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Research Article

CLINICAL STUDY OF SELECTED AYURVEDIC TREATMENT MODALITIES IN ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN

Snehal V. Kale[1], Abhijit J. Bharamgonda[2]

P. G. Scholar [1], Associate Professor [2]
Department of Kaumarbhritya, Hon. Shri. Annasaheb Dange Ayurved Medical College, P.G. & R.C., Ashta. Maharashtra

*Corresponding Author: Dr. Snehal V. Kale, email: snehalvkale088@gmail.com

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ABSTRACT:

Attention Deficit Hyperactivity Disorder (ADHD) is among the commonest childhood neurological disorders affecting the focusing, behavior and activity controlling abilities. Children with this disorder are restless and prone to accidents. Due to poor attention and lack of persistence with tasks they may have learning difficulties In *ayurveda* it occurs due to vitiation of *Dhee*, *Dhriti*, *Smriti* that causes imbalance of *Kala* and *Karma* which results into improper contact of the senses with their objectives (*Asatmendriyartha samyoga*) and give rise to inattention, hyperactivity and impulsivity. The present study was conducted to examine the increase in attention span in 40 ADHD affected children treated with different approaches. The assessment was done to all the patients before treatment, after treatment by self prepared scale on the basis of Conners Comprehensive Behavior Rating Scale (Conners CBRS). Selected children of both sexes in age group of 8-10 years were divided into two groups. In group A 20 patients receive *Brahmi Ghrita;* in group B 20 patients were treated with *Brahmi Ghrita+ Shiropichu* with *Bala Taila.* The dose of drug was 20ml per day depending on their age in two divided doses for internal administration for 3 month. It was found that combination of drug and *Shiropichu* superior than the drug used alone.

KEY WORDS: ADHD, *Asatmendriyartha Samyoga*, Conners Comprehensive Behavior Rating Scale, *Shiropichu.*

INTRODUCTION:

Attention Deficit Hyperactivity Disorder (ADHD) is behavioral disorder affecting 5-10% of Indian population. ADHD is one which is characterized by a persistent pattern of inattention and/or hyperactivity as well as forgetfulness, poor impulse control or impulsivity and distractibility[1].

Basic information about how the prevalence of ADHD varies by race/ethnicity, sex, age, and socio-economic status remains poorly described. One of the reason is that difficulties in diagnosis of ADHD have translated into difficulties developing an adequate case definition for epidemiological studies. Diagnosis depends heavily on parent and teacher reports; no laboratory tests reliably predict ADHD. Prevalence estimates of ADHD are sensitive to who is asked what and how information is combined. Moreover the diagnosis of ADHD is complicated by the frequent occurrence of co morbid condition such as learning disability, conduct disorder and anxiety disorder. Symptoms of these conditions may also mimic ADHD.

In *Ayurveda* not all diseases can be named as their presentation vary depending on the causative factors of *Doshas* vitiation and the pathogenesis of the disease in different parts of the body by these vitiated *Doshas*. *Acharya* has thus clarified that description of every physical or mental disorder was out of the scope of our texts as disease are innumerable[2].But the basic scheme of understanding newer disease has been laid down by the seers of the lore, based on which we can decipher the newly identified disease like ADHD.

There is no clear cut description of any disorder matching that of Attention deficit/ Hyperactivity disorder in ayurvedic texts. Description of abnormal behavior though are found scattered in our texts like-

Anavasthita Chittatva[3] *Manovibhrama*[4]
Budhivibhrama[5] *Smritivibhrama*[6]
Sheelavibhrama[7] *Cheshtavibhrama*[8]
Archaravibhrama[9]

These terms have been mentioned collectively under the description of *Unmada Vyadhi*, when considered individually they resemble some of the clinical features and associated features of ADHD.

As modern medicine has failed to provide a cure for a variety of health problems, more people are turning to the alternative and complementary medical sciences, especially *Ayurveda*, in search of relief. Among the problems for which modern medicine has failed to find a solution are the behavioral or psychiatric disorders of childhood.

The bacosides in *Brahmi* (Baccopa monnieri) are said to sharpen cognitive function by improving transmission of nerve impulses, which makes it promising for the treatment of ADHD. *Shiropichu* comprise of application of medicated oil on the head following a slight massage. Application of *Taila* in head causes the pacification of *Vata* which is responsible for the impulsive behavior and it is also told as *Indriyaprasadana* (sense organ able to function normally) [10]. *Acharya Sharangadhara* have described *Bala Taila* as *Sarva Vatamayapaham*[11]. In study, significant brain functional activation changes together with increased cerebral blood flow were observed n participants who receive *Shiropichu*.

Prevalence of ADHD:

Prevalence of AD/ HD is estimated as 3% - 5% in school age children[12].

Recent systematic review report ADHD prevalence estimates as wide as 2% - 18%[13].

Prevalence rate in Indian children ranges from 5% - 10%[14].

Prevalence was highest in the age group 9 and 10 years[15].

Aims and objectives:

1. The aim of the study was to assess the efficacy of selected Ayurvedic treatment modalities in reducing the signs and symptoms of ADHD in children of 9-10 years.
2. The exploration of etiopathogenesis of Attention Deficit Hyperactivity Disorder from Modern and Ayurvedic point of view was the objective of the study.
3. To evaluate a safe, efficacious and side effects free treatment.

MATERIALS AND METHODS:

The present study was conducted to examine the efficacy of an *Ayurvedic* compound in decreasing reaction time in ADHD affected children, using the Conners Comprehensive Behavior Rating Scale (Conners CBRS).

For this study, we selected all affected children attending the OPD of the Department of *Kaumarbhritya* and also screened the students of the school in the area around the Medical College to identify cases. Only children between 8 to 10 years were included in the study.

Selected patients were randomly divided into two groups, ensuring both the groups had children from various grades, schools and socioeconomic status.

Group A- This group of 20 children was given *Brahmi Ghrita*

Group B- This group of 20 children was given *Brahmi Ghrita* with *Shiropichu* of *Bala Taila*

The drug was prepared in the ayurveda pharmacy

Study design:

Outpatient section of the department of *Kaumarbhritya* and students of the schools in area around the Ayurved Medical College were selected as the research setting. The Simple Randomized Controlled Clinical Trial (RCT) was the study design adopted to envisage the present research work. The subjects were selected and randomly divided into two groups, Group A (Trial group) Group B (Trial group). 20 patients in each group .For the random selection of patients; Table of Random Number method was followed.

Inclusion criteria:
The inclusion criteria for recruitment in this study were DSM IV diagnostic criteria for ADHD.
Children of age group 8-10 years were selected for the study.

Exclusion criteria:
The exclusion criteria for the study was presence of classified disorders coming under pervasive development disorders, mental retardation and other organic or neurological or psychotic disorders. Children under other medication or intervention such as behavior therapy were also excluded from the study.

Time and Duration of the Study:
The duration of the study was 3 months.

Administration of Drug and observation of patient:
Each child of Group A was given 20ml of *Brahmi Ghrita* (in two divided doses) for 3 months. Each child of Group B was given 20ml of *Brahmi Ghrita* (in two divided doses) with *Shiropichu* of *Bala Taila* (for 30 minutes each day) for 3 months duration.

Significance of scale in the assessment:
The Conners CBRS is one of the many ways to screen for ADHD in children. Conners CBRS forms can be used during follow up appointments to rate the behavior of the child with ADHD. This will help to monitor how well certain medication or behavior modification techniques are working. By using this rating scale test result is evaluated after completion of Conners CBR parent form. The scores are ten converted to standardized scores, known as T-scores.

Table 1: % wise classification of T-score

T-scores range in %	T-scores classification
More than 60	An emotional, behavioral or academic problem
Between 61 to 70	An emotional, behavioral or academic problems are slightly atypical or moderately severe
Above 70	An emotional, behavioral or academic problems are very atypical or more severe

Assessment criteria

Table 2: % wise assessment of reduction in T-score

Assessment of result	Reduction in T-Score by %
No Improvement	0%
Mild Improvement	1% to 5%
Moderate Improvement	6% to 10%
Markedly Improvement	More than 11%

RESULTS:
All the 40 children of age group 8-10 years subjected to clinical trial had DSM IV diagnostic criteria for ADHD.

Table 3: Statistical analysis of Reduction in T-score between Group A and Group B

Group	Mean			n	d.f.	t statistic	P-value
	B.T.	A.T.	Diff.				
Group A	76.65	73.80	2.85	20	19	26.045	< 0.001
Group B	75.20	69.20	6.00	20	19	23.875	< 0.001

B.T-Before treatment; A.T-After treatment

In group A, mean T-score before treatment was 76.65 which was reduced to 76.80 after treated with Brahmi Ghrita. The observed reduction of 2.85 was observed to be significant (P-value < 0.001) at 5% level of significance. i.e. treatment A is effective in reduction of T-score.
In group B, mean T-score before treatment was 75.20 which was reduced to 69.20 after treated with Brahmi Ghrita + Shiropichu. The observed reduction of 2.85 was observed to be significant (P-value < 0.001) at 5% level of significance. Treatment B is effective in reduction of T-score.

Table 4: Statistical analysis of effect of treatment in Group A and Group B

Group	Mean diff.	S.D. of diff.	n	d.f.	t statistic	P-value
Group A	2.85	0.489	20	38	-11.492	< 0.001
Group B	6.00	1.124	20			

S.D- Standard deviation
The percent reduction in T-score for group A was 2.85 (S.D. = 0.489) while mean reduction in group B was observed to be 6 (S.D. = 1.124). The reduction in group B was significantly higher than that of group A (P-value < 0.001) at 5% level of significance. i.e. treatment B is more effective as compared to treatment A.

Figure1: Total reduction in T-score

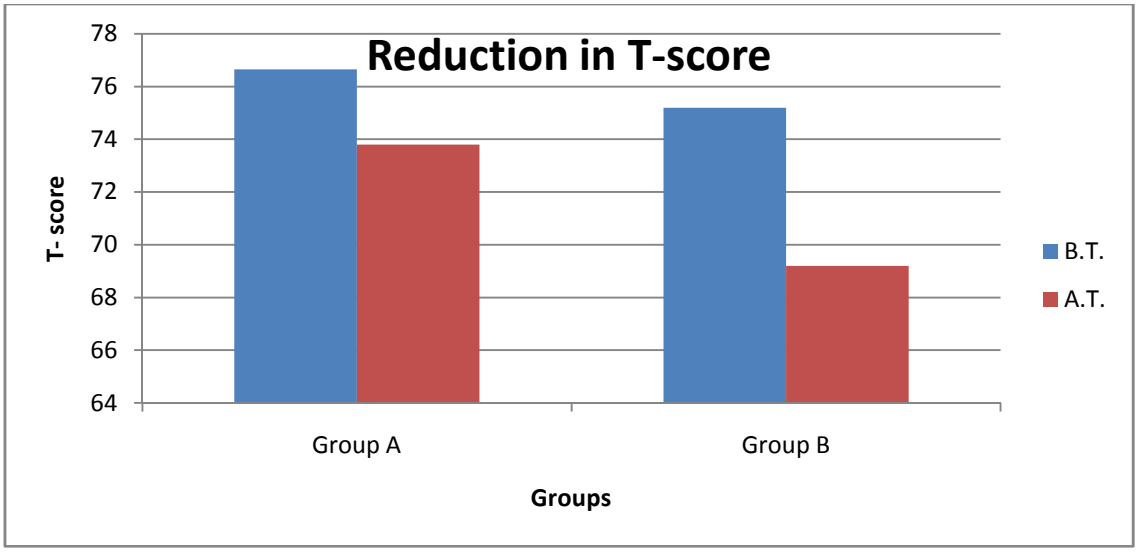
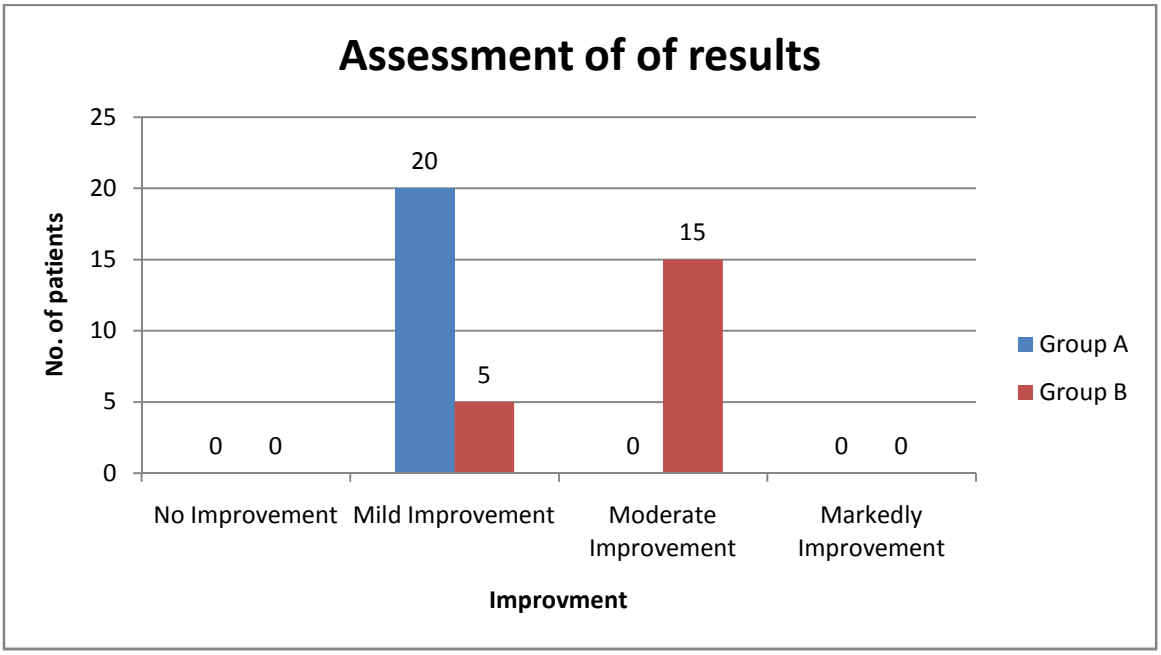


Table 5: Total effect of treatment on Group A and Group B

Assessment result	Reduction in T-Score by %	Group A		Group B	
		No. of patients	%	No. of patients	%
No Improvement	0%	00	00.00%	00	00.00%
Mild Improvement	1% to 5%	20	100.00%	05	25.00%
Moderate Improvement	6% to 10%	00	00.00%	15	75.00%
Markedly Improvement	More than 11%	00	00.00%	00	00.00%

Figure 2: Effect of treatment on Group A and Group B



DISCUSSION:

Review of various clinical and experimental studies show that Ayurvedic studies show that Ayurvedic herbal drugs having cognitive, memory enhancing, nootropic, learning aid, anticonvulsant, neuro-protective properties in single as well as in compound form that brings homeostasis in vitiated *Tridoshas* & calm down ADHD symptoms.

Brahmi has *Rasa* that is sweet and bitter, *Virya* that s cooling and *Vipaka* that is sweet. It has a n affinity for all tissues, especially plasma, blood, nerve and for the circulatory, digestive, nervous and excretory *Srotasa. Baccopa monnieri (Brahmi)* the wonderful nervine tonic possess nootropic and memory enhancing properties. It is necessary to increase the general mental ability, attention and concentration of mentally retarded children. It is attributed with improving learning ability and concentration. It helps to relive tension throughout the body. *Brahmi* is considered to be a rejuvenative, particular to nervous system. It strengthens the mind and promotes energy as well as sleep. It helps to recover from exhaustion, stress, and *Vata* imbalance. It s indicated for all conditions with *Majja dhatu.* Due to these properties they are more effective to control inattention, hyperactivity and impulsivity of ADHD.

There are many procedures employed to calm down aggravated symptoms of ADHD. These procedures are *Shirodhara, Shiropichu, and Dhmapana Nasya.* In *Shiropichu* diffusion of the active ingredient of Bala Taila occur through the skin of the anterior fontanel and get circulated all over the brain through the superior sagital sinus and consequent C.S.F pathway which bring compartments that lead to regularization of the neurotransmitter mechanism.

Achrya Sharangadhara have described *Bala Taila* as Sarva *Vatamayapaham* i.e it cures all disorders associated with *Vata Dosh*

CONCLUSION:

In a nut shell it is conducted that single herbal drug along with *Shiropichu* procedure provide an ideal solution to ADHD affected children which are absolutely side effect free and calm down parent's anxiety opting modern stimulant medicine. *Baccopa monnieri (Brahmi)* along with *Shiropichu* are proved very potent to control inattention, hyperactivity, impulsivity and distractibility however more clinical studies are required to establish it in scientific world.

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