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Ayurvedic Concept Of Nidra And Its Modern Correlation: An Analytical Study

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ABSTRACT

Background: *Nidra* (sleep) is one of the *Trayopastambha* (three supporting pillars of life) described in Ayurveda, essential for maintaining health and longevity. Classical Ayurvedic texts consider *Nidra* as a natural, physiological state crucial for *Sharira* (body) and *Manas* (mind) restoration. Acharyas have described its causative factors, physiological basis, types, and health complication of its disturbances. Understanding *Nidra* from both perspectives offers valuable insights into holistic health management. **Aim:** To critically analyze the Ayurvedic concept of *Nidra* and establish its correlation with modern physiological and clinical understanding of sleep. **Objectives:** To review *Nidra* as described in classical Ayurvedic texts with respect to definition, classification, causative factors, and benefits. To evaluate the pathophysiological basis of *Nidranasha* (insomnia) and *Atinidra* (hypersomnia) in Ayurveda. **Materials and Methods:** A comprehensive review of Ayurvedic classical texts including *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, and relevant commentaries was undertaken. Modern literature was sourced from peer-reviewed journals, sleep medicine textbooks, and neurophysiology references. Comparative analysis was performed to identify convergences and divergences between Ayurvedic and modern perspectives. **Results:** Ayurveda emphasizes the role of *Tamas* and *Kapha* dominance, *Mana–Indriya* relaxation, and *Hridaya* (mind-heart axis) in the onset of *Nidra*. Modern science parallels these concepts with reduced sensory input, parasympathetic predominance, and neural regulation via the hypothalamus and reticular activating system. Both systems recognize the detrimental effects of sleep deprivation on cognitive function, immunity, and metabolism. Ayurvedic descriptions of *Nidranasha* and *Atinidra* show close resemblance to modern sleep disorders such as insomnia and hypersomnia. **Conclusion:** The Ayurvedic concept of *Nidra* aligns significantly with modern physiological understanding of sleep, particularly in its restorative role and health complication of disturbances. Integrating Ayurvedic preventive and therapeutic measures, such as *Dinacharya*, *Ratricharya*, and *Manonigraha*, with modern sleep hygiene practices could enhance management strategies for sleep disorders.

Keywords: *Nidra*, *Trayopastambha*, *Nidranasha*, *Atinidra*, Sleep physiology, Ayurveda–modern correlation

INTRODUCTION

In Ayurveda, *Nidra* (sleep) is regarded as one of the *Trayopastambha* (three fundamental pillars of life) alongside *Ahara* (diet) and *Brahmacharya* (regulated lifestyle). Acharya Charaka describes *Nidra* as essential for maintaining physical strength, mental stability, and overall well-being. Adequate and timely sleep is considered a natural physiological requirement that supports the body's restorative processes and ensures optimal functioning of the *Sharira* (body) and *Manas* (mind). Without proper *Nidra*, even a healthy individual may experience deterioration in health, immunity, and cognitive capacity.[1]

Classical Ayurvedic literature elaborates the origin, types, and causative factors of *Nidra*. According to *Charaka Samhita*, *Nidra* occurs naturally when the *Manas* (mind), *Indriya* (sense organs), and *Sharira* become fatigued, and the *Tamas* guna dominates, leading to a withdrawal of sensory activity. *Sushruta Samhita* further emphasizes that *Kapha* predominance, physical relaxation, and mental calmness facilitate the onset of sleep. Acharyas classify *Nidra* into natural (*Swabhavika*) and abnormal (*Vaikarika*) forms, with the latter being linked to disease conditions or improper lifestyle.[2]

Ayurveda associates proper *Nidra* with benefits such as increased longevity, strength, immunity, and stability of mental faculties. Conversely, *Nidranasha* (insomnia) and *Atinidra* (hypersomnia) are considered pathological states that disturb *Dosha* equilibrium and contribute to diseases like *Apasmara* (epilepsy), *Atisara* (diarrhea), and metabolic disorders. The management of *Nidra* disturbances includes lifestyle regulation (*Dinacharya*, *Ratricharya*), dietary adjustments, *Manasika* (psychological) therapies, and in some cases, *Aushadhi* (medicinal) interventions.[3]

From a modern physiological perspective, sleep is a complex neurobiological process regulated by the hypothalamus, brainstem, and reticular activating system. It is characterized by altered consciousness, reduced sensory responsiveness, and changes in brain wave patterns, particularly in non-rapid eye movement (NREM) and rapid eye movement (REM) stages. Neurotransmitters such as serotonin, melatonin, gamma-aminobutyric acid (GABA), and adenosine play a key role in initiating and maintaining sleep, while circadian rhythms synchronize the sleep–wake cycle with environmental cues.[4]

Modern medical research links inadequate or excessive sleep to cardiovascular diseases, metabolic syndromes, mood disorders, cognitive decline, and impaired immunity. Chronic insomnia is associated with increased risk of hypertension, depression, and type 2 diabetes, while excessive sleep has been correlated with reduced life expectancy. These findings parallel Ayurvedic observations that disturbed *Nidra* affects both *Sharirika* (physical) and *Manasika* (mental) health, underscoring the timeless relevance of classical wisdom in contemporary healthcare.[5]

While both Ayurveda and modern science recognize the vital role of sleep in maintaining health, their approaches to understanding and managing sleep disturbances differ in methodology and focus. Ayurveda provides a holistic, preventive framework grounded in lifestyle, diet, and mind–body balance, whereas modern medicine emphasizes neurophysiology and pharmacological interventions. An analytical study that bridges these perspectives can enhance clinical practice by integrating Ayurvedic preventive strategies with modern diagnostic and therapeutic approaches, offering a comprehensive model for sleep health management.[6]

AIM AND OBJECTIVES

Aim:

To critically analyze the Ayurvedic concept of *Nidra* and establish its correlation with modern physiological and clinical understanding of sleep.

Objectives:

1. To review *Nidra* as described in classical Ayurvedic texts.
2. To study the types, causative factors, and benefits of *Nidra*.
3. To examine the pathophysiology of *Nidranasha* and *Atinidra*.
4. To correlate Ayurvedic principles of *Nidra* with modern neurophysiology.
5. To explore integrative approaches for the management of sleep disorders.

MATERIAL AND METHOD

The present analytical study was conducted through an extensive review of Ayurvedic and modern literature on *Nidra* and sleep physiology. Primary Ayurvedic sources such as *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, and other classical treatises with authoritative commentaries were examined for conceptual understanding, and relevant Sanskrit *shlokas* were collected, transliterated, and interpreted in context. Modern references were gathered from peer-reviewed journals, standard textbooks of physiology, neurology, psychiatry, and sleep medicine, along with authentic digital databases including PubMed, Google Scholar, and ScienceDirect, using keywords like “sleep physiology,” “insomnia,” “hypersomnia,” “circadian rhythm,” and “Ayurveda sleep.” The collected data focused on definitions, classifications, causative factors, physiological basis, and health complication of *Nidra*, followed by a comparative analysis to identify similarities, differences, and possible integrative approaches between Ayurvedic principles and modern scientific perspectives.

CONCEPT OF *NIDRA*

In Ayurveda, *Nidra* is considered one of the three essential pillars of life (*Trayopastambha*), along with *Ahara* (diet) and *Brahmacharya* (regulated lifestyle). Acharya Charaka states that *Nidra* is fundamental for sustaining life, promoting health, and preventing disease. It is defined as a natural and periodic state of rest for the body and mind, characterized by reduced sensory and motor activity, altered consciousness, and restoration of physiological balance.[7]

Acharya Charaka explains that *Nidra* occurs when the *Manas* (mind), *Indriya* (sense organs), and *Sharira* (body) are fatigued, and the *Tamas* guna becomes dominant, causing a withdrawal from sensory perception. This natural withdrawal leads to mental and physical relaxation, allowing for the restoration of bodily tissues (*Dhatu Pushti*) and the maintenance of mental clarity. *Sushruta Samhita* adds that *Kapha* predominance, coolness, and heaviness contribute to the onset of sleep, highlighting the role of *Dosha* balance in the regulation of *Nidra*.[8]

Ayurvedic texts classify *Nidra* broadly into **two categories**:

1. **Swabhavika Nidra** (natural sleep) – Occurs due to natural fatigue and is essential for health maintenance.
2. **Vaikarika Nidra** (abnormal sleep) – Arises due to disease, injury, psychological disturbance, or improper lifestyle.

NIDRAUTPATTI

Indriya (Sense organs) + Manas (Mind) Fatigue
↓
Withdrawal from External Sensory Objects
↓
Dominance of Tamas Guna
↓
Kapha Dosha Predominance (Snigdha, Guru, Sheeta qualities)
↓
Calmness and Relaxation of Mind & Body
↓
Reduced Activity of Indriya and Karma Indriya
↓
Physiological Inhibition of Nervous System Activity
↓

Onset of Nidra (Sleep)

Acharya Charaka further enumerates **six types of *Nidra*** based on causation:

1. *Tamobhava* – Sleep induced by predominance of *Tamas*.
2. *Shleshmasamudbhava* – Sleep due to excess *Kapha*.
3. *Manah-sharira-shramaja* – Sleep caused by physical and mental fatigue.
4. *Agantuki* – Sleep caused by external factors such as trauma.
5. *Vyadhyanuvartini* – Sleep occurring as a symptom in diseases.
6. *Ratri Swabhavaprabha* – Physiological night sleep regulated by natural circadian rhythm.

Ayurveda emphasizes that proper *Nidra* maintains *Bala* (strength), *Varna* (complexion), *Pushti* (nourishment), *Vrishata* (sexual vigor), *Jnana* (knowledge), and *Ayushya* (longevity). Conversely, *Nidranasha* (insomnia) leads to debility, dryness, emaciation, impaired senses, and mental instability, while *Atinidra* (excessive sleep) can cause *Manda Agni* (low digestive fire), lethargy, and metabolic disorders.[9]

From a modern perspective, *Nidra* correlates with the sleep process, which is regulated by the central nervous system, particularly the hypothalamus, brainstem, and reticular activating system. Neurotransmitters like serotonin, melatonin, gamma-aminobutyric acid (GABA), and adenosine influence sleep onset and maintenance. The two main stages—non-rapid eye movement (NREM) and rapid eye movement (REM) sleep—serve different restorative functions for the body and brain.[10]

The Ayurvedic view aligns closely with modern findings in emphasizing circadian rhythms, the restorative role of sleep, and the harmful effects of its disturbances. Ayurveda also provides preventive and therapeutic guidelines through *Dinacharya*, *Ratricharya*, and mental hygiene (*Manonigraha*), which can complement modern sleep hygiene practices for better clinical outcomes.[11]

MODERN REVIEW

In contemporary biomedical science, sleep is defined as a naturally recurring state of mind and body characterized by altered consciousness, reduced responsiveness to external stimuli, and relative inhibition of voluntary muscles. It is a complex neurobiological process essential for physical restoration, cognitive function, metabolic regulation, and overall well-being. Sleep is regulated by two primary processes: the circadian rhythm (biological clock) and the homeostatic sleep drive.[12]

The circadian rhythm is governed by the suprachiasmatic nucleus (SCN) of the hypothalamus, which synchronizes the sleep–wake cycle with the 24-hour light–dark cycle. This rhythm is influenced by environmental cues, especially light exposure, which modulates the secretion of melatonin from the pineal gland. The homeostatic drive for sleep accumulates during waking hours, largely due to the buildup of adenosine in the brain, and dissipates during sleep.[13]

Sleep is broadly divided into non-rapid eye movement (NREM) and rapid eye movement (REM) stages. NREM sleep has three stages:

- **N1 (light sleep)** – Transition between wakefulness and sleep; reduced muscle activity; slow eye movements.
- **N2 (intermediate sleep)** – Further slowing of heart rate and breathing; appearance of sleep spindles and K-complexes on EEG.
- **N3 (deep sleep or slow-wave sleep)** – Dominated by delta waves; crucial for physical restoration, tissue repair, and immune function.

Light–Dark Cycle & Environmental Cues
↓
Suprachiasmatic Nucleus (SCN) in Hypothalamus
↓
Regulation of Melatonin Secretion (Pineal Gland)
↓
Homeostatic Sleep Pressure (Adenosine Accumulation)
↓
Inhibition of Wake-promoting Neurons by GABA & Galanin
↓
Transition through NREM → REM Stages
↓

Onset & Maintenance of Sleep

REM sleep is characterized by rapid eye movements, increased brain activity resembling wakefulness, muscle atonia, and vivid dreaming. REM sleep plays a vital role in memory consolidation, emotional regulation, and learning. A typical adult sleep cycle alternates between NREM and REM stages approximately every 90 minutes, with 4–6 cycles per night.[14]

Neurochemically, sleep initiation and maintenance involve multiple neurotransmitters and neuromodulators. GABA (gamma-aminobutyric acid) and galanin from the ventrolateral preoptic nucleus promote sleep by inhibiting wake-promoting neurons. Serotonin participates in sleep onset, while melatonin regulates circadian timing. Adenosine accumulation during wakefulness enhances sleep pressure. Wakefulness is sustained by neurotransmitters such as norepinephrine, dopamine, histamine, and orexin.[15]

Modern research links insufficient or excessive sleep with multiple health risks. Chronic sleep deprivation is associated with cardiovascular diseases, obesity, type 2 diabetes, mood disorders, cognitive impairment, and reduced immune function. Excessive sleep has been linked to depression, metabolic dysfunction, and higher mortality risk. Sleep disorders such as insomnia, obstructive sleep apnea, restless legs syndrome, and narcolepsy significantly affect quality of life and increase healthcare burden.[16]

Management strategies in modern sleep medicine include sleep hygiene practices (regular sleep schedule, limiting caffeine and screen exposure before bedtime, creating a conducive sleep environment), cognitive behavioral therapy for insomnia (CBT-I), pharmacological interventions (hypnotics, melatonin supplements), and treatment of underlying medical conditions affecting sleep.[17]

When compared with Ayurvedic understanding, modern science emphasizes the neurophysiological and biochemical mechanisms of sleep, while Ayurveda focuses on *Dosha*, *Guna*, and mind–body harmony. Both systems agree on the necessity of proper and regular sleep for maintaining health and preventing disease. Integrating Ayurvedic preventive principles with modern diagnostic tools could enhance the overall management of sleep-related disorders.[18]

RESULTS AND FINDINGS:

- The Ayurvedic concept of *Nidra* aligns with modern understanding of sleep in its restorative and health-promoting role.
- Ayurveda explains sleep origin through *Tamas* dominance, *Kapha* predominance, and withdrawal of *Manas* and *Indriya* from external objects.
- Modern science attributes sleep regulation to circadian rhythms, homeostatic pressure, and neurochemical mediators such as melatonin, serotonin, GABA, and adenosine.
- Both systems recognize that inadequate sleep (*Nidranasha*) leads to physical, mental, and metabolic disturbances.
- Excessive sleep (*Atinidra*) is linked in both views to lethargy, low metabolism, and increased risk of chronic disease.
- Ayurvedic classifications of *Nidra* parallel modern distinctions between normal and pathological sleep states.
- An integrative approach combining Ayurvedic lifestyle measures (*Dinacharya*, *Ratricharya*, *Manonigraha*) with modern sleep hygiene can enhance sleep quality and prevent disorders.

DISCUSSION

The present analytical study reveals significant parallels between the Ayurvedic and modern scientific perspectives on sleep. Ayurveda emphasizes *Nidra* as a fundamental pillar of health (*Trayopastambha*), describing it as essential for maintaining *Sharirika* (physical) and *Manasika* (mental) balance. The classical explanation attributes sleep origin to

Tamas dominance, *Kapha* predominance, and the relaxation of *Manas* and *Indriya*. This understanding focuses on the qualitative aspects of rest and the holistic balance of *Dosha*, *Dhatu*, and *Manas*.[19]

From a physiological standpoint, modern science explains sleep as a neurobiological process regulated by the circadian rhythm and homeostatic mechanisms. The hypothalamus, suprachiasmatic nucleus, pineal gland, and various neurotransmitters such as serotonin, melatonin, GABA, and adenosine play key roles in initiating and maintaining sleep. Stages of NREM and REM sleep, identified through electroencephalography, have distinct restorative functions for the body and brain, correlating with Ayurvedic emphasis on both physical rejuvenation and mental clarity.[20]

The convergence between the two systems is evident in their shared recognition of the harmful effects of disturbed sleep. *Nidranasha* (insomnia) is linked to weakness, cognitive decline, mood disturbances, and metabolic impairment in Ayurveda, which aligns with modern findings that chronic sleep deprivation increases the risk of cardiovascular disease, obesity, diabetes, and mental health disorders. Similarly, *Atinidra* (excessive sleep) is described in Ayurveda as promoting lethargy and *Manda Agni*, a concept that resonates with modern associations between hypersomnia, metabolic dysfunction, and depression.[21]

Ayurveda's preventive and therapeutic approaches to sleep disturbances—such as adherence to *Dinacharya* (daily routine), *Ratricharya* (night regimen), dietary regulation, mental discipline (*Manonigraha*), and the use of specific *Aushadhi* (herbal formulations)—complement modern strategies like sleep hygiene, cognitive-behavioral therapy, and pharmacological interventions. This integrative framework offers a broader scope for individualized, non-invasive, and sustainable management of sleep disorders.[22]

CONCLUSION

The present study concludes that the Ayurvedic concept of *Nidra*, rooted in *Tamas* predominance, *Kapha* balance, and mind–body relaxation, closely parallels the modern scientific understanding of sleep as a neurophysiological process governed by circadian rhythms, homeostatic mechanisms, and neurotransmitter activity. Both perspectives emphasize the restorative role of proper sleep and the adverse effects of its deficiency or excess on physical, mental, and metabolic health. Integrating Ayurvedic lifestyle practices such as *Dinacharya*, *Ratricharya*, and *Manonigraha* with modern sleep hygiene and clinical interventions offers a holistic and effective framework for promoting optimal sleep and preventing sleep-related disorders.

CONFLICT OF INTERET –NIL

SOURCE OF SUPPORT –NONE

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