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Effect of Tri - Doshas in Our Day to Day Life in Contest of Circadian Rhythm

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Abstract

Circadian rhythm is the cyclical 24-hour period of human biological activity. Within the circadian (24-hour) cycle, a person usually sleeps approximately 8 hours and stays awake for 16 hours. During the wakeful hours, mental and physical functions are most active and tissue cell growth increases. During sleep, voluntary muscle activities nearly disappear and there is a decrease in metabolic rate, respiration, heart rate, body temperature, and blood pressure. In *Ayurveda,* this concept is based on three *Doshas- Vata, Pitta, Kapha* - which predominantly govern our daily routine life. These *Doshas* maintain the integrity of our body by creating, assimilating & diffusing strength. In this article, efforts will be made to correlate the *Doshic* influence which affects the human body.

Keywords

Tridoshas, Circadian rhythm, *Dincharya*, *Ritucharya*, Chronobiology.

INTRODUCTION

Circadian rhythm is a roughly 24-hour cycle in the biochemical, physiological, or behavioral processes of living entities on Earth, including plants, animals, fungi and cyanobacteria. The term "circadian" comes from the Latin circa, "around", and Diem or dies,"day", meaning literally "approximately one day". The formal study of biological temporal rhythms such as daily, tidal, weekly, seasonal, and annual rhythms is called chronobiology.

Regulation

The circadian cycle is controlled by a region of the brain known as the hypothalamus, which is the master centre for integrating rhythmic information and establishing sleep patterns. A part of the hypothalamus called the supra-chiasmatic nucleus (SCN) receives signals about light and dark from the retina of the eye. Upon activation by light, special photoreceptor cells in the retina transmit signals to the SCN via neurons of the retino hypothalamic tract. The signals are further transmitted to the pineal gland, a small cone-shaped structure that is attached to the posterior end (behind the hypothalamus) of the third cerebral ventricle and that is responsible for the production of a hormone called melatonin.

Cyclical fluctuations of melatonin are vital for maintaining a normal circadian rhythm. When the retina detects light, melatonin production is inhibited and wakefulness ensues; light wavelength (colour) and intensity are important factors affecting the

extent to which melatonin production is inhibited. In contrast, in response to darkness, melatonin production is increased, and the body begins to prepare for sleep. Sleep-inducing reactions, such as decrease in body temperature and blood pressure, are generated when melatonin binds to receptors in the SCN.

The natural time signal for the circadian pattern is the change from darkness to light. Where daylight patterns are not consistent, as in outer space, regimented cycles are established to simulate the 24-hour day. If one tries to break the circadian rhythm by ignoring sleep for a number of days, psychological disorders begin to arise. The human body can learn to function in cycles ranging between 18 and 24 hours, but any variance greater or less than this usually causes the body to revert to a 24-hour cycle. Even in totally lighted areas such as the sub-polar twilight zone, the body has regular cycles of sleep and wakefulness once the initial adjustment has been made.

Importance

Any drastic shift in the circadian cycle requires a certain period for readjustment. Each individual reacts to these changes differently. Travelling across a number of time zones is commonly accompanied by circadian rhythm stress, sometimes called "jet lag". For example, jet travel between Tokyo and New York City creates a time difference of 10 hours; it usually takes several days for the body to readjust to the new day-night pattern. Too-frequent shifts in circadian patterns, such as several transoceanic flights a month, can lead to mental and physical fatigue. Preflight or post flight adaptation can be achieved by gradually changing one's sleeping patterns to simulate those that will be necessary in the new environment. Space travel is even more extreme. Astronauts first encounter rapid changes in the day-night cycle while in Earth's orbit. Beyond this, the void becomes a constant blackness with no observable distinction between daytime and nighttime.

The circadian cycle can alter the effectiveness of some drugs. For example, the timing of administration of hormonal drugs so as to be in accord with their natural circadian production pattern seems to place less stress on the body and produce more effective medical results.

What Ayurveda says?

Concept of Ayurvedic physiology and pathology is based on circadian rhythm of three *'Doshas'*. These *doshas* governs the integrity of our body by engendering, assimilating & diffusing vigor, in the same way as *soma*, *surya* & *anila* – maintain the integrity of the terrestrial world- as told by *Sushruta*[1] (Table-1). The three *doshas* –

Vata, Pitta & Kapha follows a circadian rhythm and by this rhythm all the metabolic functions of the body are regulated. Disruption in this rhythm leads to production of various pathological states. Beside daily circadian rhythm these doshas also follow circannual rhythm i.e. a particular pattern is followed in relation to different season in a year. These *doshas* follow yearly cycle by the process of their *Sanchaya, Prakopa* & *Shamana* for regulating the biochemical, physiological or behavioral processes of our body. These *doshas* maintain our physiological process according to our internal environment & it is withal influenced by our external environment. Beside this changes in *doshas* is also seen with the change in age e.g. *Kapha* is said to be dominant in *Balyaavastha* (Paediatric age), *Pitta* in *Madhya-avastha* (middle age) and *Vata* in *Vriddhavastha* (old age). These *doshas* become ascendant respectively according to *vaya* (age), *kaal* (time) & during digestive process, as described by *Vagbhata*[2]. (Table-2).

Table 1 Ayurvedic chronobiology in contest to circadian rhythm of three *Doshas*

Prakriti	***Purusha***	***Karya***
Soma	*Kapha*	*Visarga* (creation)
Surya	*Pitta*	*Aadana* (assimilation)
Anila	*Vata*	*Vikshepa* (diffusion)

Seasonal variation also affects rhythm of *Doshas* and it is seen in various states like *Sanchayavastha* (Stage of Accumulation), *Prakopavastha* (Stage of Aggravation) and *Prasamavastha* (Stage of suppression of vitiated *doshas*). Cycle or rhythm is maintained by the predominance of these three *doshas* & affects our *balas* (strength) which is incremented or decremented during *adana* & *visarga kaal* (seasons) as stated by *Sushruta* and *Madhukosha* commented on this regulation [3]. *Ayurveda* has told specific regime of diet and life-style to cope up with this seasonal variations. Such code of conduct related to seasonal variation is known as *Ritucharya*. Similar code of conduct *'Dincharya'* is also given for diurnal variation mentioned above.

Table 2 showing biological variation in rhythm in relation to day, night and age

Sr.	**Parameter**	***Vata* Predominance**	**Pitta Predominance**	**Kapha Predominance**

No.				
1	*Vaya* (Age)	*Vriddhavastha* (old age)	*Madhya-avastha* (middle age)	*Balyaavastha* (Pediatric age)
2	Day	At the end of the day (2pm-6pm)	In the middle of the day (10am-2pm)	In the beginning of the day (6am -10am)
3	Night	At the end of the night (2am-6am)	In the middle of the night (10pm-2am)	In the beginning of the night (6pm-10am)

Adaptation of *Dincharya* & *Ritucharyas* of *Ayurveda* according to this *Doshic* interference is the rudimental concept for our salubrious life & it takes a component in the development of a disease process due to eccentric life style.

Dincharya

According to *dincharya* firstly, we should awake in *Bramhamuhurta* (around 5a.m.) because at that time there is a predominance of *Vata dosha* and so one feels fresh and light after awakening in accordance with *vata dosha* characteristic. Ii is commonly seen that if one awake after sunrise he feels himself lethargic due to *kapha* predominance at that time.

Prakrita shlesma is known as *bala*[4] and it is predominant in early phase of the day. Most of the hormones are at the peak level in the morning and they decline with the time and are lowest at the evening time. So, for the congruous utilization of *prakrita shleshma* it is obligatory to do opportune exercise in the morning after doing *Anjana, Nasya, Kavala, Dhoompana* and *Abhyanga* which are the paramount part of our *Dincharya* and give us enough strength for all these activities. By doing *Vyayama* we feel freshness, energetic, additional efficacy, activeness and capacity for doing noetic & physical activities [5].

Ahaar

In the *Madhyahan* & *Madhyaratri* there is predominance of *Pitta,* which designates that it is the period of *Agni* therefore, at this time digestion of food takes place. According to Ayurvedic classics congruous function of *Pitta* or *Agni* is resolute by the ability of taking food & its digestion (*Abhyaharan* & *Jarana shakti*) and give us *Bala, Arogya & Ayu*[6].It is indispensable that we take congruous food in adequate

amount before the time of *Pitta* or *Agni pradhanya* because the food which is the factor that nourishes *Deha Dhatus, Ojas* & contributes to *Bala, Varna,* energy and resistance to disease is better digested in this period. Health & longevity of life itself depends upon *agni* for its utilization and make a good path for formation of *Rasadi Dhatus*. Improper food is taken in erroneous way at erroneous time is the main reason for developing symptoms like – *Ajirna, Avipak, Aruchi*, Belching, Indigestion, Acidity, Anorexia etc. If food is taken in *Aprahan* (evening), the period of predominance of *Vata* then *Rukshata* (*Sosha*) is developed in our body due to enhancement of *Ruksha guna* of *vata*, *–Kshaya* designates as decrease ability for doing physical & intellectual work, tiredness, no freshness, irritation, anxiousness, decrement energy, decrement ability or capacity for doing any work.

Nidra (Sleep)

Our sleep is depending upon *Kapha* & *Tama Doshas* but it is withal depend upon our physical & intellectual activity which denotes Svabhavtah as told in Ayurveda [7]. If time of *Kapha* predominance passes, one feels state of awakeness and leads to vitiation of *Vata*. Vitiation of *Vata* leads to development of *Rukshata* in the body. *Ruksha guna* is opposite of *Kapha gunas* and has *Shoshaka* property. This leads to *Rasakshya* and symptoms like irritability, restlessness, arduousness in concentrating, facile fatigability develop in the person. If it is done only for one or two days /a week then body can adjust it by taking day sleep (*Divaswapa*). But if it becomes our quotidian routine then our cycle of *Doshas* is inverted & disease develops. Now a day's solicitousness neurosis, stress disorder, insomnia, many phrenic disorders are commonly visually perceived in tardy night workers like workers of call centers etc. Following Ayurvedic regime of *Dincharya* we can overcome such life style generated diseases very easily.

CONCLUSION

On the substructure of above mentioned facts it could be concluded that three *doshas* govern our biological clock. If they are in their mundane state circadian rhythm of body works congruously, any impairment in these *doshas* can lead to pathology. These *doshas* maintain our circadian body physiology i.e. early morning awaking, hunger, thirst, body vigor, slumber etc. Thus it can be concluded that everybody has their own circadian rhythm or biological clock according which we work and any

derangement in the homeostasis of *doshas* can alter this biological rhythm.

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