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Impact of Nidra (Sleep) on Smriti (Memory)

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Abstract

Acharya Charaka says that Ahara, Nidra and Bramhacharya are three upastambhas of life and play a key role in maintenance of the health and long-life span. Now a day's, few of us are able to get the better sleep to function our best. When mind and indriyas get exhausted, they withdraw themselves from their objects and then individual sleeps. According to Acharya Charak, nidra is considered as Adhaarinaya vega. Acharya Charak also said that the assessment of smriti can be done by the recall ability. Memory is that faculty of the brain by which the data or information is encoded, stored, and then retrieved when needed. Happiness, misery, strength, weakness, nourishment, emaciation, sterility, virility, knowledge, ignorance, life and death, these all are dependent on proper or improper sleep.

Key Words: Adhaarinaya Vega, Memory, Nidra, Satyaa buddhi, Smriti, Trayopasthambha.

INTRODUCTION

The main aim of Ayurveda is to maintain the health of healthy person and cure the diseased one. To fulfill this aim, the theory of trayopastambha has great place, as Acharya Charaka says that Ahara, Nidra and Bramhacharya are three upastambhas of life and play a key role in maintenance of the health and long-life span.¹ Among the three upastambhas, Ahara is mainly related with physical factors and Bramhacharya is mainly related with mental factors while Nidra has psychosomatic approach.²

SLEEP

Now, in this era, few of us are able to get the sound sleep properly that we need. Experts recommend adults to get the sleep of 7-9 hours each night. Although, this may not be possible every night, but it should be the goal. Maintaining our healthy lifestyle, along with getting regular & quality sleep, has been a challenge now a days, especially when we are full of stressed with a work deadline or test.³ So if someone are sleep deprived, there will be the risk of developing a number of serious health issues, such as Obesity, Hypertension, and Diabetes, and then our ability to learn and retain new information may be impaired.³

NIDRA⁴

When our mind and indriyas get exhausted, they withdraw themselves from their objects and then individual sleeps.⁵ Sleep is nothing else but location of our mind in a place unconnected with sensory and motor organs. While we are sleep, our body rests, but our brain, is busy in processing information from the whole day and form memories.

Table 1: Types of Nidra according to Classical Texts

S. No.	Acharya Charaka ⁶	Acharya Sushruta ⁷	Acharya Vagbhatta ⁸
1.	Tamobhava	Tamsi	Kalaswabhawaj
2.	Slesmasamudbhava	Swabhaviki	Amayaja
3.	Manah-sarir srama saambha	Vaikariki	Manah- srama saambha
4.	Agantuki		Sarir srama saambha
5.	Vyadhi-anuvartini		Shleshmaprabhavaj
6.	Ratri-swabhava prabhava		Agantuka
7.			Tamobhava

According to modern science

There are two basic types of sleep:

1. Rapid eye movement (REM) sleep and
2. Non-Rapid eye movement (NREM) sleep

Concept of Samyak Nidra (Proper Sleep)⁴

The sleep caused due to the nature of night is excellent sleep. It keeps every one lively, and nourishes them like mother that's why called as the Bhutadhaatri.⁹ For better knowledge, good sleep is essential.¹⁰ There is no doubt that a good night's sleep makes us feel better. Sleep is important not only for our bodies to rest and recharge, but also for our brain's ability to learn and remember³.

Duration of Nidra

Although no existing classical Ayurvedic references directly state the duration of sleep for different stages of life, they can be logically understood through various references. The stage of childhood is explained as **Kapha**-dominant and naturally produces more sleep which is required for appropriate growth and development. The middle stage of life is **Pitta**-dominant and comparatively less sleep is required. Old age is **Vata**-dominant and in this stage sleep duration naturally decreases.¹¹

Table 2: Recommended Amount of Sleep in Different Stages of Life¹²

S.No.	Age Recommended	Amount of Sleep
1.	Newborn	16-18 hours a day
2.	Pre-school-aged children	11-12 hours a day
3.	School-aged children	At least 10 hours a day
4.	Teens	9-10 hours a day
5.	Adults (including the Elderly)	7-8 hours a day

Guidelines for Better Sleep

Ayurvedic texts have provided guidelines to enhance good sleeping:

- Avoid sleeping on a bed that is not properly covered with sheets and pillows, or is uneven or uncomfortably small.¹³
- Avoid sleeping in the prone position.¹⁴

- The bedroom should be calm, neat and clean, with clean beddings. Comfortable bedding provides quality sleep; and provides good rest and happiness.¹⁵
- The bed should stand at knee joint level, and the mattress should be soft and pleasant.¹⁵
- At the beginning and end of night, i.e., while going to sleep and waking up, one should only think about virtuous acts and avoid all negative thoughts.¹⁵
- Lying down in an easy posture on a comfortable bed removes the fatigue, pacifies or soothes vata dosha, brings sleep and dhriti (lost recollection to the mind), and is much aphrodisiac and conducive for the growth of the body; conversely, if lying down in a contrary manner leads to contrary results.¹⁶⁻¹⁷
- During hot climates, sleeping at a cool breeze is refreshing, also keeps flies & mosquitoes away, arrests perspiration, removes the fatigue, fainting and fits.¹⁶
- Samvahana (mild massage) is tranquillizing, pleasant and aphrodisiac. It destroys the bodily kapha and vata doshas, removes the fatigue and soothes the skin, blood and muscles.¹⁶
- Sleeping at cot mitigates all the three doshas (vata, pitta and kapha), at swing mitigates the two doshas, kapha and vata, at the ground makes the body stout and works as an aphrodisiac, while at wooden planks aggravate vata dosha. In general sleeping on the ground is not preferred, and some authors opine that it causes great increase of vata and dryness, but mitigates aggravation of pitta and asra (blood).¹⁷
- One should not sleep during the day time and keep awake during night. Doing both of these is injurious to health. One should keep moderation in sleep.

Benefits of Nidra⁴

Sukh (Happiness), Dukh (misery), Pushti (nourishment), Karshya (emaciation), Bala (strength), Abala (weakness), Klaibya (sterility), Vrisha (virility), Gyan (knowledge), Agyan (ignorance), Jivita (life) and Ajivita (death), all are dependent on proper or improper sleep. Untimely sleep and excessive sleep take away both happiness and longevity like kaala ratri i.e., fierceful night. At the same time if properly enjoyed, they bring about happiness, longevity to human being as real knowledge i.e., satyaa buddhi brings about siddhi to yogi.¹⁸

Asamyak Nidra (Improper sleep) will lead to different diseases like:⁴

- Halimaka (type of jaundice)
- Shirojaadya (Headache)
- Gurugaatra (Heaviness of the body)
- Jwara (Fever)
- Bhrama (Giddiness)
- Matibhramsa (Mental disturbances)

- Shrotorodha (Obstruction of channels)
- Agnimanda (Diminution of agni)
- Shopha (Oedema)
- Aruchi (Tastelessness)
- Hrillas (Nausea)
- Pinas (Rhinitis)
- Ardhabhedak (Migraine)
- Kandu (Itching)
- Ruka (Body ache)
- Kotha (Urticaria)
- Pidaka (Ulcers)
- Kaasa (Cough)
- Tandra (Drowsiness)
- Galaamaya (Disease of throat)
- Vishavega pravritti (Features of poisoning)¹⁹

Table 3: Sleep Patterns and Diseases

S.No.	Sleep Pattern	Diseases
1.	Day sleep	Sthaulya (obesity), ²⁰ Kaphaja jvara (a type of fever due to kapha dosha), ²¹ Kaphaja arsha (a type of haemorrhoids), ²² Visarpa (a type of skin disease), ²³ Vatarakta (correlated with gouty arthritis) ²⁴
2.	Sleep in excess	Antahvidradhi (internal abscess) ²⁵
3.	Sleeping in daytime and keeping awake in night	Shiroroga(diseases of head), ²⁵ Nijashotha (oedema) ²⁶
4.	Sleeping with face down	Mukha roga (diseases of mouth) ²⁷
5.	Untimely sleep pattern	Ajirna (indigestion) ²⁸
6.	Sleeping in uncomfortable bed, staying awake in the	Vata vyadhi (diseases due to vata dosha) ²⁹

	night and sleeping during daytime	
7.	Comfortable sleep for a long time	Prameha (group of urinary disorders), ³⁰ Madhumeha (diabetes mellitus) ³¹
8.	Staying awake at night	Kshaya (emaciation), ³¹ Pratishyaya (catarrh) ³²

Nidra Is Considered as Adhaarinaya Vega³³

According to Acharya Charaka, features of suppression of nidra: Jrimbha (Yawning), Angamarda (Body ache), Tandra (Drowsiness), Shiroroga (Diseases of head), and Akshigaurav (Heaviness of eyes). The condition should be treated with Swapna (sleep) and Samwahan (massage of the body).³⁴ According to modern science, without adequate sleep, our brain becomes foggy, our judgment becomes poor, and our fine motor skills hindered³.

SMRITI³⁵

In Ayurveda, the concept of Smriti is more related with Atma, Mana, Medha and Buddhi. Mana plays an important role in the process of retention of knowledge and it also coordinates the external environment with the brain through the different Gyanendriyas (sense organs). Buddhi is a powerful entity which retains the specific knowledge or the outcome of texts gained by reading, listening or repeating it. Retention of cognition takes place under the area of Medha. Smriti helps the mind to recollect the reference of any objects on the basis of concept made in past experiences.³⁶ Remembrance, memory or calling of mind is called smriti³⁷. It is the ability to recall the past experiences. According to Charak, the assessment of smriti can be done by recall ability-“Smriti Smarnena”.³⁸

Definition of Smriti According to Different Acharyas

- Vayupuran: The seers who constantly think about the spiritual object have written in brief called as Smriti.³⁹
- Vaisheshika philosophy: Smriti is said to be the results from a particular conjugation between self, mind and latent impressions.⁴⁰
- Acharya Vyasa explains memory as the retainable subject with the knowledge and the experience of this as the initiation of impression. The experience of the subjects leads to arousal of memory.⁴¹

- Yogavasishta describes recalling some of the special features of an objects which has been previously experienced is called as Smriti.⁴²
- Sabdhakalpadruma mentions, thinking about already experienced object, person etc. is Smriti which leads to vibrations, state or trance, tears, sigh etc.⁴³
- Acharya Charaka quotes recalling of a thing through hearing, or direct perception or earlier experienced with concentrated mind is called as Smriti.⁴⁴
- Chakrapani comments Smriti as the ability to recollect the past knowledge.⁴⁵
- Acharya Sushruta decodes remembrance of previous experience of object as Smriti.⁴⁶
- In Tarkasangraha, remembrance by previous experience is said to be Smriti.⁴⁷

Philosophical Aspect of Smriti:

According to Acharya Charaka recalling of Tatwagynana (philosophy) is known as Smriti⁴⁸ and a person having Smriti will not only be free from roga (Disease) but will also attain moksha (salvation).⁴⁹ Smriti is one of the reason for both pravritti⁵⁰ (attachments) and nivritti⁵¹ (detachments) which is nothing but dukha (misery) and sukha (happiness) respectively.⁵²

Smriti Utpatti Karana (Causative factors for the memory):

Two factors are said to be responsible for the function of Smriti.

1. Abhyantara Karana (Intrinsic factor): The Sannikarsha of Atma, Manas, Indriya (Sense organs) and Indriyarthas (Object of Sense) are responsible for Smriti.⁵³
2. Bahya Karana (Extrinsic factor): Acharya Charaka has explained 8 factors⁵⁴, the repeated practice of these will improve Smriti. They are as follows, i. Nimitta Grahana (Reaction to caused effects), ii. Rupa Grahana (Perception similar shape objects), iii. Sadrushya (Similarity), iv. Saviparyaya (Contrast), v. Satvanubandha (Attention), vi. Abhyasa (Repetition), vii. Gyanayoga (Divine knowledge), viii. Punah Shruta (Repeated hearing).

Smriti Utpatti (Memory Process):

The process of Smriti is not mentioned directly in Ayurveda. But it has been mentioned in scattered manner in various texts. According to Chakrapani, Pragya (Wisdom) can be acquired by means of three entities i.e., Dhi, Dhriti and Smriti.⁵⁵ Process of Smriti initiates with the perception of the object or subject by Indriya. Indriya carries perceived object or subject to Manas. It passes through the Mana Vishaya (Functions of mind) Viz: Chintana (Thinking), Vicharya (Analysing), Uhya (Reasoning) and get certain form i.e. Buddhi. Then it is sent to Atma. After the knowledge is known by Atma, action will be performed if necessary otherwise it is stored as Medha (Retentive Faculty). In future any similar stimuli strikes, the recollection occurs i.e. called Smriti⁵⁶ In contemporary science,⁵⁷ the three main processes involved in memory production are encoding, storage and recall (retrieval).

Doshas Involved in Smriti Utpatti:

Many Doshas are involved in Smriti utpatti, they may act directly on Smriti or helps for it by acting on Mana, Indriya, Buddhi. Doshas and their action.

1. Prana Vata- Control and stimulation of Mana to analyse the entire perception and action projected to Karmendriyas (organ of action).⁵⁸
2. Udana Vata- Responsible for Smriti.⁵⁹
3. Vyana Vata- Stability and concentration of Mana⁶⁰⁻⁶¹.
4. Sadhaka Pitta- Responsible for mental faculties like Buddhi, Medha.⁶²
5. Tarpaka Kapha- Nourishes the Indriyas and helps in perception.⁶³

Psychological Approach to Smriti ⁶⁴

The methodology applied to attain the knowledge is as follows⁶⁵

- The Supreme soul conjugates with the mind; and mind with respective sense organs ultimately attaining the objective of acquiring knowledge. Then the knowledge thus acquainted can be reproduced only when one has the ability to recollect the piece of information acquired.
- The four factors that are responsible for the mental faculty of the progeny are the mental faculty of parents, and the sounds that is heard repeatedly by the pregnant mother, and the actions that are performed by the embryo in his previous life and the frequent desires for a particular type of mental faculty by the progeny in his previous life. These are the reasons for the variability in the psychic temperaments among all the individuals ⁶⁶.
- The factors responsible for procreation as in the shad garbhakara bhavas ; Smriti is a factor derived from both atma ⁶⁷ and satva ⁶⁸.
- The statement that ‘manifestation of manas occurs during 5th month of pregnancy in the foetal body’ indicates the coexistent nature of mind and body⁶⁹.
- Smriti is an attribute destined to atma ⁷⁰or smriti is one among the 16 qualities that are told as the proof for the existence of atma ⁷¹

Physical Approach to Smriti

One among the three principal and fundamental causative agents in the manifestation of diseases in general as postulated in Ayurveda is prajnaparadha⁷².The memory goes astray due to the person being overcome by Rajas and Tamas, the two factors responsible for psychological disorders. Smriti is implicated specifically in two major psychological disorders like insanity (unmada) and epilepsy (apasmara).In unmada, it is perverted smriti

(smritibhramsa)⁷³ while in apasmara there is momentary departure of smriti (smritinasa)⁷⁴ Memory is counted among the four qualities to be possessed by the patient which serve as an aid to a successful treatment⁷⁵. True to its tradition, Ayurveda has applied this concept of smriti in the management of diseased states. It is considered one among the major therapeutic approaches in psychological disturbances⁷⁶. Smriti is also implicated in the prevention of exogenous diseases⁷⁷.

Memories

Memory is that faculty of the brain by which data or information is encoded, stored, and retrieved when needed. It is the retention of information over time for the purpose of influencing future action.⁷⁸

There are different types of memories. Some are fact-based, e.g. remembering the name of state capitals. Some are episodic—that are based on events in your life, and some memories are procedural or instructional – e.g. how to ride a bike or play the piano.³

Making memories³

Three functions must occur, for formation of memories:

- **Acquisition** -- learning or experiencing something new.
- **Consolidation** -- the memory becomes stable in the brain.
- **Recall** -- having the ability to access the memory in the future. Each step is necessary for proper memory function. Acquisition and recall occur during wakefulness, but according to research, memory consolidation takes place during sleep through the strengthening of the neural connections that form our memories.

What Happens When You Sleep?³

Scientists don't know exactly how sleep enhances memory, but it appears to involve the brain's hippocampus and neocortex—the part of the brain where long-term memories are stored. Studies suggest that healthy sleep facilitates neural plasticity that is thought to underlie the consolidation of newly acquired and initially unstable memories.⁷⁹ It is thought that during sleep, the hippocampus replays the events of the day for the neocortex, where it reviews and processes memories, and then it last for the long term. Researchers continue to investigate the stages of sleep involved in making certain types of memories. Studies have shown that certain kinds of memories become stable during rapid eye movement (REM) sleep -- the time when we dream. Other studies have found that some types of memories are most often secured during slow-wave, deep sleep. Scientists are getting closer to understanding what sleep does to our brain, but there are still many questions to be answered.

The Learning Process and Sleep⁸⁰

Healthy sleep is essential for optimal learning and memory function. Sleep, learning, and memory are complex phenomena that cannot be completely understood. Researchers believe that the quality and quantity of sleep affects learning and memory in two ways: **First**, a sleep-deprived person cannot pay attention optimally and so cannot learn efficiently. **Second**, sleep itself plays role in the consolidation of memory (make it stick), which is essential for learning new information.

The Impact of Sleep Deprivation on Learning and Performance⁸⁰

Without adequate sleep and rest, over-worked neurons can no longer function to coordinate information properly, and so we lose our ability to access previously learned information and our interpretation of events may be affected. We also lose our ability to make sound decisions because no longer we can accurately assess the situation, plan accordingly, and choose the correct behavior. Judgment becomes impaired. Being chronically tired to the point of fatigue or exhaustion means that we are less likely to perform well. Neurons do not fire optimally, muscles are not rested, and the body's organ systems are not synchronized. Lapses in focus from sleep deprivation can even result in accidents or injury. Studies involving memory tests show that after a single night of sleep, or even a nap, people perform better, whether on a test, in the office, on the athletic field, or in a concert hall.

Discussion: - Nidra is source of sukh, dukh, and strength as well as it is directly proportional to swasthya and smriti. It is as important as food. Imbalance in Nidra cause imbalance in our daily life. Healthy soul lives in healthy body. So, to keep our soul and body healthy, Nidra is needed. Mental health is dependent on our physical health and vice-versa. So to be physically and mentally healthy, Nidra is prime necessity. To make our life fruitful and easier Nidra is important. It acts as medicine for sick and as immunity booster for healthy. Various studies have been done which shown that how Nidra can alter our memories and mental health. Also improving Nidra will improve our cognitive behavior, memory, awaken our sensation to grasp the knowledge. Night awakening interfering on physical as well as mental health and comfort of persons and leads to substantial influence on the *Manasika Bhavas*; Fluctuations in *Medha*, *Vignyana*, *Avasthana*, *Shraddha*, *Veerya*, & *Smriti* leads to the incapability to start work, diminution output and psychological conflicts which can ultimately causes errors and fates⁸¹.

Conclusion

Classical Ayurvedic literature contains detailed descriptions of sleep and its constructive effects on health, along with the deleterious consequences of improper sleep. Low-quality sleep and sleep deprivation also negatively impact mood, which has consequences for learning. It is clear that a good night's rest has a strong impact on learning and memory. Many of these facts have been proven with modern scientific research, but additional

work is certainly required to understand the entire phenomenon. Adopting the principles of Ayurveda for good sleep are the best ways to encourage healthy sleep and a healthy life.

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