

# Clinical Assessment of the Impact of Shirodhara with water Treatment in the Management of Primary Headache with associated Anxiety and Depression

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## Abstract

Shirodhara is a popular traditional Panchakarma treatment for balancing the Doshas and for improving the function of the brain, there by relieving headache and stress. Shirodhara induces a state of peaceful awareness that results in a dynamic psycho-somatic balance. The present study was conducted on 40 cases of primary headache. The treatment was continued for 15 days with the objective to evaluate clinically the efficacy of Jaladhara and Jaladhara with some herbal medicines in the management of Headache. These patients were divided into two groups of 20 patients each. It was observed that the patients of group B treated with Ashwagandha extract (500 mg OD) and Shirodhara with water showed significant improvement, whereas the group A treated with only Shirodhara with water also showed similar improvement.

**Keywords:** Shirahshula; Jaladhara; Shirodhara; Aswagandha; Anxiety; Stress; Depression; Primary headache

## Introduction

Ayurveda is a holistic science of life and health care. It is the art of living which prescribes healthy life style to prevent disease and to achieve wellness. While defining Ayurveda it has not been considered as a mere science of medicine, rather it has been defined as a science of Sukha and Dukha i.e. wellness and illness which result from Hita and Ahita Ayu i.e. positive and negative life style respectively. Ayurveda has projected a life style to maintain the normal state of body and mind [11-17].

Headache disorders are among the most common disorders of the nervous system. It is divided into two categories viz primary and secondary headache (a classification system developed by the International Headache Society) [2]. Primary headaches are the disorders where headache and associated features occur in the absence of any obvious exogenous cause. The most common ones are migraine, tension-type headache, and cluster headache [3]. Headache often results in considerable disability and a decrease in the patient's quality of life. Secondary headaches are caused by exogenous diseases such as meningitis, intracranial hemorrhage, brain tumor, temporal arteritis, glaucoma, etc.[4] Headache disorders impose a significant degree of burden on sufferers including major personal suffering, impaired quality of life and financial cost. Repeated headache attacks, and often the constant fear of the next one, damage family life, social life and employment. The long-term effort of coping with a chronic headache disorder may also predispose the individual to other illnesses such as anxiety and depression.

Migraine, the second most common cause of headache, afflicts approximately 15% of women and 6% of men over a one-year period. It is usually an episodic headache. It is associated with certain features such as sensitivity to light, sound, or movement; nausea and vomiting. Migraine headache can be initiated by various trigger factors, such as glare, bright lights, sounds, or other afferent stimulation; hunger; excess stress; physical exertion; stormy weather or

barometric pressure changes; hormonal fluctuations during menses; lack of or excess sleep; and alcohol or other chemical stimulation. It can often be recognized by its trigger factors. This information may be useful in the management strategies involving lifestyle adjustments [5].

Tension-type headache is described as chronic headache syndrome. It is characterized by bilateral tight, band like discomfort. The pain is slow and fluctuates in severity, and may persist more or less continuously for many days. The headache may be episodic or chronic (Present > 15 days per month) in nature. Tension-type headache is completely without accompanying features such as nausea, vomiting, photophobia (light sensitivity to eyes), phonophobia (fear of or aversion to loud sounds), olfactophobia (aversion, or psychological hypersensitivity to odours) and aggravation with movement. [6].

Cluster headache is an uncommon form of primary headache (0.1%). In this case pain is usually deep, retro orbital, often unbearable in intensity, not fluctuating, and explosive in nature. Cluster headache is characterized by periodicity. The typical cluster headache patient has daily one to two attacks of relatively short-duration unilateral pain for 8 to 10 weeks a year. It is usually followed by a pain-free interval of less than a year [7].

### **Ayurvedic concept of Headache**

In Ayurveda, during Samhita period a separate disease entity was conceived as Shirahshula and in place of the term Shirahshula the word Shiroroga has been used.

### **Classification of Shiroroga according to different classical Ayurveda texts**

<b>S.No</b>	<b>Charaka Samhita [8]</b>	<b>Sushruta Samhita [9]</b>	<b>Astanga Sangraha [10]</b>
	<i>Vataj Shiroroga</i>	<i>Vataj Shiroroga</i>	<i>Vataj Shiroabhitapa</i>
	<i>Pittaja Shiroroga</i>	<i>Pittaja Shiroroga</i>	<i>Pittaja Shiroabhitapa</i>
	<i>Kaphaja Shiroroga</i>	<i>Kaphaja Shiroroga</i>	<i>Kaphaja Shiroabhitapa</i>
	<i>Tridoshaja Shiroroga</i>	<i>Tridoshaja Shiroroga</i>	<i>Tridoshaja Shiroabhitapa</i>
	<i>Krimija Shiroroga</i>	<i>Krimija Shiroroga</i>	<i>Krimija Shiroabhitapa</i>
		<i>Raktaj Shiroroga</i>	<i>Raktaj Shiroabhitapa</i>
		<i>Kshayaj Shiroroga</i>	<i>Suryavarta</i>
		<i>Suryavarta</i>	<i>Shirahkampa</i>
		<i>Anantavata</i>	<i>Ardhavabhedaka</i>
		<i>Ardhavabhedaka</i>	<i>Shankhaka</i>
		<i>Shankhaka</i>	

The Ayurvedic texts describe four types of techniques of Moordha Tail. It includes Shirah Abhyanga, Seka, Pichu and Basti. They are "Uttarottara Gunaprada" [11]. It means that each therapy has different effect as each is performed with a different method, which indicates that there is a specific mechanical effect of the therapy. Shirodhara is one of the many special types of treatment widely practiced in Kerala for psychic and psychosomatic diseases. The etymology of Shirodhara comes from Shira (Head) and Dhara (a steady flow). Shira is considered as Uttamanga as it is the most important and major part of the body [12]. Shirodhara is the process in which medicated oil, milk, buttermilk, herbal decoction or water is poured in a continuous stream on the head, mainly on the forehead, in a specific manner. Depending upon the drug components Dhara is known by different names viz. Takradhara, Kshiradhara, Tailadhara,

Kvathadhara and Jaladhara 10]. This procedure induces a relaxation response, which results in a dynamic psycho-somatic balance. A feeling of wellness, mental clarity, and comprehension is experienced in this process. Shirodhara is an amazing effective Panchakarma treatment for balancing the Doshas and to improve the function of brain, there by relieving headaches.

### ***Indications of Shirodhara***

Stress and psychosomatic disorders such as irritable bowel syndrome, Neurological disorders - Headaches, epilepsy etc., Psychiatric disorders - psychosis, neurosis, insomnia etc., Convulsive disorders, Neurodermitis condition viz Psoriasis, Eczema, Hypertension, Alcoholism, Vata Vyadhi, Facial palsy and loss of memory.

### ***Contra- Indication***

Kaphaja Vikara, episodic states of anxiety and intolerance to this procedure seen in some cases.

### **Material and Methods**

A sample of 52 patients suffering from chronic headache were picked up from Kayachikitsa OPD University Hospital, Institute of Medical Sciences, Babaras Hindu University, Varanasi, India and randomly recruited into two groups, 12 patients dropped out due to varied reasons. Group A - 20 Patients were treated with Shirodhara with water alone once a day for 15 days. Group B - 20 Patients were treated with Shirodhara with water along with an herbal drug (Ashwagandha-Withania somnifera) as total extract 500 mg once a day for 15 days.

### ***Inclusion Criteria***

- Repeated attacks of headache lasting 4-72 hours in patients with a normal physical examination, without any other reasonable cause for the headache.
- Chronic headache.
- Headache which is pressing, tightening/stretching in nature.
- Stressful situation causing tension type headache.
- Patients having primary headache.
- Patients of both sex, between the age of 16 to 60 years
- Hamilton Depression Rating Scale 20 or Higher [1,2].
- Hamilton Anxiety Rating Scale 15 or Higher [1,2].

### ***Exclusion Criteria***

- Patients of age below 16 years and more than 60 years.
- Associated with severe systemic disorders like Diabetes mellitus, HIV etc.
- Patients with ENT infection or eyes disorders like Glaucoma.
- Pregnancy and lactating mothers.
- Secondary headache arising due to meningitis, intracranial tumor, cervical spondylosis.
- Patients with severe hypertension.

### ***Subjective parameters of assessment***

- Headache (Shirahshula) and its intensity & frequency

### ***Objective parameters of assessment***

- Visual Analogue Scale test for headache.
- Hamilton Depression Rating Score.

- Hamilton Anxiety Rating Score.
- Visual analogue test for Mental Stress.
- Visual analogue test for Physical Stress.

### Statistical Analysis

It was done by considering the base line data of subjective and objective parameters to pre and post medication and compared for assessment of the difference attributable to the treatment given. The analysis of data was done using statistical software SPSS version 16.0. To test the significance of difference of mean of two independent groups, unpaired 't' test and two dependent groups paired 't' test were applied.

### Procedure of Shirodhara

We used Cristalmind Shirodhara machine for Shirodhara, designed by Dr. Bertrand Martin, a Swiss psychiatric and Ayurvedic medicine specialist. It is a fully automatic Shirodhara machine which maintains the temperature selected (36.5 to 38.5°C, 97.7 to 101.3 °F) and circulation and stops after completion of the session. The Shirodhara was done in the morning. Shirodhara treatment lasted for 45 minutes during up to 15 days in clean, well ventilated and very quiet room. After the completion of the session, the head of the patient was wiped out and dried. Patient was advised to avoid mental excitement, physical exertion, sexual contact and exposure to cold, sun, wind, smoke or dust.

### Result and Observation

Base line features of the series of patients revealed that 62% were married, 85% had Dwandwaja Prakriti, and 55% were from lower middle-class society.

Value of visual analogue test for Headache was noted before and after treatment. After the completion of therapeutic trial there was marked improvement for headache in both groups. The rate of improvement was slightly higher in group B i.e. mixed therapy group (Shirodhara and Ashwagandha 500 mg OD). Significant improvement was also observed in group A treated with water Shirodhara alone (Jaladhara). The difference between group A and B was statistically not significant. (Table No. 1).

Groups	Mean±SD Value of Visual Analogue Test for Headache Scores		Within the group comparison paired 't' test (BT-AT)
	BT	AT	
Group A	59.50 ± 9.854	13.00 ± 11.965	46.500 ± 15.652 t = 13.286 p < 0.001 HS
Group B	69.50 ± 9.720	10.75 ± 14.892	58.750 ± 19.526 t = 13.456 p < 0.001 HS
Between groups comparison unpaired 't' test Group A vs. Group B	t = 3.231	t = 0.527	

**Table 1:** Mean value of Visual Analogue Test for Headache before and after treatment in Group A and Group B. (BT = Before Treatment, AT = After Treatment).

Value of Hamilton Scale for Depression was noted before and after treatment. After the completion of therapeutic trial there was significant improvement in the depression scores in both groups. The rate of improvement was higher in group B (Shirodhara and Ashwagandha 500 mg OD). Significant improvement was also observed in group B treated with water Shirodhara alone. (Table No. 2).

Groups	Mean±SD Value of Hamilton Scale for Depression		Within the group comparison paired 't' test (BT-AT)
	BT	AT	
Group A	34.70 ± 8.779	19.40 ± 7.185	15.300 ± 7.821 t = 8.749 p < 0.001 HS
Group B	31.45 ± 8.185	12.10 ± 4.204	19.350 ± 7.293 t = 11.866 p < 0.001 HS
Between groups comparison unpaired 't' test	t = 1.211 p = 0.233	t = 3.922 p < 0.001	
Group A vs. Group B	NS	HS	

**Table 2:** Mean value of Hamilton Scale for Depression at before and after treatment in Group A and Group B.

Value of Hamilton Anxiety Rating Scale was noted before and after treatment. After the completion of therapeutic trial there was marked improvement in the depression scores in both groups. The rate of improvement was higher in group B i.e. mixed therapy group (Shirodhara and Ashwagandha 500 mg OD). Significant improvement was also observed in group B treated with water Shirodhara alone. (Table No. 3).

Groups	Mean±SD Value of Hamilton Anxiety Rating Scale		Within groups comparison paired 't' test (BT-AT)
	BT	AT	
Group A	24.65 ± 6.150	12.40 ± 6.369	12.250 ± 4.253 t = 12.880 p = 0.001 HS
Group B	23.55 ± 7.458	8.05 ± 2.297	15.632 ± 6.361 t = 10.711 p = 0.001 HS
Between groups comparison unpaired 't' test Group A vs. Group B	t = 0.509 p = 0.614 NS	t = 2.805 p = 0.008 HS	

**Table 3:** Mean value of Hamilton Anxiety Rating Scale at before and after treatment in Group A and Group B.

Value of visual analogue test for Mental Stress was noted every day and started from day zero. Improvement in the mental stress in both groups was noted every day. The mean values of mental stress from day 0 to 7, day 7 to 15, and day 0 to 15 in both groups were compared. The rate of improvement was highly significant in both groups. The difference between the means of improvement between groups A and B was statistically not significant. The rate of improvement was less in second week than first week. (Table No. 4).

Mental Stress (Days)	Groups (Mean ± SD)		Between groups comparison unpaired 't' test group A vs. group B
	Group A	Group B	
Day 0	57.75 ± 8.503	61.00 ± 8.208	t = 1.230 p = 0.226 NS
Day 7	30.25 ± 13.026	30.75 ± 13.791	t = 0.118 p = 0.907 NS

Day 15	12.00 ± 10.930	8.50 ± 8.751	t = 1.118 p = 0.271 NS
Within groups comparison paired 't' test			
Mean difference between Day 0 - Day 7	27.500 ± 9.105 t = 13.508 p < 0.001 HS	30.250 ± 11.751 t = 11.512 p < 0.001 HS	
Mean difference between Day 0 - Day 15	45.750 ± 10.422 t = 19.632 p < 0.001 HS	52.500 ± 9.801 t = 23.956 p < 0.001 HS	
Mean difference between Day 7 - Day 15	18.250 ± 9.904 t = 8.241 p < 0.001 HS	22.250 ± 12.298 t = 8.091 p < 0.001 HS	

**Table 4:** Mean value of Visual Analogue Test for Mental Stress at zero day, 7th day and 15th day in Group A and Group B.

Value of visual analogue test for Physical Stress was noted every day and started from day zero. Improvement in physical stress in both groups was noted every day. The mean value of physical stress from day 0 to 7, day 7 to 15, and day 0 to 15 in both groups was compared. The rate of improvement was highly significant in both groups. The rate of improvement between groups A and B was not significant. The rate of improvement in 2nd week in comparison to 1st week was approximately similar in both groups. (Table No. 5).

<b>Physical Stress (Days)</b>	<b>Groups (Mean ± SD)</b>		<b>Between groups comparison unpaired 't' test group A vs. group B</b>
	<b>Group A</b>	<b>Group B</b>	
Day 0	56.25 ± 10.371	56.75 ± 15.155	t = 0.122 p = 0.904 NS
Day 7	32.50 ± 9.528	31.25 ± 9.301	t = 0.420 p = 0.677 NS
Day 15	9.75 ± 11.295	7.00 ± 7.847	t = 0.894 p = 0.377 NS
Within the group comparison paired 't' test			
Mean difference between Day 0 - Day 07	23.750 ± 8.410 t = 12.630 p < 0.001 HS	25.500 ± 14.039 t = 8.123 p < 0.001 HS	
Mean difference between Day 0 - Day 15	46.500 ± 14.244 t = 14.599 p < 0.001 HS	49.750 ± 18.812 t = 11.827 p < 0.001 HS	

Mean difference between Day 7 - Day 15	22.750 ± 9.662 t = 10.553 p < 0.001 HS	24.250 ± 11.502 t = 9.428 p < 0.001 HS	
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**Table 5:** Mean value of Visual Analogue Test for physical Stress at Zero day, 7th day and 15th day in Group A and Group B.

An attempt was made to examine the impact of Deha Prakriti, on incidence of depression and anxiety and rate of improvement by treatment. The following table shows that the rate of improvement is higher in Vatapittaja Prakriti. Mean value of depression and anxiety is high in Vatapittaja and Pittakaphaja Prakriti but statistically not significant. (Table No.6).

Prakriti	Mean ± SD of Hamilton Scale for Depression		Mean ± SD Hamilton Anxiety Rating Scale	
	BT	AT	BT	AT
VP (n=12)	34.58 ± 10.60	12.58 ± 5.24	25.25 ± 8.51	8.08 ± 2.53
VK (n=8)	30.12 ± 4.51	15.62 ± 5.73	21.50 ± 4.27	10.75 ± 5.00
PK (n=14)	34.50 ± 9.84	20.28 ± 7.63	25.07 ± 7.49	12.57 ± 6.85
Between Prakriti comparison	F = 0.700 P = 0.504 NS	F = 4.697 P = 0.017 S	F = 0.766 P = 0.474 NS	F = 2.359 P = 0.111 NS
Post Hoc Test	-	P = 0.929 NS	-	-
VP vs. VK		P = 0.014 S		
VP vs. PK		P = 0.339 NS		
VK vs. PK				

VP = Vatapittaja, VK = Vatakaphaja, PK = Pittakaphaja

**Table 6:** Comparison of Mean value of Hamilton Scale for Depression and Anxiety at before and after treatment in different Prakritis.

## Discussion

The effect of Shirodhara treatment as described above is largely Dhara effect and is not really a pharmacological or medicinal effect. The Dhara might be producing some kind of biophysical impact such as micro-vibration of the skull. This could have been transmitted to the brain substance helping in resynchronization of neurons. Another important component underlying the mechanism of Dhara effect could be the relaxation response, and the meditative action could be responsible for the therapeutic response. This meditation action is obtained by focalization of the patient's attention without effort to a single focus, the agreeable sensation on the forehead, thus inducing a deep mental and physical relaxation state. However, till date there is no real robust evidence to substantiate this mechanism. The work of Uebaba et al. (2005) may throw some light on cardiovascular functions (18). Subsequently some workers suggested that use of water in place of oil for Shirodhara may be equally effective (9,10). Further studies are required to substantiate the mechanism of action of Dhara.

The present study revealed a significant trend of clinical remission of headache as measured by the Visual Analogue Scale, improved sleep, decrease in the level of anxiety and depression as measured by Hamilton Rating Scale. The assessment of the pattern of mental and physical stress before and after Shirodhara treatment revealed a substantial reduction in stress state.

It is imperative to mention that the Shirodhara treatment is classically used in Ayurvedic practice in India using some kind of medicated oil, while in the present study we used water with uniformly regulated temperature and pressure instead of oil.

This alternative option of the Dhara material was considered in order to make the treatment more cost effective and user friendly. This decision is also motivated by the past experience of the investigators. However, it cannot be overemphasized that traditionally oil is used in Dhara treatment because oil Dhara is smoother and well-formed as compared to Jaladhara (18). We think that use of costly oil for Dhara treatment may not have significant pharmacotherapeutic effect. However, in future it is advisable to undertake a controlled comparative study between Tail Dhara and Jaladhara.

## Conclusion

The present study conducted on 40 cases of primary headache for 15 days duration showed significant reduction in degree of headache, level of anxiety and depression and level of stress. The procedure of treatment was simple, cost effective and patient friendly. The therapeutic effect is most likely to be biophysical in nature instead of any pharmacological action.

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