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## Review Article

### MULTIDIMENSIONAL EFFECTS OF SHIRODHARA ON PSYCHO-SOMATIC AXIS IN THE MANAGEMENT OF PSYCHO-PHYSIOLOGICAL DISORDERS

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#### ABSTRACT

Now-a-days many clinical conditions of different physiological systems becoming psychosomatic in nature, may be because of modern day living. Psychosomatic disorders represent a therapeutic enigma. Despite compelling evidence to suggest the integrity of mind and body, humans are famously prone to experiencing them as separate. Ayurveda essentially sees every disease as a psychosomatic manifestation and views the mind and body as two aspects of one unity. Considering the involvement of Hypothalamico-Pituitary-Adrenal Axis (HPA Axis) in most of the psychosomatic disorders; an attempt is made to use the word 'Psychosomatic axis' in synonymous with HPA axis/*Shatchakras*. Shirodhara, an icon of Ayurveda in global scenario, is the pouring of warm herbal oil over the forehead in a pendulous manner. This treatment rejuvenates the nervous system, releases emotions, opens the subtle channels and unfolds bliss throughout the mind and body. This paper explores the advanced understanding of *Shirodhara* and its role in prevention and treatment of psychosomatic disorders and promotion of mental health & in turn to emphasize its importance in current day practice.

**KEYWORDS:** Ayurveda, HPA axis, Psychosomatic axis, Psychosomatic disorders, Psychophysiological disorders, *Shirodhara*.

#### INTRODUCTION

// *Manah sareerayo sthaph parasparam anuvrajeth /*  
// *Aadhara Aadheya bhawatwat taptaajyam ghoriva //*

This particular quote from great Indian epic 'Mahabharata' santhi parva beautifully emphasizes the mind body relation. It means that "The mind (psychic component) is like ghee (clarified butter) in an earthen pot (the body or somatic component). The warmth or chill of either necessarily affect the state of the other" [1].

Ayurveda postulates that the man is a triune of mental, physical and spiritual factors – '*satwatma sareeram*'. '*Satwa van sate sarva*' that is a person who is rich in *satwa guna* never becomes the victim of stress factors either psyche or somatic [2].

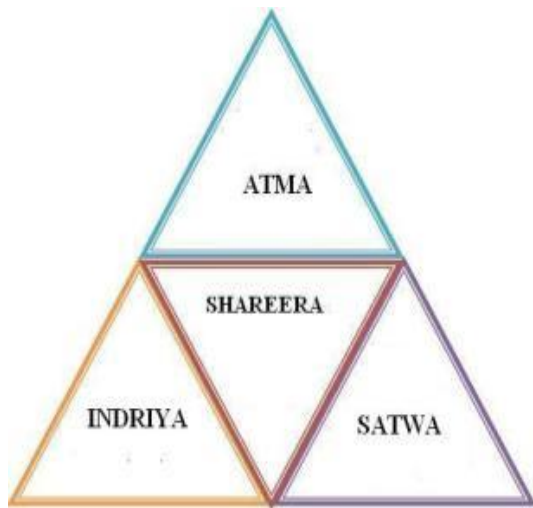
#### Traingle of Life (AYU)

Ayurveda conceives life (*ayu*) as a four dimensional entity. *Ayu*, the living entity is the sum total of *Sharira* (Body), *Indriya* (Senses),

*Satwa* (Psyche) and *Atma* (Soul); the same was quoted by Charaka as below.

// *Sharirendriya satwatma samyoga dhari jeevitam /*  
// *Nityaga anubandhascha paryayai ayur uchyatein //*  
(Ch.Su.1/42)

*Ayu* is the constant and continuous union and conjunction of *Sharir*, *Indriya*, *Satwa*, and *Atma*. The synonyms of *ayu* are *Nityaga*, *Dhari*, *Jeevitam* and *Anubandha*. *Nityaga* signifies continuation of consciousness. *Dhari* means that factor prevents the body from the decay. *Jeevitam* represents the act of keeping alive. *Anubandha* means which transmigrates from one body to another. These four components of *ayu* interplay the human body. Out of which *Atma* is supreme entity, immune to cycle of birth, disease and death (*nirvikara parastu atma*). *Sharira* is host for other three factors [3]. Keeping this in view authors have attempted to develop Life triangle which is depicted in Fig 1.



**Figure 1: Life triangle**

Psycho-somatic Axis Vis-à-vis HPA Axis

**Hypothalamico-Pituitary-Adrenal Axis (HPA Axis)** is a complex set of direct influences and feedback interactions among the hypothalamus, the pituitary gland, and the adrenal glands. The interactions among these organs constitute the HPA axis, a major part of the neuro-endocrine system that controls reactions to stress and regulates many body processes, including digestion, the immune system, mood and emotions, sexuality and energy storage and expenditure. It is involved in the neurobiology of mood disorders and functional illnesses, including anxiety disorder, bipolar disorder, insomnia, posttraumatic stress disorder, borderline personality disorder, ADHD, major depressive disorder, burnout, chronic fatigue syndrome, fibromyalgia, irritable bowel syndrome, and alcoholism. Antidepressants, which are routinely prescribed for many of these illnesses, serve to regulate HPA axis function.

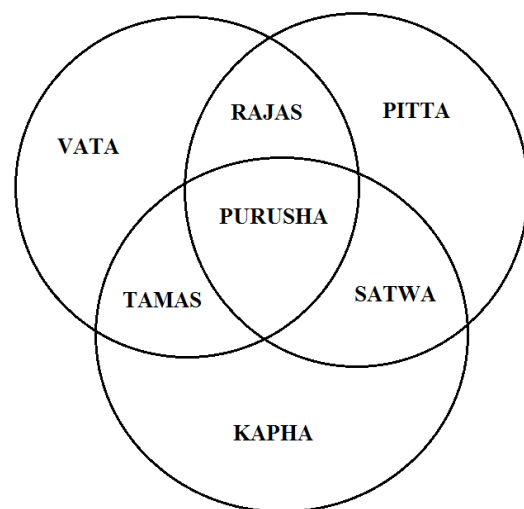
Experimental studies have investigated many different types of stress, and their effects on the HPA axis in many different circumstances. Studies on people show that the HPA axis is activated in different ways during chronic stress depending on the type of stressor, the person's response to the stressor and other factors. In post-traumatic stress disorder (PTSD) there appears to be lower-than-normal cortisol release, and it is thought that a blunted hormonal response to stress may predispose a person to develop PTSD [4].

Above brief understanding of HPA axis reveals that it get influenced directly or indirectly in most of the Psychosomatic disorders, which made us to use the term

'Psycho-somatic Axis' in synonymous with HPA axis.

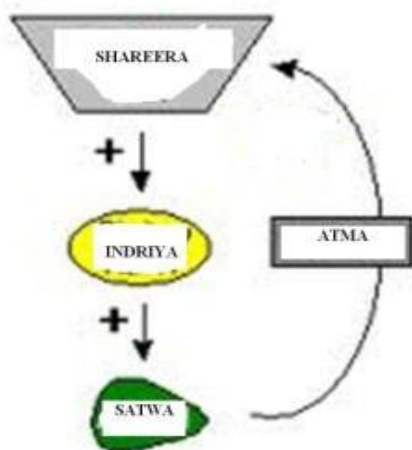
**Ayurvedic understanding of HPA Axis in terms of Psycho-somatic Axis**

Several popular theories try to explain psychosomatic disease. While each has merits for some patients there is no universal explanation in biomedicine. Ayurveda on the other hand has a completely different view. There are three mental/ spiritual dispositions or qualities called *Guna* that determine how an individual responds to 'Stress'. These are *Satwa*, *Rajas* and *Tamas*, and are inherent in all aspects of life. *Satwa* is responsible for mental equipoise and clarity. It is a quality of food, plants (medicines), environmental locations, and impressions that influence the lifestyle of everyone. The other two: *Rajas*, the force of distraction and instability and *Tamas*, the force of confusion, darkness and ignorance and fear are the direct causes of disease both physical and psychological [5]. The three *Mano guna* gets influenced by the *Sharirika dosha* i.e., *Vata*, *Pitta* and *Kapha*. These physiological and psychological triad attributes gets influenced each other to maintain internal homeostasis and in turn external allostasis with external world; which reflects the *Prakriti-Purusha* relation. This understanding also shown in the Fig.2



**Figure 2 : Venn diagram showing relation between Sharirika and Manasika dosha**

Ayurvedic understanding of Psycho-somatic axis shown in Fig.3



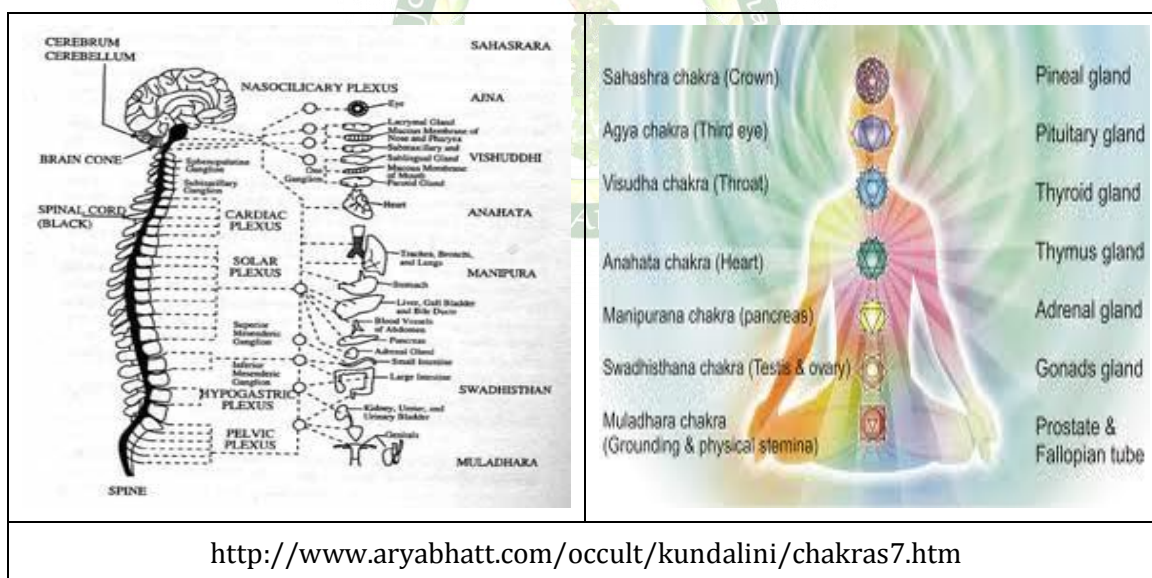
**Figure 3 : Ayurvedic understanding of Psychosomatic axis**

The spectrum of Psycho-somatic axis is much broader in *Ayurveda* i.e., the word ‘*Sharira*’ denotes *Dosha*, *Dhatu* and *mala*; the word ‘*Indriya*’ denotes *Indriya pancha Panchakam*; ‘*Satwa*’ denotes *Manas* and its dimensions and the last word ‘*Atma*’ reveals influence of *Papakarma* (past deeds) in the causation of disease.

**Shatchakras & Psycho-somatic Axis**

The primary importance and level of existence of *chakras* is posited to be in the psyche. However, there are those who believe that *chakras* have a physical manifestation as well. The author Gary Osborn, for instance, has described the *Chakras* as metaphysical counterparts to the endocrine glands, while Anodea Judith noted a marked similarity between the positions of the two and the roles described for each. C.W. Leadbeater associated the *Ajna chakra* with the pineal gland, which is a part of the endocrine system. Stephen Sturgess also links the lower six *chakras* to specific nerve plexuses along the spinal cord as well as glands. However, these associations have never been scientifically verified.

The following Figure 4 on neuro-endocrinological correlates of *Shatchakras* provide supportive evidences to consider *Shatchakras* as Psycho-somatic axis in relation to HPA axis. They are located at the physical counterparts of the major plexuses of arteries, veins & nerves; and also the major endocrine glands.



<http://www.aryabhattach.com/occult/kundalini/chakras7.htm>

**Figure 4: Neuro-endocrinological correlates of Shatchakras**

The *chakras* are thought to vitalise the physical body and to be associated with interactions of a physical, emotional and mental nature. According to medical intuitive and author, Caroline Myss, who described *chakras* in her work *Anatomy of the Spirit* (1996), "Every thought and experience you've ever had in your life gets filtered through these chakra databases. Each event is recorded into your cells...", in effect your biography becomes your biology.

**What is a Psycho-physiological disorder?**

**Psycho-somatic disorder**, also called **Psycho-physiologic Disorder**, condition in which psychological stresses adversely affect physiological (somatic) functioning to the point of distress. It is a condition of dysfunction or structural damage in bodily organs through inappropriate activation of the involuntary nervous system and the glands of internal secretion. Thus, the psychosomatic symptom

emerges as a physiological concomitant of an emotional state. In a state of rage, for example, the angry person's blood pressure is likely to be elevated and his pulse and respiratory rate to be increased. When the anger passes, the heightened physiologic processes usually subside. If the person has a persistent inhibited aggression (chronic rage), however, which he is unable to express overtly, the emotional state remains unchanged, though unexpressed in the overt behaviour, and the physiological symptoms associated with the angry state persist. With time, such a person becomes aware of the physiological dysfunction. Very often he develops concern over the resulting physical signs and symptoms, but he denies or is unaware of the emotions that have evoked the symptoms [6].

Psychosomatic disorders may affect almost any part of the body, though they are usually found in systems not under voluntary control. Emotional stress is assumed to aggravate existing illnesses, and there is some evidence that it may precipitate illnesses not usually considered to be psychosomatic (e.g., cancer, diabetes) in individuals predisposed to them. Psychosomatic disorders resulting from stress may include hypertension, respiratory ailments, gastrointestinal disturbances, migraine and tension headaches, pelvic pain, impotence, frigidity, dermatitis, ulcers and so on.

**Categories of Psychosomatic disorders**

The category I includes people who have both a mental (psychiatric) illness and a medical illness, and these illnesses complicate the **Clinical symptomatology**

symptoms and management of each other. The category II includes people who have a psychiatric problem that is a direct result of a medical illness or its treatment, such as having depression due to cancer and its treatment. The category III of psychosomatic illness is 'somatoform disorders'. Somatoform disorders are psychiatric disorders that are displayed through physical problems. In other words, the physical symptoms people experience are related to psychological factors rather than a medical cause. Somatoform disorders include Body dysmorphic disorder is an obsession or preoccupation with a minor or imaginary flaw, such as wrinkles, small breasts, or the shape or size of other body parts. Body dysmorphic disorder causes severe anxiety and may impact a person's ability to function normally in daily life. Conversion disorder is a disorder in which a person experiences neurological symptoms that affect his or her movement and senses and that do not appear to have a physical cause. Symptoms can include seizures, blindness or paralysis. Hypochondriasis is an obsession or fixation with the fear of having a serious disease. People with hypochondriasis misconstrue normal body functions or minor symptoms as being serious or life threatening. For example, a person with hypochondriasis may become convinced that he or she has colon cancer when having temporary flatulence after eating cabbage. Somatization disorder is a disorder in which a person experiences physical complaints, such as headaches, diarrhea, or premature ejaculation that do not have a physical cause [7].

**Table 1 : Symptoms of Psycho-somatic disorders**

Physical symptoms	Cognitive symptoms	Behavioral symptoms	Emotional symptoms
<ul style="list-style-type: none"> <li>• Aches and pains</li> <li>• Diarrhea or constipation</li> <li>• Increased frequency of urination</li> <li>• Indigestion</li> <li>• Changes in blood glucose</li> <li>• Nausea, dizziness</li> <li>• Chest pain, rapid heartbeat</li> <li>• Loss of sex drive</li> <li>• Frequent colds</li> <li>• Irregular periods.</li> </ul>	<ul style="list-style-type: none"> <li>• Memory problems</li> <li>• Inability to concentrate</li> <li>• Poor judgment</li> <li>• Pessimistic approach or thoughts</li> <li>• Anxious or racing thoughts</li> <li>• Constant worrying</li> </ul>	<ul style="list-style-type: none"> <li>• Eating more or less</li> <li>• Sleeping too much or too little</li> <li>• Isolating oneself from others</li> <li>• Procrastinating or neglecting responsibilities</li> <li>• Using alcohol, cigarettes, or drugs to relax</li> <li>• Nervous habits (e.g. nail biting, pacing)</li> </ul>	<ul style="list-style-type: none"> <li>• Moodiness</li> <li>• Irritability or short temper</li> <li>• Agitation, inability to relax</li> <li>• Feeling overwhelmed</li> <li>• Sense of loneliness and isolation</li> <li>• Depression or general unhappiness</li> </ul>

### Shatkriyakala of Psychosomatic disorders

The following image taken from the <http://www.brainempower.org/beforhealth.html> and is interpreted as per the *Shatkriyakala*.



Figure 5: *Shatkriyakala* of Psychosomatic disorders

### System wise clinical conditions

Table 2: System wise clinical conditions having psycho-somatic relation

S.No	System	Clinical conditions
1	Cardiovascular system	Coronary artery disease, Essential Hypertension, Cardiac arrhythmias
2	Respiratory system	Bronchial asthma Hyperventilation syndrome
3	Gastrointestinal system	Peptic ulcer, Ulcerative colitis IBD, IBS, Habitual constipation Functional Gastro Intestinal Disorders (FGID)
4	Endocrine system	Diabetes mellitus, Hyperthyroidism
5	Musculoskeletal system	Rhematoid arthritis, Lowback pain Chronic Fatigue syndrome Fibromyalgia
6	Neurological system	Migraine headache, Tension headache
7	Integumentary system	Acne, Neurodermatitis, Psoriasis Pruritis ani, Urticaria
8	Reproductive system (Psychosexual)	Dysmenorrhea, Premature ejaculation Erectile dysfunction, Dhat syndrome
9	Immune system	Allergic reactions

### Shirodhara - Ayurvedic Transcranial Oil Dripping Stimulation Therapy

Acharya Sushruta narrates human body as a tree with roots upward and branches down, further adds that as its necessary to irrigate tree in its roots in order to flourish it completely,

similarly human body needs to be irrigated in its roots i.e., head, in order to keep it moist and to enhance its functions.

In Sanskrit language *Shirodhara* is composed of two words *shiro* + *dhara*. *Shiro* means head and *Dhara* means flow. The patient

lies supine on a flat surface with head back and a rolled towel or pillow beneath the neck. A stream of warm oil is drizzled very slowly onto the center of the forehead (the location of the "third eye") for 60 minutes approx followed by gentle scalp massage. The effect is indescribable. *Shirodhara* helps to heal the body at the root level of disease, by calming imbalances in our mind and disturbances in our emotions it leaves you feeling in a heavenly state.

It is this steady, rhythmic pouring of oil that induces a deeply relaxing and blissful state of consciousness called 'Turiya' ~ the state of awareness that is neither fully conscious nor deep sleep. While in this *Turiya* state, we are able to witness and/or release impressions in our conscious and subconscious mind. The brow and third eye center are associated with the

fundamental endocrine glands (pituitary, pineal & hypothalamus), which regulate all hormonal secretions. These hormonal secretions are responsible not only for the autonomic responses which control digestion, breath, elimination, etc., but are also responsible for our moods and emotional states. *Shirodhara* is meant to establish a state of parasympathetic repose, an ego-less state, during which the innate intelligence of our body is revealed [8].

### Kinds of Shirodhara

There are different kinds of shirodhara based on the *dravya* we use for the therapy and accordingly they were given different names. For example if we choose oil for the therapy then it is called *Taila dhara*, for *Takra* - *Takradhara*, *Ksheera* - *Ksheeradhara*, *Ghrit* - *Ghrita dhara*, Water - *Jaladhara* etc.,

The following image reveals the logic behind the evolution of the therapy - *Shirodhara*

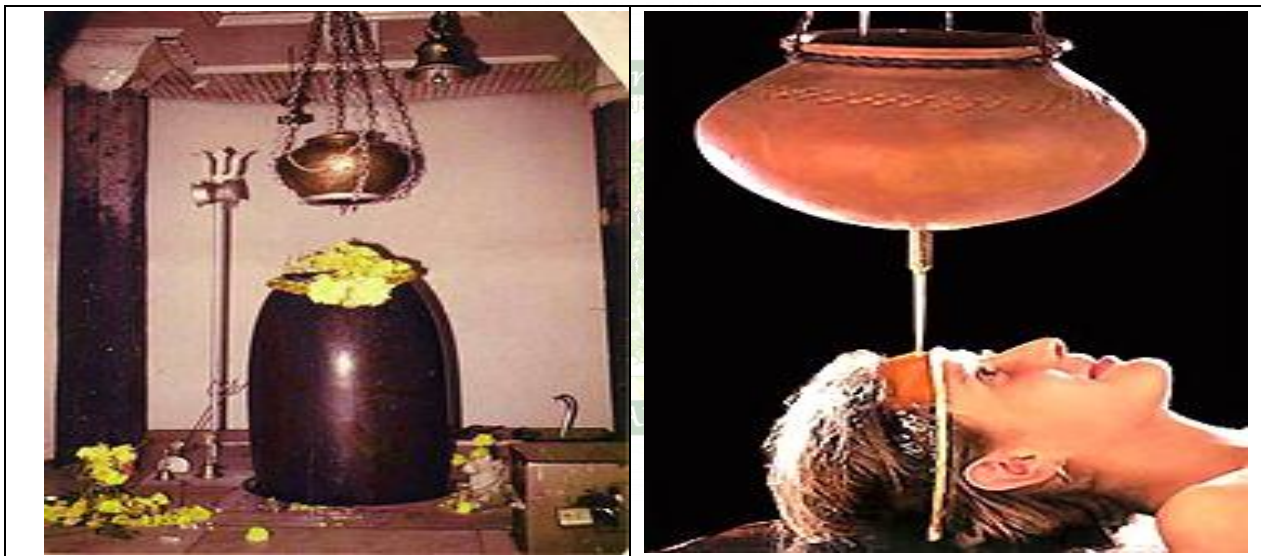


Figure 6: Logic behind evolution of Shirodhara

### Possible mechanism of *Shirodhara*

Table 3: Possible mechanism of *Shirodhara*

SENSATIONS	Name of the RECEPTOR	Tract that carries
Thermo Receptive Sensations	Bare nerve endings	Lateral Spinothalamic Tract
Tactile (Touch) Sensations	Basket like nerve fibre around hair follicle Meissners Corpuscle	Dorsal columns
Baro (Pressure) Receptive Sensations	Merkels disc (Uncapsulated expanded ending) Ruffini Organ, Krauses end bulb	Anterior Spino thalamic Tract

## Neurophysiological mechanism of *Shirodhara*

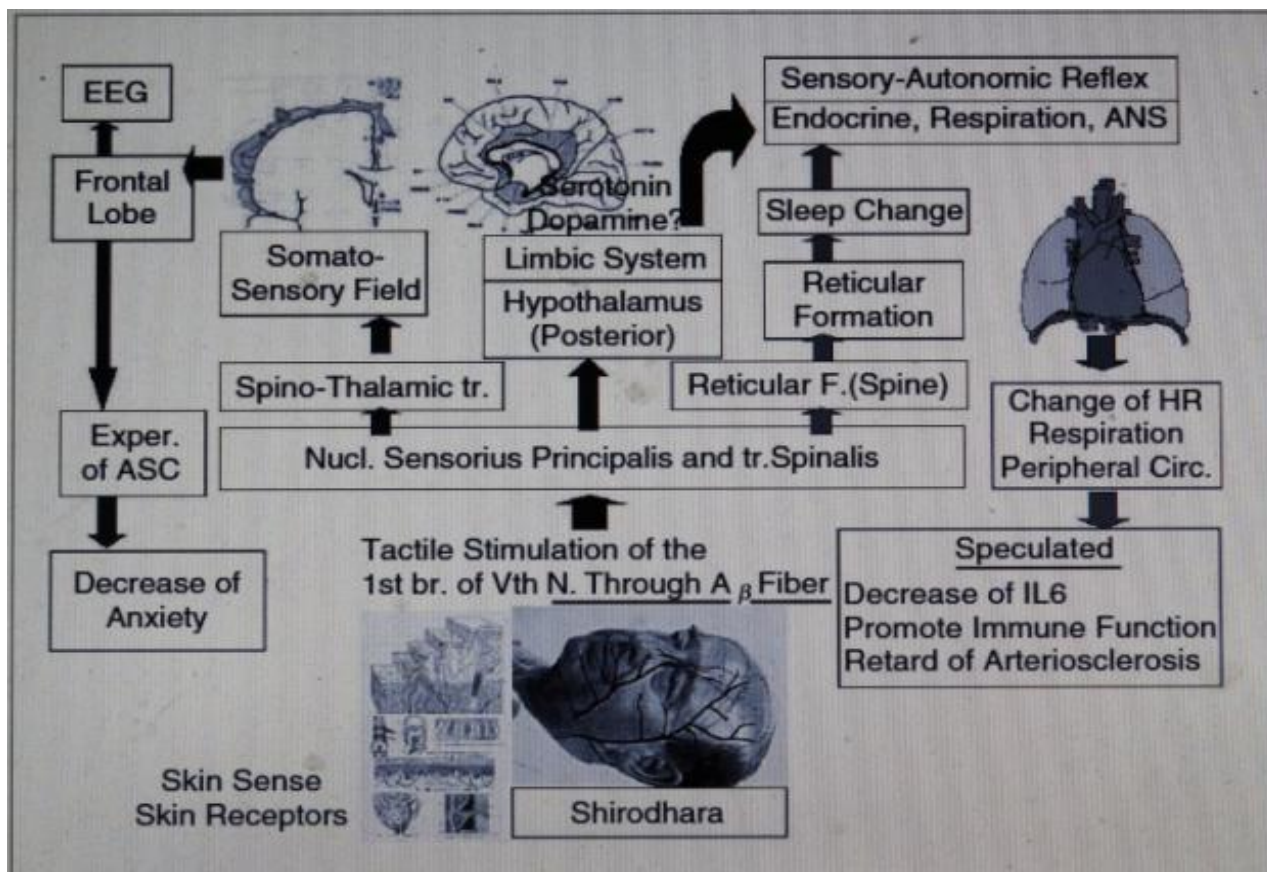


Figure 7: Neurophysiological mechanism of *Shirodhara*

Source: - Uebaba et al. Using healing robot for the scientific study of *Shirodhara* published in IEE Engineering in Medicine and Biology Magazine March/April 2005.

### Dimensions of *Shirodhara*

#### Higher consciousness

In Ayurvedic Medicine, *Shirodhara* is considered an important tool in the pursuit of higher states of consciousness. Higher consciousness is generally regarded as a developed state of consciousness in which aspects of the mind, such as thought, perception and attention, are improved, refined and enhanced. It is considered thus to be a *higher* level of consciousness relative to ordinary consciousness, in the sense that a greater awareness of reality is achieved. In a secular context, higher consciousness is usually associated with exceptional control over one's mind and will, intellectual and moral enlightenment, and profound personal growth. In a spiritual context, it may also be associated with transcendence, spiritual enlightenment, and union with the divine [8].

#### Third eye treatment

In the Upanishads, a human being is linked to surroundings with ten gates. Nine

gates (eyes, nostrils, ears, mouth, urethra, anus) lead outside to the sensory world. The third eye is the tenth gate and leads to inner realms housing myriad spaces of consciousness. In Hinduism and Buddhism, the third eye is a symbol of enlightenment. In the Indian tradition, it is referred to as the *gyanachakshu*, the eye of knowledge, which is the seat of the 'teacher inside' or *antar-guru*. The third eye is the ajna chakra (sixth chakra) also known as brow chakra or brow centre. This is commonly denoted in Indian and East Asian iconography with a dot, eye or mark on the forehead of deities or enlightened beings, such as Shiva, the Buddha, or any number of yogis, sages and bodhisattvas. This symbol is called the "Third Eye" or "Eye of Wisdom", or, in Buddhism, the urna [8].

#### Passive Meditation

During pouring of oil onto the forehead, individual starts concentrating on *Agya chakra*. With or without the involvement,

individual starts meditation on centre of the forehead. Meditation can have a calming influence on practitioners, as well as changing the state of consciousness. Meditation defined as a, mental discipline by which one attempts to get beyond the reflexive, "thinking" mind into a deeper state of relaxation or awareness. Meditation often involves turning attention to a single point of reference. *Shirodhara* leads to a state of alert calmness similar to the relaxation response observed in meditation. *Shirodhara* is deeply relaxing and induces a relaxant state; these effects are mediated by the brain wave coherence, alfa waves, and a down regulation of the sympathetic outflow. The center of the forehead, also known as *Agnya Chakra*, with closed eyes during meditation leads to psychosomatic harmony. As the oil drips on the *Agnya chakra*, it is proposed that the meditation-like effect is a consequence of stillness of mind leading to adaptive response to the basal stress. The clinical benefits observed with *Shirodhara* in anxiety neurosis, hypertension, and stress aggravation due to chronic degenerative diseases could be mediated through adaptive physiological effects [9].

### Psychoneuro Immunology

Researchers have conducted two human clinical trials on the psychoneuroimmunologic effects of *Shirodhara*. In the first study a group of healthy females were randomly assigned to receive a *Shirodhara* treatment (with plain sesame oil) or remain in a supine position (control group), while being monitored for numerous physiologic, biochemical, immunologic and psychometric parameters. The second study had a similar design, with the addition of a third group that received *Shirodhara* with a medicated sesame oil containing essential oil of lavender. Both *Shirodhara* treatments resulted in decreased anxiety and promoted ASC (altered state of consciousness). After the plain sesame oil treatment there was a significant decrease in plasma noradrenaline and urinary serotonin excretion vs. the control group. A correlation with natural killer cell (NK cell) activity and anxiolytic effect within the *Shirodhara* group was also observed [10-11].

The ultimate aim of the *Shirodhara* therapy is to restore the equilibrium of *Sharira* and *Manasika doshas* through the psychosomatic axis, which in turn facilitates

'*manoprasannatah*' or tranquility of mind, a positive sign of healthy state of the body. Researchers have recently investigated the effect of *Shirodhara* in psycho-physiological profile of healthy volunteers [9] and also in patients of generalized anxiety disorder [12] and found that the promising results in both the cases. In simple words Ayurveda treats the body through the medium of mind or manas. Modern drugs promote relaxation by blocking awareness of a stressful event, or by diminishing the importance one attaches to it. Under the influence of drug, one is not actively thinking about the problem for the time being. On the other hand the Ayurvedic approach makes one to realize the situation and adopt suitably to solve the stress problems in a refreshing way forever [13].

### CONCLUSION

"A wrong functioning of the psyche can do much to injure the body, just as conversely a bodily illness can affect the psyche; for psyche and body are not separate entities, but one and the same life. (C.G.Jung 1917, para.194)

Ayurveda avoid a strict body-mind dualism and instead emphasize their interaction in the causation of the human condition in health and disease. The Buddhist tradition takes a similar position and states that "the mind and body are neither separate nor identical, not even alternatives, but inseparable.... Like two bundles of reeds supporting each other (Goonatilake, 1998). Ayurveda therefore Preserve the unitary nature of body and mind, and approach problems in a more holistic manner.

Modernity is a matrix for new psychosomatic disorders (Shorter 1992). The psychosomatic disorders are the outcome of the modern way of life and changing value systems and hence their incidence is rapidly increasing. Over-use and misuse of the senses is one of the main causes of today's illness. With today's overstimulation of the senses, *Shirodhara* is a vital and effective treatment for psychosomatic conditions. It's an absolute antidote to modern life.

Medicine is becoming, and will become even more in the future, an integrated science; human illness and the maintenance of good health may be better understood if all medical disciplines are considered as a whole. The domain of psychosomatic medicine has now



extended to coincide with that of medical practice. There is increasing evidence, not only in psychiatry, but in all medical fields, that care of the mental well-being of a person is essential for effective care of the body. *Not only mens sana in corpore sano, but also corpus sanus in mente sana.*

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