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. 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 us. It is also called as “Vaishnavi” indicating that Nidra provides nutrition to maintain good health like Lord Vishnu who nourishes and sustains this world. Nidra is essential phenomenon to provide rest and relaxation to the body, mind and senses which get tired and exhausted. Acharya Vagbhhta quoted the importance of sleep in “Balapushnik” 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 system. Ayurveda also counts Nidra one
of 13 Adharniya Vegas causing Moha (confusion), Murdhni – Akshi Gaurav (eye heaviness), Alasya (laziness), Jrumbhika (yawning) and Angamarada (body ache). According to modern science, sleep and circadian system exerts a strong regularity influence on immune functions. 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 sleep. Sleep facilitates the extravasation of T cells and their possible redistribution to lymph nodes. 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 immuno-deficiency characterized by an enhanced susceptibility to infections and reduce immune response to vaccination on the other hand. 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

DEFINITIONS 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 sleep.
- Acharya Sushruta described the sleep occurs when the Hrudaya; the seat of Chetana is covered by Tamas.
- Acharya Vagbhata stated that, when mind loses its connection with sense organs because of fatigue and the Manovaha Strotas being accumulated with Shleshma, then individual falls asleep.

Types of Nidra

General classification
1. Svabhavika (natural sleep)
2. Asvabhavika (abnormal sleep)

<table>
<thead>
<tr>
<th>Type of Nidra</th>
<th>Acharya Charaka¹⁰</th>
<th>Acharya Sushruta¹¹</th>
<th>Acharya Vagbhata¹²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamobhava</td>
<td>Tama</td>
<td>Tamasi</td>
<td>Tama</td>
</tr>
<tr>
<td>Shleshmasamudbhava</td>
<td>Kapha</td>
<td>Svabhavika</td>
<td>Kaphabhava</td>
</tr>
<tr>
<td>Mana sharama Sambhava</td>
<td>Mental stress</td>
<td>Rajasika</td>
<td>Rajoguna</td>
</tr>
<tr>
<td>Shareer sharama Sambhava</td>
<td>Physical exertion</td>
<td>Satvika</td>
<td>Satvaguna</td>
</tr>
<tr>
<td>Agantuki</td>
<td>Bad disease</td>
<td>Absence of Nidra</td>
<td>Diseased body and</td>
</tr>
<tr>
<td></td>
<td>prognosis</td>
<td></td>
<td>mind</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Agantuki</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>External factors</td>
</tr>
</tbody>
</table>

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

Sleep can be classified as:
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 sleep.

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 body.

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

**IMPORTANCE OF SLEEP**

According to Acharya Charaka following dealings of life are dependent on Samyakss Nidra 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 mortality.

**Physiology of Nidra**

When Mana (mind) is exhausted and got tired by its continuous work and withdraws its connection from senses; the sleep occurs. This phenomenon can be similarly understood as - according to Howel, sleep is due to cerebral ischemia. 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 sleep.

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 Kaiyadeva 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 sunset.
### Table. 2: General Recommendation of Sleep for Different Age Groups

<table>
<thead>
<tr>
<th>AGE</th>
<th>RECOMMENDED AMOUNT OF SLEEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>New-born</td>
<td>16-18 hrs a day</td>
</tr>
<tr>
<td>Pre-school children</td>
<td>11-12 hrs a day</td>
</tr>
<tr>
<td>School aged children</td>
<td>at least 10 hrs a day</td>
</tr>
<tr>
<td>Teens</td>
<td>9-10 hrs a day</td>
</tr>
<tr>
<td>Adults</td>
<td>7-8 hrs a day</td>
</tr>
</tbody>
</table>

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

*Nidra* is one among the 13 *Adharniya Vegas* (natural urges). *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) etc.

### CONCEPTS VYADHIKSHAMATVA (Immunity)

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

- *Chakrapanidatta*, in commentary on *Charaka Samhita* explains the *Vyadhikshamatva* in two divisions:
  1. *Vyadhi-balavrodhitvam*:
     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-utpadakapratibandhatvam*:
     The resisting power of the body is competent to prevent the occurrence and re-occurrence of the disease. The sub-types of *Vyadhikshamatva* 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 low. *Acharya Charaka* prefers individuals *Bala Parikshan* prior to the treatment. They also have stated three types of *Bala* i.e.,

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

### OJAS AND VYADHIKSHAMATVA

*Acharya Sushruta* mentioned that, the final and excellent essence of *Dhatu* 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 body.

*Acharya Vagbhata* also supported view of *Acharya Sushruta* and mentioned similar concept which clearly indicates the close
relation between *Ojas* and *Vyadhikshamatva*\(^3\).  

**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 types\(^3\):  
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 sleep\(^3\). Our demand for sleep is also increased in most of the ailments\(^3\). Active anabolism and passive catabolism in the *Nidra* help to repair body damage at cellular level\(^3\).  

**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 compartment\(^3\). There is evidence pointing to an accumulation of lymphocytes in lymph nodes during nocturnal sleep\(^3\).  

**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 prolactin\(^3\). The endocrine milieu during early sleep likely promotes the initiation of Th1 immune responses that eventually support the formation of long-lasting immunological memories\(^3\).  

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 sleep\(^3\).  

**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 sleep\(^3\). Both acute total and short-term partial sleep deprivation result ed in elevated high-sensitivity CRP concentrations, a stable marker of inflammation that has been shown to predictive of cardiovascular morbidity\(^3\).  

**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 *Balapushhti* (enhanced immunity), *Dhatupusti* (growth of body tissue) and longevity of life. Three unnatural forms of Nidra are *nidravegdharan*, *Ratrijagarana* and *Divaswap*. They can be considered *Mithya*, *Heena* and *atiyoga* of *Nidra* respectively. *Nidravegdharana* 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 disease. 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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