

Clinical effect of *Brahmi Ghrita* in selected neuropsychological paradigms in learning disabled children- Case Series**Anil Kumar M. V.**

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Abstract

Academic performance indicators of school going children have pointed out various causes for poor scholastic performance and contributed varieties of remedial action plans. The basic understanding of the neurobiological aspects of learning problems demands medical interventions for various domains of neurological dysfunction. Ayurveda provides a variety of clinical interventions to improve the intellectual functions from the very beginning of brain development. The highlights of this include early interventions by way of providing safer herbal and mineral drugs from the neonatal period itself. Though these drugs are found to be clinically effective in improving the neuropsychological capabilities of children, an empirical data to prove its efficacy is lacking. The use of selected neuropsychological paradigms like Attention and Working Memory can provide valid information regarding the functioning of concerned cognitive areas. By using these standardised protocols for assessment, an evaluation of two Learning Disabled children were done before and after the intervention using *Brahmi Ghrita* for 3 months and promising results in improvement in Attention and Working Memory were seen.

Key words: Attention memory, *Brahmi Ghrita*, Learning Disability, Language issues, Neurological paradigms, working memory.

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Introduction:

Specific learning disability is a disorder affecting the basic psychological processes involved in understanding and using language, spoken or written and may manifest itself in an imperfect ability to listen, speak, read, write, spell or do mathematical calculations.¹

Children with learning disability suffer from many issues like low self-esteem; underachievement and poor socialization.² Learning disorders are categorized into reading disorder, writing disorder and arithmetic disorder. The causes of such disabilities are attributed more to the neurobiological aspects of brain functioning³. Attention and working memory are the main components in the process of Learning⁴. Attention time is the time taken to complete a particular task. Children with poor attention cannot concentrate on the task and may take more time for completion. Working Memory refers to the capacity to hold and manipulate information for ongoing process. This capacity is required to integrate the information with long-term memory and with other information being processed. Improvement in attention and working memory is essential for a child with learning disability to achieve learning skills. Ayurveda highlights the importance of cognitive interventional strategies. Among the various combinations used in clinical practice, *Brahmi Ghrita* is known for improving attention, language development and learning skills⁵. It is an effective combination especially for the diseases of

neurological origin and is generally being consumed as a memory booster and pacifier of mental disorders. *Brahmi Ghrita* is a safe, effective and time tested drug commonly used for learning disabled children.

Case Report:

In this Case series, two children with Learning Disability were treated at the Kaumarabhritya department of Govt. Ayurveda College, Thiruvananthapuram. The presenting features were difficulty in reading and writing, sustaining attention during studies, poor academic performance, poor memory, restlessness and easy distractibility during studies. They did not present with any other developmental or psychiatric disorders. Both children were subjected for neuropsychological evaluation by a psychologist using selected paradigms of Attention following the NIMHANS Battery for specific learning disability. Malins Intelligence Scale for Indian Children (MISIC) showed an Intelligence Quotient above 90. The tools of assessment consisted of easy tasks designed for different age levels of children.

Case -1:

The patient No. 1 was a 10 year old male child was presenting with poor academic performance, poor memory, inattention and restlessness during studies. He had reading and writing problems, difficulty in memorising subjects, used to commit frequent spelling errors, otherwise he was a

happy child with no behavioural problems. IQ level was found to be 95.

Case-2:

The second patient was a 7 year old boy. He had no interest in studying. He was easily distracted by external factors and could not concentrate and found difficulty in retaining information, had illegible handwriting and confusion regarding similar letters like 'b' and 'd'. He had poor academic performance, restlessness and reading and writing problems. On IQ testing, intelligence level was found to be 97.

Treatment Given:

After thorough evaluation of working memory and attention, both were advised 10g of *Brahmi Ghrita*, prepared as per the guidelines of Ayurvedic Pharmacopoeia of India, as medicine twice a day before food, with hot water as *anupana* for a period of three months.

Results and Discussion

Neuropsychological paradigms like Attention and working memory were evaluated before and after administration of *Brahmi Ghrita*. Attention Time - Time taken for completing a task and Attention Error- Exact number of errors committed by the child by Number cancellation test were taken for evaluation of Attention.

N back Test I and N Back Test II were performed to analyze the Working Memory. The various components of N back Tests were Hits, Misses and Commissions. Hits are the direct measure of Working Memory and Misses and Commissions are the errors

in Working Memory. The total of Hits of both N Back I Hits and N Back II Hits contribute to Total Working Memory Hits and the total of N Back I & II Misses and N Back I & II Commissions constitute Total Working Memory errors. The results of neuropsychological evaluation were as follows.

1. **Attention Error and Attentiontime:** In patient No 1, the pre test score of attention error was 136 and in the post test it changed to 102. There was a decrease of 34 in post test compared to pre test. The pre test score of attention time was 6.5 which reduced to 6 in post test.

In the patient No 2, the pre test score was 145 and in the post test it was observed as 134. There was a decrease of 11 in post test compared to pre test. The score of attention time in pretest was 15 which reduced to 13 in post test (Table-1). Thus, in both children, there is a reduction in attention errors and attention time (i.e. the time in task completion).

2. **Working memory:** It was assessed by N Back 1 test, N Back 2 test and total working memory. N Back tests include N Back Hits, N Back Misses, N Back commissions and N Back errors. The aggregate of N Back I Misses and N Back I Commissions constitute the Total N Back I errors.

a. **N Back 1 test:** The pre and post test scores of Patient No. 1 showed that N Back Hits increased from 6 to 7, N Back Misses reduced from 3 to 2 and the number of commission errors decreased from 4 to 0. There was a reduction in N Back I Total errors from 7 to 2.

In Patient No. 2, the pre and post test scores of N Back Hits increased from 3 to 4, N Back Misses reduced from 6 to 5 and the number of commission errors decreased

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from 4 to 3. There was a reduction in N Back I Total errors from 10 to 8 (Table-2).

b. N Back 2 test:The pre and post test scores of Patient No. 1 showed that N Back2 Hits increased from 5 to 6, N Back 2 Misses reduced from 13 to 12 and the number of Commission errors decreased from 4 to 0. There was a reduction in N Back 2 Total errors from 13 to 12.

In Patient No. 2, the pre and post test scores of N Back 2 Hits increased from 4 to 5, N Back 2 Misses reduced from 14 to 13 and

the number of Commission errors decreased from 5 to 2. There was a reduction in N Back 2 Total errors from 19 to 15 (Table-3).

c. Total Working Memory: In Patient No. 1, the pre and post test scores of working memory Hits increased from 11 to 13, working memory total errors reduced from 20 to 14. In Patient No 2, there was an increase in working memory Hits from 7 to 9 and reduction in working memory total errors from 29 to 23 (Table-4).

Table 1: Attention Error and Attention Time of two patients before and after treatment

Attention		Attention Errors	Attention Time
Patient 1	Pre	136	6.5
	Post	102	6
Patient 2	Pre	145	15
	Post	134	13

Table 2: N Back 1 Test for Working Memory of two patients before and after treatment

N Back 1 Test		N Back 1 Hits	N Back 1 Misses	N Back 1 Commissions	N Back 1 Errors (Misses + Commissions)
Patient 1	Pre	6	3	4	7
	Post	7	2	0	2
Patient 2	Pre	3	6	4	10
	Post	4	5	3	8

Table 3: N Back 2 Test for Working Memory of two patients before and after treatment

N Back 2 Test		N Back 2 Hits	N Back 2 Misses	N Back 2 Commissions	N Back 2 Errors (Misses + Commissions)
Patient 1	Pre	5	13	0	13
	Post	6	12	0	12
Patient 2	Pre	4	14	5	19
	Post	5	13	2	15

Table 3: Total Working Memory of two patients before and after the treatment

Working Memory		Working memory Total Hits	Working Memory Total Errors
Patient 1	Pre	11	20
	Post	13	14
Patient 2	Pre	7	29
	Post	9	23

Conclusion

The improvement in Attention and Working Memory, the major components of Neuropsychological paradigms, were the highlights of the research.

Attention time and attention errors were reduced. The reduction in the total working memory errors with a corresponding increase in the total working memory showed that the treatment was effective in improving the capacity to comprehend, to retain information about immediate past experience and act on present goals. Thus it can be concluded that Brahmi Ghrita improves neuropsychological paradigms like Attention and Working Memory in children with Learning Disability.

References

1. <https://sites.ed.gov/idea/regs/b/a/300.8/c/10> [Last accessed on 5 March 2019]
2. Paul MJ, Fung HC, Robinson NM, Self-concept, self-esteem, and peer relations among gifted children who feel "different", Gifted Child Quarterly 1985; 29 (2): 78-82.

3. Price BH, Daffner KR, Stowe RM, Marsel MM, The Compartmental Learning Disabilities of early frontal lobe damage, *Brain*. 1990; 133 (5): 1383–93
4. American Psychiatric Association. Diagnostic and statistical manual of mental disorders: DSM-IV-TR. Washington, DC: Author. 2000, p 48
5. Paradakara H. Ashtangahridayam Uthara Sthan, 6/23-25. Chaukhamba Orientalia, Varanasi: 2014. P-69.

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