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IMPORTANCE OF PROPER SLEEP FOR MAINTAINING HEALTH

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ABSTRACT

Proper sleep is a part of normal lifecycle of human being. In Ayurveda, *Nidra* (sleep) is considered as one pillar of life. Now-a-days due to changing life style, some occupational causes like night shift, stress, anxiety most of the people have the problem of disturbed sleep. These disorder of sleep adversely effect on daily life as well as physical and mental health. Adults need 7 to 9 hours of sleep per night to maintain proper health. Now a days another cause for disturbed sleep in young generation is excess and unnecessary use of internet and social media. Sleep in late night and sleep in day time disturbs circadian cycle of nature, which effects normal metabolism of the body. Abnormal metabolism is the most common cause of various non communicable disease like, obesity, diabetes, cancer etc. Improper sleep also has bad effect on immune system, which causes various communicable diseases. 7 to 9 hours of sleep in regular time is essential for adults to maintain healthy life.

KEYWORDS: *Nidra, Diwaswapna, Ratrijagarana.*

INTRODUCTION

The three supports of life are *Ahara, Nidra (Swapna), Bramhacharya*, these Supports are designated as *Upasthambha*, which literally means sub-supports.[1] *Nidra* is a special state of mind in which the mind is not associated with any type of *Indriyas* (sensory and motor organs). This detachment from the *Bahya Vishaya* is result from the tiredness of the body as well as mind.[2] Sleep is the natural periodic state of rest for mind and body with closed eyes characterized by partial or complete loss of consciousness. Loss of consciousness leads to

decreased response to external stimuli and decreased body movements. Depth of sleep is not constant throughout the sleeping period. It varies in different stages of sleep.[3] Sleep is defined as unconsciousness from which the person can be aroused by sensory or other stimuli. It is to be distinguished from *coma*, which is unconsciousness from which the person cannot be aroused. There are multiple stages of sleep, from very light sleep to very deep sleep; sleep researchers also divide sleep into two entirely different types of sleep that have different qualities.[4]

Sleep is a physiological process by which bodily functions are periodically rested. During sleep consciousness and power of will are partially or completely suspended and bodily activity generally is greatly reduced. The sleeping brain consumes as much energy as the awake brain and sometimes even more. Thus sleep is considered to be an active state. Sleep differs from alert wakefulness by loss of critical reactivity to events in the external environment; therefore, subject can be aroused by sensory stimulation.[5]

Sleeping between 7 to 9 hours per night appears to be optimal for health in adults aged more than 18 years. Sleeping less than 7 hours is associated with adverse outcomes, including obesity, diabetes, elevated blood pressure, cardiovascular disease, depression, and all-cause mortality as well as physiologic disturbances such as impaired immune function, increased pain sensitivity and impaired cognitive performance.[6]

NIDRA BHEDA (TYPES OF SLEEP)

6 types of *nidra bheda* is described. *Tamobhava* (caused by *Tama*), *Sleshmasamudbhava* (caused by aggravated *Kapha*), *Manah-Sharira Shrama Sambhava* (caused by physical and mental exhaustion), *Agantuki* (Indicative of poor prognosis), *Vyadhi-anuvartini* (caused as a complication of other diseases, *Ratri-Swabhava Prabhava* (caused by the very nature of the night).[7]

BHUTA DHATRI (GOOD AND BAD SLEEP)

The sleep caused by the *Ratri Swabhava Prabhava* is excellent and known as *Bhuta Dhatri* (that nurses all the living beings)

Other types of sleep are just like disease itself.[8]

PHYSIOLOGY OF SLEEP AND WAKEFULNESS

Most adults need 7-9 hours of sleep per night to promote optimal health, although the time, duration and internal structure of sleep vary among individuals. Some have one consolidated sleep episode each night, although in some cultures sleep may be divided into a mid-afternoon nap and a shortened night sleep. This pattern changes considerably over the life span, as infants and young children sleep more than old people, while individuals more than 70 years of age sleep less than adults.

The stages of human sleep are defined on the basis of characteristic patterns in the electroencephalogram (EEG), the electrooculogram (EOG- measure of eye movement activity), and surface electromyogram (EMG – measured on chin, neck and legs). The continuous recording of these electrophysiologic parameters to define sleep and wakefulness is termed polysomnography. This defines two basic states of sleep, Rapid Eye Movement Sleep (REM) and Non-rapid Eye Movement Sleep (NREM). NREM sleep is further subdivided into three stages; N1, N2 and N3.[9]

PHYSIOLOGICAL CHANGES DURING SLEEP

- Heart rate, cardiac output, vasomotor tone and BP decrease.
- Respiratory rate, tidal volume, pulmonary ventilation decrease.
- BMR decreases by 10 to 15%
- Urine volume decreases, while phosphate content and specific gravity increases.
- Salivary and lacrimal secretions decrease
- Sweat secretion increases
- Gastric secretion either remains unaltered or increases
- Muscles are completely relaxed and tone is minimum[10]

PHYSIOLOGIC EFFECTS OF SLEEP

Sleep causes two major types of physiologic effects: first, effects on the nervous system itself, and second, effects on other functional systems of the body. The nervous system effects seem to be by far the more important because any person who has a transacted spinal cord in the neck (and therefore has no sleep wakefulness cycle below the transection) shows no harmful effects in the body beneath the level of transection that can be attributed directly to a sleep wakefulness cycle.

Lack of sleep certainly does, however, affect the functions of the central nervous system. Prolonged wakefulness is often associated with progressive malfunction of the thought processes and sometimes even causes abnormal behavioural activities. We are all familiar with the increased sluggishness of thought that occurs toward the end of a prolonged wakeful period, but in addition, a person can become irritable or even psychotic after forced wakefulness. Therefore, we can assume that sleep in multiple ways restores both normal levels of brain activity and normal "balance" among the different functions of the central nervous system. This might be likened to the "rezeroing" of electronic analog computers after prolonged use, because computers of this type gradually lose their "baseline" of operation; it is reasonable to assume that the same effect occurs in the central nervous system because overuse of some brain areas during wakefulness could easily throw these areas out of balance with the remainder of the nervous system.

We might postulate that the principal value of sleep is to restore natural balances among the neuronal centres. The specific physiologic functions of sleep remain a mystery, and they are the subject of much research.[11]

NREM sleep – during slow wave sleep, there is pulsatile release of growth hormone and gonadotrophins from the pituitary. BP, heart rate and respiration rate decrease. This indicates that slow wave sleep may serve as a period of the body's rest and metabolic restoration.[12]

REM sleep – if subjects are aroused repeatedly in REM sleep they become irritable, but on subsequent nights they manifest many more periods of REM sleep. The corelation between dreaming and REM sleep indicates that the brain is highly active at this time. This may allow for the expression, through dreams, of concern in the subconscious and for long term chemical and structural changes that the brain must undergo to make learning and memory possible. REM sleep plays important role homeostatic mechanism. REM sleep is necessary for mental wellbeing.[13]

In Ayurveda, the effect of sleep is described briefly.
Proper sleep provides *Sukha* (happiness), *Pusti* (nourishment), *Bala* (strength), *Vrushata* (virility), *Jnana* (knowledge) and *Jeevana* (life) Improper sleep causes *Dukha* (misery), *Karshya* (emaciation), *Abala* (weakness), *Klibata* (sterility), *Ajnana* (ignorance) and *Marana* (death).

Person who desires long life should be indulge in *Kala Nidra* (sleep in proper time.

Ati Prasanga (sleeping all the time), *Na Cha Nidra* (keeping awake), both these are like *Kala Ratri*. The proper sleep will provide long life span just similar to Yogi who gets the *Satya Buddhi* (perceiving the knowledge).[14]

ORGANIZATION OF HUMAN SLEEP

After sleep onset, sleep usually progress through NREM stages N1-N3sleep within 45-60 minutes. NREM stage N3 sleep also known as slow-wave sleep, predominates in the first third of the night and comprises 15-25% of total nocturnal sleep time in young adults. Sleep deprivation increases the rapidity of sleep onset and both the intensity and amount of slow wave sleep. The first REM sleep episode usually occurs in the second hour of sleep. NREM and REM sleep alternate through the night with an average period of 90-110 minutes. Overall, in a young healthy adult, REM sleep constitutes 20-25 % of total sleep and NREM stages N1 and N2 constitute 50-60%. N3 sleep is more intense and prominent during childhood, decreasing with puberty and across the second and third decade of life. In older adults, N3 sleep may be completely absent and the remaining NREM sleep typically becomes more fragmented, with frequent awakening s from NREM sleep.

There is growing evidence that inadequate sleep in in humans is associated with glucose intolerance that may contribute to the development of diabetes, obesity and the metabolic syndrome, as well as impaired immune responses, accelerated atherosclerosis, increased risk of cardiac disease, cognitive impairment, Alzheimer's disease and stroke. For these reasons, national academy of medicine declared sleep deficiency and sleep disorders 'an unmet public health problem.

Sleep-wake cycles are driven by homeostatic, allostatic and circadian inputs.[15]

In some special conditions day sleep is indicated.

INDICATION OF *DIVASWAPNA* (DAY SLEEP)

Sleeping during the day time can be prescribed for those who are *Karshita* (exhausted) by *Geeta* (singing), *Adhyayana* (study), *Madya* (alcoholic drinks), *Stri* (sexual acts), *Karma* (*Panchakarma* – elimination therapy), *Bhara* (carrying heavy weight), *Adhva* (walking long distance); those suffering from *Ajirna* (indigestion), *Kshata* (injured), *Kshina* (debilitated), *Vruddha* (old age), *Bala* (children), *Abala* (less strength), suffer from *Trishna* (thirst), *Atisara*

(diarrhoea), *Shula* (colic pain), *Shwasa* (dyspnoea), *Hikka* (hiccup), *Krusha* (emaciated), *Patita* (injured due to fall), *Abhihata* (injured due to assault), *Unmatta* (insanity), those exhausted by *Yana* (journey by a vehicle), *Prajagara* (night asleep), afflicted with *Krodha* (anger), *Shoka* (grief) and *Bhaya* (fear)[16]

DIVASWAPNA PHALA (BENEFITS OF DAY SLEEP)

Equilibrium of *Dhatus* and strength are maintained and *Kapha* nourishes the organs and ensures longevity. *Diva Swapna* is indicated in *Grishma Ritu* (summer season), as the nights become shorter and *Vata* gets aggravated in the body due to *Ruksha Guna* of *Adana Kala*.[17]

DIVASWAPNA NISHEDHA (CONTRAINDICATIONS OF DAY SLEEP)

Sleeping during the day time in the seasons other than *Grishma Ritu* is not advisable as it causes vitiation of *Kapha* and *Pitta*. Persons with *Medasvi* (excessive fat), *Sneha Nitya* (those who are addicted to taking unctuous substances), *Shleshmala* (those with *Kapha* constitution), *Shlesmala Roga* (suffering from the diseases due to vitiation of *Kapha*) and *Dushi Visha* (Suffering from poisoning) should never sleep during the daytime.

Divaswapna causes some diseases like, *Halimaka* (type of Jaundice), *Shira Shula* (headache), *Sthaimitya* (stiffness and felling as if body is covered by wet blanket), *Guru Gatrata* (heaviness in the body), *Angamarda* (bodyache), *Agninasha* (loss of digestive power), *Hridya Pralepa* (a feeling as if adhered to the heart), *Sopha* (oedema), *Arochaka* (anorexia), *Hrillasha* (nausea), *Pinasa* (rhinitis), *Ardhavabhedaka* (headache), *Kotha* (urticaria), *Pidaka* (abscess), *Kandu* (itching), *Tandra* (drowsiness), *Kasa* (cough), *Galamaya* (disease of the throat), *Pamoha Smriti Buddhi* (impairment of the memory and intelligence), *Strotasam Samrodh* (obstruction of the circulating channels of the body), *Jwara* (fever), *Indriya Asamartha* (weakness of the sensory and motor organs) and *Visha Vega Pravartanam* (enhancement of toxic effects of poisons)

So one should considering the *Hita* (merits) and *Ahita* (demerits) of sleep in various seasons and circumstances, so that it bring *Sukha* (happiness) and health to the individual.[18]

FACTORS AFFECTING SLEEP

Sleep results from a reduction in the sensory inputs. Therefore, the procedures which minimize sensory stimulation favour the onset of natural sleep, i.e. darkened room, relaxed body musculature, comfortable warm surroundings, silence.

Anxiety and emotion stimuli by release of epinephrine cause activation of Renin-Angiotensin System and make sleep more difficult.[19]

SWAPNA JANAKA HETU (METHODS TO INDUCE GOOD SLEEP)

Abhyanga (oil massage), *Utsadana* (body massage), *Snana* (bath), *Gramya Anupa Audaka Rasa* (intake of soup of domestic mershy and aquatic animals), *Shalyanna* (rice), *Kshira* (milk), *Snigdha* (unctuous substances) and *Madya* (alcohol). *Mana Sukham* (pleasure of mind), *Manaso Anugunagandhah Shabdah* (indulging in smell of scents and hearing of sounds of desired test), *Samvahana* (kneeling), *Chakshu Tarpana* (application of soothing ointment to the eyes), *Shiraso Lepa* (application of paste to head), *Vadanasya lepah* (application of paste to face), *Swastirna Shayanam* (comfortable bed) and *Uchita Kala* (sleep in proper time).[20]

HELPFUL BEHAVIOURS FOR PROPER SLEEP

Use the bed only for sleep or sex If you cannot sleep within 20 minutes, get out of bed and read or do relaxing activities in dim light before returning to bed.

Make quality sleep a priority; go to bed and get up at the same time each day, ensure a restful environment like comfortable bed, bedroom quiet and dark Develop a consistent bedtime routine; prepare for sleep with 20-30 min of relaxation like soft music, meditation, pleasant reading etc. take a warm bath.[21]

BEHAVIOURS TO AVOID FOR PROPER SLEEP

Avoid behaviours that interfere with sleep physiology; napping, especially after 3 pm, attempting to sleep too early, caffeine after lunchtime.

In the 2-3 hour before bedtime, avoid, heavy eating, smoking or alcohol, vigorous exercise. When trying to fall asleep, avoid, solving problems, thinking about life issues, reviewing events of the day.[22]

NIDRA NASHA HETU (CAUSES OF INSOMNIA)

Elimination of Doshas in excess from the body through purgation, emesis or *Nasya*, *Bhaya* (fear), *Chinta* (anxiety), *Krodha* (anger), *Dhuma* (smoking), *Vyayama* (excessive physical exercise), *Rakta Mokshana* (excessive bloodletting), *Upavasa* (fasting), *Asukha Shaya* (uncomfortable bed), *Satvaudarya* (predominant of *Satva guna*) and *Tamojaya* (suppression of *Tamo Guna*) are causes for Insomnia).

Karya (interested to work or committed to work), *Kala* (old age), *Vikara* (disease).[23]

***RATRI JAGARANA* (EFFECT OF NIGHT AWAKENING)**

Awakening during night causes *Rukshata* (roughness) in the body).[24]

Shift-work disorder is another condition found in most of the people from their occupation on a permanent schedule at night or rotating shift. The circadian timing system usually fails to adapt successfully to the inverted schedules required by overnight work or the phase advance required by early morning start times. This leads to a misalignment between the desired work-rest schedule and the output of the pacemaker of the sleep cycle.

Sleep disturbance nearly doubles the risk of a fatal work accident. In addition long term night workers have higher rate of breast, colorectal and prostate cancer and of cardiac gastrointestinal, metabolic and reproductive disorders.

Caffeine is frequently used by night workers to promote wakefulness. However, it can not forestall sleep indefinitely, and it does not shield users from sleep-related performance lapses. Postural changes, exercise and strategic placement of nap opportunities can temporarily reduce the risk of fatigue related performance lapses. Properly timed exposure to blue enriched light or bright white light can directly enhance alertness and facilitate more rapid adaptation to night shift work. Fatigue risk management programmes for night shift workers should promote education about sleep, increase awareness of the hazards associated with sleep deficiency and night work and screen for common sleep disorders. Work schedules should be designed to minimize; such as, Exposure to night work, The frequency of shift rotations, The number of consecutive night shifts, The duration of night shifts. By adopting these schedules bad effects of night awakening can be minimized.[25]

CONCLUSION

For maintaining healthy life proper sleep time and duration is most important factor. Improper sleep affects physical health as well as mental health. In Ayurveda, sleep is described as a pillar for support healthy life. Due to lack of proper sleep, there is risk of communicable as well as non-communicable disease also. By avoiding late night work, preparing suitable environment for good sleep and avoiding daytime sleep, one can prevent many diseases and maintain healthy life.

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