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A comparative analysis of the concept of sleep (Nawm) in Unani medicine and modern physiology

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Abstract
Sleep (Nawm) is a natural physiological state essential for the restoration of body and mind. In Unani medicine, sleep is one of the Asbāb-e-Sitta Ḍarūriyya (Six Essential Factors) necessary for maintaining health and preventing disease. Unani scholars, such as Ibn Sīnā, Rāzī, and Jurjānī, described sleep as a natural process of Istirāḥat-e-Quwā (rest of faculties) and Tafarruq-e-Ḥarrārat Gharīziyya (distribution of innate heat). Modern physiology describes sleep as a neurobiological process governed by the brainstem, hypothalamus, and circadian rhythm. This paper aims to compare the Unani understanding of sleep with modern concepts to explore their harmony and significance for health and disease prevention.

Keywords: Nawm, sleep, Unani medicine, asbāb-e-sitta ḍarūriyya

Introduction

Sleep (Nawm) is vital for physical and mental well-being, yet its conceptual understanding differs between Unani and modern medicine. While modern physiology explains sleep through neurobiological mechanisms, Unani medicine views it as a process essential for restoring balance among the body's faculties, Quwwat-e-Ṭabī'iyya (natural faculty), Quwwat-e-Ḥaywāniyya (vital faculty), and Quwwat-e-Nafsāniyya (psychic faculty). In the present era of stress, irregular routines, and increasing sleep disorders, a comparative study is needed to integrate Unani principles with modern scientific understanding. Such an approach may enhance strategies for maintaining healthy sleep and preventing sleep-related disorders.

Sleep (Nawm) is a natural and essential physiological state necessary for maintaining the health and equilibrium of both body and mind. It is a periodic state of rest characterized by partial or complete loss of consciousness, reduced awareness and responsiveness, and minimal physical activity. During this state, the body's physiological and psychological functions undergo restoration, allowing the individual to regain energy and balance. In Unani medicine, sleep is regarded as one of the Asbāb-e-Sitta Ḍarūriyya vital for the preservation of health and prevention of disease. It is considered a necessary process for maintaining harmony between the Quwwat-e-Ṭabī'iyya, Quwwat-Ḥaywāniyya, and Quwwate-Nafsāniyya. Among these, the Quwwat-e-Nafsāniyya governs sensation, perception, imagination and voluntary movement, all of which are centered in the Dimāgh (brain), an organ regarded as A'ḍā Ra'īsa (chief organ). [1]

Classical Unani scholars such as Ibn Sīnā (Avicenna) in Al-Qānūn fī'l-Ṭibb, Rāzī (Rhazes) in Kitāb al-Ḥāwī, and Jurjānī in Zakhīrah Khwārizmshāhī have described sleep as a vital function of the brain, closely related to Quwwat-e-Nafsāniyya and Quwwat-e-Ṭabī'iyya. They explained sleep as a process resulting from imtilā'-e-Dimāgh (engorgement of the brain with vapors arising from digestion) and Burūdat (coldness) of the brain, leading to temporary suspension of sensory and motor activities. This resting phase allows the natural faculty to focus on nourishment, growth, and repair of the body tissues. [1, 2, 3]

From a modern physiological perspective, sleep is defined as a reversible state of unconsciousness from which an individual can be aroused by sensory or other stimuli distinct from coma, where arousal is impossible. Sleep is now understood as an active neurophysiological process, regulated by the hypothalamus, pineal gland, and reticular activating system, through the interaction of neurotransmitters and hormones such as melatonin, serotonin, GABA, and adenosine. The circadian rhythm, governed

by the suprachiasmatic nucleus (SCN), synchronizes the sleep-wake cycle with the external environment, particularly light and darkness. [4, 5]

Sleep is essential for the restoration of energy, regulation of immune functions, and repair of body cells. It plays a vital role in memory consolidation, emotional stability, and brain development by strengthening neural connections. Adequate sleep enhances learning and cognitive efficiency, whereas insufficient sleep impairs mental performance, reduces concentration, weakens immunity, and increases susceptibility to various systemic and metabolic disorders. [6, 7]

Unani Perspective

In the Unani system of medicine, Nawm (sleep) has been discussed in detail by classical scholars as one of the Asbāb-e-Sitta Ḍarūriyya necessary for the preservation of health. Sleep is regarded as a physiological need that provides rest to the psychic and physical faculties, thereby restoring balance within the body.

Ibn Sīnā (Avicenna) in Al-Qānūn fī'l-Ṭibb described sleep as a natural state of rest resulting from the cooling and moistening of the brain due to vapors that ascend after digestion. These vapors fill the Butun-e-Dimāgh (ventricles), leading to temporary suppression of the sensory and motor faculties. He emphasized that sleep strengthens Quwwat-e-Tabī'iyya and facilitates digestion and tissue repair. [1]

Jurjānī in Zakhīrah Khwārizmshāhī elaborated that sleep is essential for maintaining the I'tidāl-e-Mizāj (moderate temperamental) of the brain. He noted that adequate sleep enhances Quwwat-e-Nafsāniyya (psychic faculty), improves memory, and aids in mental tranquility. He warned that both Kasrat-e-Nawm (excessive sleep) and Sahar (insomnia) disturb the equilibrium of humors, particularly increasing Balgham (phlegm) and causing Burūdat (coldness) of temperament. [2]

Rāzī (Rhazes) in Kitāb al-Ḥāwī fī'l-Ṭibb also explained sleep as a phenomenon related to Imtilā'-e-Dimāgh (engorgement of the brain) and considered it necessary for the restoration of Quwā (faculties) exhausted during wakefulness. He considered sleep to be the natural opposite of Yaqza (wakefulness), where each maintains the balance of the other. [3]

According to Abu Sahl al-Masīḥī, sleep is a physiological condition in which the Quwwat-e-Nafsāniyya (psychic faculty) temporarily ceases its functions (afʿāl). The Quwwat-e-Nafsāniyya comprises two main components: Quwwat-e-Mudrika (perceptive faculty) and Quwwat-e-Muḥarrika (motor faculty), both of which become inactive during sleep, allowing the body and mind to rest and regain balance. [8]

Duration

According to Unani theory, moderate sleep (6-8 hours) at night is beneficial, while excessive or daytime sleep disturbs the humoral balance, especially producing Burūdat (coldness) and Rutoobat (moistness) in the brain. [1, 2]

Benefits of sleep

According to Rāzī (Rhazes), normal sleep facilitates taskeen (relaxation) and taqwiyat (strengthening) of the body's faculties, thereby promoting restoration of energy. [11]

Aristotle described sleep as a vital physiological requirement associated with the activity of the heart, from which both motion and perception originate. [11]

Ibn Sīnā (Avicenna) emphasized that sleep aids the processes of digestion and maturation of food, ultimately converting it into humours (Akhlāt). [9]

Abu Sahl al-Masīḥī stated that sleep contributes to the production of pure akhlāṭ (humors), essential for maintaining health. [10]

Sleep is considered analogous to rest, while wakefulness corresponds to physical activity. During sleep, the innate heat (ḥarārat-e-gharīziyya) returns inward, strengthening the body's innate power and facilitating repair and nourishment. It also moistens the sensory spirits, which may cause a natural state of relaxation or mild laziness. Sleep prevents excessive expenditure of rūḥ (spirit) and undue loss of akhlāṭ, thereby maintaining internal balance. Increased sweating during sleep signifies active internal metabolism and purification. Conversely, prolonged wakefulness leads to immoderate temperament (sū'-e-mizāj) of the brain, particularly dryness (yubūsat-e-dimāgh), resulting in weakness of mental faculties and predisposing to various psychological and neurological disorders. [1]

Normal sleep is believed to be due to the adequate ratoobat and baroodat i.e. wetness and coldness in the brain, if there is any deviation that leads to insomnia implies the predominance of yuboosat and hararat i.e., dryness and hotness in the brain. [12]

According to Razi, quoting Jālīnūs, moderate sleep leads to the formation of pure and healthy blood, whereas excessive sleep causes impairment of humors. Insufficient sleep, on the other hand, results in bilious humors, fatigue, and increased ḥiddat-e-safrā (irritability due to yellow bile), which may eventually produce black bile (sawdā). [13]

Modern perspective

Physiology of sleep

Sleep and wakefulness are regulated by intrinsic neural networks and circadian mechanisms. The initiation and maintenance of sleep require the inhibition of ascending arousal systems responsible for sustaining wakefulness. During prolonged wakefulness, extracellular adenosine levels gradually increase, signalling the brain to transition toward sleep. Adenosine activates inhibitory neurons in the ventrolateral preoptic area (VLPO) of the hypothalamus, which functions as a "sleep switch," promoting the onset and continuation of sleep. [14]

The circadian clock, located in the suprachiasmatic nuclei (SCN) of the hypothalamus, governs various homeostatic processes, including the sleep-wake cycle. These circadian rhythms are endogenous physiological oscillations with an average cycle of approximately 24 hours. They influence behavioral and physiological functions such as body temperature, hormone secretion, feeding behavior, and sleep regulation through complex feedback loops and molecular signaling pathways. [15, 16, 17]

The most significant physiological changes during sleep occur in the brain. Energy utilization decreases markedly, particularly during non-REM sleep, as neural activity slows down. This reduction allows the brain to restore adenosine triphosphate (ATP), the primary molecule for short-term energy storage and transport. Since the brain accounts for nearly 20% of total body energy consumption during wakefulness, this decline in activity during sleep plays a critical role in energy conservation and metabolic recovery.

[18]

Types of sleep: A good sleep follows a rhythmic and cyclic pattern known as sleep architecture, which alternates between three stages of non-rapid eye movement (NREM) sleep and a fourth stage of rapid eye movement (REM) sleep. This structured alternation ensures the restorative and regulatory functions of sleep. When sleep architecture is disturbed, individuals fail to achieve the full physiological and psychological benefits of sleep. [19, 20, 21]

Several factors can adversely affect sleep architecture, including insufficient sleep duration, excessive light exposure, caffeine or alcohol intake, environmental noise, and irregular sleep schedules.

During a typical night, an individual cycle through these two major types of sleep multiple times.

1. Slow-wave sleep (SWS): Deep slow-wave sleep is a deep stage of NREM sleep characterised by high-amplitude, low-frequency brain waves that reflect reduced cortical activity and physical restoration. It is very restful, with 10-30% decreases in blood pressure, respiration, and metabolism. Though often called "dreamless sleep," dreams or nightmares may occur, but they are less vivid and rarely remembered due to lack of memory consolidation. [6, 7]

2. Rapid eye movement (REM) sleep: REM sleep is a stage of sleep in which the brain remains highly active, yet this activity is not organized enough for full awareness of the surroundings, keeping the person truly asleep. It is characterized by rapid eye movements and is often called paradoxical sleep. Occupying about 20-30% of the total sleep period, REM sleep is essential for memory consolidation and is the stage during which most dreaming occurs. [6, 7]

Together, these phases constitute the complete sleep cycle, essential for maintaining neurological, metabolic, and emotional balance.

Biological effects of impaired sleep

Impaired sleep quality or quantity can have widespread effects on various body systems.

Metabolically, poor sleep can lead to insulin resistance, thereby increasing the risk of diabetes. It also disrupts the secretion of growth hormone, delaying muscle repair, and suppresses testosterone levels, which may reduce libido. Additionally, disturbances in appetite-regulating hormones like ghrelin and leptin can cause increased hunger and overeating.

Cardiovascular effects include heightened autonomic arousal, elevated blood pressure, and a greater tendency toward arrhythmias. Endothelial dysfunction may occur, contributing to a higher risk of cardiovascular events such as heart attack or stroke.

The immune system is also affected, with reduced antibody production and elevated inflammatory cytokines, making individuals more prone to infections and common colds.

Neurologically, sleep deprivation impairs the glymphatic system, which is responsible for clearing waste products from the brain, and disrupts memory consolidation processes.

Psychologically, insufficient sleep increases the risk of depression and negatively impacts mood, irritability, energy levels, and overall sense of well-being. [7]

Comparative Analysis [1, 2, 6, 7]

Aspect	Unani concept	Modern concept
Nature of Sleep	Cooling and moistening of brain; rest of Quwwat-e-Nafsāniyya	Neurophysiological state of reduced activity and altered consciousness
Causes	Vapors from digestion; Imtila-e-Dimāgh	Neural and hormonal regulation by hypothalamus and melatonin
Functions	Restoration of faculties; maintenance of mizāj	Cellular repair, energy restoration, memory processing
Disorders	Sahar (insomnia), Kasrat-e-Nawm (hypersomnia)	Insomnia, narcolepsy, sleep apnea
Best time	Night sleep (aligned with nature's rhythm)	Night (synchronized with circadian rhythm)

Material and method

This study is a descriptive and comparative literature-based analysis aimed to exploring the concept of sleep. In Unani me and comparing it with the modern physiological perspective. The objective was to identify the similarities and differences in the understanding of the mechanisms, functions, and health implications of sleep as described in both systems. Literature for this study were collected from classical Unani sources and modern scientific literature. Primary Unani references included Al-Qānūn fī'l-Ṭibb by Ibn Sīnā, Kitāb al-Ḥāwī by Al-Rāzī, and Zakhīrah Khwārizmshāhī by Jurjānī. Modern data were obtained from peer-reviewed journals, scientific databases such as PubMed and Scopus, as well as standard physiology textbooks, including Guyton and Hall Textbook of Medical Physiology and Principles of Neural Science.

Correlation between Unani and Modern Perspectives on the Concept of Sleep

The concept of sleep in Unani and modern medicine shares a common foundation, viewing it as a natural and restorative process essential for maintaining health and equilibrium. In Unani medicine, sleep is one of the Asbāb-e-Sitta Ḍarūriyya and results from the Burūdat and Rutoobat of the brain, allowing the Quwwat-e-Tabī'iyya to restore energy, repair tissues, and maintain I'tidāl-e-Mizāj. In modern physiology, sleep is an active neurophysiological state regulated by the hypothalamus, neurotransmitters, and circadian rhythms, serving vital roles in energy conservation, neural repair, and memory consolidation. Thus, while Unani medicine explains sleep through humoral and temperamental theories, and modern science through neurobiological mechanisms, both recognize its indispensable role in restoring physical and mental functions and sustaining overall well-being.

Conclusion

Both Unani and modern medical systems regard sleep as a restorative and essential physiological process vital for maintaining health and equilibrium. Although Unani theory is based on humoral and philosophical principles, it aligns closely with modern concepts of homeostasis and neurophysiological balance. Unani scholars demonstrated a profound understanding of sleep centuries before the advent of neurophysiology. Their holistic interpretation encompassed physical, mental, and environmental dimensions of human health, whereas modern science has

elucidated the cellular and molecular mechanisms underlying these processes. Integrating both perspectives can enrich the field of sleep medicine, offering a comprehensive framework for the management of lifestyle-related sleep disorders through a blend of traditional wisdom and modern evidence-based approaches.

Conflict of Interest
Not available

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