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## CIRCADIAN RHYTHM VARIATIONS ACROSS PRAKRITI TYPES

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**Abstract**

Biological rhythms are the natural cyclical fluctuations we experience in our bodies, and circadian rhythms are the most prominent of these. The adaptation of the body's processes to the sun and moon's rhythms causes them to change. The Ayurvedic explanation for this is in terms of the cyclic phase of the Tridoshas. The earth remains stable due to the presence of Soma, Surya and Anila; similarly, the Kapha, Pitta, and Vata doshas keep our bodies stable. In this article, we are going to discuss two regimens of nature to harmonize one's Prakriti: Dinacharya, the daily regimen, and Ritucharya, the seasonal regimen. Evidence is lacking in large-scale empirical studies with objective biomarkers (melatonin offset, cortisol profiles, actigraphy), but new correlative data have emerged, linking Prakriti with present-day chronotype (clock gene polymorphisms). This holistic design not only emphasizes the potential of Prakriti-guided chronotherapy in managing metabolic diseases, sleep disorders, and shift-work-related issues but also paves the way for personalized Ayurvedic remedies and a research agenda for continued exploration.

### 1. INTRODUCTION

There are regular fluctuations in all of our physiological systems and disease processes as a result of changes in the environment and the passage of time. Everything originates from the Panchamahabhutas, and because "Man is a tiny replica of the Universe," as stated in Loka Purusha Samya Siddhanta[1], every alteration in the environment affects humans.[2]When it comes to age, time of day, seasonal changes, food intake, etc., the cyclical fluctuations in



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Ayurveda are rooted in the rhythm of Tridoshas, Agni, Sharira Bala, etc. Dinacharya, Ritucharya, Sadvritta, Ahara Vidhis, etc., are all stated in Ayurveda as means to maintain a normal state of dosha balance. Many mental and physical diseases manifest when this regular pattern is disturbed. For health maintenance, this rhythm must be properly aligned. These days, we call the periodic shifts in how our bodies work—physical, mental, and behavioral—biological rhythms. Circadian, infradian, and ultradian rhythms are the three most common types of repeating cycles. Researchers have mostly focused on circadian and circannual (seasonal) rhythms, but numerous other biological rhythms have also been found. According to research, the neuroendocrine systems that govern the circadian rhythm also govern the circannual (seasonal) rhythm. Many biological processes, including the regulation of body temperature and the sleep-wake cycle, are influenced by the 24-hour circadian rhythm. The circadian rhythm controls several biological processes, including the timing of sleep and wakefulness, the regulation of core body temperature, the release of hormones and neurotransmitters, and the execution of daily activities like eating and drinking. The hypothalamic suprachiasmatic nucleus (SCN) controls the circadian cycle and is responsible for establishing sleep patterns and integrating rhythmic information. The pineal gland's cyclical melatonin oscillations are also critical for a proper circadian rhythm. [3]

## 2. LITERATURE REVIEW

An individual's Prakriti, or inherent mind-body constitution, is defined in Ayurveda after conception. For the study of health and illness, it is a cornerstone premise. The Charaka Samhita, the Sushruta Samhita, and the Ashtanga Hridaya are among the classical Ayurvedic texts that provide Prakriti as the basis for health. The three main Doshas—Vata, Pitta, and Kapha—express this constitution, which is a result of the ever-changing interplay of the Panchamahabhutas, or five elemental forces.

### *A. Panchamahabhut and the Tridosha Framework:*

According to Ayurveda, the three main bioenergies, called Tridosha, govern the body's functions. These energies are formed by different combinations of the five basic elements: space, air, fire, water, and earth:

- **Vata (space + air):** Controls movement, breathing, and nervous system activity.
- **Pitta (fire + water):** Governs digestion, metabolism, and energy regulation.
- **Kapha (earth + water):** Offers structural stability, lubrication, and immune strength.

The interplay and balance of these Dosha define an individual's Prakriti, shaping their physical constitution, mental characteristics, and emotional behavior (Charaka Samhita, Sharira Sthana 3).

### *B. Development of Prakriti*

An individual's Prakriti is established at the moment of conception (Shukra-Shonita Samyoga) and is influenced by a combination of factors:

- **Genetic and Parental Contributions:** The health, nutrition, and doshic constitution of the parents.



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- **Environmental conditions:** Seasonal influences, geographic location, maternal nutrition, behaviour, and psychological state during pregnancy.
- **Karmic Factors:** Subtle, spiritual impressions carried from previous lives, as noted in the Sushruta Samhita.

Each of these factors contributes to one of seven possible constitution types: a single dosha (Vata, Pitta, or Kapha), a combination of two doshas (Vata-Pitta, Pitta-Kapha, or Vata-Kapha), or a tridoshic constitution, which is the most balanced. A person's Prakriti remains constant throughout their life, but Vikriti, or transient imbalances in health, may be brought about by factors beyond their control, such as their diet, lifestyle, and environment. Even while Prakriti is static, the Ashtanga Hridaya stresses that one's way of life may affect how it manifests and the health outcomes it produces.

### **C. Characteristics of Dosha**

#### **Physical Features:**

- **Vata:** Slim build, parched skin, cold sensitivity, obvious veins.
- **Pitta:** Stocky physique, average core temperature, easily irritated or even reddened skin.
- **Kapha:** Sturdy build, greasy skin, boundless stamina.

#### **Metabolic and Psychological Tendencies:**

- **Vata:** Stomach issues, extreme originality, worry, memory lapses
- **Pitta:** Strong appetite, quick mind, ambitious character, yet prone to anger.
- **Kapha:** Calm and collected, slower metabolism, a propensity toward lethargy, and a slower rate of ageing.

#### **Disease Vulnerability Based on Prakriti:**

##### **Ayurveda links each Prakriti type with certain health risks:**

- **Vata:** Higher chance of developing nervous system disorders, joint issues like arthritis, and sleep disturbances.
- **Pitta:** Prone to inflammatory diseases such as gastritis and skin problems like acne and eczema.
- **Kapha:** More likely to face conditions such as obesity, diabetes, and respiratory issues like asthma and sinusitis.

Charaka Samhita (Vimana Sthana 8) highlights the importance of Prakriti knowledge in the prevention and treatment of early stages of illness. It influences one's physical appearance, metabolic predispositions and mental dispositions; for instance, people with a Vata constitution are creative but nervous, Pitta people are concentrated but easily prone to anger, Kapha people are stable but may have difficulty gaining weight.

Modern studies corroborate these age-old understandings. Prakriti model is similar to personalized medicine which has been linked with immunological response, metabolic and genetic differences in various studies [4-5].



In recent investigations, SNP markers were identified which correlate with the dominant doshic types [5] and in metabolomic studies a different lipid profile of Prakritis was observed [6]. With these results, Prakriti is now backed with more scientific evidence as a personalized biological marker.

### 3. METHODOLOGY

This narrative review aims to explore the potential association of human circadian rhythm variation with Ayurvedic constitutional types (Prakriti). This review brings together modern scientific knowledge on chronobiology and circadian control coupled with the traditional Ayurvedic understanding of Prakriti, Dinacharya, Ritucharya, and Tridosha cycles for a comprehensive review.

- **Search Strategy:** The following databases were searched widely; Web of Science, AYUSH Research Portal, PubMed, Google Scholar, Scopus, and DHARA. The classic Ayurvedic books were compared to one another such as the Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya, Ashtanga Sangraha, Kashyapa Samhita and Bhela Samhita. The keywords and Boolean combination such as Prakriti, Ayurveda constitution, Dinacharya, Ritucharya, Tridosha, Circadian rhythm, Chronobiology, Chronotype, Suprachiasmatic nucleus, Melatonin, Cortisol rhythm, Ayurveda and circadian rhythm etc. were used. The reference lists of papers selected were also manually searched for more relevant sources.
- **Review Methodology:** Classical Ayurvedic writings were considered regardless of their publication year; however literature mostly written between 2000 and 2025 was reviewed. The retrieved full text publications, review papers and original commentaries were criticized. The theoretical relevance of the existing circadian parameters, such as the sleep-wake rhythm, hormone rhythms, metabolic changes, chronotypes, and Prakriti types (Vata, Pitta, Kapha) were the focus. In order to integrate traditional Ayurvedic accounts and up-to-date data, a narrative synthesis approach was used. The review was conceptual and exploratory and therefore, no meta-analysis was conducted.
- **Data Synthesis:** Data were used for Data Synthesis, wherein the following Major Topics were identified: Circadian affecting variables; Lifestyle violating derangements, possible linking of Prakriti with circadian variations, and traditional knowledge on Dinacharya, Ritucharya and Prakriti regimens. The various patterns of chronobiology that may be observed in different Prakritis and ways in which Ayurvedic regimens may harmonize these patterns were the focus of the areas of interest.
- **Ethical Consideration:** This study was a survey of works that have been published previously and classic texts; therefore, ethical clearance was not required for this study. In order to remain credible within the academic community, all sources have been appropriately referenced.

### INCLUSION AND EXCLUSION CRITERIA

**Inclusion Criteria** To be considered for inclusion in this review, literature has to fulfil certain requirements:



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- Prakriti, its kinds (Vata, Pitta, Kapha, Dwandwaja, and Samadoshaja), Dinacharya, Ritucharya, and their relationship to daily and seasonal cycles are described in classical Ayurvedic writings and commentaries.
- Sleep-wake cycles, circadian rhythms, chronobiology, chronotypes, hormonal rhythms (melatonin, cortisol), and the physiological relevance of these topics are covered in scientific publications and reviews.
- Research examining the links between Ayurvedic Prakriti and contemporary ideas on chrononutrition or the circadian rhythm.
- Books, scholarly papers, and genuine Ayurvedic texts published in English that have undergone peer review.
- Publications pertaining to ancient Ayurvedic literature produced between the years 2000 and 2025, with no specific date limit.

**Exclusion Criteria** Things that weren't considered during the evaluation were:

- Dismissal of Prakriti and all practices pertaining to the circadian rhythm in favour of an exclusive examination of other Ayurvedic ideas (such as Agni and Dhatus).
- Research having nothing to do with basic variations in constitution or biological cycles.
- Articles that have not been peer-reviewed, such as editorials, conference abstracts, and opinion pieces, often lack extensive references to classical or scientific works.
- Studies that don't apply to healthy people since they are based on sick people or animal models.
- Non-English language articles published in periodicals.
- Publications that is too similar to one another or that lack sufficient theoretical or methodological depth.

#### 4. PRAKRITI

- Charaka Samhita: According to the ninth chapter of Sutrasthana, sickness is defined as a disruption of the balance of Dhatu, while health, or prakriti, is the opposite of this. A balance between Sattva, Rajas, and Tamas is the fundamental factor that gives rise to Prakriti. But now we see Vikara and Prakriti through a new lens. In this case, Dhatu stands in for guna. Vata, Pitta, and Kapha make up Dhatu, whereas Rasa, Rakta, Mamsa, Medas, Asthi, Majja, and Shukra make up Upadhatu. Disease, or Vikara, results from an imbalance between typical amounts of Dhatu, while health, or Prakriti, is the state of having no such deficit or excess. A discussion of Prakriti's role in prognosis is in Sutrasthana's tenth chapter [7]. The foundation of philosophical underpinning is described in Sharirasthana as Prakriti [8]. Loka and Purusha Siddhanta were also mentioned by him [9]. Prakriti Pariksha is defined in the Vimanasthana's Dashavidha Pariksha section, found in chapter 8. Additionally, the seven varieties of Prakriti were detailed [10]. Read Indriyasthana for a description of the Prakriti-influencing factors [11]. There are 17 kinds of Manas Prakriti and 7 kinds of Deha Prakriti, as stated in Chapter 4 of Sharirasthana [12]. Chapter 6 of Vimanasthana also describes Vatika,



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Paitika, and Kaphaja Prakriti. There is also a description of the features of various Prakriti [13].

- Kashapa Samhita: Prakriti's evolution in accordance with Sutrasthana's Lehadhyaya [14]; there are three varieties: Vata Sthuna, Pitta Sthuna, and Kapha Sthuna. Sharirasthana gives four philosophical descriptions [16], and Shishyopakramaniyaadhyaya [15] describes the features of various Prakriti.
- According to the Sushruta Samhita, the eight (primary) principles that constitute Prakriti are Avyakta, Mahat, Ahamkara, and five Tanmatra [17]. Swabhava, Ishvara, Kala, Yadriccha, Niyati, and Parinama are the fundamental causes of everything, and they are discussed in the first chapter of Sharirasthana [18]. Sushruta places a premium on Swabhava because of its significance in Prakriti [19]. The article goes on to discuss seven different kinds of Prakriti [20]. The Panchamahabhuta system of classifying Prakriti and its defining features is detailed here [21].
- In the first chapter of the Harita Samhita, Prathama Sthana and Vatadi Prakriti are explained along with their features. Also detailed is the most excellent Madhya Prakriti, one of the defining features of Sthula Sharira [22].
- In the fourth chapter of Vimanasthana, Roga Prakriti Vinischaya cites the Bhela Samhita, which, like the Charaka Samhita, describes Prakriti as having three distinct qualities: Prakriti (best), Dwandwaja (middle), and Snnipatika (poor) [23]. Astanga Samgraha: Jati, Kula, Desha, Kala, Vaya, Bala, and Atma are the seven varieties of Prakriti stated in the eighth chapter of Sharira Sthana [24].
- Chapter 3 of Sharira Sthana in the Astanga Hridaya lists seven varieties of Doshika Prakriti, with references to Charaka Samhita and Sushruta Samhita [25].
- The description of Sharirika and Manas Prakriti is found in the Samhita Sarandadhara [26]. This does not include the Deha Prakriti description that is associated with the Sushruta Samhita and the Manas Prakriti.

## 5. FACTORS INFLUENCING CIRCADIAN RHYTHM

The goal of the *Ayurvedic texts, such as Dinacharya, Ritucharya, Sadvrutta*, and the regulations for *Ahara and Nidra*, is to keep the *Doshic* cycles regular.

### A. *Dinacharya* [27]

Everything in nature follows a daily, nightly, and seasonal pattern. Both the diurnal and seasonal changes are caused by the sun's movement. Humans, being little versions of the universe, should adapt to these changes by adopting better habits. The purpose of *Dinacharya*, which begins with rising at Brahmamuhurtha and continues until sleep, is to maintain a steady balance of the doshas throughout the day. This helps with digestion, absorption, and assimilation, as well as with self-respect, discipline, tranquillity, joy, and longevity. Classical *Ayurvedic* literature recommends maintaining a regimented daily schedule (*Dinacharya*) to improve health and increase lifespan. A number of routines designed to keep the body's systems and organs operating at peak efficiency make up the daily routine. It encourages discipline in



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sleep-wake, eating, and working habits to sustain the body's homeostasis. Furthermore, these activities and ethics can help maintain mental and spiritual well-being through a systematic application. Many treatments offer other benefits, including a youthful appearance, retarding the ageing process and improving your likelihood of living a long, healthy life. If used properly, the daily routine can contribute to reducing the worldwide burden of disease by preventing many lifestyle-associated diseases. Today's studies have demonstrated the importance of everyday routines and their effects on circadian stability. In their study on circadian rhythms, Desai et al. [28] found that metabolic abnormalities, mental disturbances, and neurodegeneration may be caused by irregular eating habits, night-time light exposure, and changes in the sleep-wake cycles. If Dinacharya is not followed, then there is a risk of chronic ailments due to immune, metabolic and mental imbalance. In recent years, modern research in chrononutrition, stress physiology, and circadian rhythms has corroborated the time-specific health benefits of Dinacharya. It nurtures the mind, sensory organs, digestion, the physical humours (Doshas), tissues (Dhatus), and waste elimination (Malas) to promote overall health. In Ayurveda, present-day illnesses such as hypertension, diabetes, and metabolic issues are caused by disrupting this natural process.

Elements Crucial to Dinacharya: [29]

- Brahmacharya Muhurta, also known as pre-dawn waking,: boosts metabolism, immunity, and stress resistance by synchronising with the cortisol awakening response.
- Shoucha Vidhi—The vigorous Vata energy has a natural downward flow, which helps with early-morning bowel movements and bladder cleansing.
- Jihva Nirlekhan (Tongue Scraping) and Dantadhavana (Oral Hygiene): They eliminate Ama, lessen plaque in the mouth, and promote better gut health.
- Nasya, also known as nasal therapy, improves oxygen intake and fortifies the respiratory immune system.
- Kavala, also known as oil pulling, may help reduce inflammation and dental plaque by promoting a balance in the mouth and gut flora.
- Improves circulation, regulates circadian rhythm, and promotes better sleep via abhyanga (oil massage).
- Yoga (exercise) improves stamina, mental acuity, and energy expenditure.
- Encourages a disciplined lifestyle, emotional stability, and mental clarity—the Sadvritta (Moral and Ethical Code).
- Supports digestive efficiency, metabolic health, and Dosha balance via attentive eating, also known as Hita Mita Ahara.

### **B. Ritucharya [30]**

Seasonal variations have a noticeable impact on the environment, which, in turn, alters the rhythm of the tridosha. This impact is seen in the stages of accumulation (Sanchaya), aggravation (Prakopa), and suppression of vitiated doshas (Prasha). An internal imbalance may result from this, and a host of mental and physical diseases might follow. To adapt to the natural



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changes of the seasons without disrupting the body's equilibrium, ritucharya (seasonal regimen) prescribes a set of dietary and lifestyle restrictions. Mood disorders, according to research, are the consequence of circadian cycles that do not adjust appropriately to the changing length of the day. Depression caused by the changing seasons.

### ***C. Sadvritta [31]***

The term "Sadvritta" refers to the kind of actions and routines that promote physical, mental, sensory, and spiritual well-being. The social, emotional, psychological, personal, spiritual, and ethical dimensions of existence may be preserved by adhering to these behavioural rules. For instance, a) Vyavaharika Sadvritta encompasses the following: always stating the truth, avoiding sensory pleasure addiction, etc. b) Samajika Sadvritta encompasses a variety of practices, such as speaking quietly and nicely with intellectual people, instructors, and the elderly. c) Manasika Sadvritta—to know the true divine; to never be in a state of chronic sorrow; to always exude self-assurance, etc. d) The practices that make up Dharmika Sadvritta include paying respect to fire, elders, Brahmins, cows, and gods. e) Sharirika Sadvritta include practices such as cutting hair and nails three times every two weeks, applying oil to the head, ears, nose, and feet, and so on. The principles of Aachara Rasayana, which include the mental cleanliness necessary for a perfect ethical life, are laid forth in the Charaka Samhita Chikitsasthana Rasayanadhyaya. A yogic lifestyle is a part of it, as are truthfulness, nonviolence, cleanliness (both inside and out), dedication, compassion, and mental and physical hygiene.[32]

### ***D. Ahara and Nidra***

*The Thrayopasthambas* are Ahara, Nidra, and Brahmacharya. Ahara is the most important of these factors since it determines a person's robustness, complexion, development, and longevity. Ahara refers to a perfectly balanced diet. Proper digestion and health may be achieved by following the Ahara niyamas, which are stated in our texts, while eating. To maintain a regular rhythm when taking Ahara, it is necessary to consider factors such as Matra, Desa, Kala (which encompasses both Nityaga and Avasthika), Agni's condition, and so on.[33] According to Acharya Charaka, Ahara is the fundamental reason for both good health and illness.[32]

Sleep is just as important as food for maintaining one's health. Even though it's a daily ritual, Shareera and Manas may continue to work properly if Nidra is followed correctly. Happiness, sadness, satiety, malnutrition, power, fragility, virility, sterility, knowledge, ignorance, life, and death all depend on how well one sleeps. The Ayurvedic texts identify seven types of Nidra; one of them, Ratriwabhavaprabhava Nidra, is a natural phenomenon that promotes health when practiced correctly.[33] Among the many significant and well-known circadian rhythms, the sleep-wake cycle stands out. From a contemporary physiological perspective, sleep is essential for regulating calorie metabolism, temperature, immunological function, learning, and memory consolidation. A good night's sleep is essential to a healthy body. A number of ailments, particularly those associated with a person's lifestyle, are exacerbated by poor-quality sleep [34].



## 6. DERANGEMENT IN CIRCADIAN RHYTHM

Vega Dharana and Udeerana, an imbalance in Agni, incorrect Ahara and Nidra, and other variables might disrupt the circadian clock.

You may find two types of Vegas attractions. 1. Adharaneeya Vegas - Those desires that pose a threat to one's health if repressed. 2. Dharaneeya Vegas - Those desires that pose a threat to one's health if not controlled. Vega Shramaswasa is one of the thirteen Adharaneeya Vegas, the others being Purisha, Shukra, Apanavayu, Chardi, Kshavathu, Udgara, Jrumba, Kshudha, Trishna, Bashpa, Nidra, and Nidra. To replace Udgara Vega with Adharaneeya Vega, Acharya Vagbhata included Kasavega. Diseases might spread if these Vegas aren't treated soon. Dharaneeya Vegas, also known as Manasika Vegas, are meant to be mastered by complete mastery over our senses. Lobha means avarice, Irshya means envy or jealousy, Dwesha means aversion, Maatsarya means competitive mind, Raga means attachment, and there are many other emotions like Kama, Krodha, Bhaya, Soka, Chinta, etc. [35].

When one's dietary habits are out of whack, it may lead to problems like Samashana, Adhyashana, and Vishamashana, which, in turn, can cause severe ailments or even death. Obesity and malnutrition are mostly caused by changes in food and sleep habits.[36] Sleep deprivation, insomnia, and other sleep disorders may disrupt the body's natural circadian rhythm and increase the risk of developing certain illnesses.[37]

The Ahara Parinamakara Bhavas and the circadian cycle of digestive enzymes are both disrupted by factors such as poor food and sleep patterns, which, in turn, create Agnimandya, the underlying cause of all ailments [38].

## 7. CONCLUSION

The integration of Ayurvedic Dosha Kala with contemporary circadian biology has developed a robust, tried-and-tested paradigm for understanding individual differences in biological rhythms within Prakritis. Classical observations of the dominance of each Dosha are paralleled and corroborated by modern research on systems controlled by the suprachiasmatic nucleus, hormonal changes, and metabolic shifts. Each prakriti has a distinct sleep architecture, energy pattern, and chronotype; hence, the importance of tailored lifestyle recommendations (Dinacharya) to avoid lifestyle-related diseases and maintain homeostasis is highlighted.

To demonstrate clinical effectiveness and mechanistic linkages, it is crucial to conduct rigorous Prakriti-stratified randomised controlled trials that include validated biomarkers. The literature in the conceptual and correlative aspects is very strong in support of this integration. Today's life is unnatural, which is why the Ayurvedic approach is a complete treatment of chrononutrition, or preventive medicine, based on harmony with the cycles of life. A future study that combines Ayurgenomics with chronobiology and clinical outcomes has the potential to confirm and improve upon these age-old ideas, opening the door to rhythm-based healthcare tailored to each individual's needs.

## 8. AUTHOR(S) CONTRIBUTION

Dr. Zealous Mary comprehended and conducted the study, as well as evaluated and interpreted



the results. Dr. Vathana wrote and updated the main manuscript. All authors read and approved the final version of the manuscript.

## 9. LIMITATIONS

The size of the sample was very small. The study was completely conducted on senior citizens.

## 10. RECOMMENDATIONS

Needs to conduct in Tai-chi exercise to assess the physical problems in old age people. Comparison research may be done to discover changes in adults and old age Recommend to do this study as qualitative research.

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## 13. PLAGIARISM POLICY

The authors declare that any kind of violation of plagiarism, copyright, and ethical matters will be handled by all authors. Journalists and editors are not liable for the aforesaid matters.

## 14. CONFLICT OF INTEREST

The authors declared that no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

## 15. PROTECTION OF RESEARCH PARTICIPANTS

This study do not involve any such criteria or condition.

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