

PHYSIOLOGICAL IMPACT OF SLEEP ON PHYSICAL AND MENTAL HEALTH

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ABSTRACT

The Ancient Ayurvedic classics describe Nidra as one of three key life milestones, alongside Ahara and Brahmacharya. Nidra is an extremely crucial part of daily life. Regular nidra use can avoid severe disorders affecting both physical and mental health. All three members of this Ahara (Eating), Nidra (Sleeping), and Brahmacharya (Good behavior) make up a major trio. The three have been considered as Upastambha or the foundation of life and health. Nidra is one of the most important aspects in maintaining life. Proper sleep can eliminate half of ailments. Getting a good night's sleep improves digestion and nourishes the body. Regular practice of nidra can promote longevity, memory retention, and overall wellness. Unscheduled Nidra can lead to major physical and mental health issues.

KEYWORDS: Nidra, Upastambha, Physiology of sleep, Sleep effects.

INTRODUCTION

The science of life, Ayurveda, has listed a number of principles for human well-being. The following quotation highlights the two fundamental goals of Ayurveda: *Atura vikara prashanam* (Disease healing) and *Swasthasya swastha rachanam* (Prevention of disease).^[1]

An individual sleeps for around one-third of their life on average. A good night's sleep is essential for both happiness and health. Sleep is in charge of several vital physiological adjustments to preserve the best possible health and function.^[2] According to Ayurveda, getting enough sleep, or Nidra, is essential to living a happy and healthy life. It is one of the three major supporting pillars (Trayopastambhas) that are essential to one's health. Acharya

Caraka asserts that the concept of Triupasthambha is crucial to accomplishing Ayurveda's life purpose, which is the prevention of disease. He states that Ahara, Nidra, and Bramhacharya are the three Upastambhas of life, and that they are necessary for preserving good health and a long life. Acharya Caraka asserts that Ahara, Nidra, and Bramhacharya are the three Upastambhas of life and that they are necessary for preserving good health and a long life. He believes that the concept of Triupasthambha is crucial for accomplishing Ayurveda's purpose of life, which is the prevention of sickness.^[3]

Definition -Sleep is a state of rest accompanied by altered level of consciousness and relative inactivity and perception to environment are decreased.^[4] Maharshi Patanjali gave clear cut definition of Nidra as, Sleep is the mental operation having the cognition of absence for its grasp. It is a state of unconsciousness, but the consciousness remains about his own unconsciousness.^[5] When along with Manas, Indriyas gets retired from their object of knowledge it is called as Nidra.^[6]

Sleep and Its relation with health

Life is difficult and confusing, with ups and downs being a typical part of it. To succeed, everyone must prioritize three key areas. To be happy and healthy in terms of sleep, nutrition, and exercise. According to Acharya Sushruta, getting enough sleep at the right time will prevent diseases, improve mental health, increase strength and virility, improve physical appearance, and lead a healthy life for 100 years.^[7] Nidra is prime among the factors responsible for sustenance of life. Getting enough sleep improves digestion, improves Kayagni, and promotes overall well-being. sustenance for the body. During profound sleep, the body releases growth hormones to promote healing and growth, This helps with cell healing. Healthy new cell growth tissues and organs of the body.^[8] Proper sleep leads to happiness, nourishment, strength, virility, knowledge and long life. Improper sleep may act as cause for misery, emaciation, weakness, sterility, ignorance and even death.⁹ According to Charakacharya, leanness can be treated with Nidra (Enough sleep) and a balanced diet. Proper sleep makes a. Varaha (boar) is a fatty lean person.^[10]

Types of nidra according to different acharyas

Acharya charaka^{[11][6]}

1. Tamobhava
2. Sleshmasamdbhava
3. Manasharira shrama sambhava

4. Agantuki
5. Vyadhyanuvaritini
6. Ratriswabhavaprabhava

Acharya sushruta^{[12][3]}

1. Vaishnvi
2. Vaikariki
3. Tamsi

Acharya vagbhatt^{[13][7]}

1. Tamobhava
2. Amayakhedprabhavja
3. Chittakhedaprabhavaja
4. Agantuki
5. Kaphaprabhavaja
6. Dehakhedaprabhavaj
7. Kalasvabhavaja

Physiology of sleep

Sleep happens when the mind is worn out. According to Howell, cerebral ischaemia is the cause of sleep. The pre and post central gyrus and associated area, among other higher centres, are located in the cerebral cortex and are correlated with the mental activities mentioned in Ayurveda. Therefore, because of the decrease in cerebral blood flow, the mind becomes tranquil, which promotes sleep.^[14] According to modern text the interaction of two primary networks of nerve cells, in the upper portion of the pons and in the midbrain, which produce acetylcholine as their neurotransmitter (NT), transmits signals to the thalamus to activate it, keeps the brain aware throughout wakefulness. The cerebral cortex is then stimulated, which results in an Electroencephalography (EEG) pattern that is indicative of waking up. The cholinergic nerve cells, thalamus, and cortex are in a state that resembles wakefulness during Random Eye Movement (REM) sleep, but the brain is actually experiencing sleep. Three sets of nerve cells in the top region of the brain stem provide the distinction. The nerve cells that contain the neurotransmitter – nor-epinephrine, histamin, serotonin etc. Two types of nerve cells in the hypothalamus govern the brain stem cells that control arousal. The ventrolateral pre- optic nucleus houses a collection of nerve cells that release inhibitory NT and GABA. The suprachiasmatic nucleus, which regulates the body's circadian rhythm, has a significant

impact on the sleep cycle. The clock genes in the hypothalamus' nerve cells cycle through a biochemical cycle that includes nearly 24 hours of sleep, hormone production, and other body processes.^[15]

Physiological changes during sleep

During sleep most of the body functions are reduced to basal level. Following important changes in body during sleep:-

1. Plasma level- decreases by 10%.
2. Heart rate- varies between 45-60 beat per minute.
3. Blood pressure-systolic pressure falls to about 90 to 110 mm Hg. Lowest level is reached about 4th hour of sleep and remains at this level till a short time before waking up.
4. Respiratory system:- Rate and force of respiration are decreased.
5. Gastrointestinal tract:- Salivary secretion decrease during sleep. Contraction of empty stomach is much vigorous.
6. Excretory system:- Formation of urine decreases and specific gravity of urine increases.
7. Sweat and Lacrimal secretion:- Sweat secretion increase during sleep. Lacrimal secretion decreases during sleep.
8. Muscle tone and reflexes:- Decreases very much during sleep.
9. Effects on the nervous system.^[16]

Sleeping at night promotes the balance of the body's components (Dhatusamya), alertness, and clear vision. Healthy skin and strong digestive function.^[17] According to Acharya Sushruta, those who get enough sleep at the correct times won't get sick, because their thoughts will be calm and collected; they'll acquire potency and gorgeous features; they won't become weak or obese. They'll enjoy long, durable lives.^[18]

Impact of improper sleep on health

One should not indulge in both untimely sleep and excessive sleep as these will take out both happiness and longevity of life.^[19] Awakening at night can cause bodily dryness, potentially leading to malnutrition. While day sleep boosts the Snigdhatwa. (Unctuousness) in the body, which may be a cause for Overnutrition leads to obesity. But sleeping in. Sitting posture during the day does not increase. Rukshata (Dryness) or Snigdhatwa, so may not Cause neither emaciation nor obesity.^[20] Research done by the national sleep foundation indicates that more than 35% of adult get less than the optimal 7 to 8 hour of sleep everyday. Improper sleep can be defined as untimely, excessive, or sleepless. All of these things contribute to the disorders

listed above. It is One of the non suppressible urges, if regulated causes numerous diseases.²¹ Lack of sleep affects function of central nervous system. Prolonged wakefulness is often associated with progressive malfunction of the thought process and even causes abnormal behavioural activities. The whole day is divided into two parts in that night is reserved for Nidra and day is for Karma.^[22] The natural cycle of physical mental and behaviour changes that the body goes through in a 24 hour cycle is circadian rhythm. Trying to stay awake outside of our circadian rhythm might negatively impact our mental and physical function. diminishes. Those working night shifts may experience the consequences of a disturbed circadian rhythm. Such as excessive drowsiness, poor sleep, and loss of concentration, poor motor control, sluggish reflexes, Nausea and irritation. Research demonstrates that shift. Workers may have reduced performance, awareness and may be predisposed to accidents. There's also Evidence that sleeping in the middle of the night shift may help.^[24]

CONCLUSION

Sleep is the most important aspect in survival. Getting enough sleep promotes both physical and mental health. healthy individual will become a patient if they don't get enough sleep. In the beginning, it's not a big deal. But later on it causes various health issue. So sleep, much like food, plays an crucial part in the sustenance of the organism. Half of the Proper sleep can help treat ailments.

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