

Biological Rhythms in *Ayurveda* and *SmritiRatnakara* –Ancient Manuscript Chapter Analysis

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Abstract -

In *Ayurveda* different types of regimens are explained on the basis of *Dinacharya* -daily regimen, *Rutucharya* - seasonal regimen, *Sadvritt*- code of conducts. These are explained in *Ayurvedic Samhita* books as Preventive measures. According to Indian philosophy *NityaAnanihakam* explained with the topics of *Dinacharya*. According to modern science different rhythms are present in human body. The Biological rhythms are natural cyclic changes observed in the body which have major role to maintain Sleep Patterns, Hormone release, Eating habits and digestion, Body temperature, Metabolism and etc. There are different Rhythms in human body as follows Circadian rhythms, Diurnal rhythms, Ultradian rhythms, Infradian rhythms. Every biological disorder impacts the circadian rhythm. The biological rhythms are disturbed by various factors. these includes the chronobiology which is branch of science explains about human biology in terms of time, as the time is defined by day and night- circadian cycles, if these cycles are effected then are the major cause for disturbance in *doshas*, which lead to diseases. According to modern science these cycles- physical, mental, behavioural changes are observed in 24 hours controlled by a small portion of brain. different possible diseases can be prevented by following regimen study along with the chapter of *SmritiRatnakara* Ancient Manuscript's chapter- *AthanhikamUcchate* in this paper.

Key words- Rhythms, Dinacharya, Rutucharya, Biological clocks

INTRODUCTION

According to *Ayurveda* *Sawthasya Swasth Rakshanam* and *Aturasyavikaraprashamanam* – 2 major aim of Ayurveda to prevent the diseases and to cure the diseases¹, these depends upon *tridoshas*, *trigunas* as basic factors, which further depend upon the food consumption, sleep, daily and seasonal activities for maintaining their equilibrium or not. In the *Bhrihatrayidaily* regimen as *Dinacharya* which start from awake time in the morning to till sleep time all the activities are included, *Rutucharya* includes the seasonal regimen, some codes of conducts explained as *Sadvritt*. These will help to remove certain toxins from our body and mind and also maintain the balance between them. *Dinacharya* starts from awake time as one should get up from sleep in the *BramhaMuhurt* –early in the morning. *Brahmamuhurtha* is the 14th *muhurtha kala*(TIME) of the night. One *muhurtha* is period of 48 minutes, with a complete night consisting of 15 *muhurthas*. The time of sunrise differs each day, according to geographic location and time of year, and the time of the *Brahmamuhurta* varies according to it. According to Indian philosophy and yogic science *Bramhamuhurt* is very auspicious time for meditation, worshipping God, getting knowledge and etc. Modern science says level of Oxygen supply to mind and body will be appropriate at that time so one can do meditation, pranayama, exercise, breathing exercises and etc.

In the *Dinacharya*.after awaking one should do the *shouchavidhi* – maintain personal Hygiene by proper mala- *mutravisarjana* that is defecation, urination, *dantadhavana* – brushing the tooth, exercise – *Vyayama- ardha Shakti*-individual person's half strength one should do *Vyayama*, *Abhyanga*- oil massage over body, *Udvartana*– Rubbing body with powder, *snana*–bathing, quantity of food should to be consumed on the basis of *Agni*. According to Modern science one should awake early in the morning, perform exercises-regulates the body temperature, strength the body muscles, maintain personal hygiene and consume proper diet to prevent the diseases.

According to modern science circadian cycle- physical, mental, behavioural changes are observed in 24 hours controlled by a small portion of brain. The study of circadian Rhythms is called Chronobiology

Health consequences of aberrant light exposure. Exposure to screen light at night or other circadian disruption can disturb synchronization of the central pacemaker in the suprachiasmatic nuclei (SCN) with peripheral clocks throughout the brain and body. Circadian disruption is associated with a number of negative health effects, including effects on mood, metabolism, cancer risk and the immune system.

In this paper will study analysis of literature of Ancient Manuscript, Samhita and modern science related to maintain biological rhythms in the body.

AIMS AND OBJECTIVES

1. To study biological clocks, Rhythms in terms of its physiology and biochemistry.
2. To highlight *Dinacharya*, *Rutucharya*, *Sadvritt*, *Anihakam* chapter from *SmritiRatnakara* and detail as mentioned in *Ayurvedclassics*.
3. To understand the role and significance of establishment of relationship (if any) between *Dinacharya*, *Rutucharya*, *Sadvritt*, *Anihakam* chapter from *SmritiRatnakara* and Biological Rhythms, clocks.
4. To study about the role of biological rhythms to maintain health and cause the diseases.

MATERIALS AND METHODS

It is a literary study about concepts of ancient Ayurveda science also that of proposed and established concepts of Biological rhythms. Thus a detail surfing of Indian Philosophy- *Anihakam* chapter from *SmritiRatnakara* and Ayurved, literature of available text books to Indian philosophy, Ayurveda, modern sciences, material available on internet is done to put forth some conclusive statements regarding the same.

REVIEW OF LITERATURE

In *Charak Samhita sutra sthanaMatrashitiyaAdhyaya* Daily regimen explained as *dinampraticarya*—the daily activities should be done for individual on the daily basis. In *AshtangaHridayasutrasthana*— *Dinacharya* chapter and in *Sushruth Samhitachikitsasthanachapter-24* are explained. In *Anihakam* chapter from *SmritiRatnakara* ancient Manuscript, modern science regarding the Biological rhythms.

RHYTMS/CLOCKS	AYURVEDA	DISEASES
Circadian Rhythm	Dinacharya	Life style disorders
Diurnal rhythms	Dinacharya	Life style disorders
Ultradian rhythms	Dinacharya and Ratricharya	Sleep disorders, seasonal diseases
Infradian rhythms	MasikastreRitusrava	Gynaecological disorders

Table-1

Rhythms/clocks	Smritiratnakarmanuscript	Ayurveda
Awake by serotinine	BramhaMuhurt	Bramhmuhurthuthishta
Personal hygiene- tooth brushing, Bath	Achamana, Dantadhavana, dantadhavana, Snana,	Shouchavidhi, Dantadhavana, Snana
Food	Daily consumable food and their types of utensils, timing	According to individual digestive capacity
Sleep	Directions, prayer, timing	Timing and types

Table-2

According to age –effect of Circadian Rhythm		
Babies	Teens	Adults
New born babies do not develop a circadian rhythm till they are a few months old. This can cause their sleeping patterns to be erratic in the first days, weeks, and months of their lives	Teens are called Owl of night As they experience delay in sleep cycle.	Depending upon Physical activities, Stress, Mental and physical Health

Table -3**DISCUSSION**

Dinacharya helps to establish balance in one's constitution. It also regularizes a person's biological clock, helps digestion, absorption and assimilation and generates self esteem, discipline, peace, happiness and longevity

Dinacharya and its physiological effects are explained as *Brahmamuhurta-uthishtha*³ - It is advisable to wake up during *Brahma muhurta* (early in the 4-5am morning -90 minutes before sunrise.) oxygen in the atmosphere will be more during early morning naturally and readily mixes with haemoglobin which convert into oxy-haemoglobin to nourishes the tissues rapidly with the Secretion of serotonin (neurotransmitter) keeps the person active and alert to maintain circadian rhythm. In the early morning, there will be less pollution (noise, water, air)

with clear atmosphere which enhances the concentration for meditation. Late night sleep or chronic insomnia causes the elevation of cortisol which in turn is responsible for rise in B.P and is likely to promote the development of insulin resistance, a risk factor for obesity and type2 diabetes.

According to SmritiRatnakara ancient Manuscript Bhrama is the name of last *Prahara* of *Ratri* (last Phase of night) hence it is advised that one should get up early in the morning during which the more positive energy will be available so one do concentration for mediation which enhances the strength of body and mind³.

DarpanaDarshanam– looking one's own face into ghee or mirror acts as *Ayushyam* (increases longevity), Avoids mental confusion, gives the clarity to mind.

Ushnajaalpana- Drink a glass of room temperature water, preferably from a pure copper cup filled the night before. This cleans the tract, flushes the kidneys, and stimulates peristalsis movements.

Malotsarga- is defecation/elimination of stool in proper time which clears the rectum, increases digestive power. Proper elimination also helps to remove the *kapha* that naturally accumulates overnight. Defecation daily one time or twice is the best. Proper stools not passed daily then later till next morning or during the coming days are slowly poisoning oneself due to accumulation of toxins and wastes and creating an opportunity for chronic conditions to arise^{3/4}.

Danta-dhavana It helps to remove the impurities of tongue, tooth and oral cavity². It is advised to clean the tooth twice daily and after taking each meal. It stimulates taste perception process and increases the salivation. Saliva contains salivary amylase (ptyalin) which plays a role in breaking down food particles entrapped within dental crevices, it protects tooth from bacterial decay. Saliva contains lysozyme which act as antimicrobial agents¹².

Jihva-nirlekhana This practice reduces bad breath causing due to bacteria, and help the digestive system through stimulating the taste buds. commonly tongue cleaners are made up of copper which itself acts as antibacterial action. Copper tongue scrapers thoroughly cleanse and will remain longer than other tongue scraper¹².

Snehagandusha-dharana is procedure includes without movement keeping medicated fluids or oil and Gargling -*kavala* includes movements with medicated fluids or oil in the mouth is also called as oil pulling procedure which prevents dryness of mouth and throat, prevents Cracking of lips, makes the tooth healthy and strong, and which help to chew the hardest food item. The *sukhoshna* (lukewarm) *gandusha* and *kavaladravyas* are used which improves the circulation of oral cavity. these procedures should be done till the tears come from the eyes⁹.

Tambulasevan should be done after taking the food one should take *Tambula* (betel leaves and nut) because it will give oral hygiene, digestion of food which pacifies all the three *doshas*, cleanses the mouth, removes all foetid odour it causes extra salivation which will aid the digestive process¹².

Anjana is application of collyrium to eyes, as the screen time increased nowadays which results in dry eye or computer vision syndrome, watery eyes, photophobia and etc.

When *Anjana* are applied nourishes eyelids, conjunctiva and enhances the circulation, vision and gives beauty, resistance against wind and sunlight to eyes^{7/5}.

Nasya is Putting 2 to 5 drops of warm/medicated ghee or oil into each nostril in the morning empty stomach helps to, nourish, lubricate the nose, clean the sinuses, and improve voice, vision, and mental clarity. Strengthens muscles and joints of face and neck also improves circulation - Helps relieve stiffness of neck - which Prevents diseases like Facial palsy, Baldness, premature greying of hair and headaches⁸.

Dhumpana is Preventive and curative therapy for *urdhwajatrugataroga* which are caused by *vata* and *kapha*, it improves the voice, It also prevents premature graying of hair, clear the respiratory system, oral cavity acts as antibacterial with *dhumpanadravyas* like *haridra*, *guggulu* and *vacha*¹⁰.

Vyayama is regular exercise improves circulation, strength, and endurance which helps one relax and have proper sleep, and improves digestion and elimination. one should do exercise daily half of his own strength until perspiration appear on the forehead, armpits, and spine. It can be walking, swimming, *suryanamaskara*, early morning exercise removes stagnation in the body and mind, strengthens the digestive fire, reduces fat and gives feeling of lightness and joy as it fills body with proper heat generation in it⁵.

Abhaya is one of the important therapy used for both preventive and curative. massage the oil all over the body from head to toes, particularly on the head, face, ears, and feet. This Prevents premature aging, fatigue, joint diseases and circulation, improves vision, provides compactness to body, induces normal sleep, increases complexion and luster to the skin¹¹.

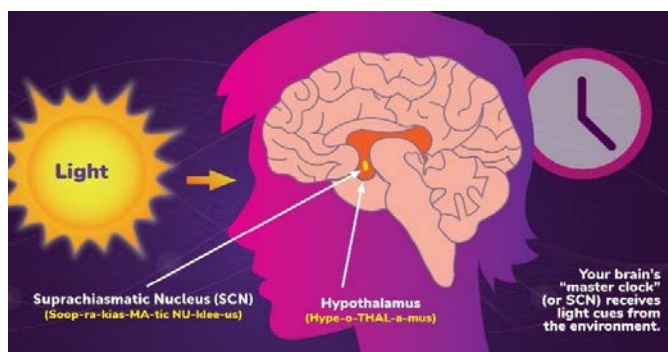
Karna purana is a simple, effective way to maintain the hearing and the health of ears. *Karna purana* helps to maintain the imbalances caused by excess *vata*, *kapha* accumulation and their aggravation due to cold and windy weather and travel.

Snana - one should take bath daily to maintain hygiene of the body and mind with *sukoshna jala*⁶, there are different types of *snana* explained in *Smriti Ratnakara* ancient Manuscript depending on the circumstances of individual as river *snana*, *sankalpsnana*, *naimittikasnana*, *shouchasnana* now a days it categorised as sponge bath, tub bath etc^{14/3}.

Aahara is the main which nourishes the body and mind, it should be *satvik* (which will not disturb *Raja* and *Tama guna*), *Shad Rasa yukta*¹⁵ *ahara* because *doshas* variation depends *rasa*, *ashtavidha aharavisheshayatana* explained which gives quality, quantity, proportion, and others qualities explained., not more hot or cold, while taking food one should not talk, laugh, one should drink water before 30 minutes and after 30 minutes of food. *Ratri Bhojana* - It should be light in nature and less in quantity which gets easily digestion, provides nourishment to body and mind¹³.

Proper sleep is one of the *Trividha upasthambha* - Three Pillars of Life in Ayurveda. Sleep is an essential time for healing the body and mind from daily stress and body will be able to focus on digesting, metabolizing and regenerating. It is controlled by Melatonin. Hormones like melatonin and cortisol may increase or decrease as part of your circadian rhythm. Melatonin is a hormone that makes sleepy, and body releases more of it at night and suppresses it during the day. Cortisol can make more alert, and body produces more of it in the morning.

Other hormones that play a role in alertness and circadian rhythm include: vasopressin, acetylcholine, insulin, Leptin which control Blood pressure, Glucose level in blood, Renal functions, Hunger and etc¹⁶



Short-term disruptions to circadian rhythm¹⁷

Memory issues, Lack of energy, delayed wound healing, Changes to your hormone cycle that may impact fertility, Problems with digestion and bowels, Shifts in your body temperature.

Disruption to circadian rhythm in the long term are Organs, Cardiovascular system, Metabolism, Gastrointestinal system, Skin¹⁷

CONCLUSION

Ten healthy lifestyles have been identified that are associated with reduced disease risk:

Increased wellness, Regular physical activity, Eating well, Managing stress, Avoiding destructive habit, Practicing Control over mind, Adopting good safety habits, Avoid alcohol, caffeine, and nicotine in the evenings, Adopting good personal health habits, Protecting the environment.

Just as unhealthy lifestyles are the main causes of modern-day illnesses or diseases, healthy life- styles can result in an improved feeling of wellness that is critical to optimal health, In recognizing the importance of “Years of healthy life,” the public health service also recognizes what it calls “Measures of well- being.” This well-being or wellness is associated with social, mental, spiritual, and physical functioning. So “Good Health management is free of cost and enjoyable, But disease condition management is very costly and painful.

As the lord of a city- King protects his kingdom and maintain in the affairs of his city, and a charioteer do the required activities in the management of his chariot, so a wise man should be ever vigilant in the caring of his own body.¹⁸.

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