# Role of *Shirodhara* in Autism Spectrum Disorder (ASD): An *Ayurvedic* Perspective with Special Reference to *Manovaha Srotas*

**[1]Dr.Hari Shanker Meghwal, [2]Prof. Ram Kumar Bhamu, 3Dr. Piyushika Sharma**

[1]PG Scholars, [2] Professor and Head of Department, [3]Lecturer

[1]Department of *Kaumarbharitya*,

[1]Madan Mohan Malviya Govt *Ayurved* College and Hospital Udaipur, Raj. India

## ABSTRACT

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition marked by impairments in communication, social interaction and behavior with conventional management often providing only partial relief. *Ayurveda* correlates ASD with *Srotodusti* of *Manovaha Srotas*, which occurs when an individual consumes vitiated food or exhibits disrespect toward God, teachers or intellectual persons. These factors lead to vitiation of the *Doshas* at the seat of intellect—*Buddhi-Hridaya* (brain) and the neural system. As a result, the individual may lose control over mind and body, become unable to make proper decisions, remain mentally unstable and experience impaired functioning of the *Indriyas*. The outcomes of such vitiation of *Manovaha Srotas* include *Unmada*, *Apasmara* and *Atattvabhinivesha*. Among these, *Kapha-Vataja Unmada* is particularly relevant due to its involvement of *Manovaha Srotas*. *Shirodhara*, a classical *Ayurvedic* therapy under *Murdhni Taila*, has shown potential in modulating these disturbances by pacifying *Vata* and balancing *Kapha*. Evidence suggests that it improves sleep quality, reduces anxiety, stabilizes mood, enhances attention and supports sensory integration in children with ASD. Modern studies further validate these effects, demonstrating that *Shirodhara* regulates the hypothalamic–pituitary–adrenal (HPA) axis, balances autonomic nervous system activity, lowers cortisol levels and influences brain wave patterns—thereby promoting relaxation and cognitive stability. Thus, *Shirodhara* emerges as a safe, non-invasive and holistic intervention for ASD, complementing behavioral and educational therapies, although large-scale clinical trials are still required to establish standardized protocols.

**KEYWORDS:** Autism spectrum disorder, Neurodevelopmental disorders**,** *Shirodhara*, *Manovaha Srotas*, *Kaumarbhritya, Unmada.*

## INTRODUCTION

Autism Spectrum Disorders (ASDs) are recognized as some of the most common developmental disabilities. They are classified as neurodevelopmental and neurobehavioral conditions, primarily characterized by impairments in social interaction and communication, reduced or absent eye contact, delayed speech and language development and the presence of repetitive or restrictive patterns of behavior or atypical body postures [(1)]. Its global prevalence has steadily increased over recent decades, making it a significant public health concern. The estimated worldwide prevalence of ASD is approximately 62 per 10,000 individuals [(2)]. In India, the reported prevalence ranges from 0.15% to 1.01% [(3, 4)]. Autism is considered the third most prevalent developmental disorder worldwide, and April 2nd is observed annually as World Autism Awareness Day [(5)]. Despite advancements in behavioral, educational and pharmacological interventions, conventional management often provides only partial symptomatic relief and no definitive cure exists. This

therapeutic gap has encouraged researchers and clinicians to explore complementary and integrative approaches that may enhance overall outcomes in children with ASD. *Ayurveda*, the ancient Indian system of medicine, offers a distinct perspective on neurobehavioral disorders through its concepts of *Manovaha Srotas*, *Dosha* imbalance and the functional dynamics of *Buddhi-Hridaya*. According to classical *Ayurvedic* texts, disturbances in *Manovaha Srotas* (*srotodusti*) may arise from factors such as consumption of vitiated food or engaging in disrespectful conduct toward God, teachers or intellectual persons. Such actions are believed to vitiate the *Doshas* at the seat of intellect *Buddhi-Hridaya* (brain) and associated neural pathways resulting in impaired decision-making, mental instability and dysfunction of the *Indriyas*. Conditions such as *Unmada*, *Apasmara* and *Atattvabhinivesha* are described as outcomes of such vitiation with *Kapha–Vataja Unmada* particularly relevant due to its resemblance to several clinical features observed in ASD.

The clinical manifestations of ASD can be correlated with *Unmada*, especially *Kapha–Vataja Unmada*, as many symptoms reflect the predominance of *Kapha* and *Vata* doshas. In this condition, vitiated *Vata* and *Kapha* obstruct the normal functioning of *Manovaha Srotas*, leading to *Manas Vibhrama* (mental instability) and impairment of *Buddhi* (intellect), *Smriti* (memory), and *Cheshta* (behavioral activity). This constitutes the Ayurvedic *Samprapti* (pathogenesis) of *Kapha–Vataja Unmada*. Clinically, these manifestations resemble autism-related behaviors such as preference for solitude, limited social interaction, reluctance to speak, repetitive motor activities, self-stimulatory behaviors, and echolalia (repetition of words or sounds) [(6)]. In *Unmada*, various faculties are significantly impaired, including *Manas* (mind), *Buddhi* (intellect), *Sangya* (consciousness), *Jnana* (knowledge), *Smriti* (memory), *Bhakti* (desire), *Sila* (manners), *Cheshta* (behavior) and *Achara* (conduct) [(7)]. The classical features of *Unmada* such as *Dhi-Vibhrama* (perversion of intellect), *Sattva-Pariplava* (mental agitation), *Paryakula-Dṛṣṭi* (restless eyes), *Adhirata* (impatience), *Abaddha-Vakyata* (irrelevant or incoherent speech) and *Hridaya-Shunyata* (mental emptiness or thought blockage) show striking similarities with ASD symptomatology [(8)].

Modern research indicates that ASD arises from a complex interplay of genetic predisposition and environmental influences that disrupt normal brain development [(9)]. Although multiple biological, environmental, and neurodevelopmental factors have been implicated in its pathogenesis, the exact etiology remains unclear [(10)]. In contemporary medicine, no definitive cure for ASD exists and available therapies focus primarily on symptomatic management and behavioral support. In *Ayurveda*, the *Nidana* (causative factors) of *Unmada* include *Viruddha Ahara* (incompatible diet), *Dushta Ahara* (contaminated food), *Asuchi Ahara* (unclean diet), *Vishama Cheshta* (improper physical activities or postures), *Mano-Abhighata* (psychological trauma) and *Pragharṣaṇam DevaGuruDvijanam* (psychic affliction or disruption of divine, preceptor or ancestral influences) [(11)].

In this context, *Shirodhara*, a classical *Murdhni Taila* therapy, has gained attention for its potential role in modulating neurocognitive and behavioral disturbances. By pacifying *Vata* and balancing *Kapha*, *Shirodhara* is traditionally believed to stabilize mental functions, induce relaxation and restore equilibrium within the mind–body axis. Contemporary research supports these traditional claims, indicating that *Shirodhara* may influence the hypothalamic–pituitary–adrenal (HPA) axis, regulate autonomic nervous system activity, reduce cortisol levels and alter brain wave patterns, thereby contributing to improved emotional and cognitive stability. Given these converging insights from classical *Ayurvedic* understanding and modern neurophysiology, exploring the role of *Shirodhara* in ASD becomes highly relevant. This article aims to examine the therapeutic potential of *Shirodhara* in Autism Spectrum Disorder with special reference to *Manovaha Srotas*, highlighting its integrative value and the need for further clinical validation

## AIM AND OBJECTIVE

To evaluate the role of *Shirodhara* in autism spectrum disorder through modulation of *Manovaha Srotas*.

- To discuss and elaborate on the various Ayurvedic

## NEED OF STUDY

Current treatment modalities for Autism Spectrum Disorder provide limited long-term benefits and are often associated with adverse effects. In contrast, *Shirodhara*, a time-tested *Ayurvedic* therapy, offers a safe, holistic, and potentially effective approach. Therefore, evaluating its role in ASD management is of clinical significance.

## REVIEW OF LITERATURE

An examination of classical *Ayurvedic* texts was carried out as primary data, complemented by a review of secondary sources such as reputed journal publications and credible electronic resources, to explore the concept of socio-behavioural disorders.

## TREATMENT

### Role of *Shirodhara* in Autism Spectrum Disorder

*Shirodhara*, an *Ayurvedic* therapy is traditionally indicated for stress, sleep disorders, neuropsychological complaints, improvement in attention span, social communication and behavioural improvements such as reduction in hyperactivity, restlessness, aggression, irritability, temper tantrums, and repetitive behaviours. *Shirodhara* has been shown to reduce anxiety, improve mood stability, and enhance emotional regulation by promoting parasympathetic dominance and relaxation. These effects may contribute to decreased stress and improved social interaction in children with ASD [12, 13]. Sleep disturbances are a common feature of ASD, including difficulty initiating sleep, frequent night waking, and poor sleep quality. Studies indicate that *Shirodhara* may improve sleep latency and duration, thereby enhancing overall sleep quality [14, 15]. Although direct evidence is limited, *Shirodhara* may also aid in sensory integration by providing uniform and repetitive sensory stimulation, which could help children with sensory processing difficulties commonly observed in ASD [16, 17]. Additionally, cognitive and communication deficits such as poor concentration, weak memory, and delayed speech have shown improvement in clinical observations where *Shirodhara* was used along with *Ayurvedic* interventions [18].

### MODERN PERSPECTIVE OF SHIRODHARA [19, 20]

*Shirodhara*, although rooted in the *Ayurvedic* tradition, is gaining increasing support in modern psychophysiology and neuroendocrinology. The continuous, rhythmic pouring of medicated liquid on the forehead is more than a ritual—it triggers a cascade of measurable neurochemical and autonomic responses.

**1. Neuroendocrine Regulation**

One of the most important mechanisms underlying the effects of *Shirodhara* is its influence on the hypothalamic-pituitary-adrenal (HPA) axis, which plays a central role in regulating the body's stress response. Cortisol, the primary stress hormone, is frequently elevated in conditions such as anxiety, depression, and chronic headaches. Clinical studies have demonstrated that *Shirodhara* significantly reduces both salivary and serum cortisol levels, thereby indicating a measurable decrease in physiological stress. This outcome is mediated by a reduction in sympathetic nervous system activity accompanied by enhanced parasympathetic tone, which together promote relaxation, improve mood, and restore endocrine balance. From a neurophysiological perspective, the forehead is richly innervated by the trigeminal nerve, which maintains close connections with the limbic system the brain's centre for emotional regulation. Gentle and continuous stimulation through *Shirodhara* is believed to modulate this pathway, thereby contributing to its calming and restorative effects.

## 2. Autonomic Nervous System Balance

*Shirodhara* promotes homeostasis of the autonomic nervous system (ANS), which regulates involuntary functions such as heart rate, respiration, and digestion. Modern research demonstrates that it increases vagal activity, as reflected in lower heart rate, reduced blood pressure, and improved heart rate variability (HRV). Vagal tone is considered a marker of resilience to stress with higher levels being associated with emotional stability, better sleep quality and reduced systemic inflammation. By modulating ANS activity, *Shirodhara* also contributes to the restoration of natural circadian rhythms, which are often disrupted in patients with insomnia, migraine and psychosomatic disorders.

## 3. Brain Activity

Advanced imaging and neuro monitoring techniques, such as electroencephalography (EEG) and functional magnetic resonance imaging (fMRI), have provided substantial evidence for the influence of *Shirodhara* on brain activity. EEG studies consistently demonstrate a decrease in Beta wave activity (13–30 Hz), which is typically associated with hyper arousal, anxiety and tension. At the same time, there is an increase in Alpha wave activity (8–12 Hz), reflecting states of relaxation, calm alertness and meditative awareness. Complementary evidence from fMRI studies suggests that *Shirodhara* induces changes in brain regions such as the prefrontal cortex, an area responsible for executive *functions*, emotional regulation and higher-order cognitive processing. These findings indicate that *Shirodhara* not only calms the nervous system but also enhances neural networks involved in stress regulation and adaptive behavior.

***SHIRODHARA*** [21]

It is classified under *Murdhni Taila* (oil therapies applied to the head), which comprises four main procedures:

1.*Shiro Abhyanga* – Oil massage of the head
2.*Shiro Pichu* – Placement of an oil-soaked cotton pad on the head
3.*Shiro Basti* – Retaining oil on the head using a specially designed cap
4.*Shirodhara* – Gentle and continuous streaming of liquid on the forehead

*Shirodhara* is a classical *Ayurvedic* therapy in which a steady stream of warm medicated liquids such as oil, decoction, milk, or buttermilk is gently poured over the forehead, especially on the region between the eyebrows—identified in yogic tradition as the *Ajna Chakra*. The term *Shirodhara* is derived from two Sanskrit words:

- *Shira* – head
- *Dhara* – continuous flow

*According* to *Ashtanga Hridaya (Vagbhata),* this procedure induces sleep, alleviates stress and pacifies aggravated *Vata* in the head. Benefits include: *Nidrajanana* (induces sleep), *Manasashanti* (calms the mind). *Acharya Sharangdhar* mentions different types of liquids based on different *Doshas*; *Taila* for *Vata Dosha, Takra* for *pitta Dosha, Ksheer* for *Vata Pitta* and *Kashaya* for *Kapha Dosha.*

## DISCUSSION

Autism Spectrum Disorder presents with complex symptoms involving cognition, behavior, and communication. Modern treatments focus on behavioral therapy, speech therapy, and medications, but long-term outcomes remain limited. *Ayurveda* views ASD-like conditions under *Unmada* with vitiation of *Vata* and *Kapha* in *Manovaha Srotas*. *Shirodhara*, by pacifying *Vata* and balancing *Kapha*, directly influences sleep, mood and cognitive functions. Modern evidence corroborates these effects, highlighting its impact on the HPA axis, ANS, EEG patterns and neurochemical balance. Therefore, *Shirodhara* may serve as a non-invasive, supportive and integrative therapy for ASD when combined with behavioral and educational interventions. In classical *Kaumarbhritya* practice, *Shirodhara* is often integrated with *Medhya Rasayana*

(like *Guduchi*, *Brahmi*, *Mandukaparni*, *Shankhapushpi*) and *Sattvavajaya Chikitsa* to enhance cognitive and behavioral outcomes. However, large-scale clinical trials are needed to establish evidence-based protocols

## CONCLUSION

*Shirodhara*, a classical *Ayurvedic* intervention, shows promise in the management of Autism Spectrum Disorder by improving sleep, reducing anxiety, stabilizing behavior and supporting sensory integration. Both *Ayurvedic* and modern perspectives suggest its beneficial role in modulating *Manovaha Srotas*, neuroendocrine balance, and brain function. While current evidence is encouraging, further scientific validation through clinical research is essential to integrate *Shirodhara* into mainstream ASD management. An integrative approach combining *Ayurveda* with conventional therapies can provide holistic care for children with ASD

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