Advances in Bioresearch
Adv. Biores., Vol 17 (3) March 2026: 186-194

Print ISSN 0976-4585; Online ISSN 2277-1573
Journal's URL:http://www.soeagra.com/abr.html
CODEN: ABRDC3
DOI: 10.15515/abr.0976-4585.17.3.186194

Advances in Bioresearch

REVIEW ARTICLE

Exploring The Connection Between Sleep and Intelligence: An Ayurvedic Approach

Bhaskar Gomtiwal* and Mariya Husain
Department of Kriya Sharir, Parul University, Parul Institute of Ayurved and Research, Vadodara, Gujrat, India.
***Corresponding Author**: Bhaskar Gomtiwal
Email: bhaskargomtiwal98@gmail.com

ABSTRACT
Sleep is so important to humans that it comprises almost 1/3 of one's life span. It has a restorative, regenerative, and reparative potential, hence any compromise to this eventually affects all these functions. Sleep disturbances are debilitating and are being linked to many diseases either as their cause or as manifestations. Buddhi (Intellect) is also known as Mahata (greatness), Upalabdhi (accomplishment) and Gyana (intellectual). Grahana (grasping) and Dharana (retaining) capacity are the most important properties of intellect because this knowledge can be retrieved by Smriti (memory). In the modern era due to stress and disturbing sleep, there is an increase in incidences of psychosomatic disease. Nidra is classified as one of the three pillars of life (Trayopastambha), along with Ahara (diet) and Brahmacharya (conduct), as described by Acharya Charaka. It plays a crucial role in maintaining equilibrium between the body, mind and soul. A disturbance in sleep leads to various physiological and psychological disorders, including Vata aggravation and disorders such as Anidra (insomnia). In Ayurvedic physiology, Nidra is governed primarily by the Tamas guna, and the Kapha dosha plays a pivotal role in promoting sound sleep. Balanced Nidra supports proper digestion, mental clarity, physical strength and emotional well-being. On the contrary, insufficient or excessive sleep causes Vata and Kapha imbalances, leading to conditions like lethargy, stress, and cognitive disturbances.
Keywords: *Trayopastambha, sleep, buddhi, intelligence.*

Received 04.02.2026 Revised 26.02.2026 Accepted 22.03.2026

How to cite this article:
Bhaskar G and Mariya H. Exploring the Connection Between Sleep and Intelligence: An Ayurvedic Approach. Adv. Biores., Vol 17 (3) March 2026: 186-194.

INTRODUCTION

Ayurveda provides a path to well-being that extends beyond treating illness, incorporating the physical, mental, and spiritual dimensions of life [2]. The diverse functions regulated by sleep make it a crucial element of health and its disruption is a widespread issue in today's society. Intelligence is a critical survival tool for all organisms, helping them meet the demands of everyday life. In *Ayurveda*, health and intellectual capacity are understood through the lens of physical constitution (*Prakriti*), psychological constitution (*Manasa Prakriti*), and the predominant *Dosha*. Sleep (*Nidra*) is an essential physiological process, playing a pivotal role in cognitive function, emotional regulation, and overall health. *Ayurveda* recognizes *Nidra* as one of the three fundamental pillars of life (*Trayopastambha*), along with *Ahara* (diet) and *Brahmacharya* (regulated lifestyle). Sleep is induced by the *Tama's* natural predominance at night and a deep intellectual and mental relaxation. When *Sleshma* accumulates the *Manovaha Srotas* and the mind becomes exhausted and deprived of sense organs, a person falls asleep [3, 6, 8]. Sleep is basic human need and is essential for good health, quality of life and performing well during the day. The constructive effects of natural sleep have been deeply considered and interpreted by Ayurvedic literature as well as modern researches. *Acharya Charaka* emphasizes that proper sleep determines happiness, intellect, vitality, and longevity, while sleep disturbances contribute to disease, cognitive impairment, and reduced mental clarity. Similarly, modern neuroscience acknowledges sleep as crucial for memory consolidation, neuroplasticity, and executive functioning, linking sleep deprivation to impaired cognitive performance and mental health disorders [1].

Ayurvedic Perspective on Nidra and Buddhi

In *Ayurveda, Buddhi* (intellect) is the faculty responsible for cognition, decision-making and memory. It is classified into *Dhee* (learning ability), *Dhriti* (retention), and *Smriti* (recall/memory), all of which are deeply influenced by sleep quality [50]. *Nidra* is primarily governed by *Tamas guna* and *Kapha dosha*, which promote mental and physical restoration. An imbalance in *Vata dosha*, often due to lifestyle stressors, disturbs *Nidra*, leading to *Anidra* (insomnia), mental restlessness, and weakened *Buddhi*. Furthermore, *Sadhaka Pitta* responsible for emotions and cognitive sharpness plays a crucial role in intellectual processes, and its imbalance manifests as anxiety, over thinking and sleep disruptions. Ayurvedic texts also describe *Nidra* as essential for the nourishment of the mind (*Manovaha Srotas*), highlighting its direct influence on *Medha* (intelligence).

MATERIAL AND METHODS

This review explores the scientific underpinnings of *Nidra* (sleep) and *Buddhi* (intellect/IQ) by drawing upon a variety of sources. The data collection process involved consulting classic *Samhita*, specialized *Kriya Sharir* books and relevant articles published in scientific journals. A thorough literature search was performed, encompassing both traditional reference books and online databases, including Google Scholar, PubMed, DHARA, the AYUSH Research Portal and Scopus. The retrieved data was subsequently organized, consolidated, critically analyzed and reviewed.

DESCRIPTION OF *NIDRA* IN VARIOUS AYURVEDIC TEXTS

The disturbance in *Nidra* might have been caused by a faulty lifestyle, mental stress, and change in dietary habits. In the context of *Vataja Nanatmaja Vyadhi*, *Nidranasha* is regarded as a separate disease entity and also considered as a symptom of a variety of physical and psychological problems [20]. *Acharya Charak* referred to sleep as *Bhutadhatri*, which comes naturally at night and nourishes all living beings [18]. *Acharya Charak* stated that when the mind, including *Jnanendriya* and *Karmendriya*, gets fatigued and they dissociate themselves from their objects and then an individual falls asleep [9, 5]. *Acharya Sushruta* narrates that once the *Sanjavaha Srotas* are filled with *Kapha* and *Indriyas* are separated from their respective objects of perception, the person goes asleep [10, 4]. *Acharya Sushruta* named *Nidra* of "*Vaishnavimaya*" a physiological process that supplies nutrition to the living organism and maintains health.[19] According to *Astanga Sangraha*, *Avarana* of the *Manovaha Srotas* by *Shlesmas* and *Shrama* of both sorts of *Indriyas* occur, which dissociates them from their respective senses and then *Nidra* occurs [11, 6]. According to *Astanga Hridaya*, when the sensation transmitting pathways of the body is blocked or filled up by *Shleshma*, and if this *Shleshma* is over saturated with the *Tamasika* quality, then the living beings fall sleep. According to *Mandukya Upanishad*, *Nidra* is a state in which "*Atma*" has no dreams or desires and this state is referred to as "*susupti*." [12]. According to *Shrangdhara* excess *Kapha* and *Tamas* contribute to *Nidra.*[7] *Maharshi Patanjali* affirmed that sleep is the mental operation having the perception of absence for its grasp. Sleep is the non-deliberate absence of thought, waves or knowledge [13].

TYPES OF *NIDRA* –

***Ashtanga Hridaya* mentions about four types of sleep**- *Mithyayogaroopa* (untimely sleep), *Atiyogaroopa* (sleep with more duration), *Hinayogaroopa* (improper sleep) and *Samyakyogaroopa* (timely with concern duration). [14]

***Ashtanga Sangraha* mentions about seven types of sleep**. They are *Kala swabava, Amayaja, Chittakedodbava, Dehakedodbhava, Krodhodbava, Agantubava* and *Tamobava* [15].

Kalaswabhawaja – it is produced at the usual time, that is, at night

Amayaja – it is formed as a result of disease

By exhaustion of *mana* – when *mana* becomes depleted

By fatigue of *sharira* – when body is exhausted

Shleshmaprabhavaj – it is formed due to *Kapha* dominance.

Agantuka – this type of *Nidra* is caused by external factors such as trauma etc.

Tamobhava – this type of *Nidra* is caused by *Tamoguna* predominance

Three categories are identified by *Acharya Susruta-Vaishnavi* (formed by the sustaining deity, a natural one), *Tamasi* and *Vaikariki* (due to diseases).[16]

Vaiṣaṇavi Nidra: It is a normal type of *Nidra* and it is the energy of God, which helps in maintaining the life of human being.

***Tamasi Nidra*:** It is the type of *Nidra* which appears due to influence of *Tamo guṇa*. It produces unconsciousness at the time of death.

***Vaikariki Nidra*:** This type of *Nidra* appears due to *Kapha Doṣha* and aggravated *Vata Doṣa* or due to any troubles which affects both mind and body.

Charaka Samhita mentions seven types of sleep. They are; *Tamobhava* (caused by Tamas), *Sleshmsamudbhava* (caused by Kapha), *Manah Sharira Sram Sambhava* (caused by physical and mental exertion), *Agantuki* (adventitious), *Vyadhi-Anuvartini* (as sequel to a disease), *Ratri Svabhava Prabhava* (normal sleep that occurs at night) [17].

The *Tamodbhava Nidra* in the modern point of view relates to the comatose state, as the individual is unable to perform the virtuous files. The concept of *Sleshma Samudbhava Nidra* can be related to sleepiness caused due to substances like antidepressants, antihistamines, anti-psychotics and anti-convulsants.

MECHANISM OF *NIDRA*-

According to *Acharya Susruta*, *Hridaya* is considered as the seat of *Chetana*. When there is an abundance of *Tamo guna*, individual's experiences sleep, while an excess of *Satva Guna* results in awareness of both external and internal surroundings [37].

Acharya Charaka proposes that when the mind along with sensory and motor organs becomes fatigued and detaches from their objects, individuals enter into a state of sleep.

As per *Ashtanga Sangraha*, when an individual falls asleep the *Manovaha Srotas* become accumulated with *Sleshma* and the mind gets devoid of sense organs because of fatigue [38].

Acharya Sharangadhara mentions that aggravation of *Kapha-Doṣha* and *Tamo guṇa* leads to *Nidra* [36].

***BUDHHI* (IQ) –**

Etymology-

The word *Buddhi* has originated from the root word '*buddha*'. It can be described as phenomena that results in the acquisition of knowledge [23].

Synonyms –

The various synonyms of *Buddhi* are *Manisha*, *Dheeshana*, *Dhee*, *Prajna*, *Semushi*, *Mati*, *Preksha*, *Upalabdhi*, *Chitta*, *Samvita*, *Pratipatti*, *Jnapti*, *Chetana* [24].

According to *Sushruta*, *Buddhi* is the first manifestation of *Avyakta Prakruti* i.e., *Buddhi* is generated from *Avyakta Prakruti Mahat* [25].

CONCEPT OF *BUDDHI* - All *Ayurveda Acharya* even surgery expert *Sushruta* explained *Buddhi* in two views:

A. *Darshanika* (Ayurveda Metaphysics) View and

B. Clinical Point of View.

The classics highlight the *Darshanika* concept of *Buddhi* due to the scholars' inevitability as well as the acceptability of their work in that community. Inevitability, in the sense *Ayurveda* developed from the contemporary sciences of that era. In that time explanation regarding *Buddhi* and *Manas* were only available from the schools viz. *Darshana*, *Upanishads* etc. Mostly *Bruhatrayee* adopted the thoughts of *Samkhya* and *Vaisheshika* as they are very much near to medical school of thought.

***Buddhi* or intelligence, can be categorized into two types:** *Indriyabuddhi*, which includes forms such as *Chakshubuddhi* (sight), *Srotrabuddhi* (hearing) etc and *Manobuddhi* (mental intelligence). This intelligence facilitates the process of gaining true knowledge. With the help of *Gyanendriya* (cognitive organs, such as nose) and the *Manas* (mind), individuals perceive objects. Initially, this perception is purely mental. Afterward, practical advantages and disadvantages are assessed. *Buddhi* (intellect) identifies the specific properties of objects and encourages individuals to act or speak accordingly. Perception is influenced by the interaction between various sense faculties and their corresponding subjects [21].

TYPES OF *BUDHHI*-

Buddhi

(intellect) determines the specific properties of the object and provokes an individual to act or to speak accordingly.

Buddhi (intellect) determines the specific properties of the object and provokes an individual to act or to speak accordingly. On the basis of sensual perception *Buddhi* is classified into *Panchendriya Buddhi* and *Mano-Buddhi* [26].

Indriya Buddhis are the fundamental intelligence or knowledge inherent in the *Indriyas*, allowing the *Indriyas* to perceive the knowledge of the linked object. The *Indriya Buddhi* assists an *Indriya* in seeing its associated information. *Pancha Indriya Buddhis* include *Chakshu Buddhi*, *Shrotra Buddhi*, *Ghraana Buddhi*, *Rasana Buddhi* and *Sparshana Buddhi* [22]. Manobuddhi-Intellect emanated through Manas, responsible for Tatva Jnana, Dharanaand Grahana etc. According to Tarka Sangraha Smriti (memory) and Anubhava (experience) considered the types of Buddhi.

SEAT OF BUDDHI-
According to Charaka Samhita Vijnana, Indriya, Panchendriya Artha, Atmawith Gunas, Manas are situated in Hridaya. Atma Guna has been referred as Adhyatma Gunas by Chakrapani. Buddhi is considered as one among Atma Gunas in Ashtanga Hridaya Sadhaka Pitta, that which responsible for Meda etc situated in Hridaya. Shiras -According to Bhela Samhita, Buddhi Vaisheshika Alochaka Pitta situated in Bhru Madhya [27].

LOGICAL REASONING AS AN ASPECT OF BUDDHI
Human perception is inherently intertwined with logical reasoning. This innate ability, termed *Viveka Buddhi* within Indian philosophical traditions, unfolds through a two-stage process. Primarly *Vivechana* at the level of *Manas* and finally *Vivechana* and *Grahana* at the *Buddhi* level. While describing the physiology of *Manas* it is said that after the perception of *Indriyartha* by *Manas*, it does the Uhopoha Vichara and send to Buddhi for final Vivechana. This is the primary Vivechana at the level of Manas [28].
MEDHA
It is specific part of Buddhi (intellect/ discriminative power) which has the power of retaining the knowledge for a long period. Due to Medha a person will be able to obtain the knowledge of existing objects and hence person becomes learned[44] Practically the word 'Medha' is used to denote higher intellect. The word 'Medhavi' is used for the person who is the knower of various Shastra (literature) and having Pratyutpanna Mati. Sometimes 'Medha' is also used for extraordinary recollection power. Acharya Dalhana defines 'Medha' very clearly as the capacity to retain knowledge of various text [45].
Sleep Stages and Mechanisms
Sleep is divided into two broad types:
NON-RAPID EYE MOVEMENT (NON-REM OR NREM) SLEEP - The American Academy of Sleep Medicine (AASM) divides NREM into three stages: N1, N2, and N3, the last of which is also called delta sleep or slow wave sleep. The whole period normally proceeds in the order: N1 → N2 → N3 → N2 → REM
RAPID EYE MOVEMENT (REM) SLEEP- REM sleep occurs as a person returns to stage 2 or 1 from a deep sleep. A complete sleep cycle typically lasts around 90-100 minutes and a typical night sleep consists of 4-5 complete sleep cycles. Each sleep cycle is comprised of approximately 5 phases, with the first 4 cycles dedicated to Non-Rapid Eye Movement (NREM) sleep. The NREM cycles conclude before transitioning to the Rapid Eye Movement (REM) cycle.
Stage 1: The initial stage of non-REM sleep signifies the shift from wakefulness to sleep. This phase usually lasts for under 10 minutes and is characterized by a decrease in heart rate, breathing, and eye movements, along with the relaxation of muscles.
Stage 2: Non-REM sleep represents a phase of light sleep occurring before the onset of deeper sleep, lasting approximately 20 minutes. In this stage, there is a continued slowing of both the heartbeat and breathing. Additionally, the brain initiates the generation of bursts of rapid, rhythmic brain wave activity known as sleep spindles. Formerly referred to as stages 3 and 4, stage 3 (N3) represents the ultimate phase of non-REM sleep. This is the most profound stage of sleep, lasting from 20 to 40 minutes. During this period, both the heartbeat and breathing reach their lowest levels, and the muscles become so relaxed that waking you up may prove challenging. This phase is commonly known as Delta sleep or slow-wave sleep. Rapid Eye Movement (REM) sleep emerges approximately 90 minutes after the initiation of sleep and is notably deeper than any of the three phases of non-REM sleep. REM sleep is characterized by swift eye movements, nearly complete body paralysis, and a tendency for dreaming [49].
SLEEP MECHANISMS
Two internal biological mechanisms include circadian rhythm and homeostasis. They work together to regulate sleep cycle.
Circadian rhythms direct a wide variety of functions from daily changes in wakefulness to body temperature, metabolism, and the release of hormones. They cause you to be sleepy at night and can help you wake up in the morning without an alarm. Your body's biological clock, which is based on a 24-hour day, controls most circadian rhythms.

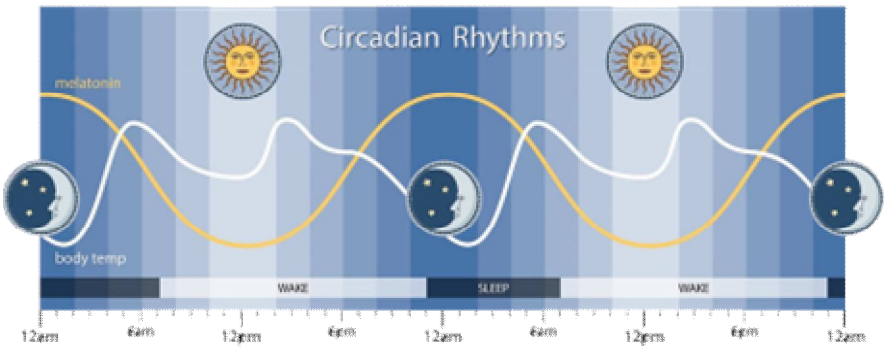

Figure 1: Sleep Circadian Rhythm – The body's 24-hour biological clock showing melatonin levels and body temperature variations that regulate the sleep-wake cycle.

Your body's biological clock is based on a 24-hour day and controls most circadian rhythms. These rhythms affect a variety of functions including body temperature (represented as the white line on the chart above). Melatonin—a hormone released by the pineal gland—helps you feel sleepy when it gets dark. The peaks and valleys of melatonin (shown in the gold line above) are important for matching the body's circadian rhythm to the external cycle of light and darkness.

Sleep-wake homeostasis keeps track of your need for sleep. Homeostasis refers to a balance between systems in the body. The homeostatic sleep drive reminds the body to sleep after a certain time and regulates sleep intensity. This sleep drive gets stronger every hour you are awake and causes you to sleep longer and more deeply after a period without sleep. Factors that influence your sleep-wake needs include medical conditions, medications, stress, sleep environment, age, and what you eat and drink. Perhaps the greatest influence is the exposure to light. Specialized cells in the retinas of your eyes process light and tell the brain whether it is day or night and can advance or delay our sleep-wake cycle. Exposure to light can make it difficult to fall asleep and get back to sleep if you wake up during the night.

INTELLIGENCE

"Intelligence is the capacity to acquire knowledge." [29]

One group of definition places the emphasis upon the adjustment or adoption of individuals to his total environment or to limited aspect of it. According to definition of this type, "Intelligence is a general mental adaptability to new problems and new situations of life "[29]. "intelligence is an aggregate or global capacity of an individual to act purposefully to think rationally and to deal effectively with his environment [29].

Physiology of Intelligence

Intelligence is the function of cerebral cortex [30]. The functional part of the cerebral cortex is a thin layer of neurons connecting the surfaces of all the convolutions of the cerebrum [31]. This layer is only 2-5 mm in thickness with a total area of about one quarter square meter. The total number of neurons in the cerebral cortex is estimated to be around 100 billion [32]. There are extensive efferent and afferent connections between all parts of the cerebral cortex and deeper brain tissues [33]. It is especially important to emphasize the relation between cerebral cortex and thalamus. Because thalamic excitation of the cortex is required for practically all cortical activity, when the thalamus is damaged along with the cortex, the loss of brain function is significantly higher than when the cortex is harmed alone [34]. Functionally the cerebral cortex can be understood with respect to its intellectual parlance [35]. The flow chart given below is a brief description regarding the functional aspect of cerebrum.

Associate Areas [39]

These areas do not fit in the rigid categories of primary and secondary motor and sensory areas. They are the primary areas that receive and process information from many regions of the motor and sensory cortices, as well as from sub-cortical structures, all at the same time. The most important association areas that take part in the functioning of intelligence are Parieto-Occipito-Temporal Area, Prefrontal Association Area, Limbic Association Area.

INTELLIGENCE QUOTIENT

Stern (1916) proposed the use of this index, but it was not used as part of the test findings and reports until 1916, when the first edition of the Stanford - Binet scale became available [40]. The intelligence quotient is the ratio of individuals' mental age to his chronological age, which can be found by the formula [41]

IQ = (Mental age/ Chronological age) X 100

To remove the decimal, the ratio is multiplied by 100. An individual's I.Q. indicates the rate of mental development or the degree of brightness. If the mental development keeps pace with one's life age, the quotient is 100. If the mental development lags or is accelerated, the quotient will be less than or greater than 100, depending upon the degree of retardation or acceleration.

Measurement of Intelligence

The measurement of a person's intellectual capacity is of great value to a clinical psychologist as well as to a physician [42]. To measure the intelligence level, workers of various fields like psychology, biochemistry, physiology all have tried in three methods, they are as follows: 1. Bio-chemical measures. 2. Psycho – physiological measures. 3. Psychological testing.

Table 1: Commonly Used Intelligence Test Scales for Clinical and Research Assessment

List of Intelligence Test Scales	
General Scales	Wechsler Scale
	Stanford-Binet Scale
	Bhatia's scale
	Seguin Form Board test
Speech & Language	Peabody Picture Vocabulary Test.
	Illinois Test of Psycholinguistic abilities (ITPA).
	Templion-Darley Test of Articulation
Reading and School Achievement	Wide Range Achievement Test..
	Durrell Analysis of Reading Difficult
	Stanford Diagnostic Reading Test.
Perceptual, Perceptuomotor	Draw A Person Test (DAPT).
	Benton Visual Retention Test (BVRT)
	Porteus Mazes, Trail Maning
	Identification of hidden and mixed figures.
Body Schema	Right and Left orientation finger recognition.
Motor Skills	Lincoln – Oseretsky Motor Development Scale
Social Maturity	Vineland Social Maturity Scale
	AAMD Adaptive Behaviour Scale.
Behavior	Child Behaviour Checklist (Achenbach)
	Teacher Rating Scale (Conners)
	Children's Depression Inventory (Kovacl)
Personality	Children's Appreciation Test (CAT.
	Thematic Appreciation Test (TAT)
	Children's Personality
	Questionnaire (Cat tell).
Environment	Family Environment Scale (Moos)
	Class room Environment Scale (Moos).
	Home Environment Scale (Sines)

The WAIS-IV provides an overall score of general intellectual ability termed the Full-Scale Intelligence Quotient (FSIQ). The four index scores introduced with the WAIS-III [50] were also maintained: Verbal Comprehension Index (VCI), Perceptual Reasoning Index (PRI; formerly Perceptual Organization Index), Working Memory Index (WMI), and Processing Speed Index (PSI). The Verbal Intelligence Quotient (VIQ) and Performance Intelligence Quotient (PIQ) are no longer used in the WAIS-IV. A General Ability Index (GAI), derived from the three core subtests on each of the VCI and PRI scales, can also be calculated as an optional composite score the WAIS-IV provides an overall score of general intellectual ability termed the Full-Scale Intelligence Quotient (FSIQ). The four index scores introduced with the WAIS-III [50] were also maintained: Verbal Comprehension Index (VCI), Perceptual Reasoning Index (PRI; formerly Perceptual Organization Index), Working Memory Index (WMI), and Processing Speed Index (PSI). The Verbal Intelligence Quotient (VIQ) and Performance Intelligence Quotient

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WECHSLER'S ADULT INTELLIGENCE SCALE

WAIS-IV provides an overall score of general intellectual ability termed the Full-Scale Intelligence Quotient (FSIQ). The four index scores introduced with the WAIS-III [50] were also maintained: Verbal Comprehension Index (VCI), Perceptual Reasoning Index (PRI; formerly Perceptual Organization Index), Working Memory Index (WMI), and Processing Speed Index (PSI). The Verbal Intelligence Quotient (VIQ) and Performance Intelligence Quotient (PIQ) are no longer used in the WAIS-IV. A General Ability Index (GAI), derived from the three core subtests on each of the VCI and PRI scales, can also be calculated as an optional composite score [43].

CORELATION BETWEEN NIDRA(SLEEP) AND BUDDHI (IQ)

According to Ayurvedic principles, sleep (Nidra) is the primary and most important of four fundamental natural urges that are essential for maintaining health. These four urges also include the need for food, drink, and sexual intercourse. Nidra is sometimes referred to as "Vaishnavi maya," a metaphor meaning "food for the soul," which emphasizes its vital role in sustaining both physical and mental well-being, much like Lord Vishnu, the preserver deity [46].

The combination of comfortable rest and gentle massage (Samvahana) offers a holistic approach to well-being. Lying down alleviates fatigue, balances Vata Dosha, promotes sleep, restores mental clarity (Dhriti), enhances libido, and supports growth. Samvahana complements these benefits with calming, sedative, and aphrodisiac effects, while also balancing Kapha and Vata Doshas [47].

According to Acharya charak Happiness, misery, nourishment, emaciation, strength, weakness, virility, sterility, knowledge, ignorance, life and death -all these occur depending on the proper or improper sleep.

Acharya Vagbhaṭa mentioned in Ashtang Sangraha that Sleep is crucial for a spectrum of human conditions, affecting everything from happiness and misery to physical strength and weakness, virility and impotence, intellectual capacity (wisdom and ignorance), and ultimately, life and death [2].

Acharya Vagbhaṭa mentioned in Ashtang Hridaya that all these are dependent on sleep-happiness, misery, bodily perfection, leanness, strength and weakness, virility and impotence, wisdom and ignorance, life and death [3].

Ayurveda offers practical interventions to enhance Nidra and optimize Buddhi:

Herbs like Brahmi, Ashwagandha, and Shankhpushpi: These medhya (brain-enhancing) herbs improve memory, reduce stress, and regulate sleep patterns by balancing Vata and Pitta dosha.[48]Abhyanga (oil massage) and Shirodhara (pouring warm oil on the forehead): These therapies calm the nervous system and enhance deep sleep, preventing cognitive fatigue [49].

Ayurvedic Mechanism of Nidra and Its Impact on Buddhi

According to Ayurveda, Nidra is primarily governed by **Tamas guna** and **Kapha dosha**, which induce a state of rest and rejuvenation. Balanced Kapha and moderate Tamas are essential for proper intellectual functioning, as they promote calmness, stability, and mental clarity. However, excess **Vata dosha**, characterized by irregularity and dryness, disrupts sleep, leading to Anidra (insomnia) and mental restlessness, ultimately affecting Buddhi (intellect). Ayurveda describes Buddhi as the faculty responsible for grasping (Grahana), retaining (Dharana), and recalling (Smriti), all of which are deeply influenced by the quality of sleep.

Additionally, Sadhaka Pitta, a sub-type of Pitta dosha responsible for intelligence and emotions, is closely linked to Nidra. During sleep, Sadhaka Pitta is regulated, allowing the mind to process emotions, experiences, and learned information effectively. An imbalance in Pitta may lead to excessive dreaming, restlessness, and fragmented sleep, which impairs cognitive clarity.

Modern Perspective: Sleep, Neural Restoration, and Intelligence

Modern research validates the Ayurvedic understanding of Nidra's role in Buddhi. The brain undergoes crucial restorative processes during **deep sleep (NREM Stage 3)** and **REM sleep**, where memory consolidation and emotional processing occur. The glymphatic system, responsible for clearing metabolic waste from the brain, is highly active during sleep, preventing cognitive dysfunction.

Scientific studies have shown that sleep deprivation affects the **prefrontal cortex**, impairing decision-making, problem-solving, and concentration—functions attributed to Buddhi in Ayurveda. Moreover, neurotransmitters like dopamine and serotonin, essential for learning and emotional stability, are regulated during sleep. A disturbed sleep cycle, especially due to an imbalanced circadian rhythm, results in cognitive decline, reduced IQ, and mood disorders.

DISCUSSION

The relationship between Nidra (sleep) and Buddhi (intellect) has been extensively discussed in both Ayurveda and modern science. Ayurveda considers Nidra as one of the three fundamental pillars of life (Trayopastambha), essential for maintaining a balance between the body, mind, and soul. Various samhita mentioned that proper sleep is the foundation for happiness, nourishment, strength, intelligence, and longevity. Disturbed sleep, on the other hand, leads to cognitive decline, emotional instability, and weakened decision-making abilities. Similarly, modern neuroscience recognizes sleep as a vital process for neuroplasticity, memory consolidation, and overall cognitive function.

CONCLUSION

The intricate relationship between sleep (Nidra) and intelligence (Buddhi) is well-documented in both Ayurvedic tradition and modern science. Sleep, recognized as one of the three fundamental pillars of life in Ayurveda, plays a crucial role in maintaining cognitive functions, emotional balance, and overall well-being. It is governed primarily by the Tamas guna and the Kapha dosha, and its disturbances can lead to Vata aggravation, which in turn affects intelligence and mental clarity. Disruptions in sleep, whether due to lifestyle, stress, or environmental factors, are linked to cognitive decline, reduced IQ, and mental health disorders. From an According to Ayurvedic principles, balanced sleep (Nidra), achieved through good sleep habits, diet, and mindfulness, can improve intellect (Buddhi) and memory (Medha). Traditional practices like Samvahana, a regular sleep schedule, and a Kapha-balancing lifestyle may significantly enhance sleep quality and, as a result, cognitive function. By integrating Ayurvedic wisdom with modern scientific insights, individuals can harness the power of restorative sleep to optimize their intellectual potential and overall health. Future research and interdisciplinary studies can further bridge the gap between ancient knowledge and contemporary findings, paving the way for holistic cognitive wellness.

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