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EFFICACY OF SHIRODHARA IN ATTENTION DEFICIT HYPERACTIVITY DISORDER CHILDREN

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ABSTRACT

The disease ADHD is a most common neurobehavioral disorder of Childhood marked by developmentally inappropriate levels of inattention, impulsivity and hyperactivity. ADHD often significantly impair functioning across multiple domains and place children at elevated risk for a variety of adverse outcomes. It is important for Pediatricians to possess a basic understanding of ADHD. However, ADHD is frequently misunderstood even by mental health professionals. Symptoms of ADHD are one of the leading causes of academic underachievement in children. In India only few studies have evaluated ADHD and these reports a prevalence ranging from 5-15.5%. The current practice of treatment is the use of drugs like CNS stimulants, Antidepressants, Alpha 2 agonists etc. which are the drugs first choice of drugs but having various side effects. Ayurveda holding a different view regarding the etiopathogenesis of diseases can provide newer theories of ADHD and thus newer dimensions to its management. *Shirodhara* is a unique form of ancient therapy, which is very useful in psychological disorders. Hence in present study an effort has made to study the effect of *Jyotishmati tailadhara* in ADHD. So for clinical study 30 children aged 6 – 12 years who were fulfilling the inclusion criteria and diagnostic criteria were selected and *Jyotishmati tailadhara* was done for 40 days continuous duration. Observations were recorded and statistically analyzed

for any change before and after treatment. Effects of *Jyotishmati Tailadhara* were found significant in assessment criteria.

KEYWORDS: ADHD, *Shirodhara*, *Jyotishmati tailadhara.*

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is the most frequently encountered and most extensively studied neurobehavioral disorder of childhood, characterized by inattention, impulsiveness and hyperactivity.[1] The prevalence of ADHD in general population of school age children is about 3-5% in the west. In India only few studies have evaluated ADHD and these reports a prevalence ranging from 5-15.5% (P Malhi *et al*., 2000)[2]; Bhatia M S *et al*., 1999; Mukhopadhyaya *et al*., 2003.[3]). Various recent studies have shown that ADHD is associated with significant impairment in multiple domains of child's functioning including a high frequency of psychiatric co-morbidity with disruptive mood and anxiety disorder; poor educational achievement and low occupational performance.[4]

The current practice of treatment is the use of drug like CNS stimulant, Antidepressants, Alpha 2 agonists and Norepinephrine inhibitors, Although the drugs are first choice of drugs but having various side effects, which is one of the their greatest demerits. Among the problems for which modern medicine has failed to find a solution are the behavioral or psychiatric disorders of childhood.

Considering the present scenario of highest prevalence of ADHD among behavioral disorders. *Ayurveda* holding a different view regarding the etiopathogenesis of diseases can provide newer theories of ADHD and thus newer dimensions to its management. *Shirodhara* is a unique form of ancient therapy, which has got worldwide popularity because of its simple administration and efficacy in variety of disorders. *Shirodhara* is designed to relieve the physiological stress and mental fatigue, it also stabilizes mind.[5] So *Shirodhara* treatment with *Jyotishmati taila (Celastrus paniculatus* oil) is effective in ADHD as disorder affects the *Mansik bhavas* in a child.

AIMS

To study the efficacy of *Jyotishmati Tailadhara* in Attention Deficit Hyperactivity Disorder (ADHD) children.

OBJECTIVES

1. To study the prevalence of ADHD as well as possible factors responsible for it.
2. To study the efficacy of *Jyotishmati Tailadhara* in Attention Deficit Hyperactivity Disorder (ADHD) children.

MATERIALS AND METHODS

Single randomized clinical study conducted in children with ADHD.

For the clinical study, patients attended the O.P.D. of Kaumarbhritya department, Govt. Ayurved College, Osmanabad and students from the local schools of Osmanabad fulfilling the DSM-V criteria for diagnosis of ADHD were selected.

Total 30 children were randomly selected those fulfilling the DSM-V criteria between the age group of 6 to 12 years irrespective of their sex, religion and socioeconomic status.

Inclusion criteria

1. Children fulfilling the DSM-V (Diagnostic and statistical manual of mental disorder).[6] criteria for diagnosis of ADHD.
2. School going children aged between 6-12 years of age with poor academic achievements, poor concentration, increased distractibility, motor restlessness were included in the study.

Exclusion criteria

1) Children not fulfilling the DSM-V criteria for diagnosis of ADHD.
2) Children having congenital disorders and CNS disorders like Cerebral palsy, MR, Epilepsy etc. Children with hearing deficit excluded.
3) Children with systemic disorders like TB, HIV, Hyper/Hypo thyroidism etc.

Scoring of clinical symptomology of ADHD

Inattention, hyperactivity and impulsivity was measured by obtaining a four point rating of the DSM-V items. The scoring was done ranging from 'never' to 'very often' as given below.

Never – 0, Often-1, quite often -2, Very often -3

Table no – 1

Sr. No	DSM-V CRITERIA DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS
A	**INATTENTION**
1	Often fails to give close attention to details or makes careless mistakes in school work, at work or with other activities.
2	Often has trouble holding attention on tasks or play activities.
3	Often does not seem to listen when spoken to directly.
4	Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (e.g. loses focus, side-tracked).
5	Often has trouble organizing tasks and activities.
6	Often avoids, dislikes, or is reluctant to do tasks and that require mental effort over a long period of time (such as schoolwork or homework).
7	Often loses things necessary for tasks and activities (e.g. school materials, pencils, books, tools, wallets, keys, and eyeglasses, mobile).
8	Is often easily distracted
9	Is often forgetful in daily activities.
B	**Hyperactivity and Impulsivity**
1	Often fidgets with or taps hands or eat, or squirms in seat.
2	Often leaves seat in situations when remaining seated is expected.
3	Often runs about or climbs in situations where it is not appropriate (adolescents or adults may be limited to feeling restless).
4	Often unable to play or take part in leisure activities quietly.
5	Is often “on the go” acting as if “driven by a motor”
6	Often talks excessively.
7	Often blurts out an answer before a question has been completed.
8	Often has trouble waiting his/her turn.
9	Often interrupts or intrudes on others.

Preparation of the drug

For *Shirodhara* purpose *Jyotishmati taila* was prepared according to standard operating procedure[7] in Rasashastra Dept. of Govt. Ayurved College, Osmanabad.

Duration of *Shirodhara* treatment

Shirodhara was given for 40 minutes daily for 40 days of continuous duration.

Assessment criteria

The diagnostic criteria of ADHD defined by DSM V was included as subjective criteria. They were scored on a four point scale ranging from 0 to 3. The assessment of effect of therapy was done depending on the improvement in these symptoms.

OBSERVATIONS AND RESULTS

Analysis was done before and after treatment procedure based on clinical features of the ADHD patients and scoring was given as per the scales used for the study. Data collected during the study is represented as follows:

Table no. 2

DSM-5 SCALE SCORE- BEFORE TREATMENT

Sr.	Age	Gen	INATTENTION										HYPERACTIVITY AND IMPULSIVITY									
NO	(YR)	der	IA(a)	IA(b)	IA(c)	IA(d)	IA(e)	IA(f)	IA(g)	IA(h)	IA(i)	Total	HI(a)	HI(b)	HI(c)	HI(d)	HI(e)	HI(f)	HI(g)	HI(h)	HI(H)	Total
1	6	M	3	2	3	2	3	2	2	3	2	22	3	2	2	1	3	2	2	3	2	20
2	12	M	3	2	1	2	2	2	2	2	1	17	3	2	1	1	2	2	2	2	1	16
3	11	M	3	2	2	2	2	2	1	3	1	18	3	2	1	2	1	1	2	2	1	15
4	11	F	3	3	1	2	2	2	1	2	1	17	3	2	1	2	2	1	2	1	1	15
5	11	M	1	3	2	2	2	3	1	3	1	19	2	2	2	2	2	3	2	2	1	18
6	9	M	3	2	3	3	2	3	2	3	3	24	3	2	2	2	2	2	3	3	2	21
7	11	M	3	2	1	2	2	2	2	3	2	19	3	2	1	2	1	2	2	2	2	17
8	6	M	2	1	1	1	2	2	1	3	2	15	3	3	2	2	3	2	3	3	2	23
9	9	M	3	2	3	3	2	3	3	3	2	24	3	3	2	3	3	2	2	3	2	22
10	12	M	2	1	1	2	2	2	1	3	1	15	3	2	1	2	1	2	2	2	1	16
11	12	F	3	2	2	3	2	2	1	3	1	19	1	1	1	2	2	3	2	2	1	15
12	12	F	3	3	2	3	3	2	1	3	1	21	2	3	2	2	2	3	3	3	2	22
13	11	M	3	2	3	2	2	3	2	3	2	22	3	2	2	1	3	2	2	3	2	20
14	6	M	3	2	3	2	2	2	2	3	2	21	3	2	2	2	2	3	3	3	2	22
15	11	M	3	3	3	3	3	3	2	3	2	25	3	3	2	2	3	1	1	3	2	20
16	8	F	2	2	2	2	2	3	2	3	2	20	2	2	2	1	2	3	3	3	2	20
17	7	M	3	2	3	2	2	2	2	3	2	21	3	2	2	2	3	2	2	3	2	21
18	6	M	3	3	3	3	3	3	2	3	3	26	3	3	2	2	3	2	3	3	3	24
19	12	M	3	2	2	3	2	3	2	3	2	22	2	2	1	1	2	1	2	2	1	14
20	6	M	3	2	3	2	2	3	2	3	2	22	3	3	2	2	3	2	3	3	2	23
21	11	M	2	2	2	2	2	2	1	3	1	17	3	2	1	2	1	1	2	2	1	15
22	7	M	3	2	3	3	2	3	3	3	3	25	3	3	2	2	3	2	3	3	2	23
23	10	M	3	2	2	3	2	3	1	3	1	20	3	3	2	2	3	1	2	3	2	21
24	7	M	3	2	3	3	2	3	2	3	2	23	3	2	3	2	3	2	3	3	2	23
25	6	M	3	3	3	3	2	3	2	3	2	24	3	3	3	2	3	2	3	3	3	25
26	7	M	2	1	2	1	1	2	1	3	1	18	2	2	1	2	3	1	2	3	3	19
27	10	M	3	1	2	3	3	1	1	3	1	18	2	2	1	2	3	1	2	3	3	19
28	9	M	3	2	3	2	2	2	2	3	2	21	3	2	2	2	3	2	3	3	2	22
29	6	M	3	2	3	2	3	2	2	3	2	22	3	2	2	1	3	2	2	3	2	20
30	7	M	2	1	1	1	2	2	1	3	2	15	3	3	2	2	3	2	3	3	2	23

DSM 5 Scale Score - After Treatment

Table no. 3

Sr.	Age	Gen	INATTENTION										HYPERACTIVITY AND IMPULSIVITY									
NO	(Yr)	der	IA(a)	IA(b)	IA(c)	IA(d)	IA(e)	IA(f)	IA(g)	IA(h)	IA(i)	Total	HI(a)	HI(b)	HI(c)	HI(d)	HI(e)	HI(f)	HI(g)	HI(h)	HI(H)	Total
1	6	M	2	1	2	1	2	1	1	2	1	13	2	1	1	1	1	1	2	2	1	12
2	12	M	2	1	0	1	1	1	1	2	1	10	2	1	0	0	1	1	1	1	1	8
3	11	M	2	1	1	1	1	1	0	2	1	10	1	1	1	1	1	1	0	1	0	7
4	11	F	2	1	1	1	1	1	1	1	1	10	1	1	1	1	1	1	1	1	1	9
5	11	M	1	2	1	1	1	1	1	2	1	11	1	1	1	1	1	2	1	1	1	10
6	9	M	3	1	3	2	2	2	2	2	2	19	2	1	1	1	1	1	1	2	1	11
7	11	M	2	1	1	1	1	1	1	2	1	11	2	1	0	1	1	0	1	1	0	7
8	6	M	1	0	1	1	1	1	1	1	1	8	2	2	1	1	2	1	2	2	1	14
9	9	M	2	1	2	1	1	1	1	1	1	11	2	2	1	1	1	1	2	1	1	12
10	12	M	1	0	0	1	1	1	1	2	0	7	2	1	1	0	1	1	1	1	0	8
11	12	F	2	1	1	1	1	1	1	1	1	10	1	1	0	1	1	2	1	1	0	8
12	12	F	2	2	1	2	1	1	1	1	1	12	1	1	0	1	1	2	2	2	1	11
13	11	M	2	1	2	1	1	1	1	2	1	12	2	1	1	1	2	1	1	2	1	12
14	6	M	2	1	2	1	1	1	1	1	1	11	2	1	1	1	1	1	2	2	1	12
15	11	M	2	2	2	2	2	2	2	2	2	18	2	2	1	1	2	0	0	2	1	11
16	8	F	1	1	1	1	1	2	0	2	1	10	1	1	1	0	1	2	1	2	1	10
17	7	M	2	1	2	1	1	1	0	1	1	10	2	1	1	1	1	1	1	2	1	11
18	6	M	3	2	2	2	2	3	1	3	1	19	2	2	2	2	2	2	2	2	2	18
19	12	M	2	1	1	2	1	2	1	1	1	12	1	1	0	1	1	1	1	1	1	8
20	6	M	2	1	1	1	1	2	1	1	1	11	2	2	1	1	2	1	2	1	1	13
21	11	M	1	1	1	1	1	0	0	1	1	7	2	1	0	1	1	1	1	1	0	8
22	7	M	2	1	2	2	1	2	2	1	1	14	2	2	1	1	2	1	1	2	1	13
23	10	M	2	1	1	2	1	2	1	1	1	12	2	2	1	1	1	1	1	1	1	11
24	7	m	2	1	2	2	1	2	1	2	1	13	2	1	1	1	2	1	1	2	1	12
25	6	m	2	2	2	2	2	2	2	2	2	18	3	2	2	2	2	2	2	2	2	19
26	7	M	1	0	2	0	0	1	1	1	1	7	2	2	2	2	2	3	2	2	2	19
27	10	M	2	1	1	1	2	1	0	2	1	11	1	1	0	1	2	0	2	2	1	10
28	9	M	2	1	2	1	1	1	1	2	1	12	2	1	1	1	2	1	2	2	1	13
29	6	M	2	1	2	1	2	1	1	2	1	13	2	1	1	1	2	1	1	1	1	11
30	7	M	1	0	1	1	1	1	1	1	1	8	2	2	1	1	2	1	2	2	1	14

Total effect of the therapy

Inattention

Table No. 4

Inattention	Median		Wilcoxon Signed Rank W	P-Value	% Effect	Result
	BT	AT				
	21	11	-4.800[a]	0.000	42.8	Significant

Since observations are on ordinal scale Wilcoxon Signed Rank test was used to test efficacy. From above table we can observe that P-Value is less than 0.05 hence it can be concluded that effect observed is significant.

Hyperactivity and Impulsivity

Table No. 5

Hyperactivity and Impulsivity	Median		Wilcoxon Signed Rank W	P-Value	% Effect	Result
	BT	AT				
	20	11	-4.731[a]	0.000	42.4	Significant

Since observations are on ordinal scale Wilcoxon Signed Rank test was used to test efficacy. From above table we can observe that P-Value is less than 0.05 hence it can be concluded that effect observed is significant.

Inattention

Table no. 6

Inattention	Frequency	Percentage
Marked Improvement	5	16.7
Moderate Improvement	18	60.0
Mild Improvement	7	23.3
No Change	0	0.0
TOTAL	30	100.0

Total 5 patients showed marked improvement, 18 patients showed moderate improvement, 7 patients showed mild improvement and 0 patients showed no change in symptoms after treatment.

Hyperactivity & Impulsivity

Table No. 7

Hyperactivity & Impulsivity	Frequency	Percentage
Marked Improvement	2	6.7
Moderate Improvement	21	70.0
Mild Improvement	6	20.0
No Change	1	3.3
TOTAL	30	100.0

Total 2 patients showed marked improvement, 21 patients showed moderate improvement, 6 patients showed mild improvement and 1 patients showed no change in symptoms after treatment.

DISCUSSION

The incidence of psychiatric disorders in children is on a rise to the extent that it is to become one of the main causes of morbidity in children. Psychiatric disorders in children are very common in India as in other countries. The psychiatric disorders which affect certain of the mental activities of the Children, which interfere with their development, slow down their education and compromise their future by repercussions on their day by day quality of life. The Indian Scenario shows that Attention-Deficit / Hyperactivity Disorder is the developmental disease with the highest incidence. In India there is very little systematic research documented on ADHD in children. The disease can devastate the life of the child as it can persist into adulthood leading to problems in socialization and employment. The shortcomings of the modern medicine have always placed greater responsibilities on the *Ayurveda* for providing effective management in such difficult to treat disorders when it comes to mental health the *Ayurvedic* concept of *Shirodhara* is a ray of hope for establishing the health of ailing *Manas.*

Postulated mechanism of treatment

Clinically the efficacy of *Shirodhara* is proven, still it is a difficult task to understand the mode of action of *Shirodhara.* The effect of *Shirodhara* can be explained in following two ways.[8]

1. Therapeutic effect of medicine,
2. Procedural effect of the process.

1. Therapeutic effect of medicament

According the principle of drug absorption, maximum absorption is in the scalp region and comparatively oil is better absorbed. Effects of *Jyotishmati Tailadhara* were found significant in assessment criteria due to *Medhya* action of *Jyotishmati Taila.*[9]

Jyotishmati by its *usna, tiksna gunas, usna virya* and *katu vipaka* increases *pitta*. Increased *pitta* stimulates *sadhakagni* which in turn generates *Medha*. Likewise due to its *usna, tiksna guna* and *katu* rasa it breaks the 'avarana' of *kapha* and *tama* in abnormal state; due to which again functions of *Buddhi, Medha* and *Smriti,* are normalized. Further *Jyotismati* is used in oil form which due to its *Suksma, Tiksna* and *Vyavayi* properties; helps to reach directly up to sukshma *strotsas*.

2. Procedural effect of the process

The procedural effect of *Shirodhara is* also has significance.

1. *Acharya Vagbhata* have given four type of techniques for *Moordha Taila,* which include *Abhyanga, Seka, Pichu* and *Basti*. They are mentioned "*Uttarottara Gunaprada*".[10] It means that one after one it becomes more effective. Description itself indicates that there is a mechanical effect of therapy. Mind, body and spirit are intimately connected and *Shirodhara* by calming the stressful mind, relaxes the entire physiology.

2. Imbalance of *Prana, Udana and Vyana Vayu, Sadhaka Pitta* and *Tarpaka Kapha* can produce stress and tension. *Shirodhara* reestablishes the functional integrity between these three subtypes of *Dosha* through its mechanical effect.

3. *Aadnya Chakra* (the space between the two eyebrows) is the seat of Pituitary and Pineal gland. Pituitary gland is one of the main glands of the endocrine system. *Shirodhara* regulates its stimulation by its penetrating effect, which helps in bring the hormonal balance.

4. The forehead and head has areas of many vital spots (*Marma*) as mentioned in *Ayurvedic* classics. Mainly *Sthapani, Utkshepa, Avarta Marma* are situated in this region. According to *Acharya Bhela,* the location of *Chitta (Mana)* is *Bhrumadhya.* It is place of *Sthapani Marma*. *Shirodhara* makes the patient concentrate on this area by which the stability arrives in the functions of mind.

On the basis of above description, it is clear that *Shirodhara* has both therapeutic effect of medicament and also the procedural effect.

CONCLUSION

1. The incidence of psychiatric disorders in children is on a rise and is demanding more attention from the medical field. The disease ADHD is a most common neurobehavioral disorder of Childhood.
2. A basic knowledge of child psychiatry is essential for timely diagnosis of disorders in children for deciding their line of treatment and also for offering correct guidance to the parents.
3. Most of the parents are unaware of the fact that ADHD is a mental disorder with long term implication and need for treatment.
4. Pharmacological and non-pharmacological therapies used in the management of ADHD do not ensure an all-round coverage.
5. The adverse effects of stimulant therapy must be taken in to consideration and better treatment options should be sought.
6. The disease ADHD though not mentioned in *Ayurvedic* classics can be understood by applying the basic principles of Ayurveda.
7. *Shirodhara* has both therapeutic effect of medicament and also has procedural effect.
8. Effects of *Jyotishmati Tailadhara* were found significant in assessment criteria due to *Medhya* action of *Jyotishmati Taila*.

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