may be emphasizing quite different component and different cutoff points for establishing normality versus deficit in both IQ and written. Since learning disability is recent and emerging area in the field of special needs, differences in the prevalence figures may partly be attributed to different factors like different definition of the term learning difficulties, differences in the identification criteria, controversy with regard to etiology and so on.

Conclusion:

Written learning difficulties or say Dysgraphia are common, significant and worthy of serious attention in schools. From this study, it is concluded that to quantify the exact prevalence rate of students with Dysgraphia is hard. The main reason for this is that different studies have used different measures and criteria. Many researches revealed that the prevalence rate of learning disability ranges between 5-16%. It is hard to quantify exactly how many people have dysgraphia because very few people are aware about it.

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