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Role of shirodhara in the management of stress-induced menstrual disorders: a review.

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ABSTRACT-

INTRODUCTION: In the midst of a fastpaced competitive lifestyle, everyone is affected by stress in some way. Stress cycle which causes negative consequences on the menstrual cycle in females. Menstrual function is disrupted by stress that activates the hypothalamic-pituitaryadrenal (HPA) axis; it leads to menstrual cycle alterations. As a result of this activation. menstruation becomes unpleasant, painful. Ayurveda aims at preservation & promotion of health and prevention & cure of diseases through the concepts of positive physical and mental health. Shirodhara is a procedure of gentle pouring of a stream of lukewarm medicated oil or other liquid continuously & steadily on the forehead specifically on the Agneya chakra. **AIMS** & OBJECTIVES: 1. To analyze the effects of stress on menstrual disorders. 2. To study the efficacy of Shirodhara in stress induced menstrual disorders. MATERIAL

& METHODS: Relevant literature is referred from the Samhitas, Sangraha Granthas and contemporary literature personal experience. along with DISCUSSION: People are dealing with a plays an important role on the mensural warrety of stress and are working hard to get rid of them. A person's mental wellbeing is essential for effective care of the body. CONCLUSION: Shirodhara is a therapy that rejuvenates the nervous system, releases emotions, opens the subtle channels, and brings bliss throughout the mind and body. This has a calming and relaxing effect on the brain. Shirodhara has a significant effect on a variety of stress-induced menstrual disorders.

> Keywords- Menstrual cycle, Menstrual Disorders, Shirodhara, Stressor, Stress

INTRODUCTION-

Menstrual disorders and stress are the most common health problems among young females. Stress is a subjective & unpleasant feeling of distress. It is normal psychological & physiological reaction to changes in someone's environment which could be emotional, physical, social or cultural.^[1] There is a rising prevalence pattern of stress disorders in society. Prevalence of all forms of stress is found 53% in COVID-19 pandemic. [2] Stress affects body, mind, behavior in many ways & everyone experiences it differently. Several studies have identified stress as one of the key factors responsible for menstrual irregularities.^[1] In addition, the COVID-19 pandemic had a significant impact on public mental health.

A regular menstrual cycle indicates the female's overall good health. Abnormal cycles, with irregular, painful heavy bleeding, disrupt professional and personal life. And require evaluation as they may have a major harmful impact on future reproductive and general health. [3] Research shows that there that helps reduce stress by finding balance is a strong & significant association in the mind, body, and spirit for holistic between stress and menstrual Disorders.^[4]

Working young females frequently experience a variety menstrual related complaints, including dysmenorrhea, menorrhagia, irregular menses, and menstrual related mood changes.[3] Prevalence of work stress was found 64.6% in working women in New Delhi. [5] Some research shows that females experience more stress than males & consistently report more physical and somatic symptoms. [6] The number of women experiencing work-related stress is 50% higher than for men of the same age.^[3] Several recent studies have found links between the women's levels of davto-day stress and lowered chances of pregnancy. In recent study, women whose saliva had high levels of alpha-amylase, an

enzyme that marks stress, took 29% longer to get pregnant compared to those who had less [7]

In Ayurveda, Shirodhara is considered as one of the most powerful treatments that releases emotions. Shirodhara is administered by gently and methodically pouring lukewarm medicated oil over the forehead for a certain period of time. Shirodhara is a relaxation technique that rejuvenates the nervous system, releases emotions, opens the subtle channels, and gives bliss to the mind and body. [8] In few researches, the clinical benefits have been observed Shirodhara anti-anxiety, anti as hypertensive, sleep inducing effects and also in stress aggrevation.^[9]

In several studies conducted around the world, stress has been identified as one of the causing factors of menstrual disorder. [10] Shirodhara is an ancient Ayurvedic therapeutic technique well-being.^[11] Thus in this study, we set the efficacy of to investigate Shirodhara on the stress induced menstrual disorders in females.

AIMS & OBJECTIVES

- To analyze the effects of stress on menstrual disorders.
- To study the efficacy of Shirodhara in stress induced menstrual disorders.

MATERIALS & METHODS:

Relevant literature is referred from the Samhitas, Sangraha Granthas and contemporary literature along with personal experience.

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• Stress:

Stress is an unpleasant and subjective sensation of discomfort. Stress can be distinguished as good stress and bad stress. Good stress acts as motivation for an individual for completion of a particular work or distress. While bad stress can negatively affect a person's short term & long term health. Stress is produced by various environmental & social challenges in day to day life. One's personality, behavior and lifestyle all have important influences on stress level. [1]

Various emotions of mind are stated in Ayurveda. It is also stated that, if these emotions are not controlled, they might result in physical diseases. Stress occurs through emotions such as jealousy, sorrow, ego, grief, fear, anger, hatred etc. the causes which develop are psychological dysfunctions, and also known to contribute in Pradhnyaparadha. The *Pradhnyaparadha* again works on the body and creates an imbalance of fulfill these roles, women can feel doshas. [12] These emotions weaken the overwhelmed with time pressures and mind, which activates the body's stress responses.

Over thinking and stressing is the *Atiyog of mind*, the total emptiness of mind or thinking less completely is the *Yog* of mind and fear, grief, anger, lust, pride, jealousy are the *Mithyayog* of mind. ^[12] These are the components of stress and might be called stressors. Stressors are the stress producing agents. Persistent stressed conditions are associated with a high probability of menstrual disorders. ^[13]

Eating an unhealthy diet, smoking, drinking, and taking drugs can also contribute further to physical strain. Stress may be generated through work, at home, within relationships, as a result of internal emotional conflict, through environment, diet, ill-health, and financial insecurity as

well as through major life events such as marriage, death, divorce etc.^[14] The corona virus disease (COVID-19) pandemic has had a huge impact on people all around the world. People's mental health has been affected by uncertainty and quarantine. Prevalence of all forms of stress is found 53% in COVID-19 pandemic.^[15]

Research suggests that women may feel the symptoms of stress more or get more of the symptoms of stress than men. This can raise their risk of depression and anxiety.^[6] Men and women share many of the same sources of stress, such as money matters, security, health, iob relationship issues. Perhaps a little more unique to women is the many roles they take on. In today's society, women's roles often include family's obligations, caregiving for children and/or elderly parents (statistically more likely to be a woman) and work responsibilities as well as other roles. As demands increase to unmet obligations. They may feel a sense of failure in not being able to meet expectations for themselves and others. Oftentimes women spend more time meeting the needs of others rather than nurturing their own needs. If functioning at high stress levels, women may not even recognize what their needs are.[16] These problems throw her into various emotions like worry, anger, fear, grief leading to mental stress.[12]

These emotions create stress and due to stress the sympathetic nervous system gets stimulated and works on hormones and creates abnormal physiological states. The physiological mechanism responsible for menstrual diseases is unknown but could be related to the prolonged activation of the

Hypothalamic–pituitary–gonadal axis (HPG axis) by stress.^[10]

The communication between the brain and ovaries is known as the Hypothalamic-Pituitary-Gonadal axis (HPG axis). In the HPG axis, two glands are involved, the hypothalamus and the pituitary. Stress disrupts the communication between hypothalamus and anterior pituitary, which affects the release of hormones. GnRH is a hormone releases from the hypothalamus. It tells the pituitary to release two hormones, LH and FSH, which speak to ovaries to inhibit the production progesterone and estradiol. The hypothalamic-pituitary-adrenal (HPA) and the hypothalamic-pituitary-gonadal (HPG) axis work together. Activation of one affects the function of the other and vice versa. Stress causes activation of the HPA axis and suppression of the HPG axis. 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. This activation of the HPG axis may delay or stop the ovulation which results menstrual disorders.[17]

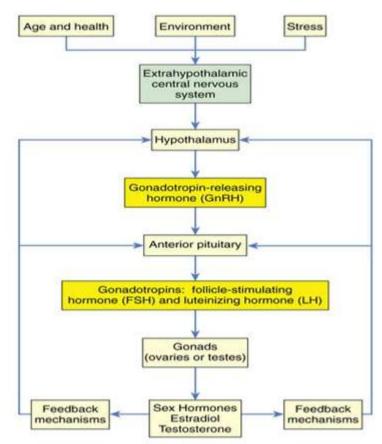


Fig: 1 -Hypothalamic-Pituitary-Gonadal axis (HPG axis)^[17]

Menstrual disorders

Any abnormal condition relating to a woman's menstrual cycle is

referred as menstrual disorder. There are many different types of menstrual disorders that vary with signs and symptoms, including pain during menstruation, heavy bleeding, delaying or absence of menstruation. Normal variations can occur in menstrual patterns but generally menstrual disorders can also include periods that come sooner than 21 days apart, more than 45 days apart, or last more than 10 days in duration. [18] Variations of the menstrual cycle are mainly caused by the immaturity of the hypothalamic-pituitary-ovarian (HPO) axis. Early detection and management is required in order to minimize the possibility of complications regarding future reproductive ability.[19]

Stress from the previous month may influence the frequency of dysmenorrhea, thus a person may not have painful menstruation as a result of stress until the following month's period. People with a history of dysmenorrhea in the past may be more susceptible to this impact. [20] Similarly, people who were stressed earlier in their cycle were also more likely to experience severe symptoms later on. [21]

As mentioned, the different effects of stress impact on the menstrual cycle. Higher reported stress during the follicular phase (i.e. from the first day of menstruation until ovulation) has been strongly associated with changes in normal reproductive function^[1]. According to a recent study, women who reported preovulatory stress (during the follicular phase) were less likely to conceive than women who did not express stress at the same time ^[22]. This implies that stress can cause ovulation to delayed be stopped. Menstrual cycle completely variation has been studied, and research backs up this theory.^[1]

The length of the luteal phase (i.e. post-ovulation until menstruation) tends to be consistent across and within women, whereas the length of the follicular phase has a stronger association

with the variation in the total length of the entire menstrual cycle. This means that the follicular phase, as compared to the luteal phase, is more likely to change in length. Therefore, the effects of stress on ovulation may be one of the biggest factors related to changes in cycle length due to stress, though it is unclear how this would be related to other stress-related changes in the menstrual cycle, such as painful or delayed menstruation.^[1]

Some common menstrual disorders in which stress is one of the causative factors are as following:

- 1) Premenstrual **Syndrome (PMS):** Premenstrual Syndrome of unknown aetiology, often noticed just prior to menstruation. Regularly occurs during the luteal phase of each ovulatory menstrual cycle. [22] There is a cyclic appearance of a large number of symptoms during the last 7-10 days. Symptoms are usually mild, but 5-8% of women suffer from moderate to severe symptoms that significantly affect daily activities.^[18] Symptoms may include anxiety, irritability, mood swings, depression, headache, food cravings, increased appetite and bloating. Fluid retention and fluctuating weight gain also reported. Symptoms must be severe enough to disturb the lifestyle of the women. One of the risk factors is stress among alcohol consumption, exercise & smoking etc.^[22]
- 2) Premenstrual dysphoric disorder (PMDD) is a severe mood disorder that affects cognitive and physical functions in the week leading up to menstruation. PMDD is diagnosed with at least one affective, or mood, symptom and at least five physical, mood, and/or behavioral symptoms. [23]

- The psychological symptoms are irritability, emotional lability, anxiety, and depression. The prevalence of PMDD was 3.7%. [24]
- 3) **Dysmenorrhea** means painful menses. Painful menstruation of sufficient magnitude so as to incapacitate day to day activities is known Dysmenorrhoea. There are two types Dysmenorrhoea, primary dysmenorrhoea & secondary dysmenorrhoea. In primary dysmenorrhoea there is no indefinable pelvic pathology.^[25]. Among menstrual disorders dysmenorrhea was the most common with prevalence 70.2%. [26] Primary dysmenorrhoea is mostly confined with adolescents. Psychosomatic factors are one of the causes of primary dysmenorrhoea which are stress & anxiety during adolescence. While secondary dysmenorrhoea normally considered to be menstruation associated with pain-yield ho occurs in the presence of pelvic pathology.[27]
- Table 1. Menstrual disorders

- 4) Amenorrhea is the absence of a menstrual period in a woman of reproductive age. [28] Types of amenorrhoea are classified as primary or secondary. Secondary amenorrhea is also caused by stress, extreme weight loss, or excessive exercise. [25,29] Young athletes are particularly vulnerable, although normal menses usually return with healthy body weight. Causes of secondary amenorrhea can also result in primary amenorrhea, especially if present before onset of menarche. [28]
- 5) Oligomenorrhea is infrequent (or, in occasional usage, verv light) menstruation. More strictly, it menstrual periods occurring intervals of greater than 35 days, with only four to nine periods in a year. Menstrual periods should have been regularly established before the development of infrequent flow. The duration of such events may vary. [30] The prevalence of oligomenorrhea among the general population is 13.5%.[31]

| Sr. | Menstrual disorders | Prevalence | Symptoms |
|-----|---------------------|------------|-----------------------------------------------------------------|
| No. | | | |
| 1 | Premenstrual | 5-8 % | Cyclic appearance of a large number of |
| | Syndrome (PMS) | | symptoms during the last 7-10 days. |
| | | | Anxiety, irritability, mood swings, |
| | | | depression, headache, food cravings, |
| | | | increased appetite, bloating, fluid |
| | | | retention and fluctuating weight gain |
| 2 | Premenstrual | 3.7 % | It is a severe mood disorder. |
| | dysphoric disorder | | Irritability, emotional laibility, anxiety, |
| | (PMDD) | | and depression |
| | | | |
| 3 | Dysmenorrhea | 70.2 % | Primary Dysmenorrhoea: |
| | | | No pelvic pathology |

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| | | | Painful menstruation |
|---|----------------|--------|--------------------------------------------------------|
| | | | 2. Secondary Dysmenorrhoea: |
| | | | Associated with pain occurs in the |
| | | | presence of pelvic pathology. |
| 4 | Amenorrhea | - | Primary Amenorrhoea: |
| | | | also caused by stress, extreme |
| | | | weight loss, or excessive exercise |
| | | | 2. Secondary Amenorrhoea: |
| | | | Missing several menstrual periods |
| | | | at a row. |
| 5 | Oligomenorrhea | 13.5 % | Occurring at intervals of greater than 35 |
| | | | days with only four to nine periods in a |
| | | | year. |

• SHIRODHARA

Shirodhara is composed of two words, Shiro(head) + Dhara(flow). [9] In Ayurveda, Shirodhara is a Snehana treatment [32] and is one of the most relaxing, healing & rejuvenating therapy in today's life. It is gentle pouring of a stream of lukewarm medicated oil continuously & steadily on the forehead specifically on the Agneya chakra. [33]

Shirodhara helps in the healing of the body at the root of diseases by relaxing mental imbalance and emotional disturbances, leaving in a heavenly state. Shirodhara rejuvenates the nervous system, releases emotions, opens the subtle channels and unfolds bliss throughout the mind and body.^[8]

Analysis of *Shirodhara* procedure: [33,34]

Shirodhara procedure can be done in 3 stages i.e. Poorva Karma, Pradhana Karma and Paschat Karma.

- 1) Poorva karma: It includes Sambhar sangraha(collection of the materials which are needed for the procedure) and Aturasiddhath(preparation of the patient).
 - Sambhar Sangraha: Includes droni, shirodhara patra,

Shirodhara dravya, gauze, cotton ear plugs, hot water bath, vessels, churnam(according to Dosha-Pradhanata), towels, and attendants.

- Athurasiddhata: Patient should be advised to pass stool and urine. Pulse, temperature and blood pressure should be recorded. Shiroabhyanga and/or Sarvanga-abhyanga should be done. Eyes and ears should be covered with cotton.
- 2) Pradhan karma: The patient lies down comfortably in supine position on a flat surface with head back and a rolled towel or a pillow beneath the neck. Height of the *Dhara Patra* should be 4 *angula* from the forehead. A stream of lukewarm oil is poured very slowly on the center of the forehead. Temperature of the *Dravya* should be maintained throughout the procedure i.e. 38-400 c.
- 3) Pashchat karma: Head of the patient should be wiped with a towel. Application of Rasna, Jatamansi, Amalaki Churna over the vertex of head. Gentle massage should be done after the Dhara. Patient

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should be advised to take rest for a period of time.

Duration:- The duration of *Shirodhara* may extend from 30 to 60 minutes and is performed for 3, 7, 14, or 28 days. It is advisable to skip *Shirodhara* for 7 to 15 days, after a cycle of *Shirodhara*. And one oscillation must be of 16-17 sc/min. [34,35]

Types of Shirodhara

There are different types of *Shirodhara* based on the *Dravya* used for the therapy and accordingly they were given different names. For example if we choose oil for the therapy then it is called *Tailadhara* (*Sneha Dhara*), for *Takra* – *Takradhara*, *Ksheera* – *Ksheeradhara*, *Ghrita* – *Ghrita Dhara*, Water – *Jaladhara*. [8]

Table 2. Types of Shirodhara

| | 71 | 7 41 4 4 | |
|------------|------------------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Sr. No. | Types of Shirodhara | Dravya/ Drugs OPYING | Effects |
| 1 | Taildhara | Taila (oil) or ghee | improves sleep quality reduce anxiety and mental stress |
| 2 | Takradhara | Takra (buttermilk) infused with special herbs. | effective for <i>Vata</i> predominant diseases Cures psycho-somatic diseases like hypertension |
| 3 | Ksheerdhara | Dugdha (milk) infused with herbs. | • Extremely effective on <i>Vata & Pitta</i> predominant headaches, stress, insomnia, and anxiety. |
| 4 | Jaladhara | Water | Used for relieving stress Beneficial for eyesight & mental health. |

Probable mode of action of Shirodhara:

Shirodhara is an ancient Ayurvedic healing therapy which is unique in its own way. It is a procedure in which therapeutic oils, milk, Kwatha, or

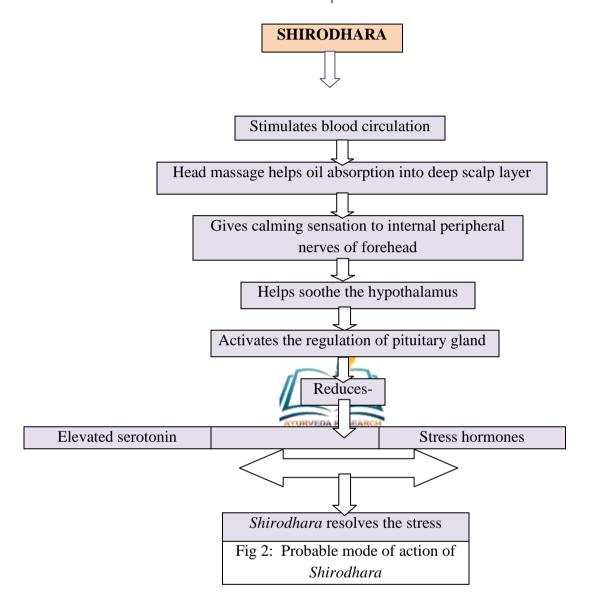
Tailadhara (Sneha Dhara):- In Sheha dhara uses medicated oils called taila (oil) or ghee. Helps improving sleep quality, reduce anxiety and mental stress. [8,36]
 Takwadhara: uses takwa

- 2. *Takradhara*:- uses t*akra* (buttermilk) infused with special herbs. It is an effective therapy for *Vata* predominant diseases, cures certain types of psycho-somatic diseases like hypertension. [35,37]
- 3. *Ksheeradhara*:- *Dugdha* (milk) used infused with herbs, extremely effective on *Vata & Pitta* predominant headaches, stress, insomnia, and anxiety.^[37]
- 4. *Jaladhara*:- Water is used in *Jaladhara*. Used for relieving stress & also beneficial for eyesight and mental health. [36,37]

buttermilk are poured in a continuous stream over the forehead for a predetermined amount of time. [8] It is a successful procedure for psychiatric disorders. [38] When this process is done correctly, it results in miraculous healing.

The 3rd eye and *Aadnya chakra* get stimulated, and the *Aagnya chakra* is awakened. This helps improving sleep patterns, pacifies *Vata* reducing anxiety,

restlessness, irritability, nervousness, fear & excessive thinking, improves mental focus and concentration. [33]



Shirodhara stimulates the vital points of the head, which helps to boost blood circulation. Massaging the head allows the oil to infuse deep into the scalp layer, delivering a calming sensation, which further passes to the internal peripheral nerves of the forehead. [39] Shirodhara soothe helps the hypothalamus, which activates the regulation of the pituitary gland. It also

works in reducing elevated serotonin levels and stress hormones such as noradrenalin and adrenaline to manage stress. Thus, *Shirodhara* effectively helps resolve stress related diseases. [40]

Shirah is the seat of Prana, and all Indriyas (Sense organs) having shelter in Shirah, it is also known as Uttamanga. So due to this fact Shirodhara provides strength to Pranadriyas which are mainly

vitiated in case of psychological disorders. *Indriyas* are in close contact of mind so when *Indriyas* remain healthy then mind automatically remains healthy. ^[41] In this way *Shirodhara* keeps body and mind healthy.

Shirodhara stimulates Agneya Chakra thereby improving the functions of mind which is vitiated in stress as it is the place of subtle mind. Structures like Pituitary gland, pineal body, subcortical structures of midbrain are related with mental functions like anger, grief, fear, memory and other higher intellectual functions. Shirodhara acts at this level, correcting their functions. [11,33]

Mechanism of Shirodhara: [42]

Any substance situated at certain height possess Potential Energy and this energy is converted into Kinetic Energy when the substance fall from that certain height according to "Law of Conservation of Energy" Potential Energy of substance depends upon two things- (1) Mass of substance & (2) Height of the substance If the height stays the same, Potential energy is proportional to the mass of the substance or mass energy, i.e. the more mass a substance possesses, the more energy it have. It is clear that the higher a substance's specific mass, the higher its energy. On the other hand, we know that when a moving object collides with a stationary object, acceleration occurs, therefore the greater the mass, the greater the energy, and the greater the momentum generated.

The magnitude of momentum is the important factor which decides the voltage difference for nerve impulse generation and conduction if its magnitude is small

the energy is absorbed solely by the skull only. This could be the probable reason why drugs are given for 45 min- 1 hour in *Shirodhara*. It is known from the knowledge of modern physiology that there is continuous electrical activity in the brain that generates electromagnetic waves and recorded with the help of Encephalogram (EEG).

Probable mode of action of shirodhara in managing stress:

Shirodhara is already found to decrease the sympathetic tone nearby decreasing cardiac activity and alpha and O wave activity in the brain. [36,42] Continuous pouring of taila on the forehead for a certain period of time has a tranquilising effect and induces sleep. [8,42] According to contemporary research, ointment can penetrate through the stratum corneum into a blood vessel and have a desired impact once it reaches the target organs. [36] The continuous pouring of oil in a calm and comfortable position provides a secondary impact as compared to a mother cradling her child.[11] This has a calming and relaxing effect on the brain, resulting in sleep.^[11,34] By reaching the cerebral cortex, medicated oil poured on the forehead get absorbed, creating a calming effect.[41]

• DISCUSSION:

literature Based on the reviewed, there is a strong effect of Shirodhara on several stress induced menstrual disorders. Stress has a direct link to menstrual problems. Menstrual Disorders commonly found as condition. independent or secondary Menstrual predominant disorder has features.

People are dealing with a variety of stress and are working hard to get rid of them. There is significant evidence, not only in psychiatry but in many medical areas, that a person's mental well-being is essential for effective care of the body. High levels of perceived stress are linked to an increased risk of menstrual disorders.^[10] The psychological basis behind menstrual disorders is unknown; however it could be linked to stressinduced hypothalamic-pituitary-adrenal axis activation.

Menstrual problems are common young women and have a significant influence on their quality of life & disrupt professional and personal life & they may have a major harmful impact on future reproductive and general health. Modern system of medicine is still in need of an effective anti stress agent. Though drugs like Diazepam and fluxetive are claimed to have anti-stress activity, these drugs do not fulfill the criteria of a true utilized to avoid symptoms of a gent. The disorders & reduce severity of pain Irrespective of symptomatic relief offered by such drugs initially these drugs also offer a dose dependency, & rebound withdrawal symptom.^[10]

From Ayurvedic perspective, for eradication of a disease Samprapti of the disease has to be dissociated & unless it is done with continuation of the therapy would be required to get sustained relief in the symptoms. Shirodhara has a wide range of utility in treating somatic as well psychological complaints. In the of Shirodhara, procedure particular pressure and vibration is created over the forehead.^[9]

In Dhara therapy, prolonged and continuous pressure due to pouring of the medicated liquid may cause tranquility of mind and induce natural sleep. Shirodhara

is deeply relaxing and induces a relaxant state; these effects are mediated by the brain wave coherence, Alpha waves, and a down regulation of the sympathetic outflow. Focusing on Agneya chakra with closed eyes during meditation leads to psychosomatic harmony. As the oil drips on the Agneya chakra, it is proposed that the meditation-like effect is a consequence of stillness of mind leading to adaptive response to the basal stress.

Psychosomatic disorders are the outcome of the modern way of life and changing value systems and hence their incidence is rapidly increasing. Overuse 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. Appropriate lifestyle modifications, including self care and reduction in stress levels can be associated.

CONCLUSION:

With the rapid progress advancement comes the disease burden created by psychological depression, which is engulfing our society. Stress induced menstrual disorders are the emerging factors in the current scenario, leading to irregular, painful and higher severity of menstrual symptoms females.

The effect of Shirodhara procedure appears to produce a relaxation response. In *Shirodhara* patients feel relaxation both physically and mentally. It strengthens the mind and spirit & this continues even after the relaxation. Stimulation of Marma &

Agneya Chakra has beneficial effects on the body, due to their connection with higher centers. Shirodhara is done directly on head, so it is good for relieving the diseases caused by stress.

Menstrual problems are common among young women and have a significant influence on their quality of life. Despite the fact that further study is needed, this review is a resource to support that high levels of stress are associated with menstrual disorders & Shirodhara effective in stress management. As a result, Shirodhara to be effective in stress induced menstrual disorders.

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