

ANCIENT WISDOM, MODERN HEALTH: THE SCIENCE BEHIND AHARA, NIDRA, AND BRAHMACHARYA

Satya Keerthi Kulkarni¹, Mukkera Rishik², K.SwarnaLatha*

^{1,2}B.Sc Microbiology, Department of Microbiology
St. Pious X Degree & P.G College for Women, Hyderabad, Telangana, India.

*Faculty, Department of Microbiology
St. Pious X Degree & P.G College for Women, Hyderabad, Telangana, India.
Corresponding Author, Email: swarnak30@stpiouscollege.org,

Abstract:

In Ayurvedic literature, the three fundamental pillars of the ancient Indian knowledge system- Ahara (food), Nidra (sleep), and Brahmacharya (balanced living) are referred to as Trayopastambha. These concepts prioritise moderation, ecological harmony, and following natural biological rhythms. Modern biomedical sciences are providing more evidence to support the relevance of these beliefs in preventative healthcare today.

Circadian biology research suggests that regular meal time, reduced nocturnal eating, synchronization with natural light-dark cycles are critical for maintaining metabolic health and lowering the risk of obesity and diabetes. Similarly, sleep science research emphasises the necessity of enough restorative sleep for emotional control, cognitive performance, and mental well-being, matching Ayurvedic beliefs about Nidra as a basic regulator of our physical and psychological stability.

Modern lifestyle medicine confirms Ayurvedic concepts of moderation by demonstrating that planned daily routines, regular exercise, and efficient stress management dramatically reduce the incidence of chronic disorders, including hypertension and cardiovascular disease. Brahmacharya is defined as the controlled and harmonious use of physical and mental energy, with an emphasis on self-control, restraint, and sustainable lifestyle choices that are consistent with modern approaches to long-term health management.

The interaction of Ahara, Nidra, and Brahmacharya is examined in this study to demonstrate how these age-old ideas might guide sustainable and economical approaches to contemporary preventative healthcare. With over one billion people worldwide suffering from obesity and metabolic diseases, traditional eating habits based only on restricting calories have proven to be ineffective in the long run. This has heightened interest in circadian nutrition and the new area of chrono-nutrition, which highlights the timing of food intake as a critical aspect in metabolic control. Circadian rhythm disruptions caused by artificial lighting, work shifts, and irregular lifestyles have an adverse effect on health due to interactions between clock genes, food, and the gut microbiota.

Ahara, Nidra, and Brahmacharya work together to provide an affordable and cost-effective foundation for advanced preventive healthcare, confirming the Indian knowledge system's long-term scientific relevance.

Keywords:

Trayopastambha, Ahara, Nidra, Brahmacharya, Circadian Rhythm, Chrono-nutrition, Indian Knowledge Systems, Lifestyle Medicine.

I. Introduction

Health, according to ancient Indian medical theory, is a dynamic balance maintained by a few core lifestyle pillars, rather than simply the absence of sickness. The idea of Trayopastambha, which is Ahara (eating), Nidra (sleep), and Brahmacharya (controlled conduct), is embodied in Ayurveda and is said to be essential for maintaining bodily, mental, and spiritual well-being.

Indian Knowledge Systems and Health:

Lifestyle and daily routines (Dinacharya) are important factors in determining health, illness prevention, and treatment, according to ancient Indian wisdom. These ideas, which have evolved over generations, are still applicable today as complementary strategies to contemporary biomedical perspectives [1]. Ancient Indian knowledge systems, especially Ayurveda, provide a comprehensive framework for comprehending and preserving health that incorporates behavioural, mental, and physical aspects. Ayurveda, which has its roots in writings like the Charaka Samhita and Sushruta Samhita, defines health (Swasthya) as the harmonious balance of body constituents (doshas), tissues, waste products, senses, mind, and soul rather than just the absence of sickness.[2]

Concept of Trayopastambha:

The three fundamental "sub-pillars" of Trayopastambha, Ahara (diet and nutrition), Nidra (sleep), and Brahmacharya (self-regulated conduct) are described in classical Ayurvedic scriptures, particularly Charaka Samhita, as supporting life, strength, complexion, growth, and longevity when appropriately balanced. Any disruption in one of these pillars is thought to cause Dosha and Dhatus disturbances, which put the person at risk for a variety of physical and mental illnesses.

Ahara: A healthy diet supplies the nutrients and energy required for growth, digestion, and immunity, and is regarded as the main external support for physical and physiological integrity. Certain dietary practices (aharavidhi) that balance the doshas and improve digestion are described in classical Ayurvedic writings. [3]

Three Pillars of Ayurveda

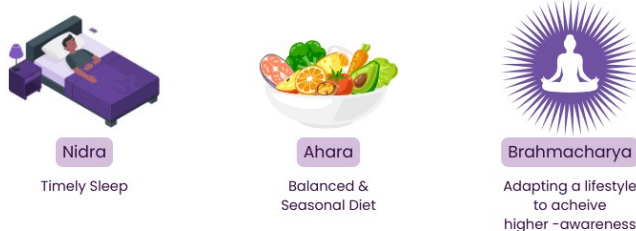


Figure 1:
Conceptual representation of Trayopastambha—Ahara (diet), Nidra (sleep), and Brahmacharya (disciplined conduct)—as the foundational pillars of health and longevity in Ayurveda.

Nidra: It is said that strength, mental stability, and renewal depend on getting enough restorative sleep.

According to Ayurvedic researchers, getting enough sleep has a direct impact on emotional, cognitive, and metabolic equilibrium. [4]

Brahmacharya: It is traditionally connected with disciplined living and temperance in sensuous pleasures. It promotes physical strength, mental clarity, and the preservation of vital energy.

When applied in line with Ayurvedic principles, these three sub-pillars (Trayopastambha) are depicted as essential to maintaining Swasthya and fostering longevity.

Relevance of ancient lifestyle principles in the modern health crisis:

Unpredictable eating patterns, sleep deprivation, and dysregulated sexual and behavioural patterns are all strongly associated with the growth in lifestyle-related non-communicable diseases (NCDs) worldwide, including obesity, type 2 diabetes, cardiovascular disease, and depression. In line with Ayurveda's focus on Trayopastambha as a form of prevention for NCDs and healthy ageing, modern public health literature increasingly emphasises the importance of nutrition quality, sleep hygiene, and behavioural control as modifiable risk factors. Similar to Ayurvedic findings, modern research increasingly emphasises how stress-related behaviours, sleep quality, and dietary habits affect the risk of chronic diseases. The concepts of Trayopastambha remind us of fundamental actions that can counteract these trends, even though modern lifestyles frequently feature irregular food patterns, sleep disturbances, and a lack of self-control.

The increasing prevalence of chronic illnesses may be lessened by incorporating these age-old lifestyle ideas into contemporary medical procedures, such as through individualised diet, circadian rhythm-aligned sleep patterns, and thoughtful activity moderation. The combination of traditional knowledge and modern medicine highlights the ongoing significance of Indian health knowledge systems and presents opportunities for holistic and preventive health approaches. [5]

II. Ahara (Diet) and Chrono-nutrition

Concept of Ahara in Ayurveda:

The concept of Ahara has been well established in Ayurvedic literature since antiquity. Ahara has been defined from several angles by classical Ayurvedic experts. Shabdakalpadruma describes Ahara as a substance that is swallowed through the throat after ingestion. Similarly, the Nibandhasangraha commentary explains that any substance passing through the oesophagus is termed Ahara. Acharya Chakrapani further elaborates that Ahara encompasses not only dietary substances but also medicinal preparations, as both are consumed through the oral route. Thus, Ahara may be comprehensively defined as any substance ingested orally and swallowed via the throat.

According to Ayurvedic principles, every Ahara dravya possesses specific attributes, including rasa (taste), guna (physical qualities), veerya (potency), and vipaka (post-digestive effect), with prabhava determining the unique or specific action of the substance. These factors collectively govern the physiological and therapeutic effects of food within the body. Classical Ayurvedic texts emphasise the concept of Ahara as

Mahabhaishajya, signifying that food itself can function as medicine when appropriately selected and consumed. Furthermore, the regulation of food intake in terms of quantity (*matra*) and suitability (*satmya*) is considered a crucial component of the Ayurvedic lifestyle, contributing to the maintenance of health and longevity. Importantly, the suitability of Ahara is individual-specific and varies according to one's constitution (*prakriti*), digestive capacity (*agni*), and health status, thereby supporting the classical dictum that what is beneficial for one individual may be harmful to another. Ahara in Today's Life with Special Reference to Ayurveda. [6]

Importance of digestion, meal timing, and balance:

The belief that eating three meals a day is healthier originates from cultural traditions and early epidemiological studies that mainly examined cardiovascular risk factors such as cholesterol levels, body weight, and obesity rather than cardiovascular disease (CVD) itself. Many early studies reported that a lower meal frequency ("gorging") was associated with worsened blood lipid profiles compared to more frequent eating ("nibbling"), leading to the assumption of increased CVD risk. Several later cohort studies also found that higher meal frequency was associated with lower total and LDL cholesterol, reduced obesity risk, and smaller waist circumference, even after adjusting for lifestyle and dietary factors. Some evidence suggested a higher risk of type 2 diabetes in men eating fewer meals, though findings were inconsistent, especially among women. Only one prospective study directly assessed coronary heart disease risk and found no clear advantage of higher meal frequency. Overall, results are inconsistent and largely based on cross-sectional data, making it difficult to establish a strong or causal link between meal frequency and cardiovascular disease.[7]

Modern circadian biology and chrono-nutrition:

Chrono-nutrition explores the relationship between circadian rhythms and nutrition, emphasising how the timing of food intake influences metabolism and overall health. The human circadian system operates on a roughly 24-hour cycle, regulated by central and peripheral clocks that control physiological processes such as sleep, hormone secretion, glucose metabolism, and energy balance. Modern lifestyle factors like shift work, artificial lighting, irregular sleep, and late-night eating can disrupt this rhythm (chronodisruption), increasing the risk of metabolic disorders such as obesity, type 2 diabetes, and cardiovascular disease. Emerging evidence shows that diet interacts with clock genes, the gut microbiome, and epigenetic mechanisms, influencing individual responses to nutrition. Aligning meal timing with circadian rhythms may therefore support metabolic health and enable personalised nutritional strategies to reduce chronic disease risk. [8]

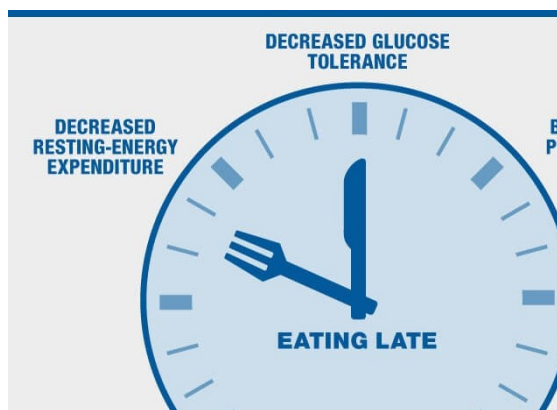


Figure 2:
Interaction between circadian rhythm and timing of food intake influencing metabolic regulation.

Linking Ayurvedic dietary principles with metabolic health:

Selection of food in Ayurveda is based on several important factors such as prakriti (body constitution), guna (qualities), samskara (processing), sathmya (adaptability), vaya (age), desa (habitat) and kala (season). Diet is customised according to an individual's prakriti because metabolic patterns differ among kapha, pitta and vata types. Kapha-predominant individuals have slow digestion and a tendency toward weight gain; hence, they are advised to eat light, small meals with pungent, bitter and astringent tastes while avoiding heavy, sweet and oily foods. Pitta-predominant individuals have strong digestion and require frequent meals; cooling foods with sweet and astringent tastes are preferred, and spicy, sour and salty foods should be restricted. Vata-predominant individuals have irregular digestion and are prone to degeneration, so warm, nourishing and oily foods with sweet, sour and salty tastes are recommended.[9]

Food selection also depends on guna and rasa, as foods possess specific qualities that can either aggravate or pacify the doshas. Heavy, oily and sweet foods aggravate kapha, while lighter foods help maintain balance, especially in disease prevention such as diabetes. Samskara or processing alters the qualities of food; for example, puffed rice is lighter than flaked rice, whereas deep-fried foods increase disease risk. The concept of virudha highlights incompatible food combinations, such as milk with fruits, which may lead to metabolic disturbances when consumed regularly. Age is another determinant, as kapha predominates in childhood, pitta in middle age and vata in old age, requiring age-appropriate dietary modifications. Desa and Kala emphasise the importance of consuming local and seasonal foods to adapt to climatic changes. Finally, the quantity of food should always match one's digestive capacity, as both excess and inadequate intake can disturb dosha balance and lead to disease.

III. Nidra (Sleep): Ancient Wisdom and Modern Sleep Science **Nidra in Ayurvedic philosophy:**

Nidra (sleep) is regarded in Ayurveda as one of the three fundamental pillars (Trayopastambha) of life, alongside Ahara (food) and Brahmacharya, forming the essential triad that sustains health and vitality. Proper Nidra, as emphasised in Ayurvedic literature, is vital for maintaining total health, vigour, mental clarity, and longevity. [10]

Classical texts describe Nidra as an active physiological state supporting the nourishment of *Dhatu*s and *Ojas* while ensuring *Sharira Bala*, *Varna*, and *Sukha*—strength, complexion, and happiness [11]. Ayurveda categorises sleep into two forms: normal (*Svabhaviki Nidra*) and abnormal (*Vaikariki Nidra*), reflecting both natural rest and pathological conditions linked to *Dosha* imbalances. Anidra (insomnia) and Ati-Nidra (excessive sleep) arise from disturbances in *Vata* and *Kapha* as well as mental factors such as worry, fear, and anger, leading to fatigue, mood changes, and psychosomatic ailments. This traditional perspective underscores Nidra's integral role in preserving *Swasthya* (health) through balanced routines and timely, restorative rest, aligning closely with modern insights into the restorative and regulatory functions of sleep. [12]

Modern understanding of sleep and circadian rhythm:

Modern sleep research defines sleep as an intricate biological process regulated by circadian rhythms—internal body clocks that synchronise the sleep-wake cycle with environmental cues such as light and darkness. These rhythms coordinate neuronal, endocrine, and metabolic activities, influencing cognitive performance, immune competence, and overall physiological balance. [13]

Sleep consists of two major phases—non-rapid eye movement (NREM) and rapid eye movement (REM)—which function together to consolidate memory, promote cellular restoration, and facilitate emotional processing. Adequate, well-structured sleep regulates hormones such as melatonin and cortisol, stabilising stress responses and maintaining optimal metabolic and mental health. [14]

Contemporary sleep science recognises that sleep is not merely a passive “switching off” of consciousness but an active, cyclical state governed by brain circuits and homeostatic mechanisms that communicate closely with circadian pathways. The suprachiasmatic nucleus (SCN) in the hypothalamus acts as the master clock, aligning physiological processes including body temperature, hormone release, and energy metabolism with the

24-hour light–dark cycle [15]. When these natural rhythms are disrupted by irregular habits, exposure to artificial light at night, or shift work, the misalignment between internal and external timing predisposes individuals to a variety of metabolic, cardiovascular, immune, and neuropsychiatric disorders, underscoring the essential role of sleep timing and quality in sustaining total health.[16]

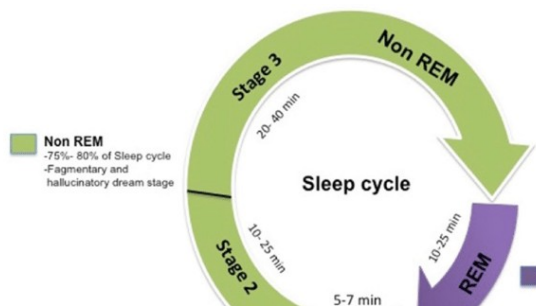


Figure 3:
Organisation of sleep architecture and circadian regulation through the suprachiasmatic nucleus

Impact of sleep on physical and mental health:

Sleep is a vital determinant of physical and mental health, a concept emphasised in both Ayurvedic and modern medical systems. Prolonged insomnia or disturbed sleep is strongly linked to metabolic imbalances, elevated inflammation, reduced immune defence, and higher susceptibility to chronic conditions such as obesity, diabetes, and cardiovascular disease [17]. Modern research also reveals that sleep deprivation raises stress hormones, affects cognitive and emotional processing, and contributes to psychological issues like anxiety and depression. In Ayurveda, disturbed sleep patterns are described as *Nidranasha*, a state comparable to modern insomnia that diminishes *Swasthya* (health) and disrupts emotional balance [18]. Both traditions agree that restorative, well-timed sleep maintains bodily equilibrium and mental harmony. Adequate sleep facilitates cellular repair, hormonal stability, and immune regulation, while promoting memory consolidation, emotional control, and stress resilience. Conversely, chronic sleep deprivation impairs these functions, leading to an imbalance of *Manas* (mind) and depletion of *Ojas* (vital essence). Thus, classical Ayurvedic understanding and contemporary sleep science converge in recognising quality sleep as fundamental to holistic well-being and longevity [19].

IV. Brahmacharya (Balanced Lifestyle) and Lifestyle Medicine

Meaning of Brahmacharya beyond celibacy:

Brahmacharya is one of the three supporting pillars of life in Ayurveda, along with Aahara (diet) and Nidra (sleep), which together sustain the body, mind and soul. It refers to disciplined conduct that leads to the realisation of Brahman or one's true self and is not limited to physical celibacy alone. Brahmacharya strengthens *Atma* and preserves *Shukra Dhatu* (semen), which is considered the visible form of *Atma Tattva* and the supreme source of *Ojas*, immunity, vitality and longevity. Preservation of *Shukra* enhances strength, mental clarity, resistance to disease and long life, whereas its depletion leads to weakness and reduced lifespan. Brahmacharya involves complete control over thoughts, speech and actions related to sensuality, including avoidance of the eight forms of sexual indulgence at physical, verbal and mental levels. It is essential for both men and women and is regarded as a key practice for health, immunity, moral strength, longevity and spiritual progress, as it balances *Ojas*, *Tejas* and *Prana*, the vital forces responsible for a healthy, energetic and fulfilled life. [20]

Self-regulation, moderation, and mental discipline:

Research evidence consistently highlights a strong interrelationship among resilience, self-regulation, and psychological well-being. Studies have shown a positive association between resilience and life satisfaction, identifying resilience as an important component of overall well-being. Individuals with higher resilience tend to experience better psychological well-being, as resilience enables effective coping with stress and adversity. Similarly, self-regulation has been found to significantly contribute to psychological well-being by helping individuals balance multiple goals, manage stress, enhance positive emotions, and achieve personal objectives, which in turn increases subjective well-being. Empirical findings, particularly among young adults, indicate a strong positive relationship between self-regulation capacity and psychological well-being. Furthermore, self-regulation is recognised as a core characteristic of resilient individuals and acts as a significant predictor of resilience. Research across student and entrepreneurial populations demonstrates that individuals with better self-regulatory skills show higher resilience. In addition, resilience has been identified as a mediating factor between self-regulation and psychological outcomes, suggesting that self-regulation enhances resilience, which in turn promotes psychological well-being.[21]

A holistic Ayurvedic code of conduct aimed at promoting physical health, mental stability, social harmony, and spiritual growth. Practices such as Brahmacharya (regulated celibacy) encourage sense control and longevity by promoting balanced and responsible sexual behaviour. Ahimsa (non-violence) is highlighted as essential for mental peace and long life, as violent tendencies disturb the mind and body. Anayasaka (avoiding over-exertion) and Prashantam (calmness of mind) support doshic balance, mental clarity, and sustained energy. Ethical speech (*Priyavadinam*), meditation (*Japa para*), cleanliness (*Soucha*), patience (*Dheera*), charity (*Dana*), ascetic discipline (*Tapaswin*), and respect for elders foster emotional well-being, moral integrity, and social cohesion. Compassion (*Anrushamsya*), mercy (*Karuna*), and balanced sleep (*Sama jagaranswapna*) further strengthen psychological health and resilience. Dietary guidance, such as regular intake of milk and ghee, nourishes vital tissues and *Ojas*, while awareness of place, time, and measure (*Desha-Kala-Pramana*) ensures adaptability. Traits like planning (*Yuktidnya*), modesty (*Anahamkari*), good etiquette (*Shashtachara*), open-mindedness (*Asamkirna*), spiritual focus, service to elders, and engagement with both traditional wisdom and modern knowledge collectively define an ideal lifestyle. Together, these practices

reflect Ayurveda's integrative approach to longevity, disease prevention, ethical living, and overall well-being. [22]

Modern lifestyle disorders and preventive medicine:

The four major chronic and life-threatening diseases—COPD, diabetes mellitus, Alzheimer's disease, and cancer—each represent a significant global health burden driven largely by lifestyle, environmental exposure, and complex genetic interactions. COPD is a progressive, non-curable respiratory disorder mainly caused by long-term exposure to air pollutants and tobacco smoke, leading to airflow limitation, impaired gas exchange, and increased mortality, particularly in developing countries like India. Diabetes mellitus, especially Type-2 DM, is a rapidly growing metabolic disorder strongly linked to unhealthy lifestyle habits, obesity, and environmental factors, resulting in widespread organ damage and reduced quality of life if not properly managed. Alzheimer's disease is a major neurodegenerative disorder characterised by irreversible cognitive decline due to amyloid plaque and neurofibrillary tangle formation, with no definitive cure currently available, though early diagnosis and lifestyle modification can slow progression. Cancer represents the most lethal disease burden worldwide, with rising incidence particularly in low- and middle-income countries, where tobacco use remains the most significant preventable risk factor. Overall, these diseases share common themes of chronic progression, limited curative options, and strong associations with lifestyle and environmental risk factors, emphasising the urgent need for preventive strategies, early diagnosis, lifestyle modification, and integrated healthcare approaches to reduce global morbidity and mortality. [23]

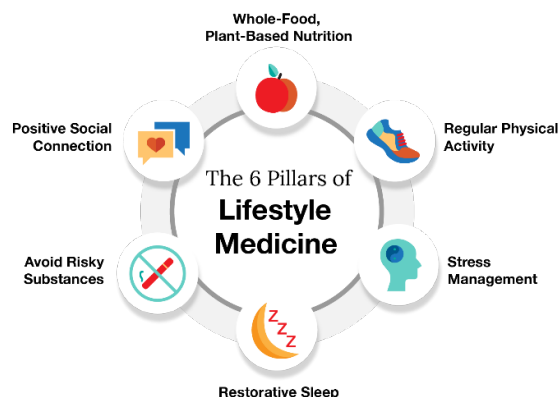


Figure 4:
Role of self-regulation and disciplined lifestyle in maintaining psychological and physical well-being.

V. Integrated Perspective of the Three Pillars

Interconnection of Ahara, Nidra, and Brahmacharya:

Ayurveda describes Ahara (food), Nidra (sleep), and Brahmacharya (disciplined regulation of conduct and sexuality) as *Trayopastambha*, three interdependent sub-pillars that support the body-mind complex and sustain health and longevity. Rather than functioning separately, these pillars continuously influence one another to maintain balance in the body (Sharira), mind (Manas), and vital essence (Ojas): wholesome food nourishes tissues and steadies the mind, adequate sleep restores metabolic and neuroendocrine equilibrium, and regulated sensual and sexual behaviour conserves Ojas and promotes psychological stability. Classical Ayurvedic literature explains that disturbances in any one of these domains—such as irregular or unwholesome diet, sleep deprivation, or unrestrained indulgence—disrupt Dosha homeostasis and can trigger a cascade of lifestyle-related and psychosomatic disorders, whereas harmony among the three supports strength (Bala), vitality, healthy complexion, growth, emotional equilibrium, and overall well-being. [24]

Ayurvedic systems approach:

Ayurveda views health as an emergent, systems-based state sustained by integrated lifestyle practices rather than isolated interventions. Within this framework, Ahara (food) nourishes the Dhatus, Nidra (sleep) restores and stabilises physical and mental functions, and Brahmacharya (disciplined regulation of sensory, cognitive, and behavioural processes) protects Ojas and mental steadiness. Together, these three pillars continuously modulate the interactions among Doshas (Vata, Pitta, Kapha), Dhatus, Agni, and Manas, thereby supporting the “Tridanda” of body, mind, and soul and maintaining overall homeostasis. When any one pillar is disturbed, for example, through improper diet, irregular or insufficient sleep, or uncontrolled indulgence, it initiates a cascade of imbalances that weaken digestion, immunity, and psychological resilience, increasing vulnerability to disease. [25] For this reason, classical guidance embeds Ahara, Nidra, and Brahmacharya into Dinacharya and Ritucharya, aligning daily and seasonal routines with natural rhythms so that wellness and disease prevention become the primary goals, particularly in reducing the risk of lifestyle disorders such as obesity, diabetes, hypertension, and stress-related illnesses through sustained, low-cost lifestyle adjustment. [26]

Modern scientific parallels (holistic and preventive health):

Contemporary health science increasingly reflects this integrative vision through holistic and preventive medicine, which recognises that lifestyle patterns across multiple domains collectively determine long-term health rather than any single factor alone. Nutrition, sleep quality, stress management, and behavioural discipline together influence metabolic health, immune capacity, mental well-being, and the overall risk of chronic illnesses such as obesity, diabetes, heart disease, and anxiety. Cumulative disruptions in these areas, such as poor diet, irregular or insufficient sleep, unmanaged stress, and lack of self-regulation, are now understood to underlie the development of lifestyle diseases, rather than one isolated cause. [27] In response, fields such as lifestyle medicine, circadian health, and psychosomatic medicine emphasise regular routines, balanced eating, restorative sleep, and mindful self-regulation, closely echoing the Ayurvedic stress on harmonising daily habits. This aligns strongly with the concept of Trayopastambha, where Ahara, Nidra, and Brahmacharya are seen as interacting determinants of Agni, Ojas, and Manas: modern research on diet–gut–brain interactions, circadian biology, and stress physiology similarly shows that nutrition, sleep–wake cycles, and behavioural and sexual choices together shape gut microbiome balance, hormonal profiles, inflammation, and psychological resilience.[28] Thus, the ancient triad of Ahara, Nidra, and Brahmacharya resonates with integrated care models that prioritise multi-component interventions—nutrition counselling, sleep optimisation, stress and impulse regulation—as a comprehensive foundation for long-term health and healthy ageing.

VI. Conclusion and Future Outlook

Relevance of ancient wisdom in contemporary healthcare:

Ancient Ayurvedic wisdom offers a timely and practical framework for modern healthcare in the context of rising lifestyle-related and noncommunicable diseases. Ayurveda places primary emphasis on prevention and balance, focusing on the daily regulation of diet (Ahara), sleep (Nidra), and disciplined behaviour (Brahmacharya) rather than only treating symptoms after disease appears. [29] This

approach directly addresses contemporary public health challenges, where modifiable lifestyle factors significantly contribute to chronic conditions such as obesity, diabetes, cardiovascular disease, and mental health disorders. [30] Since lifestyle factors are estimated to account for more than 80% of the global burden of non-communicable diseases, the Trayopastambha framework provides structured, low-cost strategies for long-term risk reduction through a balanced diet, good sleep hygiene, and behavioural moderation. Emerging scientific evidence and integrative reviews increasingly support the view that durable health outcomes depend not just on medical interventions but on sustained behavioural and lifestyle patterns, with combined lifestyle measures showing better effects on immune function, cardiometabolic risk markers, and psychological resilience than isolated treatments. By embedding these practices into daily routines (Dinacharya) aligned with natural rhythms, Ayurvedic lifestyle principles offer scalable, preventive solutions that can be integrated into modern health systems, particularly in resource-constrained and population-level settings.[31]

Need for integrative and preventive health approaches:

The escalating global burden of chronic diseases highlights the critical need for integrative and preventive health models that transcend isolated biomedical treatments.[32] Modern lifestyle medicine acknowledges the synergistic impact of nutrition quality, sleep hygiene, stress regulation, and behavioural discipline on metabolic, immune, and psychological health, principles that closely mirror Ayurveda's Dinacharya and Ritucharya for aligning daily and seasonal routines with biological rhythms.[33] Healthcare systems worldwide are recognising the shortcomings of reductionist, symptom-centric approaches for chronic condition management, fueling demand for hybrid models that merge Ayurvedic lifestyle principles with contemporary diagnostics and therapeutics.[34] Clinical trials and meta-analyses demonstrate that multi-domain interventions—nutrition optimisation, circadian-aligned sleep protocols, and stress-behavioural regulation, embodying the Trayopastambha triad—outperform single-modality treatments in NCD prevention and holistic wellbeing. (Patwardhan, Bhushan.)[35] Policy initiatives in India and globally promote AYUSH integration, personalised care pathways, and public health campaigns focused on root-cause modification through self-regulation, routine adherence, and early intervention, shifting paradigms from disease management to proactive wellness. [36]

Scope for future research:

Future research holds immense potential to bridge Ayurvedic lifestyle principles with contemporary biological science through interdisciplinary investigations into the physiological and molecular mechanisms underlying concepts like Dosha, Agni, Ojas, and Prakriti, particularly via circadian biology, neuroendocrine regulation, immunology, and gut-brain interactions. [37] Priority gaps include randomised controlled trials comparing Trayopastambha-based regimens to standard care for NCD risk reduction across diverse populations, alongside longitudinal studies mapping these pillars to modern biomarkers such as gut microbiota, inflammasomes, and chronobiology to develop standardised, evidence-based clinical models. Additional focus should address scalability through digital health tools, cost-effectiveness analyses, health systems research on affordability and adaptability, and transdisciplinary collaborations to translate ancient wisdom into global preventive healthcare paradigms and policy frameworks. [38]

References:

1. Goyal, Mandip. "Lifestyle intervention: A preventive approach for non-communicable diseases." *Ayu* vol. 39, 3 (2018): 119-120. doi:10.4103/ayu.AYU_26_19
2. Navya, S., Ranjith Kumar Shetty, and Sri Nagesh K. A. "A Review on the Concept of Trayopastambha with Special Reference to Brahmacharya." *Journal of Ayurveda and Integrated Medical Sciences*, vol. 5, no. 4, July–Aug. 2020, pp. 341–346.
3. Deore, Nilam & Pani, Sudhirkumar. (2020). AAHAR: IMPORTANT ASPECT OF TRAYOPASTAMBHA. *World Journal of Pharmaceutical Research*. 9. 1583-1595. 10.20959/wjpr202015-19543.
4. Syed, Mehrukh. (2021). A Review on Ayurvedic concept of significance of Nidra in Lifestyle Disorders. *National Journal of Research in Ayurved Science*. 9. 10.52482/ayurlog.v9i02.834.
5. Saxena, Vartika et al. "Strengthening AYUSH Integration with Preventive Medicine." *Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine* vol. 49, Suppl 2 (2024): S183-S190. doi:10.4103/ijcm.ijcm_748_24
6. Yewale, Swapnali, and Prasad Yewale. "Importance of Ahara in Today's Life with Special Reference to Ayurveda." *International Journal of Life Science and Pharma Research*, vol. 13, no. 6, Nov. 2023, pp. L205-L210, doi:10.22376/ijlpr.2023.13.6.L205-L210.
7. Paoli, Antonio, et al. "The Influence of Meal Frequency and Timing on Health in Humans: The Role of Fasting." *Nutrients*, vol. 11, no. 4, 2019, <https://doi.org/10.3390/nu11040719>. Accessed 30 Dec. 2025.
8. Franzago, Marica, et al. "Chrono-Nutrition: Circadian Rhythm and Personalized Nutrition." *International Journal of Molecular Sciences*, vol. 24, no. 3, 2023, <https://doi.org/10.3390/ijms24032571>. Accessed 30 Dec. 2025.
9. Edavalath, Mukesh. "Ayurvedic Dietary Principles in Prevention and Management of Diabetes: A Review." *Endocrinology, Diabetes and Obesity*, 2018, pp. 1-8.
10. Singh, Priya, and S S Yadav. "Exploring the Sub-Pillars of Life: Trayopastambha WithSpecial ReferenceTo Nidra". *International Research*

Journal of Ayurveda & Yoga, vol. 8, no. 10, Nov. 2025, pp. 51-55,
<https://doi.org/10.48165/IRJAY.2025.81010>.

11. Ravi, Dr. "An integrative review on sleep disturbances in Ayurveda." *International Journal of AYUSH*, vol. 14, no. 12, 2025, pp. 25–33, <https://doi.org/10.22159/prl.ijayush.v14i12.1644>. Accessed 27 Dec. 2025.
12. Patel, Dr Zalak. "An analytical study on nidra as a pillar of life (Trayopastambha)." *International Journal of AYUSH*, vol. 14, no. 11, 2025, pp. 01-10, <https://doi.org/10.22159/prl.ijayush.v14i11.1599>. Accessed 27 Dec. 2025.
13. Desai, Dev et al. "Exploring the Role of Circadian Rhythms in Sleep and Recovery: A Review Article." *Cureus* vol. 16,6 e61568. 3 Jun. 2024, doi:10.7759/cureus.61568
14. Foster, Russell G. "Sleep, circadian rhythms and health." *Interface focus* vol. 10,3 (2020): 20190098. doi:10.1098/rsfs.2019.0098
15. Fishbein, Anna B et al. "Circadian disruption and human health." *The Journal of clinical investigation* vol. 131,19 (2021): e148286. doi:10.1172/JCI148286
16. "View of the Significance of Nidra for Mental Well-Being: A Comprehensive Review of Its Benefits and Mechanisms | Journal of Ayurveda and Integrated Medical Sciences." *Jaims.in*, 2025, jaims.in/jaims/article/view/3642/5743.
17. K, Sneha, et al. "Systematic Review: The Impact of Poor Sleep Quality on Psychological and Physical Health." *Journal of Heart Valve Disease* 30.7 (2025): 79-85.
18. Sharma, Nippu Kumari, et al. "Nidra as a Pillar of Health: A Brihatrayi Perspective." *Frontiers in Health Informatics*, Oct. 2024, pp. 6935–40, <https://doi.org/10.63682./fhi0981>. Accessed 27 Dec. 2025.
19. Tripathi, Dr. Puja, and Dr. Mantosh Kumar Jha. "Ayurvedic Concept of Nidra and Its Modern Correlation: An Analytical Study." *Journal for ReAttach Therapy and Developmental Diversities*, 2021, <https://doi.org/10.53555/jrtdd.v4i1.3708>. Accessed 21 Nov. 2025.
20. Bhati, Kirti, et al. "Brahmacharya: A Concept with Special Reference to Its Contribution to Prevention and Promotion of Health." *Rom J Diabetes NutrMetab Dis*, vol. 30, no. 4, 2023, pp. 1253-1263, doi:10.46389/rjd-2023-1253.

21. Padhy, Meera, et al. "Psychological Well-being: Can It Be Accounted for by Resilience and Self-regulation? A Moderation Analysis." *International Journal of Advanced Multidisciplinary Research*, vol. 9, no. 7, 2022, pp. 37-46, doi:10.22192/ijamr.2022.09.07.005.
22. Priyanka, Gajanan, et al. "Efficacy Of Achara Rasayana (Behavioral Therapy) For The Management Of Mental Health Disorders Resulting From Pragyaparadha (Intellectual Errors): A Review *Corresponding Author." *Certified Journal | Kengale et Al. World Journal of Pharmaceutical Research* 2915 *World Journal of Pharmaceutical Research SJIF Impact Factor*, vol. 12, no. 9, 2023, pp. 2915–25, <https://doi.org/10.20959/wjpr20239-28504>. Accessed 30 Dec. 2025.
23. Senapati, Sabyasachi, et al. "Modern Lifestyle Diseases: Chronic Diseases, Awareness and Prevention." *International Journal of Current Research in the Multidisciplinary Sciences*, vol. 3, no. 7, July 2015, pp. 215-223.
24. "A Comprehensive Review of Trayopastambhas Role in Promoting Healthy Aging" *AYUSHDHARA*, vol. 11, no. 1, Mar. 2024, pp. 124-7, <https://doi.org/10.47070/ayushdhara.v11i1.1473>.
25. "Physiological Study of Trayopastambha (Ahara, Nidra Evam Brahmacharya) W.s.r. To Nidra (Sleep)." *Ijrasnet.com*, 2022, www.ijrasnet.com/research-paper/trayopastambha-ahara-nidra-evam-brahmacharya-w-s-r-to-nidra. Accessed 27 Dec. 2025.
26. Madugula Sruthi and Geeta Maindoli. "Rasayana: Preventive Measures for Non-Communicable Diseases (NCDs)." *Journal of Ayurveda and Integrated Medical Sciences*, vol. 9, no. 5, Maharshi Charaka Ayurveda Organisation, July 2024, pp. 175–78, <https://doi.org/10.21760/jaims.9.5.29>.
27. Egwumba, Patricia et al. "Ayurveda for Managing Noncommunicable Diseases in Organisation for Economic Cooperation and Development Nations: A Qualitative Systematic Review." *Health science reports* vol. 8,4 e70624. 8 Apr. 2025, doi:10.1002/hsr2.70624
28. Soman, Chippy, and Marikutty TC. "Ayurvedic Insights into Gut Microbiome Dynamics - on Trayopastambha Perspective." *Journal of Ayurveda and Integrated Medical Sciences*, vol. 9, no. 7, Sept. 2025, pp. 109–18, <https://doi.org/10.21760/jaims.9.7.14>. Accessed 27 Dec. 2025.

29. Wallace, Robert Keith. "Ayurgenomics and Modern Medicine." *Medicina (Kaunas, Lithuania)* vol. 56,12 661. 30 Nov. 2020, doi:10.3390/medicina56120661
30. Verma, Sunil Kumar, et al. "Exploring Ayurveda: Principles and Their Application in Modern Medicine." *Bulletin of the National Research Centre/Bulletin of the National Research Centre*, vol. 48, no. 1, Springer Science+Business Media, Aug. 2024, <https://doi.org/10.1186/s42269-024-01231-0>.
31. "NCDs: Ayurvedic Solutions for a Healthier World." *Sri Sri Ayurveda Hospital*, Apr. 2024, srisriayurvedahospital.org/ayurvedic-solutions-for-ncds/. Accessed 29 Dec. 2025.
32. Hegde, Harsha; Barvaliya, Manish¹; Roy, Subarna². Integrating Ayurveda and Conventional Medicine: A Bridge to Be Built for Holistic Health. *Indian Journal of Ayurveda and Integrative Medicine KLEU* 5(2):p 51-53, Jul-Dec 2024. | DOI: 10.4103/ijaim.ijaim_48_24
33. Farhud, Dariush, and Zahra Aryan. "Circadian Rhythm, Lifestyle and Health: A Narrative Review." *Iranian journal of public health* vol. 47,8 (2018): 1068-1076.
34. Mohanan, K P. "Integrating Ayurveda and modern mainstream medicine." *Journal of Ayurveda and integrative medicine* vol. 15,5 (2024): 100997. doi:10.1016/j.jaim.2024.100997
35. Patwardhan, Bhushan. "Bridging Ayurveda with Dr Swapnali Yewale and Dr Prasad Yewale, Importance of Ahara in Today's Life with Special Reference to Ayurveda..(2023).Int. J.
36. Life Sci. Pharma Res.13(6), L205-L210
<http://dx.doi.org/10.22376/ijlpr.2023.13.6.L205-L210>evidence-based scientific approaches in medicine." *The EPMA journal* vol. 5,1 19. 1 Nov. 2014, doi:10.1186/1878-5085-5-19
37. Kumar, Ashwani, and Vedpriya Arya. "Achieving holistic health through ayurveda along with advanced technologies: A conference report." *Journal of Ayurveda and integrative medicine* vol. 15,3 (2024): 100967. doi:10.1016/j.jaim.2024.100967

38. Gupta, Neelu Jain. "Lifestyle and Circadian Health: Where the Challenges Lie?" *Nutrition and metabolic insights* vol. 12 1178638819869024. 6 Aug. 2019, doi:10.1177/1178638819869024