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FRAMING OCCUPATIONAL THERAPY INTERVENTION FOR DYSCALCULIA

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ABSTRACT

Children primarily learn by observing, listening, experimenting and asking questions at their school life. Usually school environment provides plenty of unstructured, balanced formal lessons and play to enhance learning. There are certain factors which affect learning, a specific and persistent difficulty in understanding numbers which can lead to a diverse range of difficulties with mathematics is seen in certain children. An estimated 25% of people have learning difficulties which can be caused either by neurodiverse conditions or external issues such as a traumatic learning experience related to mathematics at school. These children are termed Dyscalculia. A group of such children, are administered, Occupational Therapy intervention and the interested findings are reviewed in this study.

Key Words: Learning, School Children with Dyscalculia, Traumatic learning, Occupational therapy intervention.

The aim of the study is to identify children with Dyscalculia, with standardized assessment procedures, apply SIT intervention (Occupational Therapy) as suitable to their age, gender, education. Frame an appropriate method of treatment for Dyscalculia, & analyse the effectiveness of the program.

Objective of the study

- To select primary school children studying at Chidambaram.
- As appropriate to primary school children, to do screening with a tool devised by author Nathiya.
- To apply Multi-sensory treatment in SIT, as applicable to Dyscalculia & as applicable to the environment available at school.
- To analyse effectiveness, of therapy with statistics, as suitable to age, gender, education
- To frame the Occupational Therapy procedure for future reference.

Method

The study was carried out at Sri Meenatchi Primary School, Annamalai Nagar, which is a reachable, nearby school for the researchers.

STUDY PROCEDURE consisted of, PHASE - I Selection of children with Dyscalculia (samples) and PHASE – II Occupational Therapy Intervention application, Phase III to assess prognosis.

Result

Results of the study, based on

1. Age, Gender, Education
2. Occupational therapy procedure could be formulated in study sample.

Conclusion

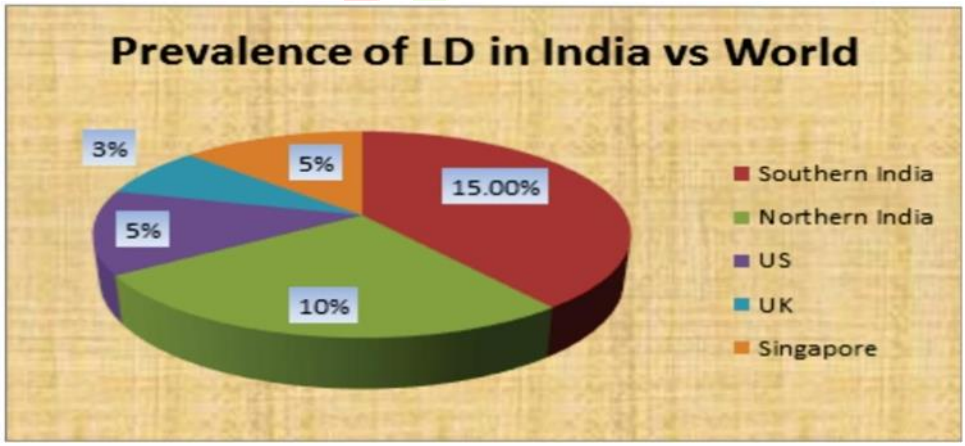
It was found that, activities selected on basis of SIT are appropriate to primary school children, in Chidambaram area of Tamilnadu, in dealing with Dyscalculia.

INTRODUCTION

Learning disorder in young is a neuro developmental disorder, produced by interaction of heritable and environmental factors, that influence brains ability to efficiently perceive or process verbal & nonverbal information characterized by persistent difficulty in learning academic skills like reading, written expression, or mathematics, beginning in early childhood, that is inconsistent with the overall intellectual ability of the child".

–KAPLAN & SADOCK

According to DSM-V the prevalence of specific learning disorder across the academic domain of reading, writing, and mathematics is 5 to 15% among school age children across different language and culture. In adults it is unknown but appears to be approximately 4%. Mogasale et al (2011) conducted a prevalence study of specific learning disability among primary school children in South India. They reported the prevalence of specific learning disability was 15.17% in sampled children and 11.2% of dyslexia, 12.5% of dysgraphia and 10.5% of dyscalculia.



Dyscalculia' means literally 'disorder in calculation'

"Dyscalculia" comes from Greek and Latin which means "counting badly". The prefix "dys" comes from Greek and means "badly". "Calculia" comes from Latin "calculare", which means "to count". The word "calculare" comes from "calculus" which means "Pebble" or one of the counters on an abacus. Num lexia is a key synonym for dyscalculia. Difficulties with maths are persistent and it will be present since the learner was young. Difficulties applying to arithmetic but not necessarily to other areas of maths such as geometry and algebra can be termed Dyscalculia. Lacking fundamental understanding on how numbers relate to each other, like ten can be made from adding two times 5, multiply of 5 by 2. Children with difficulties at mathematics are at higher risk for expressive language problems, and developmental coordination disorder. Relying on procedures like counting induces high level of anxiety in these children.

Developmental dyscalculia was first recognized by the Department for Education and Skills (DFES) (2001) and defined the condition as, "A condition that affects the ability to acquire arithmetical skills. Dyscalculic learners may have difficulty in understanding simple number concepts, lack an intuitive grasp of numbers, and have problems learning number facts and procedures. Even if they produce a correct answer or use a correct method, they may do so mechanically and without confidence."

Clark et al (1989) describes, SIT is applicable to children with Learning Disability. Since Dyscalculia is a sub type of LD, SIT is found to be effective. Occupational therapy intervention for Dyscalculia lies in early identification, at the main stream education, treatment of such a condition using the best available method such as, Sensory Integration Therapy(SIT), follow up of those children at long term, for analysing Dyscalculia symptoms in future.. In reviewing articles relevant, there was no specific assesments, procedure in SIT, strictly adheres to treatment of Dyscalculia children. Hence, this study was done, to FRAME effective assessment & treatment techniques.

Symptoms

Difficulties in counting, differentiating long, short.

• Comparing and identifying Small / big numbers

• Reading analog clocks , difficulty with conceptualizing time

• Difficulty in sequence of numbers, or transposing them such as turning 89 into98

• Difficulties with arithmetic especially confusion in the signs: +, -, ÷, ×.

• Difficulty in learning and remembering arithmetic "facts" viz. arithmetic multiplication-tables, mental arithmetic, etc.

•Difficulty in sequential processing from physical to abstract.

• Difficulty keeping score during games.

Extreme problems may lead to a phobia of mathematics.

Moreover, these children have

• Face problem in differentiating between left and right.

• Have difficulty in estimating the right answer.

• Have trouble even with a calculator

• Inability to concentrate on mentally intensive tasks.

• Difficult to comprehend budgeting.

CLASSIFICATION OF DYSCALCULIA

On the basis of experience with the arithmetic learning problems, Kosc described six types of Dyscalculia.

• Verbal dyscalculia - is characterized by difficulty naming and understanding the mathematical concepts when presented verbally.

• Practognostic dyscalculia – difficulty translating an abstract mathematical concept into a real concept; trouble in listing, comparing, and manipulating mathematical equation.

• Lexical dyscalculia - trouble reading and understanding mathematical symbols, numbers, expressions, and or equations.

• Graphical dyscalculia - difficulty in writing mathematical symptoms

• Ideognostical dyscalculia - difficulty carrying out mental operations without using numbers.

• Operational dyscalculia - difficulty to complete written or spoken mathematical operations or calculations.

Causes of Dyscalculia as explained in **Neuro sciences**

• Dyscalculia has not been studied with the same intensity as dyslexia. Numerical abilities including arithmetics are mediated by areas in the parietal lobe. In functional imaging studies performed during mental calculation tasks, pattern of bilateral activation in the prefrontal premotor and parietal Curtis has been observed. Neuropsychological evidence indicates that numerical processing is localized to the right lobes bilaterally.

• Reduced volume of grey cortical matter has been reported in few studies, of genetic contributions to mathematical ability. Most have studied the possible genetic etiology of mathematics disorder, at least partly because of its comorbidity with reading disorder. Results from twin studies were consistent with a genetic basis for mathematics disorder whether combined with reading disability or not and estimates of high heritability of mathematical ability where obtained in a sample of twins with normal intelligence as attained for reading disability and family samples. So for developmental dyscalculia is likely to be the result of the failure of these brain areas to develop normally and can best be defined as a deficit in the representation or processing of specifically numerical information.

NEED AND SIGNIFICANCE OF THE STUDY

• School children with mathematical learning difficulties have problems in solving basic mathematical problems. They find it difficult to remember and retain basic mathematical facts and have trouble in figuring out their knowledge and skills to Solve mathematical problems. If basic mathematical skills are not mastered, learners may have difficulty in doing advanced mathematical applications.

Dyscalculia is seen to be a developmental as well as acquired learning disability and the effects of the disorder can be controlled with appropriate support, guidance and interventions.

- Very few researches have been done in the area of mathematical disorder compared to other learning disorders. Few studies have focused on the various types of dyscalculia, at various levels of education.

1. This study is an attempt to screen dyscalculia in school children at Chidambaram.

2. The study would help the students to get aware of their mathematical disorder, the teachers to screen the dyscalculic school students.

3. Occupational Therapy remedial measures can be framed

REVIEW OF LITERATURE

- STUDIES ON INTERVENTION FOR DYSCALCULIA

  - Rogaieh Mohammadi; Fatemeh Behnia; Mojgan Farahbod; Mehdi Rahgozar et.al., study investigates occupational therapy interventions effect on mathematical problems in students with specific learning disorder (dyscalculia) It is an empirical kind of study. 40 students with dyscalculia were selected and divided through randomized permuted blocks method into two; 20 as intervention group and others as control group and both were administered by "Iran Key Math Test". Then intervention group received occupational therapy interventions and two groups were administered again by the test. Data were analyzed by paired and independent T tests, mean (P<0/05) by measure intervention group show more difference than control group. Thus, occupational therapy intervention has clinical **effects on math problems** improvement such as basic concepts operations and mathematical application of students with dyscalculia. (Iranian Rehabilitation Journal, Vol.7, No.10, 2009)
  - Udita Khurana; Neelima Chopra et.al., study the effect of occupational therapy and special education as remedial intervention to enhance cognitive processing of children with specific learning disability, with two children, aged seven years in a Private school. They were provided with occupational therapy and special education Interventions for a period of one month. Cognitive assessment system was used in a pre and Post setting before and after the intervention to record the changes in cognitive processing Level. For occupational therapy intervention Logicco Piccolo, by Grolier was used and for Special education through Individualised Education Plan the intervention for English Language was focused upon. The results indicated that occupational therapy intervention did bring about a change in the cognitive processing level of the child. Significant change was Seen in the simultaneous subsets on the cognitive assessment system for both occupational Therapy and special education intervention. (Pal Arch's Journal of Archaeology of Egypt / Egyptology,17 (7) 2020).
  - Majeda Al Sayyed Obaid et.al., investigates the impact of using multi-sensory approach for teaching students with learning disabilities(dyscalculia). The test consists of 20 items on mathematics and the study comprised 117 sixth grade students who are divided into four groups for study (two experimental - 62 students and two control groups - 55 students). Descriptive statistical analyses was used for the pre and post-tests of the study. It indicated that there were statistically significant differences in the post test between the control and experimental groups.

- STUDIES AT PRIMARY SCHOOL LEVEL

While analyzing the neuro-psychological processes and the arithmetic errors Committed by the students studying in primary schools, it was found that majority of the dyscalculics experienced difficulty in reading and writing more than two digits. In sequential reproduction and seriation of numbers, and also in involving spatial and numerical relations (Ramaa, 1990). Drueck (1997) found that the low-math achievers used the more immature unitary Conception for a longer period of time than did the average-math learners. It was also found that the low-math achievers used the less sophisticated concrete representational methods. Advanced methods of mental strategies and standard written algorithms were used by the average-math learners. The low-math achievers also found to have decreased automaticity for labeling numerical information, poorer basic fact retrieval and Lower performance on a composite of memory tasks.

- STUDIES ON NUMERACY

Dimona Bartelet, Anniek Vaessen, Leo Blomert, Daniel Ansari (2013), conducted a Study on, "What basic number processing measures in kindergarten explain unique Variability in first-grade arithmetic proficiency?" Hierarchical regression analysis revealed that children's efficiency to compare digits, count, and estimate numerosities uniquely predicted arithmetic Differences above and beyond the non-numerical factors included. Moreover, regression analysis indicated that symbolic Number processing efficiency was consistently a significant predictor of arithmetic achievement scores regardless of children's level of arithmetic proficiency, whereas their non-symbolic number processing efficiency was not. Finally, none of the task-specific effects indexing children's representational precision was significantly associated with arithmetic fluency. The implications of the results were 2-fold. First, the findings indicated that children's efficiency to process symbols is important for development of their arithmetic fluency in Grade 1 above and beyond the influence of non-numerical factors. Second, the impact of children's non-symbolic number processing skills did not depend on their arithmetic achievement level given that they are selected from a nonclinical population.

Multi Sensory approach of Treatment

Individuals with Disabilities Education Act, 1990 furnishes, children with Learning Disabilities can attend public schooling with sensory integration therapy.

Jean Ayres reported Sensory Integration Therapy (SIT) as a promising method for improving academic scores in learning disabled children. Sensory integration is a term used to describe processes in the brain that allow us to take information we receive from our senses, organize it, and respond appropriately. Actually, Occupational Therapist, Jean Ayres designed SIT , to help children with sensory processing disorders to cope with their difficulties. She administered therapy sessions with play oriented activities, swings, trampolines and slides. It makes the child tolerate sensory rich environments, reinforce positive behaviours as applicable to learning. In 2013, with DSM-5, sensory issues became an official part of the diagnosis, described as: "Hyper- or hypo reactivity to sensory input or unusual interests in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement)."

Sensory Integration Therapy

When a certain stimuli comes into contact with the senses, such as hearing, touch, taste, and smell; the nervous system receives and interprets this stimuli—this process is known as sensory integration. Sensory integration therapy can make a real difference by helping individuals to manage their sensitivities and cravings. Ayres Sensory Integration (ASI) therapy was developed to provide occupational therapists with a set of guidelines for how to provide consistent intervention. A review of studies that provided ASI therapy,

2006-2017 concluded that ASI is an effective intervention for the autistic population, especially those who are four–12 years of age. The American Occupational Therapy Association describes several types of remediation that can help with both sensory challenges and the performance challenges that can go along with them.

Various activities require multiple senses acting simultaneously—for example when a child is eating, his/her sense of smell is activated so that the child recognizes what he/she is eating. Meanwhile, his/her sense of hearing naturally filters out background noise, the child's sense of sight is also activated; adding to it the sense of touch that informs the child about the texture of the food. However, if any of these senses are either over or under stimulated (as they often are in children with autism), the child's desire to eat is affected and the food might not be enjoyed.

Swinging

In a child, when sensory stimulation has been deprived, it can lead to sensitivities with light, sound and texture. They may lack balance, coordination, motor planning and muscle awareness. Because the body and the brain are connected, disruptions in sensory integration may not be fully developed, which can cause attention and focus issues in the classroom. They may struggle to listen to their teacher or find it hard to retain and grasp elements that come easier to other children. Other aspects of the body such as balance and weight (vestibular system) or sense of touch (tactile) is arguably more important because they comprise so much of a child's overall body mass. If a child shows signs of learning delays in the classroom, it could be lack of sensory integration and poor vestibular system instead of trouble with the eyes and ears.

Ayres advices swing, sitting up straight, on their stomachs, on their backs and even twisting round and round. It's what we call a sensory diet. That is why using a park swing isn't always the most beneficial, because they are limited to what they can do. She also suggests to use therapy hammocks since it provides whole slew benefits of SI. The swinging motion helps vestibular system, to improve balance & coordination. Ayres describes, if child is constantly on the move, signs of toe walking after 5 years, has speech delays, it may be the under responsive vestibular system.

Numeracy & Dyscalculia

From neuroimaging studies that the critical area for processing numbers in the human lies in the

Intra parietal sulcus & and the parietal lobes are deeply implicated in the neural network. It has been found that individuals with developmental disorders of low numeracy or dyscalculia have abnormalities in the parietal lobe. Henschen (1920) showed that left parietal damage led to problems with numbers, often with no other cognitive symptoms. Cappelletti, Butterworth, & Kopelman, 2001 reported a patient with severe deficit of language & semantic memory having progressive atrophy in the temporal lobes with relatively intact parietal lobes.

More generally, it has been argued that the core deficit in dyscalculia, is an inability to process numerosities, which are properties of sets. Dyscalculics perform poor, either in accuracy or in time, on very simple numerosity tasks, such as number comparison or the enumeration of small arrays of objects (Butterworth & Reigosa Crespo, 2007; Landerl, Bevan, & Butterworth, 2004).

METHODOLOGY

SELECTION CRITERIA FOR THE STUDY

INCLUSION is based on screener FORM A & B Pretherapy score. Students obtained poor scores in one or both of the sub-tests of the screener.

Primary school children, both male and female gender are included.

EXCLUSION criteria are based on scores. Above or below average level scores in both FORM A & FORM B or anyone of these sub-tests of the Screener.

PRE-THERAPY ASSESSMENT

The screener is administered for the population (60) dividing them into small groups each consisting of 5 members. Half of the groups (6 groups) were administered by form A and rest of them by Form B. The scores from both symbolic and non-symbolic parts of the forms are documented.

SAMPLE OF THE STUDY

The population of the study consists of all students of the classes 1 to 4 in the selected primary School (Total 60) The sample of the study is selected by randomized method (scores < 25 out of 56 in symbolic or non-symbolic or both) through pre therapy assessment screener. Sample consists of 26 students as appropriate for the study (11 girls and 15 boys).

PHASE - II

Treatment procedures or Occupational Therapy Intervention

As per literatures, Sensory integration is very effective for specific learning disability & it was chosen as a choice of intervention to administer for dyscalculia.

ACTIVITIES SELECTION

Based on

- Easy to administer
- Age appropriate (for 5 to 10 years)

Play based activities are selected. Activities are administered for selected children in group & individually. The duration of the activities differ from the early sessions to the late sessions. Study participants participated for time duration six months.

POST THERAPY ASSESSMENT

After the end of intervention sessions once again the screener is administered to the selected samples but this time, they who were administered form A are administered form B and vice versa,as described by author. The difference between the symbolic and non-symbolic scores of both forms is documented.

Dyscalculia is developmental, problem. So early interventions are most effective. The skill level of each student needs to be assessed to judge treatment interventions.

DESCRIPTION OF THE INSTRUMENT

Name of the Instrument used for the diagnosis is Numeracy Screener as developed by Author Nadia Nosworthy, under the supervision of Doctor Daniel Ansari. Validity & Reliability are given by them, at Numeracy cognition laboratory, western university, Canada (2014). Numeracy Screener as instrument, according to the original, author describes **professionals can use this form** A & B in one week gap to find numerical processing ability of the child. Low score may indicate or alert the professionals to investigate further more on the child's arithmetic abilities. Reliability on scores of the test is also given instructions by the author. The author tested 658 schools children as part of her Ph.D work and documented data.

Based on this study, for a sample of 26 children selected in primary school of Chidambaram, the present study is done. Future studies may extend to children of higher age belonging to other educational standards. As the author used this Screener to study numerical processing ability of children in senior kindergarten to grade 3 this study is also done for the numerical processing ability of children in primary education.

There are very few studies described on dyscalculia both in clinical and nonclinical perspective and no easily accessible, evaluation and intervention plans for mathematical disability is found. So as an attempt to investigate and frame occupational therapy intervention for dyscalculia, this study is focused.

DATA ANALYSIS

Table 1

Distribution sample according to their Age

S.No.	Age	Number of Students	Percentage
1.	5 to 6 years	10	38.5
2.	7 to 8 years	11	42.3
3.	9 to 10 years	5	19.2
	Total	26	100.0

It is seen from the table that 38.5% of the students are 5 to 6 years of age, 42.3% of them are 7 to 8 years of age and 19.2% of them are 9 to 10 years of age. Therefore majority of dyscalculics are 7 to 8 years of age group.

Graph 1

Distribution sample according to their Age

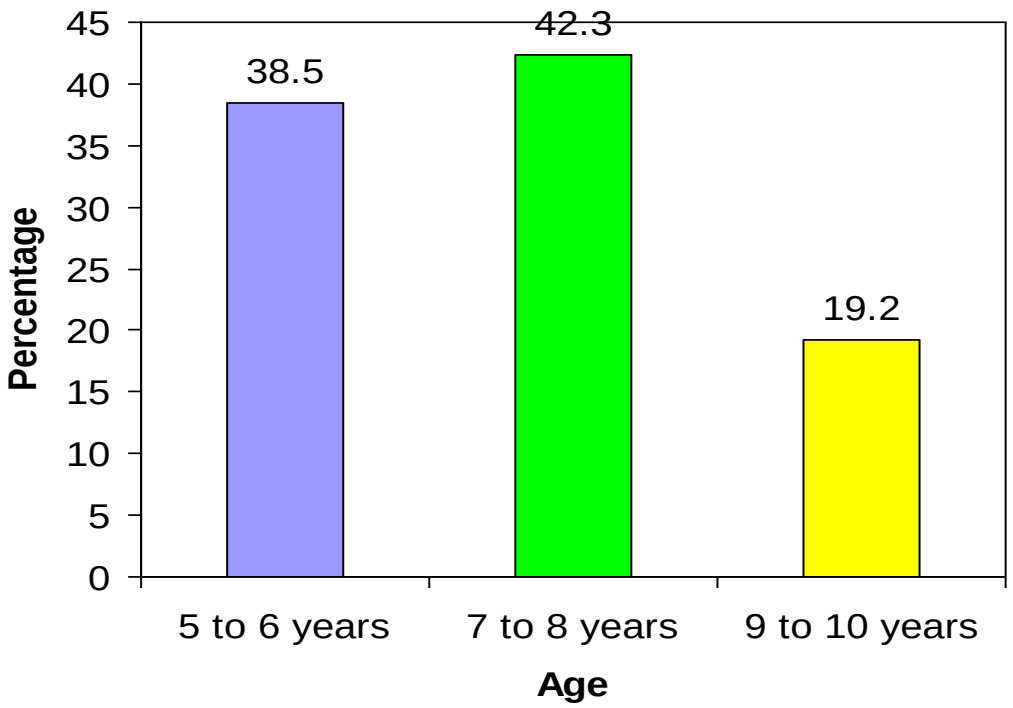


Table 2

Distribution sample according to their Gender

S.No.	Gender	Number of Students	Percentage
1.	Male	15	57.7
2.	Female	11	42.3
	Total	26	100.0

It is seen from the table that 57.7% of the students are male and 42.3% of them are female. Therefore majority of dyscalculics are male children.

Graph 2

Distribution sample according to their Gender

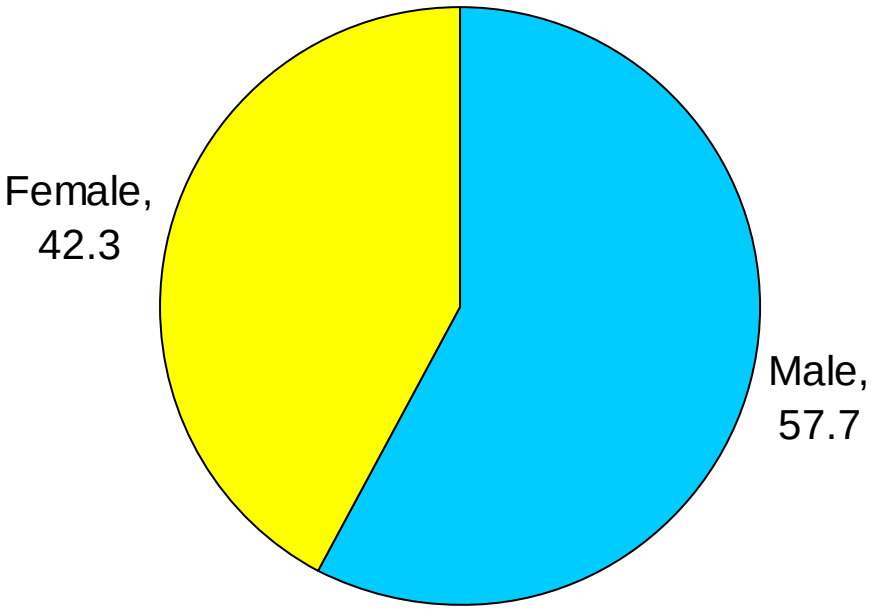


Table 3

Distribution sample according to their Education

S.No.	Education	Number of Students	Percentage
1.	1st standard	9	34.6
2.	2nd standard	5	19.2
	3rd standard	6	23.1
	4th standard	6	23.1
	Total	26	100.0

It is seen from the table that 34.6% of the students are from 1st standard, 19.2% of the students are from 2nd standard, 23.1% of the students studying are from 3rd standard and 23.1% of the students studying are from 4th standard.

Graph 3

Distribution sample according to their Education

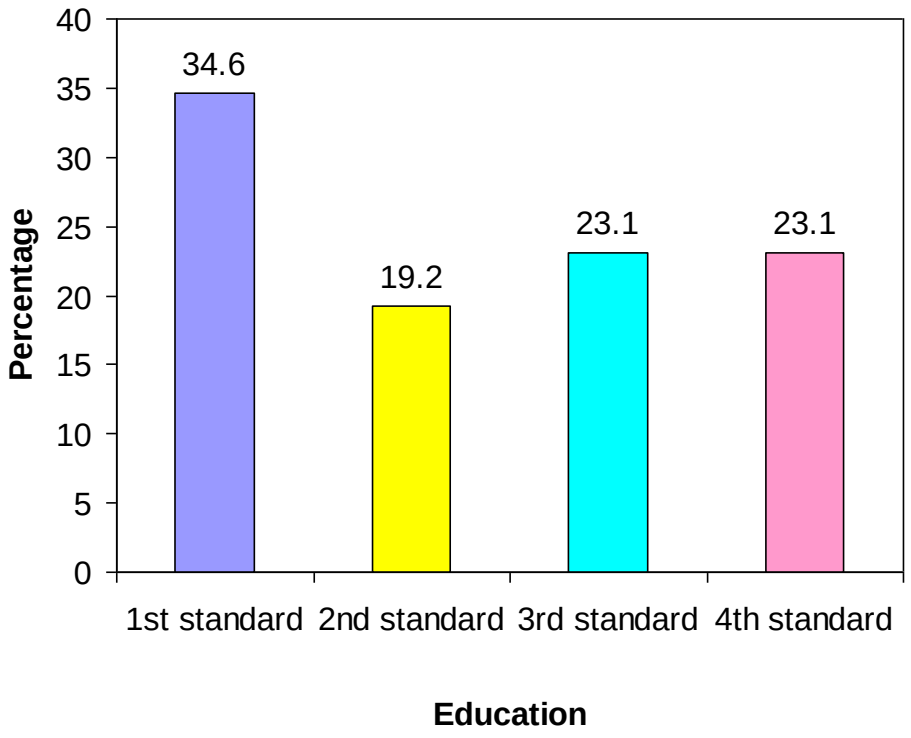


Table 4

t-test of Symbolic Score in School Students in Pre and Post value

Group	N	Mean	Standard Deviation	Standard Error Mean	t-value	Probability Value
Pre	26	15.04	4.33	0.85	11.580	0.001*
Post	26	20.27	4.69	0.92		

* Highly significant at 0.01 level

In comparing pre and post test, scores of post test (20.27±4.69) has higher mean value than pre test (15.04±4.33). The calculated 't' value 11.580 and Probability value is 0.001 at 0.01 level of significance. Hence it is concluded that, there is a significant difference between the pre and post test for Symbolic score in school students.

Graph 4

Mean of Symbolic Score in School Students in Pre and Post value

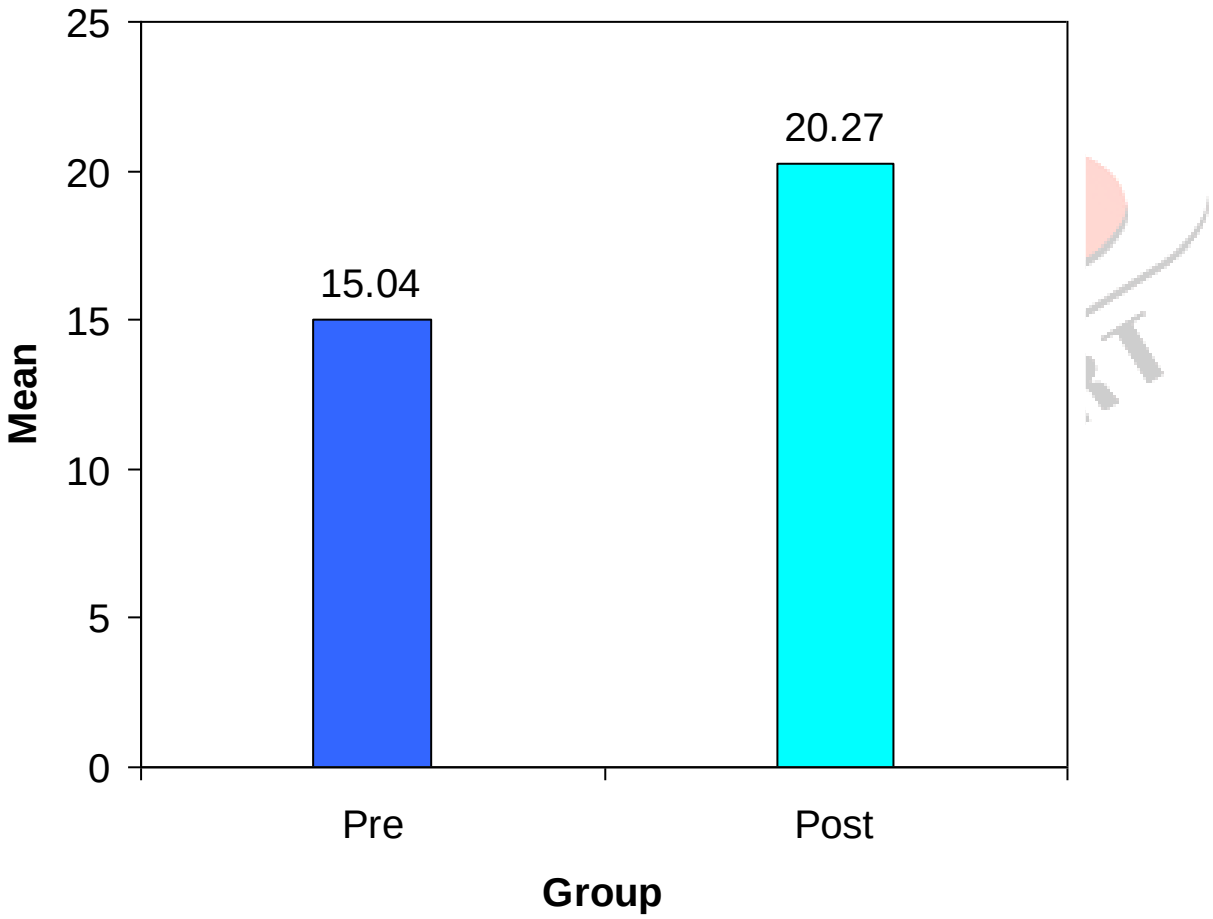


Table 5

t-test of Non Symbolic Score in School Students in Pre and Post value

Group	N	Mean	Standard Deviation	Standard Error Mean	t-value	Probability Value
Pre	26	15.77	4.63	0.91	13.340	0.001*
Post	26	22.81	4.41	0.86		

* Highly significant at 0.01 level

In comparing pre and post test, scores of post test (22.81±4.41) has higher mean value than pre test(15.77±4.63). The calculated 't' value 13.340 and Probability value is 0.001 at 0.01 level of significance. Hence it is concluded that, there is a significant difference between the pre and post test for Non Symbolic score in school students.

Graph 5

Mean of Non Symbolic Score in School Students in Pre and Post value

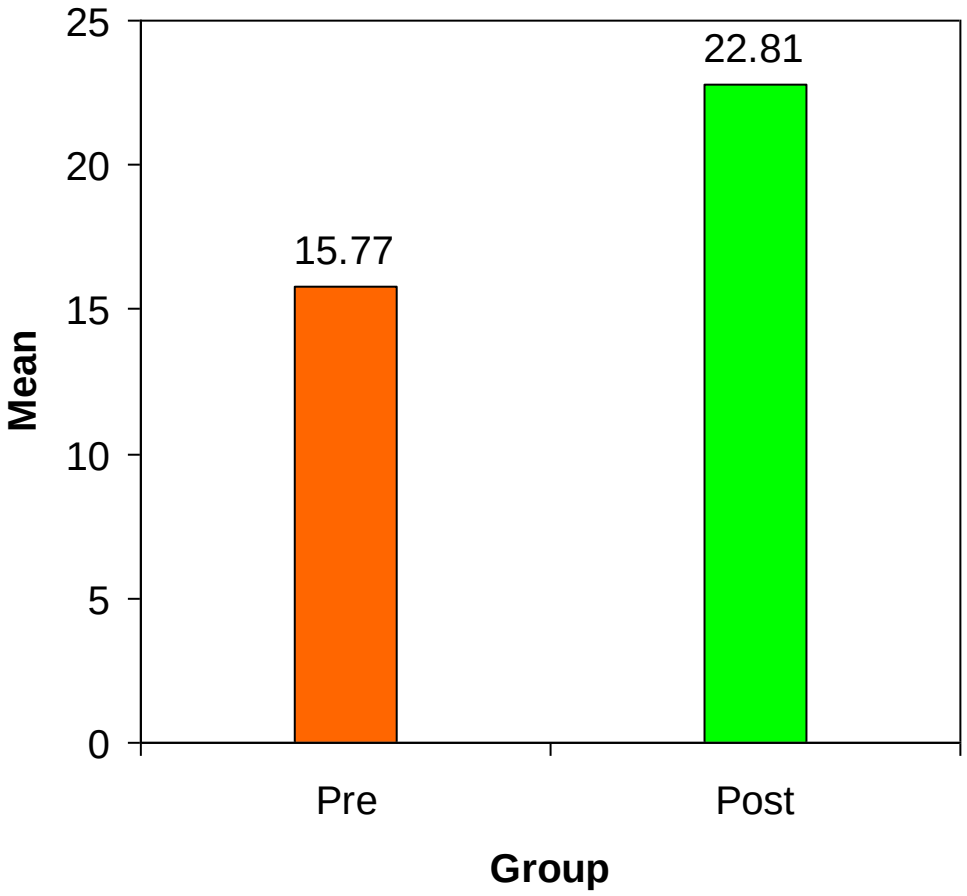


Table 6

t-test of Dyscalculia Screener Mean Score in School Students in Pre and Post value

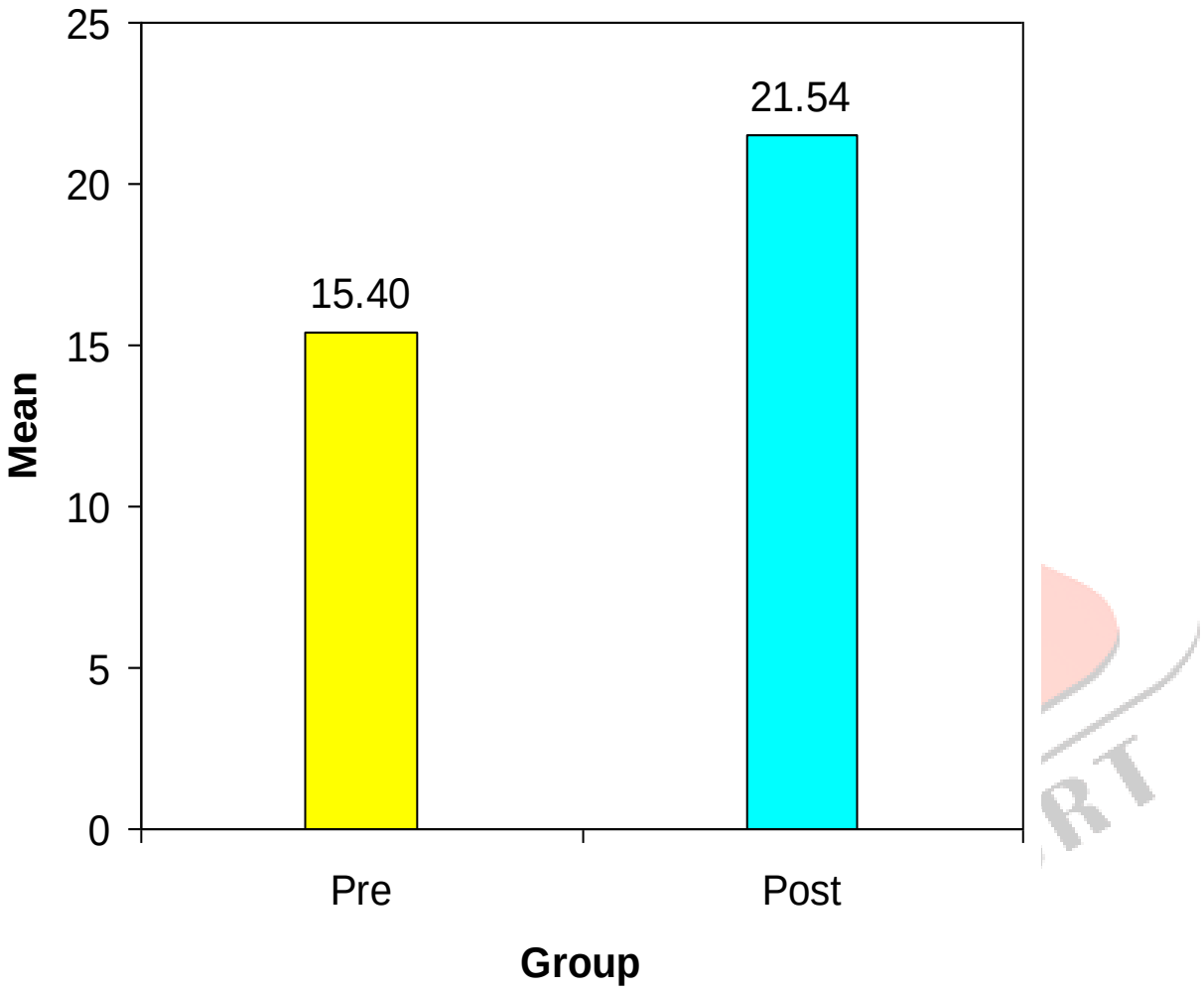
Group	N	Mean	Standard Deviation	Standard Error Mean	t-value	Probability Value
Pre	26	15.40	4.16	0.82	17.511	0.001*
Post	26	21.54	4.47	0.88		

* Highly significant at 0.01 level

In comparing pre and post test, scores of post test, (21.54±4.47) has higher mean value than pre (15.40±4.16). The calculated 't' value 17.511 and Probability value is 0.001 at 0.01 level of significance. Hence it is concluded that, there is a significant difference between the pre and post test for Dyscalculia Screener Mean score in school students.

Graph 6

Mean of Dyscalculia Screener Mean Score in School Students in Pre and Post value



RESULTS

There are no secrets to success. It is the result of preparation, hard work, and learning from failure. - Colin Powell

Results of the study, based on Age, Gender, Education could be formulated in study sample.

From the analysis carried out it can be understood that, students of age 7 to 8 years were the most sufferers. (Table 1, Graph 1). From Pretherapy assessment it was found that 26 students as appropriate for the study were selected by the researcher. According to gender, table (2), graph (2) point's male students are more in number of Dyscalculia than females. According to education, the first standard studying students were identified more in number with Dyscalculia.

DISCUSSION

The purpose of this study is to frame occupational therapy intervention for dyscalculia. Initially screening of 60 students, was done. Out of which 26 were identified as suitable for this study. By administering numeracy Screener the selected students were given multisensory approaches of occupational therapy for six months, twice weekly. The materials used for the treatment study were self-funded and were selected based on the space availability and way of administration of the intervention. During the sessions some difficulties to handle primary school children were experienced. Later, through practice the study was successfully done and the post therapy assessment indicates there is significant level of improvement over the numeracy of the children after implementing multi-sensory intervention in Occupational Therapy.

SUGGESTIONS

- Identification of Dyscalculia in children needs to be done early. Hence, the study was applied on Primary School children.
- Awareness about Occupational Therapy treatment interventions are very little as for as the Dyscalculia problem is concerned. Hence, proved result of intervention can enhance, dealing with the problem with OT interventions.
- Study can be done in different age group children. It can be repeated in comparison between the genders at varying ages and educational standards. Study can be done for longer duration and for wider, larger population.

CONCLUSION

Children are born ready to learn and interested in the world around them. It is natural for them to use all their abilities to learn. Children's development and learning are affected by influences within themselves – their genetic inheritance, temperament, gender, and health influences within the family, parenting styles and values, and parents' physical & mental health.

Sensory integration therapy is essentially a form of occupational therapy, and it is generally offered by specially trained occupational therapists. It involves specific sensory activities to help a child appropriately respond to light, sound, touch, smells, and other input. Interventions may include swinging, brushing, playing in a ball pit, and many other sensory-related activities. The outcome of these activities may be better focus, improved behaviour, and even lowered anxiety.

The study concludes that those primary school children who are taught mathematical concepts with multi-sensory approach treatment shown higher level of achievement in arithmetics . Post therapy test with the screener shows, statistically significant values. Hence proves multi-sensory approach as a better intervention for dyscalculia in the study group selected with the screener as a diagnosing tool. With Occupational Therapy programs, many children can develop skills and abilities. For adults who learn they have this condition, treatment isn't possible. Hence, framing of OT intervention & application of such programs is necessary in early stages.

SUGGESTIONS

Identification of DYSCALCULIA in children needs to be done early. PHOBIA for dealing with MATHS subject needs to be erased, earlier from mind of children.

Awareness about Occupational Therapy treatment interventions are very little as for as the Dyscalculia problem is concerned. Hence, proved result of intervention as done in this study can enhance, dealing with the problem with OT interventions.

Study can be done in different age group children. It can be repeated in comparison between the genders at varying ages and educational standards. Study can be done for longer duration

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