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Reviewing the Psychophysiological Outcomes of *Shirodhara*: A Systematic Approach

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ABSTRACT

One of the *Bahya snehana* (external oleation therapy) techniques described in *Ayurveda* is *Shirodhara*. The Seat of Mind is *Shira*, or the head. *Shirodhara* is mostly recommended for mental diseases such as *Raja & Tama Dosha Pradhana* (predominated) or *Manasa bhava pradhan vikaras*. This procedure's apparent mode of action is unclear. *Ayurveda* placed a great deal of emphasis on the process's result rather than its method. It is necessary to hold hypothetical beliefs about the purported mechanism of action of any therapeutic techniques in order to affect and improve perception. Because the procedure is being performed at the *Sthapani marma* (pituitary gland level), *Ajnya chakra* (Brain's medulla oblongata and pelvic gland), *Shavasana* (yogic corpus posture), the pose in which therapy is being performed, and *Manomaya kosha* (mental sheath). The simultaneous occurrence of the *Manasika* and *Shareerika doshas* can be counterbalanced using *Shavasana* and auto body suggestion treatment. This process is enhanced by the psychoneuroimmunology (PNI) mechanism, which is why the results can be observed right away.

Key Words *Shirodhara, Marma, Dharapatra, Snehana, Neurological Disorders*

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INTRODUCTION

Shirodhara is one of the *Bahya snehana* (external oleation therapy) methods utilized in *Ayurveda*. The *Murdni taila* group (oil anointing of the head) includes author Vagbhata¹. Technical definitions state that this procedure, called the *Shirodhara*, entails constantly dousing the forehead or scalp with liquid for a set period of time². *Shirashaka*, *Pariseka*, and *Sechana* are synonyms for *Shirodhara*, and a variety of drugs, including *Taila* (oil), *Takra* (medicated

buttermilk), *Kshira* (alkali), *Kwatha* (decoction), etc., can be used to achieve this³.

It is contraindicated in *Kapha vikaras* (diseases of *Kapha*) due to its synergistic influence over *Kapha*. Therapy is often recommended in *Ardhavabhedaka* (migraine)^{4,5} *Suryavarta*⁶ (type of headache), *Ardita* (facial palsy), *Pakshaghata* (stroke), *Hanugraha* (lockjaw), *Nidranasha* (insomnia), *Shirogata Vata* (diseases of *vata* in the head region), *Shirahkampa* (head tremors)⁷. In addition to these applications, it is currently

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used to treat a variety of ailments, such as infertility, diabetes, hypertension, psychosomatic problems, premature hair aging, and fatigue. The outcome of the process, not its source, was highly valued in Ayurveda. Despite its apparent simplicity, this therapy's mechanism of action is actually somewhat complex⁸.

AIMS AND OBJECTIVES

To study the systemic review of *Shirodhara* in ayurvedic classics.

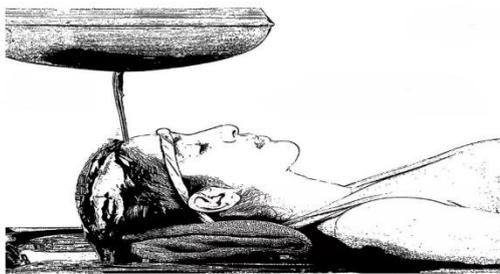


Figure 1 Procedure of *Shirodhara*

METHODOLOGY (FIG. 1)

Procedure of *Shirodhara*⁹

The procedure of this therapy includes 3- stages for the descriptive purpose as

1. *Purvakarma* (pre procedural)
2. *Pradanakarma* (actual procedure)
3. *Paschata karma* (post procedural).

PURVA KARMA:

In Ayurveda, *Purvakarma* is the 1st stage in the Panchkarma process. The choice of medicine is dependent on the patient comfort and the condition of the patient. The patient must pass stool and urine before the procedure, as they must undertake physical examinations as part of the standard check-up to assess fitness. During this process, it is recommended that the patient be

placed in a supine position. The *Dharapatra* (vessel) should be set 4 *angula* (inches) above the forehead, and the ears and eyes should be covered with cotton to prevent the entry of liquid. according to the condition of *Dosha*¹⁰ -

Vata Dosha- Tila Taila

Pitta Dosha- Ghrita

Kapha Dosha- Tila Taila

Rakta Dosha- Ghrita

Vata + Pitta + Rakta- Ghrita and *Taila* in equal par portion

Vata + Kapha + Rakta- ½ part Ghrita and 1-part *Tila Tail*

PRADHANA KARMA:

The *Shirodhara* room needs to be well-ventilated, calm, and clean. After a massage, *Shirodhara* is applied in the morning on an empty stomach. Liquids of any kind, including water, milk, *kwatha*, and tea, should be stored in *Dharapatra*. *Dhara* should be applied consistently to the forehead, neither quickly nor slowly. *Shirodhara* liquid shouldn't be very hot or chilly. The *Dhara* liquid stream shouldn't be excessively thin or thick.

As soon as the liquid begins to flow, the vessel is moved in a pendulum motion from one lateral side to the other. Before the *Dharapatra* runs empty, the liquid is gathered in another container and utilized to replace it. For a minimum of fifteen to twenty-one days, the *Shirodhara* procedure is carried out in the morning. *Shirodhara* liquids should be heated to a temperature higher than body temperature.

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CHANGING THE MEDICATED DRAVYA -

Every day, the milk and water used in *Shirodhara* should be replaced. *Dhanyamla* has a maximum three-day shelf life. Additionally, the oil needs to be changed every three days, but it can be reused. Half of the oil should be used for the first three days, the other half for the next three, and on the seventh day, the first and second halves should be combined and disposed of.

PASHCHATA KARMA:

The patient's head is cleaned and dried when the treatment is finished. This was followed by a brief period of rest and an oil massage of the head and body. Then, a warm bath is suggested.

Indications- Stress and psychosomatic conditions include convulsions, psoriasis, eczema, hypertension, and neurological and psychiatric conditions like insomnia, neurosis, and headaches, as well as irritable bowel syndrome, psoriasis, and epilepsy. *Shirodhara* is also utilized for patients with memory loss, facial palsy, and *Vata Vyadhi*.

Contraindication- In *Kaphaja Vikara*, *Shirodhara* further increase *Kaphaja*, this makes the diseases difficult to cure.

DISCUSSION

Although the effectiveness of *Shirodhara* has been demonstrated clinically, comprehending the process's mechanism of action remains challenging. *Shirodhara* works well in the following ways-

A/c to Ayurveda-

The head, sometimes referred to as *Uttamanga*, is the foundation of all sense faculties, or *Indriyas* (sense organs), in a living creature. As a result, *Shirodhara* strengthens the *Prana* and *Indriyas*, which are typically weakened in cases of mental illness. Since the mind and *Indriyas* are closely related, a healthy *Indriya* also corresponds to a healthy mind¹⁰. Thus, *Shirodhara* maintains mental and physical well-being. Stress and tension can result from an imbalance of *Prana*, *Udana* and *Vyana Vayu*, *Sadhaka Pitta*, and *Tarpak Kapha*. The mechanical action of *Shirodhara* restores these *Dosha* subtypes' functional integrity¹¹.

Therapeutic effect of medicine

The solubility of the medication, the concentration and length of contact, the physical state of the skin and the exposed body part, and other elements all play a role in the absorption of substances through the skin, according to the principle of drug absorption. Oil with a good dense concentration and a longer contact time is used in *Shirodhara*. According to the theory of medication absorption, the scalp is the site of greatest absorption, and oil absorbs more effectively than water in comparison¹².

PROCEDURAL EFFECT OF THE SHIRODHARA PROCESS:

Effect of *Shirodhara* procedure-

1. TEMPERATURE

A prolonged time of warm liquid flow across the forehead will result in mild vasodilatation.

Shirodhara helps to regularize the blood supply to the brain and enhances circulation in certain

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areas. Temperature and vibration may work together to stimulate the thalamus and basal forebrain, which returns serotonin and catecholamine levels to normal¹³. (Fig .2)



Figure 2 Warm liquid flow

2. PRESSURE AND VIBRATION

The frontal bone's hollow sinus amplifies the constant pressure and vibration experienced throughout the *Shirodhara* therapy. Through the cerebrospinal fluid (CSF) fluid medium, the vibration is internally transferred. Impulse conduction is also impacted by pressure. *Shirodhara's* technique involves applying extended pressure to a nerve, which interrupts impulse conduction and causes a portion of the body to relax.

By modifying nerve stimulation, prolonged and continuous pressure over the forehead (due to the flowing of medicinal liquid over the forehead) induces mental tranquility and lowers tension. When the autonomic nervous system's nerve endings are stimulated, they release chemicals such as acetylcholine, which is an inactive form of the neurotransmitter that is activated by vibrations in the nerve impulses caused by continuously applying liquid to the forehead. Acetylcholine may also cause a drop in blood pressure, which in turn reduces the activity of the

central nervous system and promotes mental tranquility.

Acetylcholine is the substance the nervous system uses to activate [skeletal muscles](#), a kind of striated muscle. These are the muscles used for all types of voluntary movement, in contrast to [smooth muscle tissue](#), which is involved in a range of involuntary activities such as movement of food through the gastrointestinal tract and constriction of blood vessels. Skeletal muscles are directly controlled by [motor neurons](#) located in the [spinal cord](#) or, in a few cases, the [brainstem](#). These motor neurons send their [axons](#) through [motor nerves](#), from which they emerge to connect to muscle fibers at a special type of [synapse](#) called the [neuromuscular junction](#). (Fig .3)

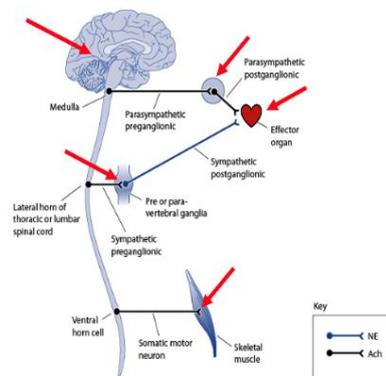


Figure 3 Neuromuscular junction

The application of *Dhara Dryya* (Medicated oil or any other form of liquid) to the patient's forehead heightens brain wave intensity while lowering cortisone and adrenaline levels in the brain. This component also functions as *Shirodhara's* anti-stress impact¹³⁻¹⁴.

3. Marma (vital points) -

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Classics of Ayurveda state that certain *Marma* (Vital point) is situated in the forehead and head region. This region is mostly home to *Sthapni*, *Utshepa*, *Avarta*, *Shankha*, and *Apanga Marma*¹⁴. The location of *Chitta* (Mana) is *Bhrumadhya*, according to Acharya Bhela (between both eyebrows). It is also *Sthapni Marma's* location¹⁵. Most of the *Marma* of head region are Agni and *Vayu Pradhana Mahabhoota*¹⁶. The locations of the pituitary and pineal glands, as well as *Sthapni Marma*, are on the same level. Hormones regulate the function of the pituitary gland. The gland's master is this entity. It is able to sustain the entire endocrine system in the human body¹⁷. Anxiety and tension in the mind, with the endocrine system's normal functioning being upset as the root cause¹⁸. The pituitary gland's indirect stimulation and *Sthapni Marma's* stimulation both alter the psycho-somatic level. *Shirodhara* therapy thereby relieves mental tension by restoring this gland's normal function¹⁹. (Fig .4)

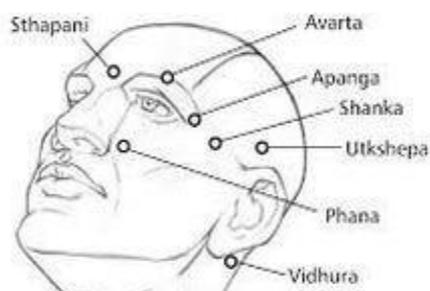


Figure 4 Urdhvajatrugata Marma ON THE BASIS OF PHYSICS –

ENERGY – According to the Law of Conservation of Energy, energy can neither be created nor destroyed; it can only be transformed from one form to another. All substances possess

potential energy when positioned at a height. As an object descends, its potential energy is converted into kinetic energy. The amount of potential energy an object holds depends on its mass and height. If the height is constant, a greater mass results in greater potential energy. Any object falling on the forehead from a certain height may alter the local voltage, trigger the generation of nerve impulses, or enhance their conduction due to the transformation of potential energy into kinetic energy. If there is minimal voltage difference between the generation and conduction of a nerve impulse, the excess energy is absorbed by the skull. According to current physiological theory, the brain continuously generates electromagnetic waves through electrical activity, which can be recorded using an electroencephalogram (EEG)²⁰.

RESULTS AND DISCUSSION

Shirodhara is a very effective therapy and in this section, we have discussed the results of Several clinical research studies on *Shirodhara* have demonstrated its therapeutic efficacy, with documented outcomes supporting its role in stress reduction, sleep improvement, and autonomic balance -

1. *Shirodhara* showed significant improvement in serum biomarkers of stress. It provided significant relief in the grading of the POMS Score also²¹.
2. *Shirodhara* with Brahmi oil is very effective in moderate to severe insomnia²².

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3. It is evidence that *Shirodhara*, can produce a very significant reduction in the respiratory rate, mean diastolic blood pressure, and heart rate and also an increase in the alpha rhythm and decrease in beta activity (confirmed by EEG)²³.

4. *Shirodhara* is found effective in the management of a condition like pediatric attention deficit hyperactivity disorder, cerebellar ataxia, essential hypertension, psychological symptoms of menopause, premature ejaculation, generalized anxiety disorder and insomnia, this procedure has a demonstrable anxiolytic effect evidenced by the decrease in Plasma noradrenaline and urinary serotonin excretion²⁴.

5. *Dhara* therapy, specifically, *Takradhara* has shown a significant role in relieving stress-induced disorders²⁵.

6. In a study, *Shirodhara* was found very effective in alleviating the symptoms of ADHD²⁶.

7. *Shirodhara* is very effective in the management of *Vatika Shirah Shoola* w.s.r. to tension headache²⁷.

8. In a clinical study *Shirodhara* is found effective in the management of attention-deficit/hyperactivity disorder (AD/HD) affected children²⁸.

9. It is evidence that *Shirodhara* is very effective in essential hypertension even compared to *Sarpagandha Vati*²⁹.

10. In a study *Shirodhara* is found very effective in the management of *Anidra* (insomnia) and developing the feeling of well-being in the patient without having any side/toxic effects³⁰.

11. *Shirodhara* was found effective in psychosomatic management of *Shukraavrita Vata* (premature ejaculation) like intra-vaginal ejaculatory latency time, voluntary control over ejaculation, patient satisfaction, performance anxiety, and the number of penile thrusts etc³¹.

12. *Shirodhara* found very effective in *Pakshaghat* with special reference to cerebral ischemic stroke and this procedure produced significant results in gradation score of MPG and power of upper limb and lower limb in *Pakshaghat*³².

13. In a clinical study, it was found that *Shirodhara* was very effective in the management of stress induced insomnia (*Anidra*)³³.

14. In a study, *Ksheerdhara* found effective in reducing systolic and diastolic blood pressure and also alleviating the symptoms of essential³⁴.

CONCLUSION

Shirodhara is a key therapeutic intervention in the Ayurvedic medical system, which has gained international recognition for its straightforward application and efficacy in treating a variety of illnesses and lifestyle problems. It is a restorative and cleansing therapy that relieves stress and any negative effects on the central nervous system, gets rid of pollutants and mental fatigue, and revitalizes the body. Based on the description provided above, it is evident that *Shirodhara* has both procedural and medicinal effects. These can be comprehended via the lenses of mechanical, *Marma*, and Ayurvedic science. Psychological
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illnesses and abnormalities of the scalp and hair
can be treated with *Shirodhara*.

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