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Review Article

DINACHARYA AND CIRCADIAN CYCLE: A CONCEPTUAL REVIEW OF AYURVEDIC DAILY *KARMAS* AND THEIR MODERN SIGNIFICANCE FOR CIRCADIAN CORRECTIONS

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ABSTRACT

Dinacharya, the Ayurvedic daily regimen, is a structured set of daily *Karmas* (practices) designed to align human physiology with natural cycles. Modern chronobiology describes similar health effects through circadian rhythms-24-hour biological cycles regulated by the suprachiasmatic nucleus (SCN), melatonin, cortisol, and peripheral clocks. Disruption of circadian timing is linked to metabolic, psychological, and sleep disorders. **Objective:** This conceptual review describes the key *Karmas* of *Dinacharya*, examines their modern physiological significance in relation to circadian biology, and discusses how *Dinacharya*-based interventions can correct or prevent circadian misalignment in contemporary lifestyles. **Methods:** Classical Ayurvedic texts and recent peer-reviewed reviews on *Dinacharya*, circadian rhythm, and chronobiology were conceptually analyzed. Practices were mapped to physiological markers such as cortisol awakening response, digestive enzyme secretion, body temperature rhythm, and melatonin onset. **Results:** Core *Dinacharya karmas*-including *Brahma Muhurta* waking, *Mala visarjana, Dantadhavana, Jihva nirlekhana, Gandusha, Abhyanga, Vyayama, Udvartana, Snana*, timed meals, and *Ratricharya*- show strong temporal and functional alignment with circadian physiology. Non-adherence mirrors circadian misalignment and is associated with obesity, diabetes, cardiovascular disease, depression, and sleep disorders. **Conclusion**: *Dinacharya karmas* represent an ancient, time-ordered behavioral framework that anticipates key principles of circadian biology. Systematic adherence, with pragmatic modifications for modern life, offers a preventive and corrective approach to circadian misalignment and lifestyle-related disorders.

INTRODUCTION

Ayurveda defines health as a state of balanced *Dosha, Agni, Dhatu,* and *Mala*, along with mental and spiritual well-being.[1] *Swasthavritta* emphasizes daily and seasonal regimens to maintain health and prevent disease.[2]

Dinacharya is not merely a set of hygiene habits; it is a time-based lifestyle system that coordinates daily activities with natural rhythms of light, temperature, and *Dosha* dominance. Classical texts prescribe specific *Karmas* to be performed at particular times, beginning with Brahma Muhurta waking and ending with *Ratricharya*.[3] Modern chronobiology studies circadian rhythms, endogenous 24 hour cycles that regulate sleep-wake patterns, hormone secretion, body temperature, digestion, immune function, and metabolism.[4] These rhythms are coordinated by the master clock in the suprachiasmatic nucleus of the hypothalamus and synchronized by zeitgebers such as light, temperature, food timing, and activity[5]. Circadian disruption due to shift work, jet lag, late-night screen exposure, irregular meals, and sleep deprivation is associated with obesity, type 2 diabetes, cardiovascular disease, mood disorders, and certain cancers.

Recent conceptual and narrative reviews have highlighted striking parallels between *Dinacharya* and circadian biology, suggesting that Ayurveda may be

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viewed as an ancient form of chronomedicine.[6] This paper expands on that relationship by describing the individual karmas of *Dinacharya*, explaining their modern physiological significance in circadian terms, discussing how non-adherence leads to circadian misalignment, and proposing corrections and integrative strategies to realign circadian rhythms using *Dinacharya* principles.[7]

METHODS

This is a conceptual narrative review based on classical Ayurvedic texts and recent peer-reviewed review articles on *Dinacharya*, circadian rhythm, and chronobiology. Each *Dinacharya karma* was identified and described based on classical sources. These practices were then mapped to modern physiological processes such as cortisol awakening response[8] melatonin secretion and sleep onset, digestive enzyme secretion and metabolic rhythm, core body temperature rhythm, autonomic nervous system balance, and immune function. The review did not involve human participants, primary experimentation, or statistical analysis.

Results

Overview of *Dinacharya Karmas* and Their Timing

According to classical Ayurveda, *Dinacharya* includes a sequence of daily practices performed from pre-dawn to night. Key *Karmas* include *Brahma Muhurta Utthana, Mala Visarjana, Dantadhavana, Jihva Nirlekhana, Gandusha* or *Kavala, Abhyanga, Vyayama, Udvartana*, *Snana*, appropriate clothing and grooming, timed meals, and *Ratricharya*. These practices are timed according to *Dosha kala* and natural cycles.[3]

Modern Physiological Significance of Key *Dinacharya Karmas*

***Brahma Muhurta Utthana* (early waking):** Waking during *Brahma Muhurta* is considered highly auspicious and is a *Vata*-dominant period ideal for clarity and learning. It coincides with the natural cortisol awakening response[5], a rise in cortisol that promotes alertness and prepares the body for the day. Early rising aligns with the light-induced phase advance of the circadian clock and supports a stable sleep-wake rhythm.[9]

***Mala Visarjana* (evacuation):** Early morning evacuation is supported by *Apana Vayu*. Delayed evacuation may disturb *Apana Vayu*, leading to constipation and restlessness. Modern circadian physiology shows that bowel motility follows a daily pattern, with increased colonic activity in the morning[10].

***Dantadhavana*, *Jihva Nirlekhana,* and *Gandusha* (Oral Hygiene):** Tooth brushing, tongue scraping, and oil pulling support oral health, remove impurities, and improve taste. Oral hygiene is the first phase of digestion and is linked to reduced systemic inflammation[11] and lower risk of cardiovascular disease. Consistent morning oral hygiene establishes a daily behavioral anchor that reinforces circadian regularity.

***Abhyanga* (Self-Oil Massage):** Oil massage nourishes *Dhatus*, reduces fatigue, improves sleep, and enhances skin complexion. Modern evidence indicates that massage increases lymphatic drainage, reduces cortisol, and improves immune function[12]. Evening *Abhyanga* or *Padabhyanga* can promote parasympathetic activation and facilitate sleep onset.

***Vyayama* (Exercise) and *Udvartana* (Powder Massage):** Exercise enhances strength, endurance, *Agni*, and metabolic rate. Morning or early afternoon exercise aligns with the peak in body temperature and metabolic activity, improving circadian alignment[13]. Late-evening intense exercise may delay sleep onset by increasing core temperature and sympathetic activity.

***Snana* (Bathing):** *Snana* promotes longevity, relaxation, and removal of drowsiness. Cold baths increase alertness and may act as a zeitgeber, while warm baths in the evening help facilitate sleep by promoting core temperature drop afterward.

Timed Meals: *Madhyanna bhojana* is recommended when *Pitta* and *Agni* are strongest. Digestive enzyme secretion and metabolic efficiency peak around midday, while late eating is associated with impaired glucose tolerance and reduced insulin sensitivity[14]. Early, light dinner supports melatonin onset and prevents gastrointestinal activity during sleep.

***Ratricharya* (Night Routine) and Sleep:** *Ratricharya* includes light dinner, a gentle walk after meals, oral hygiene, calming activities, and sleep by 10 PM. Early sleep aligns with melatonin rise and natural circadian dip in alertness, reinforcing SCN stability and improving sleep quality, immune function[8], and cognitive performance.

Circadian Misalignment Due to *Dinacharya* Non-Adherence

Modern lifestyle factors often violate *Dinacharya* principles, leading to circadian misalignment. Late waking blunts cortisol awakening response[5] and delays the SCN phase. Irregular meal times and late heavy dinners desynchronize peripheral clocks in the gut and liver.[15] Late-night screen exposure suppresses melatonin and delays sleep onset. Sedentary behavior reduces myokine release and disrupts metabolic rhythm. Chaotic sleep timing leads to SCN instability, fragmented sleep, cognitive impairment, depression, and immune dysfunction. Night shift work causes chronic circadian misalignment and increases risk of metabolic syndrome, cardiovascular disease, and cancer.[16]

Corrections to Circadian Cycle Using *Dinacharya* Principles

Sleep-Wake Rhythm Correction: Gradual early waking, morning light exposure, evening light reduction, and consistent bedtime strengthen the sleep-wake cycle[17].

Meal Timing and Circadian Alignment: Breakfast within 1 to 2 hours of waking, main meal at midday, and early light dinner improve circadian and metabolic synchronisation.

Physical Activity and *Abhyanga*: Morning or early afternoon exercise and evening *Padabhyanga* support metabolic health and sleep.

Oral Hygiene and Daily Anchors: Morning *Dantadhavana, Jihva Nirlekhana*, and *Gandusha* establish a stable behavioural rhythm.

Stress Reduction and *Ratricharya*: Evening wind-down routines, reduced stimulation, and a sleep-friendly environment improve sleep quality.

Personalisation and Pragmatic Adaptation: Prioritising key practices and micro-practices makes *Dinacharya* feasible in modern life.[18]

Clinical Validation of *Dinacharya* Interventions

Empirical data from a 12-week randomized controlled trial involving 120 adults demonstrated that the synergistic application of *Dinacharya* and *Yoga* significantly restores circadian stability and metabolic health. The study found that this combined intervention reduced sleep onset variability from 34.1 minutes to 15.8 minutes and lowered fasting glucose from 103.4mg/dL to 91.3mg/dL, with 75% of participants achieving melatonin normalization[18]. Furthermore, research on the timing of these practices indicates that morning-based (dawn) sessions provide superior benefits for sleep quality and chronotype alignment compared to evening (dusk) practices, reinforcing the Ayurvedic emphasis on early morning activity[19].

Metabolic Health and the "Butterfly Effect"

Dinacharya and *Ritucharya* serve as foundational frameworks for the quaternary prevention of obesity by promoting non-invasive lifestyle modifications that avoid unnecessary medicalization. This preventive strategy relies on consistent adherence to daily habits-such as waking in Brahma Muhurta, timely elimination, and regular physical activity-which positively influence gut health, metabolic function, and hormonal balance[20]. Such simple yet consistent Ayurvedic habits align with the modern concept of the "Butterfly Effect," where small, repeated actions in daily routine lead to profound long-term health improvements and prevent the onset of circadian misalignment[21]. Integrating these ancient regimens with wearable technology, heart rate variability monitoring, and continuous glucose monitoring provides a modern, data-driven pathway for optimizing hormonal harmony and preventing occupational health risks[22].

Expanded Discussion

Dinacharya and circadian biology share a conceptual and functional convergence centered on time, rhythm, and physiological balance. Ayurveda organizes daily life according to *Dosha kala,* while modern science describes similar timing effects via hormonal, neural, and metabolic oscillations. The major strength of *Dinacharya* as a circadian correction tool is its preventive and integrative nature. It combines behavioral, metabolic, and psychological dimensions into a coherent daily structure. It is culturally rooted in Ayurvedic tradition, improving acceptability among populations familiar with Ayurveda. It emphasizes consistency and regularity, which are key determinants of circadian stability.

The daily *Karmas* of *Dinacharya* can be interpreted not only as hygienic or spiritual practices but also as behavioral interventions that regulate biological timing. For example, *Brahma Muhurta* waking is more than early rising; it is a method of synchronizing wakefulness with the body's phase of rising alertness. In modern terms, this helps reinforce the cortisol awakening response[23] and stabilizes the sleep-wake cycle. Similarly, *Dantadhavana* and *Jihva Nirlekhana* may appear to be local oral practices, yet they function as a reliable morning cue, anchoring the day and reinforcing routine regularity. Such anchoring behaviors are important in chronobiology because the circadian system thrives on repetition and predictability.

Another important aspect of *Dinacharya* is meal timing. Ayurveda's recommendation of a substantial midday meal is strongly consistent with modern evidence showing greater glucose tolerance and metabolic efficiency earlier in the day. A heavy evening meal, particularly when combined with late-night screen exposure and limited physical activity, can shift peripheral clocks in the liver and gut away from the central clock in the SCN. This misalignment is increasingly recognized as a pathway to obesity, insulin resistance[24], dyslipidemia, and inflammatory disease. Thus, the Ayurvedic emphasis on *Madhyanna bhojana* should not be seen as merely traditional advice; it has a plausible biological basis in circadian physiology.

Exercise and body massage represent another important area of overlap. *Vyayama* improves circulation, glucose handling, and mood, while *Abhyanga* reduces stress and supports sleep. Their timing matters. Morning or early afternoon activity

tends to reinforce daytime alertness and metabolic activation, whereas vigorous late-night exercise may delay sleep onset by raising body temperature and sympathetic tone. Similarly, evening *Padabhyanga* may facilitate parasympathetic dominance and serve as a pre-sleep relaxation practice. In this sense, *Dinacharya* does not simply prescribe what to do; it also implicitly prescribes when to do it.

Sleep hygiene is central to both Ayurveda and circadian science. *Ratricharya* encourages early dinner, calm behavior, and sleep before midnight. This aligns well with modern findings that regular sleep timing improves sleep efficiency[9], cognitive performance, emotional regulation, and immune function. The Ayurvedic recommendation to avoid overstimulation at night is especially relevant in the contemporary era of artificial light and digital media. Blue light exposure, emotional arousal, and screen-based engagement all suppress melatonin and delay circadian phase, making traditional night routines highly relevant today.

The concept of circadian misalignment provides a useful bridge between ancient and modern perspectives. In Ayurveda, repeated violation of daily rhythm may lead to *Doshic* imbalance, impaired *Agni*, and accumulation of *Ama*. In modern terms, the same lifestyle pattern may disrupt hormonal rhythms, autonomic balance, and metabolic regulation. The resulting illness is often chronic, cumulative, and multifactorial. This parallel suggests that *Dinacharya* could be framed as a low-cost, non-pharmacological preventive strategy for contemporary society.

At a practical level, however, the challenge lies in implementation. Modern work schedules, commutes, shift duties, and digital connectivity make full adherence difficult. Therefore, a graded and realistic approach is needed. The most important practices should be prioritized: waking early, morning light exposure, regular evacuation, oral hygiene, a balanced midday meal, early light dinner, moderate daytime exercise, and a calm pre-sleep routine. Even partial adherence to these core practices may improve circadian stability. This makes *Dinacharya* adaptable to urban life while retaining its core physiological logic.

The limitations of current evidence should also be acknowledged. Most literature on *Dinacharya* and circadian rhythm remains conceptual, explanatory, or based on general lifestyle medicine. There is a need for controlled clinical trials testing whether *Dinacharya*-based interventions improve objective circadian markers such as melatonin onset, cortisol rhythm, actigraphy-derived sleep regularity, heart rate variability, fasting glucose, and inflammatory biomarkers. Future studies should also investigate personalized regimens based on prakriti, age, occupation, and chronotype. Such research would strengthen the scientific validity of *Dinacharya* and broaden its therapeutic relevance.

From a public health perspective, *Dinacharya* is particularly valuable because it is preventive, low-cost, and behaviorally feasible. It offers a framework that can be taught in schools, clinics, workplaces, and wellness programs. In settings where medication access is limited or lifestyle disorders are increasing, such a framework may help reduce disease burden by improving sleep, metabolism, stress resilience, and daily functioning. Its appeal lies in the fact that it does not require sophisticated technology; rather, it asks for alignment with time, consistency, and natural rhythm.

In summary, *Dinacharya* can be understood as an ancient chronobiological system[20]. Its *Karmas* are not isolated rituals but interconnected regulators of biological timing. Their modern significance extends beyond tradition and into preventive medicine, sleep health, metabolic regulation, and lifestyle correction. By reinterpreting *Dinacharya* through the lens of circadian science, Ayurveda can contribute meaningfully to contemporary health promotion.

CONCLUSION

Dinacharya karmas constitute a time-ordered lifestyle system that aligns human behavior with natural cycles, closely paralleling modern circadian biology. Practices such as *Brahma Muhurta* waking, timed meals, morning exercise, *Abhyanga*, and *Ratricharya* correspond with circadian markers including cortisol awakening, metabolic peaks, and melatonin-mediated recovery. Non-adherence to *Dinacharya* mirrors circadian misalignment, contributing to metabolic, psychological, and sleep-related disorders. Integrating *Dinacharya* principles with modern lifestyle adjustments offers a pragmatic, culturally grounded strategy for correcting and preventing circadian disruption, particularly in urban and shift-working populations. *Dinacharya* thus represents an ancient form of chrono-medicine, whose systematic study and integration with modern chronobiology can enhance preventive care and lifestyle medicine in the 21st century.

REFERENCES

1. Acharya YT, editor. Charaka Samhita of Agnivesha. Varanasi: Chaukhambha Orientalia; 2018.
2. Acharya YT, editor. Sushruta Samhita of Sushruta. Varanasi: Chaukhambha Surbharati; 2019.
3. Tripathi B, editor. Ashtanga Hridaya of Vagbhata. Delhi: Chaukhamba Sanskrit Pratishthan; 2017.
4. Satchidananda Panda. Circadian physiology of metabolism. Science. 2016; 354(6315): 1008-15.

5. Till Roenneberg, Merrow M. The circadian clock and human health. *Curr Biol*. 2016; 26(10): R432-43.
6. Bass J, Takahashi JS. Circadian integration of metabolism and energetics. Science. 2010; 330(6009): 1349-54.
7. Scheer FAJL, Hilton MF, Mantzoros CS, Shea SA. Adverse metabolic effects of circadian misalignment. Proc Natl Acad Sci U S A. 2009; 106(11): 4453-8.
8. Matthew Walker. Why We Sleep: Unlocking the Power of Sleep and Dreams. New York: Scribner; 2017.
9. Charles A. Czeisler. Perspective: Casting light on sleep deficiency. Nature. 2013; 497(7450): S13.
10. Johnston JD. Physiological links between circadian rhythms, metabolism and nutrition. Exp Physiol. 2014; 99(9): 1133-7.
11. Hastings MH, Maywood ES, Brancaccio M. Generation of circadian rhythms in the suprachiasmatic nucleus. Nat Rev Neurosci. 2018; 19(8): 453-69
12. Arble DM, Bass J, Laposky AD, Vitaterna MH, Turek FW. Circadian timing of food intake contributes to weight gain. Obesity (Silver Spring). 2009; 17(11): 2100-2.
13. Morris CJ, Yang JN, Scheer FAJL. The impact of the circadian timing system on cardiovascular and metabolic function. Prog Brain Res. 2012; 199: 337-58.
14. Knutson KL, Spiegel K, Penev P, Van Cauter E. The metabolic consequences of sleep deprivation. Sleep Med Rev. 2007; 11(3): 163-78.
15. Potter GD, Skene DJ, Arendt J, Cade JE, Grant PJ, Hardie LJ. Circadian rhythm and sleep disruption: causes, metabolic consequences, and countermeasures. Sleep Med Rev. 2016; 25: 91-100.
16. Turek FW, Joshu C, Kohsaka A, Lin E, Ivanova G, McDearmon E, et al. Obesity and metabolic syndrome in circadian Clock mutant mice. Science. 2005; 308(5724): 1043-5.
17. Srinivasan V, Pandi-Perumal SR, Spence DW, Moscovitch A, Trakht I, Brown GM, et al. Potential use of melatonergic drugs in sleep disorders. CNS Drugs 2011; 25(11): 913-32.
18. Perera MTPR. Synergistic role of dinacharya and yogic practices in regulating circadian health and preventing lifestyle disorders: A randomized controlled trial. Int J Res Ayur Pharm. 2025;
19. Iyer S, et al. Dawn vs. Dusk: Yoga practice timing shapes sleep, mood and well-being in young adults-results of a randomized controlled trial. J Sleep Res. 2026;
20. Saha S, et al. Exploring the role of Dinacharya and Ritucharya in quaternary prevention of obesity. J Prev Med. 2025;
21. Basireddy R, Reddy KRS. Dinacharya vs ideal circadian rhythm. Vedic Health Journal. 2025;
22. Mallaraddi R, et al. Synchronising life's cadence: Ayurvedic chronobiology, hormonal harmony, and wearable technology for diverse occupations– a review. Int J Phytother Phytopharm. 2026;
23. Harvard Health Publishing. Blue light has a dark side. Harv Health Lett. 2020; 45(3): 1-3.
24. Patel SR, Hu FB. Short sleep duration and weight gain: a systematic review. Obesity (Silver Spring). 2008; 16(3): 643-53.

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