

**DINACHARYA AND CIRCADIAN HEALTH: LINKING THE AYURVEDIC DAILY
REGIMEN WITH SLEEP AND METABOLIC HEALTH****^{1*}Kushwaha Madan Mohan Singh**

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ABSTRACT

Dinacharya, the Ayurvedic concept of a structured daily regimen, is a fundamental pillar of *Swasthavritta* that aims to preserve health through the timely regulation of sleep, physical activity, meals, and other daily practices. In parallel, modern circadian science has demonstrated that the synchronization of biological rhythms plays a crucial role in maintaining metabolic homeostasis, hormonal balance, and sleep quality. Increasing prevalence of irregular sleep schedules, sedentary behaviour, and disrupted daily routines has been linked with obesity, type 2 diabetes, and other cardio metabolic disorders. This review explores the conceptual relationship between *Dinacharya* and circadian health by integrating classical Ayurvedic principles with contemporary evidence from chronobiology. It discusses how regular daily behavioural patterns may influence circadian alignment, sleep regulation, and metabolic function, while identifying current evidence, knowledge gaps, and future research directions. The review highlights *Dinacharya* as a potential evidence-informed lifestyle framework for the prevention of metabolic disorders and the promotion of holistic health.

KEYWORDS: *Dinacharya*, Circadian Rhythm, Ayurveda, Sleep, Metabolic Health, Chronobiology.**INTRODUCTION**

Metabolic disorders and sleep disturbances have emerged as major public health challenges of the 21st century. A recent global meta-analysis estimated that approximately 28–32% of adults are affected by metabolic syndrome, with nearly 1.54 billion people worldwide living with the condition in 2023.^[1] The burden is particularly high in South Asia and continues to rise due to sedentary lifestyles, unhealthy dietary habits, and disrupted daily routines. Sleep disorders are equally prevalent, with 16–25% of adults experiencing insomnia or poor sleep quality at some point in life.^[2] Increasing evidence indicates that inadequate or irregular sleep contributes to obesity, insulin resistance, impaired glucose metabolism, hypertension, and dyslipidaemia, highlighting the close relationship between sleep and metabolic health.^[3]

Ayurveda addresses these lifestyle determinants through *Dinacharya*, a scientifically structured daily regimen described under *Swasthavritta*. Rather than viewing health merely as the absence of disease, *Dinacharya* emphasizes the appropriate timing of awakening, physical activity, food intake, and sleep to maintain

physiological equilibrium. Contemporary chronobiology similarly recognizes that biological functions follow predictable daily rhythms, and disruption of these rhythms adversely affects metabolic homeostasis.

This review aims to explore the relationship between selected components of *Dinacharya* and contemporary evidence on sleep and metabolic health, providing an integrative perspective on their preventive potential in lifestyle disorders.

MATERIALS AND METHODS

This narrative review was conducted using classical Ayurvedic literature including *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, and contemporary literature indexed in PubMed and Scopus. Electronic databases were searched using keywords such as *Dinacharya*, circadian rhythm, chronobiology, sleep, metabolic health, and Ayurveda. Relevant review articles, clinical studies, and mechanistic studies published in recent years were synthesized narratively to identify conceptual and physiological convergence between Ayurvedic principles and circadian science.

***Dinacharya* Activities Supporting Circadian and Metabolic Health**

Dinacharya describes a structured pattern of daily activities intended to maintain health by bringing regularity to everyday life. Many of these practices—such as waking early, exercising, eating at appropriate times, and getting adequate sleep—are closely related to the factors that influence the body's internal clock and metabolic function. Instead of viewing *Dinacharya* as one single intervention, its individual practices can be considered as simple lifestyle habits that provide regular cues to the body throughout the day.

***Brahma Muhurta* awakening**

Brahma Muhurta is traditionally regarded as the appropriate time to begin *Dinacharya*. Almost all major Ayurvedic Acharyas who describe the daily regimen recommend awakening during this period. It is described as the 14th Muhurta of the night;^[4] with one *Muhurta* being approximately 48 minutes, *Brahma Muhurta* occurs about one and a half hours before sunrise.

Ayurveda considers this period favourable for awakening, self-care, study, meditation, and activities that promote mental clarity. From a modern circadian perspective, maintaining a regular waking time and receiving morning light are important cues for synchronizing the body's internal clock with the environmental day–night cycle. Morning light influences melatonin, cortisol rhythms, alertness, and subsequent sleep timing.

Since *Brahma Muhurta* is calculated in relation to sunrise, its actual timing varies with season and location. Therefore, its relevance to circadian health may lie less in waking at a fixed early hour and more in maintaining a regular sleep–wake pattern aligned with the natural light–dark cycle, while ensuring adequate sleep duration.

***Vyayama* (Physical Activity)**

Vyayama is one of the essential components of *Dinacharya*, and all major Ayurvedic Acharyas have emphasized its daily practice for the preservation of health. According to *Charaka Samhita*, regular *Vyayama* promotes *Laghava* (lightness of the body), *Karma Samarthyas* (improved physical capacity), *Diptagni* (enhanced digestive and metabolic activity), and resistance to disease. It also helps maintain proper body composition and supports overall vitality.^[5]

From a contemporary perspective, regular physical activity improves energy expenditure, glucose utilization, insulin sensitivity, and lipid metabolism. The consistency and timing of exercise may also contribute to healthy biological rhythms, making *Vyayama* a valuable lifestyle practice for supporting both metabolic and circadian health.

***Aahar* (Timely Meals)**

Ayurveda places great emphasis on *Aahar Kaal* (the proper time of eating) and *Aahar Matra* (the appropriate quantity of food). Acharyas recommend taking the principal meal during the daytime, particularly around *Madhyahna*, when *Agni* (digestive capacity) is considered strongest. Food should be consumed only after the previous meal has been completely digested, ensuring proper digestion and metabolism.

Equally important is *Matra*, where Acharya Vagbhatt advises eating in a quantity that is easy to digest—traditionally filling the stomach with half solid food, one-quarter liquids, and leaving one-quarter empty for the movement of *Vata*.^[6] This balanced approach prevents both overeating and under nutrition.

Modern Chrono nutrition similarly suggests that appropriate meal timing and portion control influence glucose regulation, insulin sensitivity, energy balance, and overall metabolic health. Thus, the Ayurvedic principles of *Aahar Kala* and *Matra* remain highly relevant in promoting healthy metabolic function.

***Nidra* (Sleep)**

All major Acharyas recommend night sleep (*Ratri Nidra*) as the physiological form of sleep and advise sleeping during the *Kapha*-dominant period of the night while avoiding *Ratrijagarana* (night awakening). *Divaswapna* (daytime sleep) is generally contraindicated because it aggravates *Kapha* and *Pitta*, although it is permitted in specific conditions such as *Grishma Ritu*, exhaustion, old age, childhood, debility, and certain disease states.

From a modern perspective, maintaining a regular nocturnal sleep schedule supports circadian stability, hormonal balance, glucose metabolism, and insulin sensitivity. Conversely, chronic sleep deprivation and irregular sleep patterns have been consistently associated with obesity, insulin resistance, metabolic syndrome, and impaired cardiometabolic health. Thus, the Ayurvedic concept of *Samyak Nidra* closely aligns with the contemporary understanding of sleep as a fundamental determinant of metabolic health.

DISCUSSION

Discussion on *Brahma Muhurta jagran*

Brahma Muhurta, the 14th Muhurta of the night (about 1½ hours before sunrise), is recommended by all major Acharyas as the ideal time to begin *Dinacharya*. Early awakening aligns the body with the natural light–dark cycle and promotes timely bowel evacuation, mental alertness, and physiological readiness for the day. Modern research shows that morning light synchronizes the suprachiasmatic nucleus (SCN), suppresses melatonin, regulates cortisol secretion, and improves circadian alignment, thereby supporting metabolic homeostasis and glucose regulation.^{[7][8][9]}

Discussion on Vyayama

Acharya Charaka describes Vyayama as producing Laghava, Diptagni, Karma Samarthya, and Vyadhi Kshamatva, highlighting its role in maintaining health and metabolism. Contemporary evidence demonstrates that regular physical activity improves insulin sensitivity and glucose metabolism, increases energy expenditure, and contributes to reductions in visceral adipose tissue. These effects support the role of regular exercise in maintaining metabolic health and reducing cardio metabolic risk.^{[10][11]} Exercise also acts as a circadian cue for peripheral metabolic clocks, contributing to better glycaemic control and metabolic flexibility.

Discussion on Ahara

Ayurveda emphasizes both Aahar Kaal (timely eating) and Matra (appropriate quantity). The principal meal is advised during Madhyahna, when Agni is strongest, and food should be taken only after complete digestion of the previous meal. Acharya Vagbhata also recommends filling half the stomach with solids, one-quarter with liquids, and leaving one-quarter empty. Modern Chrono nutrition supports these principles, showing that daytime eating improves insulin sensitivity and glucose tolerance, whereas late-night meals contribute to circadian disruption, obesity, and metabolic syndrome. Appropriate meal timing and portion control therefore promote both Samagni and metabolic health.^[12]

Discussion on Nidra

Nidra is one of the Trayopastambha and is regarded as essential for strength, nourishment, longevity, and mental well-being. Physiologically, the sleep-wake cycle is regulated by the SCN through the light-dark cycle, which controls melatonin secretion and circadian rhythms. During nocturnal sleep, hormonal regulation, tissue repair, lymphatic clearance, and glucose metabolism are optimized. Conversely, Ratrijagarana and exposure to artificial light suppress melatonin, disturb leptin and ghrelin balance, reduce insulin sensitivity, and increase the risk of obesity, type 2 diabetes, and metabolic syndrome. Thus, the Ayurvedic concept of Samyak Nidra closely corresponds with modern understanding of sleep as a key determinant of circadian and metabolic health.

CONCLUSION

Dinacharya provides a time-oriented lifestyle framework that closely aligns with modern concepts of circadian and metabolic health. Practices such as Brahma Muhurta Jagarana, Vyayama, timely and Matravat Ahara, and Samyak Nidra help maintain regular biological rhythms, support metabolic homeostasis, and promote overall well-being. While growing evidence supports the benefits of these individual practices, further clinical studies are needed to validate the complete Dinacharya regimen as a preventive strategy for lifestyle-related metabolic disorders.

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