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## Role of sleep-in immunity: Ayurveda perspective

**Dr Ritesh MD (KRIYA SHARIR),**

Ayurvedic Medical Officer, Ayush Department Haryana

**Dr Sandeep Kumar MD (KAUMARBHRITYA ),**

Ayurvedic Medical Officer, Ayush Department Haryana

**Dr Shital Chinchalkar, MS (Ayu)**

### Abstract

Like proper diet, proper sleep is also essential for the maintenance of good health. Most people these days do not know how much sleep is needed and place themselves and sometimes others at risk for medical problems. Ayurveda is one of the oldest and most successful medical traditions still in use today. Maintaining good health in the healthy and restoring health to the sick are the two primary goals of Ayurvedic medicine. The principles and practices of sleep & immunity mentioned in several traditional Ayurvedic text books including Brihatrayee, Laghutrayee, their commentaries, and published research papers are used as the basis for this review. Dincharya (daily routine), Ritucharya, healthy nutrition, exercise, certain foods like milk, Rasayana's like *Guduchi* (*Tinospora cordifolia*), meditation, Yoga-pranayama, and Achara Rasayana (good conduct of behaviour). are few of the immune moderators recommended by Ayurveda. Unlike the idea of contemporary medicine, which focuses on immunization against a single infectious agent or illness, Vyaadhikshamatva encompasses a far broader notion of generalized immunity in Ayurveda. According to Ayurveda, sleep is one of the important pillars (*upastambha traya*) which sustain life. To better grasp the Ayurvedic stance proper sleep for healthy immune system we provide here a complete analysis of the relevant ancient literature of Ayurveda.

**Keywords:** Immunity, Ayurveda, *Vyadhikshamatva*, *Bala*, *Ojas*, Sleep, *Nidra*.

### Introduction

Ayurveda is one of the oldest and most successful medical traditions still in use today. Nature-based medicine will thrive for centuries to come thanks to its detailed explanation of how the human body is built and how it works in connection to the rest of nature and the forces of the cosmos.

Nidra is an essential phenomenon of life, which affects the physical as well as mental status of an individual. There is a wide description of sleep in Ayurveda as an important part of *traya-upstambha* as well as in context of various disorders. Acharya Charak has described *nidra* in



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chapter of ashtauninditiya purusha in sutrasthana and also included aswapna (loss of sleep) in 80 nanatmajavatavikara<sup>1</sup>. Acharya Sushruta explains it in sharir sthana in the chapter garbha vyakaran shariram; which enlightens its role in nourishment and development of body<sup>2</sup>. Ashtanga sangraha describes nidra and nidravikara in viruddhaanna-vigyaniya adhyaya<sup>3</sup>. Ashtanga hridaya describes it in Annaraksha Adhyaya, while explaining traya-upstambha<sup>4</sup>.

A good, quality sleep provides - Sukha (wellness), Pushti (nourishment), Bala (strength), Vrishata (potency), Jnana (knowledge) and Jiva (life or longevity)<sup>5</sup>.

Mere the enough hours does not contribute to a healthy sleep, it also depends on the timing of sleep. In samhitas day sleep is contraindicated except in summer (grishmaritu). Persons with excessive fat, those who are addicted to taking unctuous substance, those with shlaishmika constitution, those suffering from disease due the vitiation of kapha and those suffering from dushivisha should never sleep during the day time<sup>5</sup>.

Sound sleep at night is a natural and nourishing phenomenon, so it is also called bhutadhatri (nourishes all living beings).

### **Physiology of Sleep as per Ayurveda**

When the mind including sensory and motor organs is exhausted and they dissociate themselves from their objects, then individual sleeps<sup>1</sup>. According to acharya Sushrut, the heart is said to be the primary seat of consciousness in the body. Sleep overcomes a man whenever the heart is enveloped in the illusive effect of tama. Sleep is caused due to tama and it is the quality of sattva that brings on awakening. Mainly swabhava (nature) is the fundamental cause of sleep<sup>2</sup>. According to acharya Vagbhat, sleep is produced by the accustomed time (nights), effect of diseases, fatigue of the mind and body, increase of kapha; external factors and dominance of tamoguna.

### **Effects of Sleep on Body as per Ayurveda;**

Ayurveda considers sleep as the most important component of our physiology. It is one of the three supporting subpillars (upstambha) as mentioned in Ayurveda, the other two being aahara and brahmacharya. The inclusion of Nidra in the three Upastambha itself proves its importance. Happiness, misery, nourishment, emaciation, strength, weakness, virility, sterility, knowledge, ignorance, life and death – all these occurs depending on the proper and improper sleep. The same sleep, if properly enjoyed brings about happiness and longevity in human beings as the real knowledge brings about siddhi in a yogi<sup>6</sup>. Like proper diet, proper sleep is also essential for maintenance of the body. Corpulence and emaciation are specially conditioned by proper or improper sleep and diet<sup>7</sup>.

### **Contemporary views about sleep<sup>8-10</sup>**



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Sleep is the non-deliberate absence of thought-waves or knowledge. Dreamless sleep is an inert state of consciousness in which the sense of existence is not felt. Sleep is a state in which all activities of thought and feeling come to an end. Sleep can be defined as a condition of body and mind which typically recurs for several hours every night, in which the nervous system is inactive, the eyes closed, the postural muscles relaxed, and consciousness practically suspended. As a result, sleep provides the body with the nutrients, strength, sexual drive, education, digestive efficiency, skin tone, and other physical advantages necessary for optimal health. Benefits to one's mind might be summarized as a surge of curiosity, a desire to learn, and overall contentment. Inadequate sleep causes the opposite effect. One must sleep in order to stay alive. In the end, it's a matter of life and death. Sleep is very individual, both in terms of how much and how well it is slept, and in terms of the advantages that come from it.

## Discussion

The circadian rhythm is the biological clock that controls the eating and sleeping patterns of all living things, including humans. The term "circadian" originates from the Latin words "circa," which means day, and "diem," which means about. Together, these words form the English word "circadian." The sleep-wake cycle is something that is naturally regulated by something called the circadian rhythm. The cycle of sleep and wakefulness is governed by the intricate interactions that take place between the immune system, the endocrine system, and the central nervous system<sup>11</sup>.

According to modern physiology, sleep is needed to maintain metabolic caloric balance, thermal equilibrium and immune competence. Sleep is necessary for learning and memory consolidation<sup>12</sup>. Not only the proper hours of sleep are important, but also the good quality of sleep fulfils the healthy body needs.

Sleep is a broad term which affects various bodily functions regulated by it. In today's modern era, it has been a topic of great concern. Due to increased technologies, night shift duties, excessive social networking indulgence, stress etc. there has been some direct or indirect impact on the quality of a healthy sleep which in turn affects the health of an individual.

During sleep body secretes cytokines, which are hormone-like proteins that play a critical role in the control of immune system. Under stress or being attacked by a virus, body requires a much higher quantity of cytokines. Because the levels of cytokines rise during sleep, it follows that a lack of sleep impairs the body's capacity to defend itself against infectious diseases<sup>13</sup>. When a person has an illness of any kind, their body has a tendency to sleep more than usual. According to research conducted by the National Sleep Foundation, an impaired immune system might be the result of long-term sleep deprivation. In a study that was carried out by Ackermann et al., the researchers examined the white blood cell counts of 15 patients when they were either getting a regular amount of sleep or being severely sleep deprived<sup>14</sup>.



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The immune system benefits greatly from the restorative power of sleep. Getting enough hours of high-quality sleep is one way to achieve this well-balanced immune defence.

On the other hand, major sleeping issues, such as sleep disorders such as insomnia, sleep apnea, and circadian rhythm disturbance, might interfere with the immune system's ability to operate normally.

### Conclusion

Like proper diet, proper sleep is also essential for the maintenance of good health. More than a periodic rest condition for the body and nervous system, sleep is a phase during which the body and nervous system can recuperate. Circadian rhythm disharmonies lead to a wide range of modern lifestyle problems and mental illnesses. A well-balanced immune defence is one that has strong innate and adaptive immunity, an effective response to vaccinations, and fewer severe allergy responses. Getting enough hours of high-quality sleep is one way to achieve this well-balanced immune defence. Therefore, it can be concluded that by emphasizing on appropriate routine and timings of the day's natural cycle, the optimum sleep at proper time as per the principles of Ayurveda is very essential for the growth and development of the body and mind.

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