

CONCEPTUAL STUDY OF ROLE OF NIDRA AS AN IMMUNITY BOOSTER

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ABSTRACT

BACKGROUND: *Nidra* is an important phenomenon which provides rest and relaxation to the body, mind and senses after getting tired and exhausted. It prevents from getting sick. It is believed that, chronic sleep deprivation can lead to many diseases as it having major role in adaptive immune response. **OBJECTIVE:** To explore the role of *Nidra* as an immunity booster. **MATERIAL AND METHODS:** Information from *Brihatrayee* as well as from internet media related to *Nidra* and role of *Nidra* in immunity were reviewed. Discussion of the study is built on the basis of evidences gathered from the literature reviewed and presented under the heading namely types of *Nidra*, physical and mental health associated with *Nidra*, role of *Nidra* in improvement of illness or as immunity booster and other positive changes in human health. **RESULTS:** Literary study showed that, active anabolism and passive catabolism in the *Nidra* helps to repair body damage at cellular level. Also, *Bala*(strength), *Ojas*(vitality), etc. which are the utmost vital parts in building immunity are dependent on proper *Nidra*. **CONCLUSION:** Adaptation of proper sleeping habits which are stated in *Brihatrayee* is essential for healthy body and immunity. Sleep history of individual plays an integral part in treatment of disease as well as in perception and judgment of one's health. Hence it proves the role of *Nidra* as an immunity booster.

Key Words: Immunity, *Nidra*, Sleep, *Vyadhikshamatva*.

INTRODUCTION: *Ayurveda* is a science which gives importance to prevention and promotes healthy lifestyle. In this regards *Ayurveda* has quoted the three supporting sub-pillars or tripod of life for one's health as *Ahara*, *Nidra*, *Brahmacharya*¹. Among this *Nidra* is an important pillar of life that if not taken properly can cause severe diseased conditions. Due to urbanization and change in lifestyle people are giving least importance to sleep which influences both physical and mental wellbeing. Sleep is the most significant human behavior, occupying roughly one third of human life. *Nidra* is considered as a state in which there will be no desire. It is

mentioned as “*Bhutadhatri*” as it nourishes us². It is also called as “*Vaishnavi*” indicating that *Nidra* provides nutrition to maintain good health like Lord *Vishnu* who nourishes and sustains this world³. *Nidra* is essential phenomenon to provide rest and relaxation to the body, mind and senses which get tired and exhausted. *Acharya Vaghbhata* quoted the importance of sleep in “*Balapushtikar*” i.e it gives strength and immunity. When it comes to health, sleep plays an important role, while more sleep won't necessarily prevent you from getting sick, skipping on it could adversely affect your immune system⁴. *Ayurveda* also counts *Nidra* one

of 13 *Adharniya Vegas* causing *Moha* (confusion), *Murdhni – Akshi Gaurav* (eye heaviness), *Alasya* (laziness), *Jrumbhika* (yawning) and *Angamarda* (body ache)⁵.

According to modern science, sleep and circadian system exerts a strong regularity influence on immune functions⁴¹. Investigations of normal sleep wake cycle showed that, immune parameters like numbers of undifferentiated naïve T cells and production of pro-inflammatory cytokine exhibit peak level during early nocturnal sleep⁴¹. Sleep facilitates the extravasation of T cells and their possible redistribution to lymph nodes⁶. The adverse effect of chronic sleep deprivation compromise and enhanced risk for various diseases as a consequence of the persistent low-grade systematic inflammation on the one hand, as well as manifest immunodeficiency characterized by an enhanced susceptibility to infections and reduce immune response to vaccination on the other hand⁷. This is how sleep has major role in adaptive immune response.

In this research effort has been made to explore the role of *Nidra* (sleep) as a booster in person's immunity.

MATERIAL AND METHODS

This research being conceptual study about role of *Nidra* as an immunity booster and maintaining healthy status; the information obtained from the *Brihatrayee* as well as from research journals having similar keywords were explored and obtained data was studied to understand different aspects of *Nidra* i.e., sleep and its relevance in maintaining health as well as adaptive immunity.

OBSERVATIONS AND RESULTS

DEFINATIONS OF NIDRA

- According to *Acharya Charaka*, when the mind as well as soul gets exhausted or becomes inactive along with sensory (*Gnyanendriya*) and motor organs (*Karmendriya*) then the individual gets sleep⁸.
- Acharya Sushruta* described the sleep occurs when the *Hrudaya*; the seat of *Chetana* is covered by *Tamas*³.
- Acharya Vagbhata* stated that, when mind losses its connection with sense organs because of fatigue and the *Manovaha Strotas* being accumulated with *Shleshma*, then individual falls asleep⁹.

Types of Nidra

General classification

1. *Svabhavika* (natural sleep)

2. *Asvabhavika* (abnormal sleep)

Table. 1 Classification of Nidra according to Brihatrayee 10,11,12

<i>Acharya Charaka</i> ¹⁰		<i>Acharya Sushruta</i> ¹¹		<i>Acharya Vagbhata</i> ¹²	
Type of <i>Nidra</i>	<i>Dosha</i>	Types of <i>Nidra</i>	<i>Dosha</i>	Type of <i>Nidra</i>	<i>Dosha</i>
<i>Tamobhava</i>	<i>Tama</i>	<i>Tamasi</i>	<i>Tama</i>	<i>Tamobhava</i>	<i>Tama</i>
<i>Shleshmasamudbhava</i>	<i>Kapha</i>	<i>Svabhavika</i>	Manifests naturally	<i>Kaphabhava</i>	<i>Kapha</i>
<i>Manasharama Sambhava</i>	Mental stress	<i>Rajasika</i>	<i>Rajoguna</i>	<i>Dehakhedaja</i>	Fatigue of body
<i>Shareer sharama Sambhava</i>	Physical exertion	<i>Satvika</i>	<i>Satvaguna</i>	<i>Chittakhedaja</i>	Fatigue of mind
<i>Agantuki</i>	Bad disease prognosis	Absence of <i>Nidra</i>	Diseased body and mind	<i>Agantuki</i>	External factors

<i>Vyadhi-anuvartini</i>	Complication of disease			<i>Kalaswabhavaja</i>	Nature of time
<i>Ratri swabhavaja</i>	Nature of night			<i>Amayaja</i>	Effect of disease

Classification According to Modern Science

Sleep can be classified as¹³

1. Rapid eye movement (REM) – altered consciousness relatively inhibited sensory activity, reduced muscles activity, inhibition of nearly all voluntary muscles and reduced interactions with surrounding with active brain patterns and more dreams.
2. Non rapid eye movement(non-REM) – dreamless sleep with slow breathing and slow heart rate, here sleeper is still.

BENEFITS OF SLEEP

Properly and timely taken sleep bring the happiness, nourishment, strength, virility, knowledge and maintains the life. As *Yogi* attains *Siddhi* by real knowledge, human being achieves longevity by properly taken sleep¹⁴.

Proper sleep also provides strength, enhances skin texture, increases appetite, it eliminates laziness of person and helps to attained *Dhatusamyata* (a complete homeostasis of body tissues/proper formation of body tissues) in persons body¹⁵.

Acharya Charaka also state that, one who wants to gain his weight if practice more sleep will be get as strong as *Varaha*¹⁶ (Pig).

IMPORTANCE OF SLEEP

According to *Acharya Charaka* following dealings of life are dependent on *Samyakss Nidra*¹⁷ - *Sukha* (pleasure), *Dukkha* (sadness), *Pushti* (nourishment and growth), *Karshya* (thinness), *Bala* (strength and immunity), *Vrushata* (potency and sexual vigor), *Kleebata* (infertility and impotency), *Gyanam*

(knowledge and intellect), *Agyanam* (illiteracy) and *Jeevitam* (good life span and longevity of life).

From above quotation it is evident that, by what means sound and timely taken *Nidra* plays an important role in one's immunity and longevity of life. Excess or less amount of sleep leads to physical as well as psychiatric problems. Large prospective cohort studies have shown that short sleep is associated with higher risk of mortality¹⁸.

Physiology of Nidra

When *Mana* (mind) is exhausted and got tired by its continuous work and withdraws its connection from senses; the sleep occurs¹⁹. This phenomenon can be similarly understood as - according to Howel, sleep is due to cerebral ischemia²⁰. Cerebral cortex is the seat of higher centers like pre- and post-central gyres, association area etc., which have the correlation with mental activities described in *Ayurveda*. So due to reduction in cerebral blood supply *Mana* becomes *Klanta* which leads to sleep²¹.

Further during sleep *Indriyas* become inactive by the detachment form their sense organs or form their work.

Nidra Sevan Kala

A *Ratrisvabhava Prabhava Nidra* (natural sleep due to effect of night) is recommended as a good sleep in *Ayurveda*. *Acharya Kailadeva* has been further advised to avoid the sleep during the first and last part of night and have indirectly stated the ideal time for sleeping is after first two *Yama* (approximately six hours) of sunset²².

Table. 2: General Recommendation of Sleep for Different Age Groups²³

AGE	RECOMMENDED AMOUNT OF SLEEP
New-born	16-18 hrs a day
Pre-school children	11-12 hrs a day
School aged children	at least 10 hrs a day
Teens	9-10hrs a day
Adults	7-8hrs a day

DISADVANTAGES OF ANIDRA /RATRI JAGARAN / NIDRAVEGDHARAN (Night awaking)

Nidra is one among the 13 *Adharniya Vegas* (natural urges)²⁴. *Nidra Vegdharan* causes various *lakshanas* which is subsequently turns into various diseases which are- *Moha* (confusion), *Murdhni-Akshi Gaurav* (heaviness of head and eyes), *Alasya* (laziness), *Jrumbhika* (yawning) and *Angamarda* (body ache). In general, it causes *Shleshma Kshaya* and increases *Vata Dosha* and pathological conditions associated with them.

DISADVANTAGES OF DIVASWAP (Day time sleeping)

Except *Grishma* (summer) sleeping at the daytime is subdued by *Ayurveda*. *Divaswap* is *Adharma* causes accumulation of all *Doshas* in the body, which subsequently turns into various diseases like- *Kasa* (cough), *Swash* (breathing conditions), *Pratishaya* (cold), *Shiro Gaurav* (heaviness of head), *Angamarda* (body ache), *Arochak* (tastelessness), *Jwara* (fever), *Daurbalya* (weakness) etc²⁵.

CONCEPTS VYADHIKSHAMATVA (Immunity)

- The word *Vyadhi**kshamatva* means *Vyadhi*= disease and *Kshamatva*= suppress or to overcame.
- *Vyadhi**kshamatva* means the factor which limit the pathogenesis and opposes the strength of diseases²⁶.

• *Chakrapanidatta*, in commentary on *Charaka Samhita* explains the *Vyadhi**kshamatva* in two divisions²⁷.

1) *Vyadhi-balavirodhitvam*:

It is the capacity to retain or withstand the strength or severity of the diseases i.e., strength to resist the progress of disease.

2) *Vyadhi-utpadakapratibandhakatva*:

The resisting power of the body is competent to prevent the occurrence and re-occurrence of the disease. The sub-types of *Vyadhi**kshamatva* collectively form the resistance which now a day known as immunity.

BALA AND VYADHIKSHAMATVA

Health of an individual is nothing but good strength of the body tissues. It is difficult to treat the disease of person whose body strength is low²⁸. *Acharya Charaka* prefers individuals *Bala Parikshan* prior to the treatment. They also have stated three types of *Bala*²⁹ i.e.,

1. *Sahajabala*
2. *Kalajabala*
3. *Yuktikritabala*

OJAS AND VYADHIKSHMATVA

Acharya Sushruta mentioned that, the final and excellent essence of *Dhatus* beginning from *Rasa* to *Shukra* is *Ojas* and said to be *Bala*. *Dalhanacharya* commented that, *Ojas* is the cause for predominance of *Bala* of whole body³⁰.

Acharya Vaghbata also supported view of *Acharya Sushruta* and mentioned similar concept which clearly indicates the close

relation between *Ojas* and *Vyadhibhikshamatva*³¹.

IMMUNITY AND ITS TYPES

The immune system in a broad sense is a mechanism that allows a living organism to discriminate between self and non-self. Immunity works by the process of recognition and disposal of non self or materials that enter the body.

It has following types³²

- 1) Innate immunity
- 2) Acquired immunity

Sleep and Health: Sleep and circadian system are strong regulators of immunological process. Our capacity to remain healthy is badly affected by loss of sleep and sense of comfort, physiological framework accompanied by health is badly influenced by poor sleep³³. Our demand for sleep is also increased in most of the ailments³⁴. Active anabolism and passive catabolism in the *Nidra* help to repair body damage at cellular level³⁵.

SLEEP AND IMMUNE FUNCTION

Immune cell migrates and attain peak during the early rest period indicating that there is a fast equilibrium between the blood and lymphatic compartment³⁶. There is evidence pointing to an accumulation of lymphocytes in lymph nodes during nocturnal sleep³⁷.

Sleep and Immunological Memory:

The basic of influence of bidirectional communication between the central nervous system and immune system which is mediated by shared signals (neurotransmitters, hormones and cytokines) and direct innervations of immune system by the autonomic nervous system. Nocturnal sleep, especially SWS prevalent during the early night, promotes the release of GH and prolactin³⁸. The endocrine milieu during early sleep likely promotes the initiation of Th1 immune

responses that eventually support the formation of long-lasting immunological memories³⁹.

Sleep specially enhances the consolidation of neurobehavioral memories whereas encoding and recall usually take place during waking, the transfer of this concept to the immune system would implicate that is also the consolidation phase immunological memory formation which mostly benefit from sleep⁴⁰.

Sleep, Inflammation and Immunodeficiency: Chronic sleep loss is associated with an increase in inflammatory markers and also with immunodeficiency. The immune response to vaccination against influenza virus was diminished after 6 days of restricted sleep⁴¹.

Both acute total and short-term partial sleep deprivation resulted in elevated high-sensitivity CRP concentrations, a stable marker of inflammation that has been shown to predictive of cardiovascular morbidity⁴².

DISCUSSION: Ayurveda have placed *Nidra* in 3 major attributes of life. Urbanization and change in life style have cause loss in awareness of sleep and wake cycle in overall society. There is need to generate the awareness about early rise early to bed mechanism. Our *Acharyas* have stated different benefits of properly observed *Nidra*. It provides strength, helps to attain *Dhatusamyata* (proper formation of body tissue), eliminates laziness, gives *Balapushti* (enhanced immunity), *Dhatupusti* (growth of body tissue) and longevity of life. Three unnatural forms of *Nidra* are *nidravegdrhan*, *Ratrijagarana* and *Divaswap*. They can be considered *Mithya*, *Heena* and *atiyoga* of *Nidra* respectively. *Nidravegdrhana* or *Ratrijagarana* can cause *Mohadi*

lakshanas which are responsible for vitiation of *Vata* and *Kapha kshaya*; which further turns into various pathological conditions associated with them. Balanced *Vata* maintains all the body functions while *Kapha* provides *Sthirata*(stability), *Snigndhata*(unctuousness), *Sandhi bandha* (integrity of bony joints of body) and *Kshama* i.e., *Vyadhi Kshamatva*, tolerance power or immunity. Whereas excessive *Nidra* or day sleeping will cause accumulation of *Kapha* and *Ama* and thereby various pathologies like *Pratishaya*, *Kushta*, *Kandu*, etc. Either the extremes of *Nidra*; excess or less can subsequently cause the imbalance in *Doshas* and will be responsible for the further pathological changes.

Charakacharya have convinced the importance of *Balaparikshan* prior to treatment to understand the course of disease as well the strength of person to overcome the disease⁴³. Person with *Uttam Bala* can deal with *Kashtasadhya* disease with ease where the person with *Heena Bala* will show slower response towards recovery.

Timely taken sleep has positive impacts on adaptive immunity and its prolonged curtailment cause chronic low-grade inflammation and produces immune deficiency, which both have detrimental effect on health. This can lead to increased susceptibility to infection and also reduces the impact of vaccination. Consolidation of neurobehavioral memories to the immunological memories which are encoded and recalled during day time is the benefit of nocturnal sleep. Studies have shown that nocturnal sleep enhances relaxation, increase cell growth, restoration of GH, prolactin and melatonin while there is drop in cortisol, epinephrine, non-epinephrine. Accumulation of lymphocytes

occurs at lymph nodes during nocturnal sleep. However, there is no strong evidence which can state ideal quantity of hours of sleep will be helpful in providing markedly improvement in immunity.

CONCLUSION: *Nidra* is associated with the persons health as well as immune response. There is need to create an awareness about the early rise early to bed phenomenon which have been heard from forefathers. Chronic sleep deprivation leads to *Vata* vitiation and decrease in *Kapha dosha* which is associated with growth and development of body tissue and increase in the immunity to fight against disease. Physician should understand that, individual's sleep history plays an integral part in treatment of disease and in perception and judgment of one's health. Sleep deprived peoples are more likely to get perceived as less attractive, less healthy and more tired as compared to person taking well rest and proper sleep and less likely to get affected by illness. One should adapt and spread the awareness about proper sleeping habits, which will help our body to maintain and restore good immune system. After exploring all the literature one can conclude that *Nidra* plays an important role as an immunity booster.

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