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### RESEARCH ARTICLE

#### “A SYSTEMATIC REVIEW: TO ANALYZE THE EFFECT OF SHIRODHARA IN MAJOR DEPRESSIVE DISORDER (VISHADA)”

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#### Abstract

**Introduction:** Mind-body medical interventions are usually used to treat a wide range of mental health conditions and Shirodharais one of the Ultimate mind-body treatments in Ayurveda. Although, Ayurvedais one of the world’s oldest holistic healing systems and has a promising potential in the management of Vishada [Major Depressive Disorder (MDD)]. However, systematic and evidence-based research on the subject is still lacking. The aim of this review was to systematically assess and analyze the effectiveness of Shirodhara therapy in MDD and to explore scientific explanations for its therapeutic utility.

**Methods:** Medline/Pubmed, Google Scholar, ProQuest, and EBSCO were searched through May 2022 and reaped three eligible interventional studies performed on patients with depression, who were administered Shirodhara with or without medicament (modern or herbal preparations). However, there are considerable caveats due to methodological limitations of sample size, design, duration, and the method of administration. These elements have been detailed.

**Result:** Due to the paucity and heterogeneity of the included interventional studies, no meta-analyses were possible to measure the outcomes.

**Conclusion:** Limited evidence supports the use of Shirodhara for depression. However, considering its impact on the psycho-neuro-immunological axis and various bodily systems, Shirodhara shows potential benefits. Further research is needed to evaluate Shirodhara as a standalone or adjunct treatment, including its integration with modern or herbal interventions, in a broader context.

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#### Introduction:-

Major depressive disorder (MDD) is the most prevalent mental disorder which severely restricts psychosocial functioning and scales down the quality of life<sup>[1]</sup>. In 2008, WHO ranked major depression as the third leading cause of the global burden of disease worldwide and proposed that the disease will rank first by 2030<sup>[2]</sup>. Major depressive

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disorder is characterized, by the 11th Revision of the International classification of diseases, “by a period of depressed mood or diminished interest in activities occurring most of the day, nearly every day during a period lasting at least two weeks accompanied by other symptoms such as difficulty concentrating, feelings of worthlessness or excessive or inappropriate guilt, hopelessness, recurrent thoughts of death or suicide, changes in appetite or sleep, psychomotor agitation or retardation, and reduced energy or fatigue”<sup>[3]</sup>.

MDD is a heterogeneous disorder and a significant cause of disability affecting approximately 3.8% of the population globally<sup>[4-5]</sup>. In the course of life, it's almost twice as common amongst the female gender than in males and, in both, a peak prevalence is observed in the second and third decades of life, with an ensuing, more modest peak, in the fifth and sixth decades<sup>[5-9]</sup>.

As MDD is a recurrent lifelong illness<sup>[1]</sup>, patients are often in pursuit of treatment with complementary and alternative therapies<sup>[10]</sup>. Although allopathic antidepressant treatment regimens are effective<sup>[11]</sup>, still remission rates of about 30% after initiation of first-line selective serotonin reuptake inhibitor therapy<sup>[12]</sup> and cumulative remission rates of about 70% after the fourth line of medicinal treatment<sup>[13]</sup> are noticed. Moreover, non-compliance to this is usually seen because of the presence of side effects associated with pharmacological treatment. The issue of treatment resistance and non-adherence has accentuated the call for new management strategies, and as concepts and views on MDD pathophysiology have evolved, so have the therapeutic alternatives. Ayurveda is the oldest Indian system of medicine and nearly 80% of the population still relies upon it for their health issues<sup>[14]</sup>. Although evidence-based research in this field remains insufficient<sup>[15]</sup>, Ayurveda seems to have a propitious potential in the management of MDD through its therapeutic treatment<sup>[16]</sup>. Although, due to a lack of systematic research in this area, the efficacy, safety, and neurobiology of the mechanism of action of these procedures still need to be sought and analyzed<sup>[17]</sup>.

### Concept of depression in classical texts

In Ayurveda literature, dispersed information on mental disorders and their treatments is available. In Bhagavad Gita, Arjuna Vishada yoga states the first-ever description of symptoms of a patient suffering from Vishada [Veda Vyasa]. In classical texts, occurred from the Tej of Krodha and was called Visha due to the characteristic of creating Vishada<sup>[18]</sup>.

It can be closely correlated to the condition described in Ayurveda as Vishada, Avasada, Manodhukhaja Unmada and Kaphaja Unmada. MDD can be analogous to Kaphaja Unmada in severe cases due to the derangement of Kapha and Prana and to Vishada and Avasada in mild cases due to the derangement of Kapha and Vata<sup>[19]</sup>.

Vishada has been cited as an extraordinary disease of the Vata<sup>[20]</sup> and manasikadusti involved is Tama pradhana Raja dosha. It is a condition characterized by Avasada (derangement) of Vak (speech), Kaya (body), and Chitta (mind)<sup>[21]</sup>, and its presence intensifies the co-existing conditions<sup>[22]</sup>. Vishada is more prevalent in hinasa twasara purusha (decreased mental strength)<sup>[23]</sup>.

### Current study

This systematic review aimed to examine the evidence of the effectiveness of Shirodhara in patients with depression. The intention was to understand the putative mechanism of Shirodhara in the management of MDD through the published work and to include this therapy in future research.

### Description of the therapy

The derivation of the word Shirodhara is from Shira = head, and Dhara = a steady flow. Shirodhara is an ancient healing procedure that includes pouring liquid on the forehead from a definite height and a specific period spontaneously and rhythmically allowing the liquid to run through the scalp and into the hair. This is a subtype of Murdhatailala along with Shiro Abhyanga, Pichu, and Shiro Basti.

This continuous process of streaming of liquid results in a deep relaxing and blissful state of consciousness called 'Turiya' which means the state of awareness of mind that can neither be considered as fully conscious nor in deep sleep<sup>[24]</sup>.

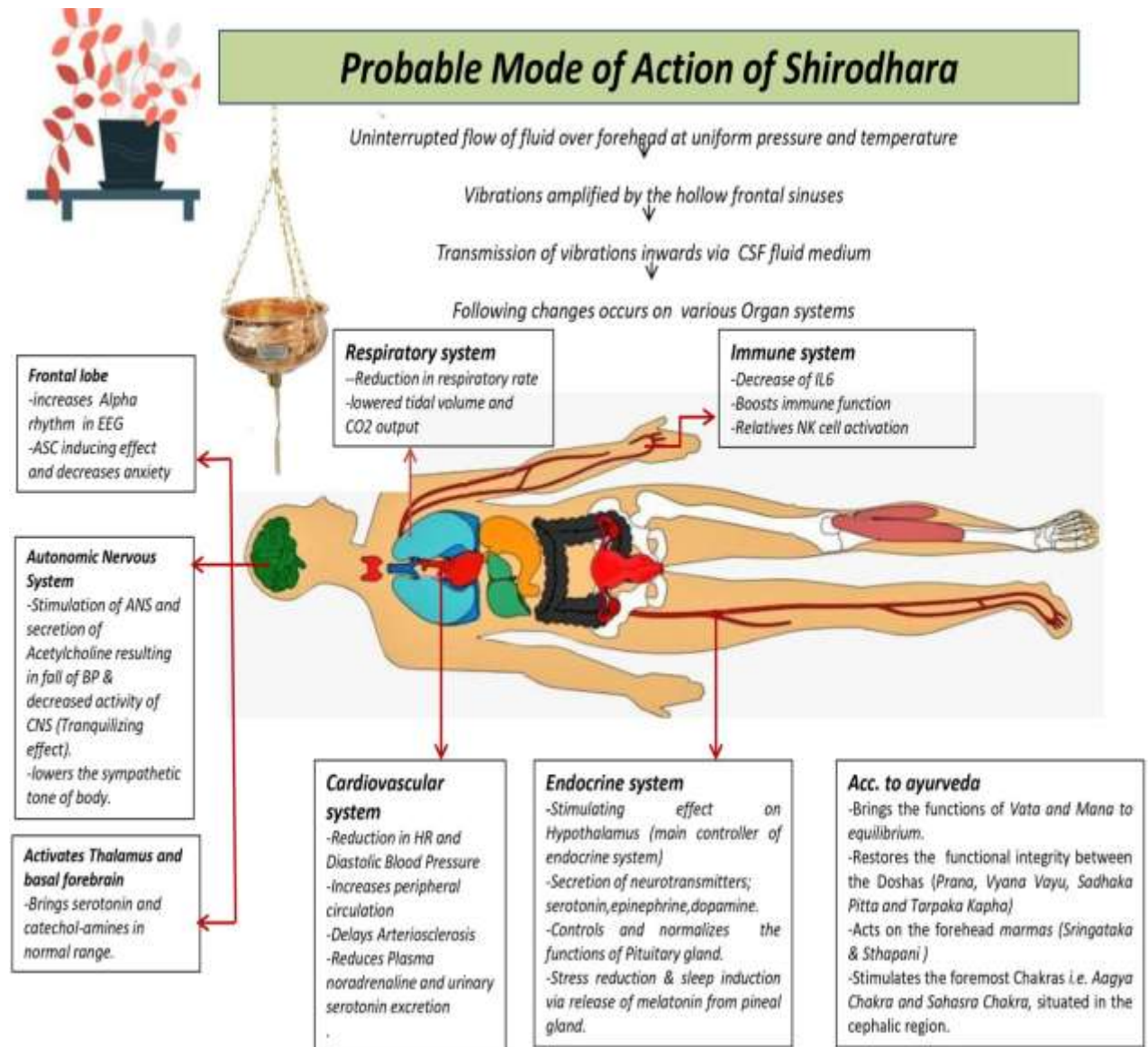
**How the therapy might work**

Shirodhara helps to alter the psycho-neuro-immunologic axis of the brain but the insight into the probable mode of action and mechanism still needs further evidence. The putative mechanism of this therapy has been summarized below,

1. **Mechanical effect:** Shirodhara strengthens the senses (Indriyas) located in the head region, which are closely connected to the mind. It helps maintain the balance of doshas through its mechanical effect <sup>[25]</sup>.
2. **Law of drug absorption:** The thin skin of the scalp allows for quick absorption of the medicated oil into the bloodstream. The chemical components in the oil may act as neurotransmitters, normalizing levels of serotonin and catecholamines, which can alleviate depression <sup>[26]</sup>.
3. **Law of energy conservation:** When the liquid is poured over the forehead, energy transformation occurs, resulting in voltage changes and stimulation of nerve impulses <sup>[26]</sup>.
4. **Effect of constant pressure:** The soothing vibrations and constant pressure reduce sympathetic tone, leading to decreased levels of plasma noradrenaline and urinary serotonin excretion <sup>[26]</sup>.
5. **Effect of constant temperature:** The warm liquid flow over the forehead causes mild vasodilation, improving brain circulation and activating the function of the thalamus and basal forebrain <sup>[26-27]</sup>.
6. **Effect due to amplification of vibrations:** Vibrations produced in the intracranial sinuses activate areas such as the frontal lobe, limbic system, brain stem, and autonomic nervous system. This activation releases endorphins and serotonin, producing a tranquilizing effect. It also reduces heart rate, diastolic blood pressure, and breathing rate, resulting in anxiolytic effects <sup>[26]</sup>.
7. **Marma location:** Shirodhara targets seven out of the ten marmas (vital points) located in the cephalic region, as mentioned in Ayurvedic texts <sup>[27]</sup>.
8. **Chakra Concept:** Shirodhara stimulates the Ajnya chakra (6th chakra) located in the center of the forehead, which corresponds to the pineal gland and medulla oblongata. This stimulation activates the Sahastra chakra, which controls the other six chakras. The pineal gland regulates rhythmic changes, sleep promotion, and sexual behavior, while the medulla oblongata maintains body equilibrium <sup>[27,28]</sup>.
9. **Postural effect:** The posture during Shirodhara resembles Shavasana (corpse pose) in yoga. Shavasana has been found to reduce symptoms such as headache, giddiness, nervousness, irritability, and sleep disturbances <sup>[27,28]</sup>.

**How the therapy might affect the various organsystem**

From various evidence-based research in the past on Shirodhara, the following positive results have been noticed in the human system and have been illustrated in the image <sup>[29-34]</sup>.



## Materials and Methods:-

This report follows the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement<sup>[35]</sup>.

### Selection criteria

#### Inclusion Criteria

- (i) Interventional studies with Shirodhara being the therapy involved.
- (ii) participants should be suffering from depression.
- (iii) the article should have been written in English

#### Exclusion Criteria:

- (i) Interventional studies included Shirodhara but were used in other psychological conditions.
- (ii) The studies which don't include Shirodhara on depressed patients

### Search strategy

The database Medline/PubMed, Google Scholar, Proquest, and EBSCO were searched systematically till May 2022. The literature search was constructed around search terms “depression”, “Major depressive disorder”, “depressive disorder”, “Vishada”, “manasroga”, “Shirodhara”, “Ayurvedic oil dripping”, and “forehead oil pouring therapy”.

### Data extraction

All papers from the automated database searches were collated using the Zotero reference management software. After duplicates were deleted, screening was conducted to ensure that studies fulfilled the eligibility criteria. In a three-stage process, papers were screened on title and abstract and the remaining papers were screened in full text. Key information relevant to the research question was systematically extracted and tabulated to aid comparison and synthesis of the studies. These data comprised authors, publication date, sample size, Design, variables, results, test applied and interpretation. The extraction process was conducted and any disagreements resolved through discussion with the co-authors.

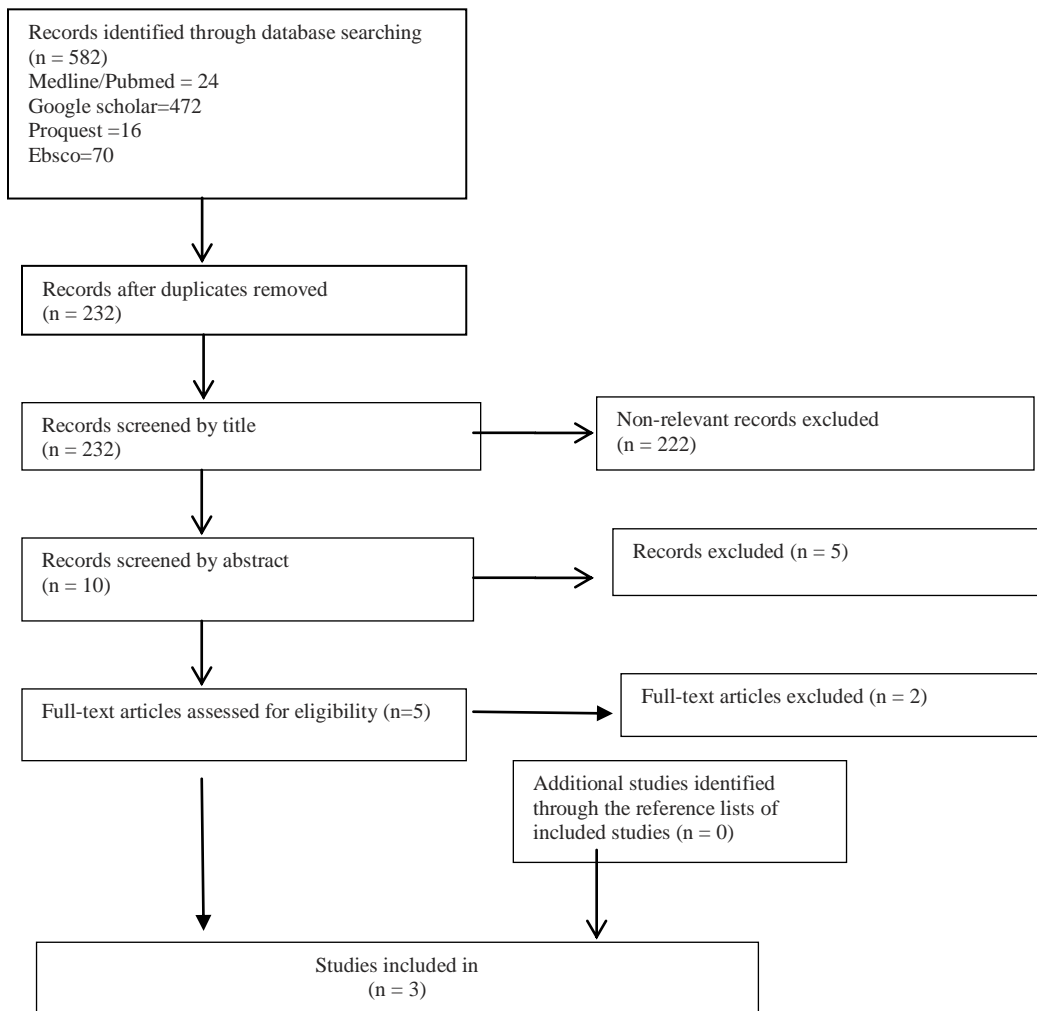
### Data analysis

After the data extraction, the data analysis was carried out by describing the study into different relevant headings and measuring their impact on the patients with the result observed in the studies.

### Results:-

The literature search yielded 582 articles from the four databases. After 350 duplicates were removed, screening on title excluded 222 of the 238 unique papers. The remaining 10 articles were screened on abstract, with 5 removed, leaving 5 papers. On reading the full text, 2 papers were found to be ineligible, the most common reason being the impact of Shirodhara not mentioned in the result of the discussion. Ultimately a total of 3 papers were eligible for review. The PRISMA flowchart provides further detail on the reasons for exclusion (Figure 1)

### PRISMA Flow chart of the result of the literature search(Figure 1)



**Description of studies**

Description of studies summarized in Table 1:-

S.No	Author/Publication date	Sample size	Design	Variables	Results	Test applied	Interpretation
1.	Bishnoi et al./ (2021)[36]	30	- Interventional study "Panchgavya Ghrita" in the dose of 20 ml with Luke warm water or milk empty stomach for 30 days along with "Takra dhara" for 10 days	- Beck Depression Inventory -Hb, TLC, DLC, Fasting Blood Sugar (FBS), Blood urea	-Satisfactory improvement in subjective parameters. ( <b>54.17% relief</b> ) -unsatisfactory improvement in objective parameters. ( <b>18.49% relief</b> )	Subjective parameters- Wilcoxon matched-pairs signed ranks test - objective parameters is shown (Paired t-test)	The trial drugs Panchgavya Ghrita and Takradhara are mild to moderately efficient for Manoavsadatre atment (Depression).
2.	Deshmukhet al/(2017)[37]	10	- Interventional study - Ashwagandha Siddha Tailadhara	- Avasada questionnaire according to classical texts. -HDRS (Hamilton Depression Rating Scale)	Statistically significant results were observed in major parameters.	Wilcoxon matched pair signed rank test	Tailadharahas great stress relieving and tranquilizing effect.
3.	Fulzele et.al./(2014)[38]	30	Randomised controlled trial  Group A (herbal preparation) & Group B herbal preparation with Shirodhara therapy by medicated plain Ashwagandha oil.	-HDRS 17 -CGI-S -CGI-I	The clinical symptoms and the HDRS 17, CGI-S and CGI-I score were found highly significant (p<0.001) in both groups	-	Selected herbal preparation & Shirodhara both are effective and safe in mild and moderate condition of MDD.

**Discussion:-**

Shirodhara is a well-established traditional ayurvedic treatment procedure of slowly and steadily dripping lukewarm medicated oil on the forehead of the person, resting quietly on a comfortable bed in a pleasant ambience<sup>[29]</sup>.

Shirodharagives strength to the Pranaand Indriyas, which are mostly vitiated in case of psychological disorders, thus maintaining a healthy body and mind. The imbalance of Vayu subtypes like Prana, Udanaand VyanaVayu, Sadhaka Pitta,and TarpakKaphacan lead to stress and tension. Shirodharare-establishes the functional integrity between these subtypes of Dosha through its action<sup>[25]</sup>.

In classical texts, the site of Shirodhara is Shira (cephalic region) and it is the major site of PranaVayu<sup>[39]</sup>, MajjaDhatu (CSF) and Indriyas (senses). Therefore, Shirodhara helps in stabilizing the PranaVayu and nurtures Majjadhatu and Indriyas. Prana Vayu is one of the vital elements of life which is responsible for the activities like judgment, intelligence, and memory power. Overall Prana Vayu can be compared to the CNS anatomically and physiologically as it integrates the sensory impulses from all over the body<sup>[40]</sup>. In the procedure of Shirodhara, prolonged and continuous pressure over the forehead interrupts impulse conduction and the nervous system is greatly stilled. The brain waves slow down, thus tranquilizing the mind and activating the rotas, and the necessary nutrients and oxygen are then transported to the brain via pranavaha and manovahasrotasa. The increased cerebral circulation results in improved brain function, mood stabilization, and better stress-handling abilities. Shirodhara acts on the psychoneuroimmunology axis<sup>[39]</sup>. It generates pressure and vibration over the forehead which activates the functions of the thalamus and the basal forebrain and normalizes the amount of serotonin, catecholamine, and norepinephrine which play an important role in a variety of neuropsychological processes, and lowers the amount of cortisol and adrenaline contributing to its anti-stress effect. Shirodhara maintains the functions and secretions of the pituitary and pineal gland.

### Conclusion:-

From the above discussion, it can be concluded that Ayurvedic science is very much capable of managing patients with depression or other mental disorders. The Shirodhara is a non-invasive approach and can be used without any adverse effects. It is a most skillful healing technique that produces both procedural and therapeutic effects. There are very few studies conducted on depression with Shirodhara being part of the management of MDD along with ayurvedic or allopathic medications. So, further clinical trials should be carried out to prove its beneficial role in the disorder which will help and leads to national prosperity by reducing the global burden of the disease.

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