

# ORIGINAL ARTICLE

## Avicenna's Integrative Psychological and Behavioral Approaches to Pain Management

### Abstract

Avicenna, known as Ibn Sina, was a pioneering physician and philosopher whose magnum opus, *The Canon of Medicine*, synthesized knowledge from Greek, Persian, and Indian medical traditions, creating a comprehensive approach and emphasizing the balance of mind, body, and environment. His theories on pain management extended beyond physical remedies, incorporating psychological and behavioral techniques, such as distraction, music therapy, and environmental adjustments. Avicenna recognized the influence of emotional and mental states on physical health, suggesting that pain perception could be shaped by factors such as stress and emotional well-being. This understanding aligns closely with contemporary pain management strategies, including cognitive-behavioral therapy (CBT), mindfulness, and psychosomatic medicine, which also acknowledge the mind-body connection. The article underscores the enduring significance of Avicenna's holistic philosophy, especially as integrative and complementary medicine gains traction in treating chronic pain conditions. By analyzing Avicenna's approaches in a historical context and comparing them to modern interdisciplinary methods, this review highlights the value of combining ancient wisdom with current scientific insights to create more comprehensive, patient-centered pain management strategies. Avicenna's legacy continues to inform and inspire today's holistic health practices, underscoring the timeless relevance of his integrative approach to well-being.

**Key words:** Avicenna, Holistic Medicine, Pain Management, Mind-body Connection, Integrative Medicine, Cognitive-behavioral Therapy (CBT)

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## Introduction

Avicenna, also known as *Ibn Sina* (980–1037), was a Persian polymath whose contributions to various fields, particularly medicine, have left an indelible mark on the history of science (Tashani and Johnson, 2010). His magnum opus, *The Canon of Medicine* (*Al-Qanun fi'l-Tibb*) (Avicenna, 1987), became a foundational text in both the Islamic world and Europe, influencing medical education for centuries (Buranova, 2015). Avicenna's understanding of human health went far beyond the biological or physiological domain; his medical philosophy was rooted in a holistic approach, integrating mind, body, and environment (Tabei and Riazi, 2009). This emphasis on psychological and behavioral factors, particularly pain management, made him a pioneer of holistic healing practices (Khodaei, et al., 2017). His work laid the foundation for a system of medicine that recognized the intricate connections between physical health and psychological well-being. This view resonates deeply with modern integrative approaches to health (Ghaffari, et al., 2022).

In *The Canon of Medicine*, Avicenna advocated for a comprehensive approach to health that incorporated not only physical interventions but also psychological and environmental factors in treating ailments, especially pain (Buranova, 2015). He believed that pain was not merely a physical phenomenon but one deeply intertwined with emotional and mental states (Jakovljević, et al., 2022). Avicenna's understanding of pain anticipated modern notions of the psychosomatic relationship, where the mind's influence on the body is acknowledged as a significant factor in disease and healing (Tabei and Riazi, 2009). He proposed that treating pain effectively required addressing both its physical causes and its psychological dimensions, a concept that places him at the forefront of what we today recognize as integrative medicine (Buranova, 2015). His holistic framework mirrors contemporary interdisciplinary approaches, such as those seen in psychosomatic medicine, cognitive-behavioral therapy (CBT), and mindfulness-based stress reduction (MBSR) (Khodaei, et al., 2017).

The relevance of Avicenna's approach to modern pain management is increasingly apparent as contemporary medicine grapples with the limitations of purely biomedical models (Tabei and Riazi, 2009). Despite the impressive advancements in pharmacology and surgical interventions, chronic pain remains a major public health issue, often resistant to conventional treatments (Borsook, et al., 2018). This issue has led to a growing recognition of the need for integrative approaches that combine physical, psychological, and behavioral strategies (Tabei and Riazi, 2009). Avicenna's work offers valuable insights in this regard, as he was one of the earliest thinkers to advocate for a treatment model that addressed the whole person- body, mind, and environment (Buranova, 2015; Jakovljević, et al., 2022). By promoting a balance between physical therapies, lifestyle changes, and psychological well-being, Avicenna anticipated many of the methods now seen in modern pain management, such as multimodal therapies that integrate psychological counseling, physical therapy, and medication (Casella, 2019; Aciduman, ER, and Belen, 2009).

Avicenna's method of addressing pain involved more than just treating the physical symptoms (Buranova, 2015). He was particularly concerned with the mental and emotional states of his patients, believing that psychological stress or emotional distress could exacerbate physical pain. He emphasized the importance of creating a calming



environment, utilizing distractions such as music or pleasant conversation, and attending to the patient's emotional state as part of the healing process (Khodaei, et al., 2017). These practices foreshadowed modern techniques like relaxation therapy and music or art therapy in pain management (Buranova, 2015), highlighting the enduring relevance of his holistic vision (Tashani and Johnson, 2010). In his time, such approaches were revolutionary, as they deviated from the primarily humoral-based treatments that dominated medieval medicine (Buranova, 2015).

The enduring significance of Avicenna's integrative pain management philosophy lies in its comprehensive approach, which acknowledges the limitations of treating the body in isolation from the mind and the environment (Tabei and Riazi, 2009). Contemporary integrative medicine seeks to overcome similar limitations in modern healthcare, where treating chronic pain, in particular, has proven challenging (Elvina, et al., 2020). Pain is now understood not only as a physiological phenomenon but as one influenced by psychological, social, and behavioral factors, which is a multidimensional experience that requires equally multifaceted treatment strategies (Khodaei, et al., 2017). Avicenna's vision of holistic health, which emphasized the need for balance in mind and body, mirrors these modern perspectives and underscores the relevance of his work to current medical practices (Ghaffari, et al., 2022, Khodaei, et al., 2017).

In recent years, there has been a resurgence of interest in traditional and historical medical practices, particularly those that align with modern holistic health models (Buranova, 2015). Avicenna's legacy is particularly notable in integrative and complementary medicine, where his focus on the interplay between mind, body, and environment is increasingly recognized as a precursor to contemporary medical approaches (Tabei and Riazi, 2009). His work offers a rich source of insight for modern practitioners who seek to develop pain management strategies that go beyond pharmacological interventions to include psychological and behavioral therapies (Khodaei, et al., 2017).

This article argues that Avicenna's integrative approach, which combined psychological, behavioral, and physiological methods to address pain, provides valuable historical insights into the development of holistic healing practices. His work is an important reminder of the timeless relevance of treating the whole person in medicine. By exploring his contributions to pain management, we can gain a deeper understanding of historical medical thought and draw connections to contemporary practices in integrative medicine. This historical review highlights how Avicenna's pioneering efforts continue to inform and inspire modern approaches to pain management, offering a holistic model that remains as pertinent today as it was nearly a millennium ago.

### **Historical Background**

Avicenna, known in the Islamic world as *Ibn Sina* (980–1037 CE), was one of the most influential polymaths of the medieval Islamic world (Al-Mahrezi, 2017). His intellectual contributions spanned philosophy, astronomy, mathematics, and medicine, leaving a lasting legacy that shaped both Eastern and Western thought for centuries (Zargarani, et al., 2011; Keskinbora, and Keskinbora, 2016). Born in Afshana, a village near Bukhara (in modern-day Uzbekistan), he grew up during the Islamic Golden Age, a time of remarkable scientific and cultural development (Brent and Flamm, 1981). His early education was extensive, encompassing Islamic jurisprudence, theology, philosophy, and medicine.



By the age of 16, he was already practicing medicine, and his profound intellect soon earned him widespread acclaim, granting him access to the libraries of the ruling *Samanid dynasty*, which significantly expanded his knowledge (Ventegodt and Merrick, 2005).

Avicenna’s most celebrated medical work, *The Canon of Medicine* (*Al-Qanun fi’l-Tibb*), represents the culmination of centuries of medical thought synthesized into a comprehensive, systematic text (Lindroth, 1999). Written in five volumes, it served as a medical encyclopedia covering everything from basic medical theory and anatomy to diagnosing and treating diseases (Ghodrati and Nia, 2004). *The Canon of Medicine* was not merely a medical textbook; it integrated philosophical ideas with empirical observations, reflecting his belief in the interconnectedness of body and mind (Bhalla, et al., 2019). The work became a standard reference in the Islamic world and Europe for centuries, influencing medical education as late as the 17th century (Morlion, et al., 2018). Figure 1 illustrates the historical influence of *The Canon of Medicine*.

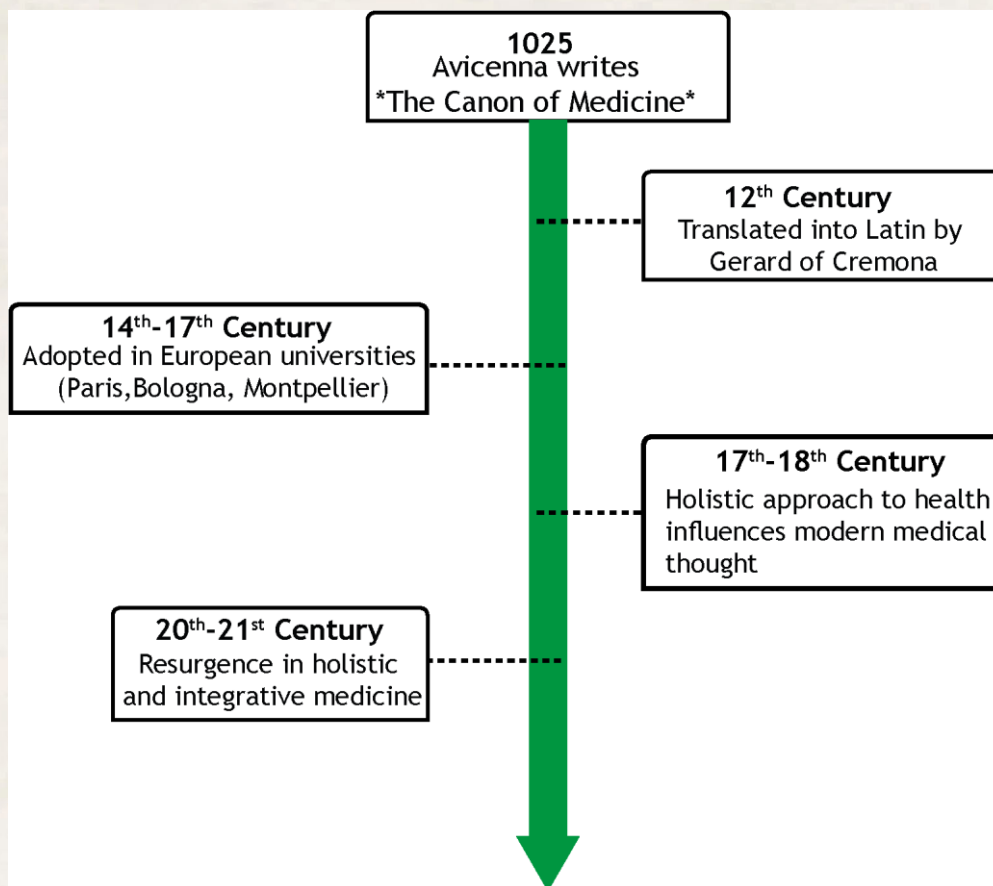


Figure 1. *The Canon of Medicine’s Influence Timeline*

The first volume of *The Canon of Medicine* discusses the general principles of medicine, including anatomy and physiology, while the second lists simple medicines derived from herbs, animals, and minerals (Ghaffari, et al., 2022; Saffari and Pakpour, 2012). The third volume is the most significant for understanding Avicenna’s contribution to pain management, as it focuses on special pathology, including diseases and conditions affecting specific organs (Al-Mahrezi, 2017). It is here that he delves into pain, not as a



singular condition but as a symptom arising from multiple factors, physical, psychological, and environmental (Bhalla, et al., 2019). The fourth book covers diseases that affect the whole body, and the final volume addresses compound medicines (Brent and Flamm, 1981). This meticulous organization allowed Avicenna's work to be both accessible and applicable across different cultures and eras (Al-Mahrezi, 2017).

His holistic approach to medicine, especially his pain treatment, was groundbreaking in that he viewed the patient as a whole rather than treating individual symptoms in isolation (Bhalla, et al., 2019). He recognized the importance of emotional and psychological well-being in physical health, laying the foundation for what would later be termed psychosomatic medicine (Jakovljević, et al., 2022). His medical philosophy reflected a deep understanding of the interplay between the mind and body, suggesting that mental states, such as stress or anxiety, could exacerbate physical conditions like pain (Brent and Flamm, 1981). This insight marked a significant departure from the dominant medical theories of his time, which primarily focused on the humoral system, a belief that health was maintained by balancing the four bodily fluids: blood, phlegm, yellow bile, and black bile (Ventegodt and Merrick, 2005). He acknowledged this humoral theory but went further, advocating for the treatment of the mind as a critical component of healing (Khodaei, et al., 2017).

**Avicenna's Approach to Pain Management**

Avicenna's contributions to the field of medicine, particularly his approach to pain management, reflect his profound understanding of the interconnectedness of the mind and body and his holistic view of health (Zargarán, et al., 2016). Unlike many of his contemporaries, who focused primarily on the physical aspects of pain, Avicenna offered a multidimensional perspective incorporating psychological, behavioral, and philosophical elements (Driscoll, et al., 2021). His methods for treating pain were not just symptomatic but addressed the root causes of discomfort, recognizing the influence of mental and emotional states on physical health (Abhimanyu Sud, et al., 2020). This section will explore the psychological aspects of Avicenna's pain management techniques, his behavioral interventions, and the philosophical foundations underpinning his integrative approach. Table 1 summarize key methods Avicenna used, linking them to modern practices.

**Table 1:** Avicenna's Psychological and Behavioral Approaches to Pain Management

Avicenna's Approach	Description	Modern Equivalent
Distraction	Use of music, stories, and pleasant environments	CBT
Emotional Relief	Managing emotions to reduce pain perception	Mindfulness, Emotional Regulation
Balancing Humors	Maintaining a balance of body fluids and temperaments	Holistic Nutrition, Traditional Medicine

**1- Psychological Aspects**

Avicenna's understanding of the mind-body connection was groundbreaking for his time, and it laid the foundation for much of his approach to pain management (Heffernan,



et al., 2021). He believed that the mind played a crucial role in perceiving pain and the healing process. This idea aligns closely with what modern medicine now terms psychosomatic medicine, where psychological factors, such as stress or anxiety, are seen as playing a key role in the onset and exacerbation of physical symptoms (Oliveira, et al., 2024). His view of pain was not just a purely physical sensation but an experience deeply influenced by a person's emotional and mental state (Hall, 2020).

Avicenna posited that emotions such as fear, anxiety, and sadness could amplify pain perception, while positive emotions and mental tranquility could reduce it (Conti, et al., 2020). He recognized that the mind could either exacerbate or alleviate pain depending on the individual's emotional state, making it critical for physicians to address both the psychological and physical conditions of their patients (Bagheri, et al., 2021). This dual focus is evident in his treatment recommendations, where he emphasized the need for mental and emotional care alongside physical treatments (Lin, et al., 2021).

For example, Avicenna often advised that physicians should create a comforting and reassuring environment for patients, using calming words and focusing on positive outcomes (Park, Krause-Parello, and Barnes, 2020). He also stressed the importance of addressing emotional turmoil, noting that unresolved emotional distress could worsen physical symptoms like pain (Grunberg, et al., 2021). Avicenna understood that negative emotions, such as grief or anger, could disrupt the body's equilibrium, leading to or intensifying pain (Thompson, et al., 2020). His insight into this mind-body relationship represents a significant departure from the more mechanistic views of pain held by many of his contemporaries and prefigures modern approaches that integrate psychological therapies into the treatment of chronic pain (Declercq, 2021).

A striking example of Avicenna's awareness of the mind-body connection is his use of *taqlīd*, or suggestion, as a therapeutic tool (Zargaran, et al., 2016). He believed that the power of belief and expectation could influence the body's response to treatment, an idea that closely resembles what is now understood as the placebo effect (Park, Krause-Parello, and Barnes, 2020). Avicenna suggested that instilling hope and confidence in the patient could enhance the efficacy of treatment by positively affecting their mental state, which, in turn, would facilitate healing and reduce pain (Bagheri, et al., 2021). This holistic perspective, which accounts for the influence of mental states on physical health, foreshadows contemporary methods such as CBT and MBSR, which are widely used today to manage pain by altering the patient's mental and emotional responses to it (Khoo, et al., 2019).

## 2- Behavioral Approaches

In addition to his insights into the psychological aspects of pain, Avicenna also advocated for various behavioral interventions to alleviate pain. His recommendations were based on the belief that pain could be mitigated through changes in lifestyle, environment, and behavior (Lewis, et al., 2018). Avicenna believed that pain could be distracted or even diminished by modifying a patient's surroundings or engaging them in certain activities (Finlay, et al., 2015).

One of the key behavioral interventions Avicenna suggested was the use of *tasliyah* (distraction) as a means to manage pain. He advised that patients in pain should be engaged in activities that could divert their attention from discomfort (Johnson, 2005). This



recommendation included listening to music, engaging in pleasant conversations, or participating in light physical activities, depending on the patient's condition (Fowler-Kerry and Lander, 1987). Music, in particular, played a significant role in Avicenna's therapeutic practices. He believed that music could profoundly affect both the mind and body, and its rhythmic and melodic qualities could soothe the patient, reduce stress, and ultimately alleviate pain (Magill-Levreault, 1993). This approach aligns with the modern practice of music therapy, which is used to help manage pain in patients suffering from chronic illness or recovering from surgery (Comeaux and Comeaux, 2013).

Avicenna also emphasized the importance of environmental modification in pain management. He suggested that the physical surroundings of the patient could influence their emotional state and, consequently, their experience of pain (Gélinas, et al., 2012). A calm and serene environment, free from noise and stress, was considered essential for healing (Kline, 2009). This insight is particularly relevant today, as modern hospitals and rehabilitation centers increasingly focus on creating healing environments that promote recovery by reducing stress and anxiety for patients (Honzel, et al., 2019; Zakeri, et al., 2024). Avicenna's recognition of the importance of environmental factors demonstrates his holistic understanding of health, which extends beyond the body to include the patient's immediate surroundings (Diette, et al., 2003).

Furthermore, Avicenna advocated for lifestyle interventions, such as regulating sleep, diet, and exercise, to manage pain and improve overall health (Davydov, et al., 2021). Avicenna believed that an imbalance in these areas could contribute to both the onset and intensity of pain (Finlay and Rogers, 2014). For example, he recommended that patients maintain a regular sleep schedule, as sleep disturbances could exacerbate pain. He also advised dietary adjustments based on the patient's temperament and condition, believing that certain foods could promote healing or aggravate pain (Pei-Fan, Chen, and Cheng 2009). This approach is reminiscent of contemporary recommendations for managing chronic pain, where maintaining a balanced diet, proper sleep, and regular physical activity are considered essential components of pain management programs (Subnis, Starkweather, and Menzies, 2016).

Overall, Avicenna's behavioral approaches to pain management reflect his belief in the power of non-pharmacological interventions to reduce pain and promote healing (Lewis, et al., 2018). His use of distraction, music, environmental modification, and lifestyle regulation illustrates his commitment to treating the whole person rather than focusing solely on the physical symptoms of pain (Finlay, et al., 2015). These methods resonate strongly with modern integrative approaches, which prioritize behavioral therapies as part of a comprehensive pain management strategy (Johnson, 2005).

### **3- Philosophical Foundations**

The philosophical underpinnings of Avicenna's integrative approach to pain management are rooted in his broader medical philosophy, which emphasizes balance, moderation, and harmony (Davydov, et al., 2021). Like many physicians of his time, Avicenna was deeply influenced by the humoral theory, which posited that health resulted from the proper balance of the four bodily fluids: blood, phlegm, yellow bile, and black bile. However, Avicenna expanded on this theory by integrating it with his understanding of the mind and spirit, creating a more holistic framework for health and healing (Lewis, et



al., 2018).

At the core of Avicenna's philosophy was the concept of moderation. He believed that extreme states (whether physical, emotional, or behavioral) could lead to illness, while balance promoted health (Johnson, 2005). This idea extended to his approach to pain management, where he advocated for moderation in all things (Subnis, Starkweather, and Menzies, 2016). For instance, he warned against excessive treatments that could overwhelm the body or mind and favored gentle, gradual interventions that would restore balance without causing harm (Pei-Fan, Chen, and Cheng 2009). This principle of moderation reflects the Hippocratic notion of *primum non nocere* (first, do no harm) and continues to influence modern medical ethics (Lewis, et al., 2018).

Avicenna also placed great importance on the concept of *mizaj* (temperament), which referred to an individual's unique physical and psychological constitution (Finlay and Rogers, 2014). He believed that each person had a distinct temperament that influenced their susceptibility to illness and their response to treatment (Gélinas, et al., 2012). In managing pain, Avicenna recommended that physicians consider the patient's temperament when developing a treatment plan (Davydov, et al., 2021). This personalized approach to medicine is remarkably similar to contemporary practices in personalized medicine, where treatments are tailored to the patient's genetic, environmental, and lifestyle factors (Lewis, et al., 2018).

Moreover, Avicenna's understanding of the relationship between the mind and body was deeply influenced by his philosophical studies, particularly his engagement with Aristotelian and Neoplatonic thought (Finlay, et al., 2015). He viewed the soul as the animating force of the body, and he believed that the soul's health was directly linked to the health of the body (Lewis, et al., 2018). This dualistic view of human nature led him to advocate for a holistic approach to medicine, where treating the body and mind was seen as equally important (Gélinas, et al., 2012). Pain, in this framework, was not just a physical sensation but a disturbance of the body's harmony, which required a comprehensive approach to healing that addressed both physical and mental factors (Finlay and Rogers, 2014).

So, Avicenna's approach to pain management was deeply rooted in his philosophical belief in the importance of balance, moderation, and the integration of mind and body (Davydov, et al., 2021). His holistic perspective, which emphasized the interplay between psychological, behavioral, and physical factors, set him apart from many of his contemporaries and foreshadowed modern integrative approaches to pain management (Finlay, et al., 2015). Avicenna's insights into the mind-body connection, his use of behavioral interventions, and his philosophical commitment to treating the whole person continue to resonate with contemporary medical practices, making his work a timeless source of wisdom in pain management (Johnson, 2005).

### **Comparing Avicenna's Methods to Modern Practices**

Avicenna's integrative approach to pain management, which he formulated nearly a millennium ago, was revolutionary in his time and continues to offer valuable insights for contemporary medicine (Deng, 2019). His holistic view of health, which emphasizes the interconnectedness of the mind, body, and environment, aligns closely with modern integrative practices (Teets, Dahmer, and Scott, 2010). Today, medical science has





advanced significantly in understanding pain mechanisms, incorporating new tools like neuroscience and pharmacology. However, many of Avicenna’s methods, particularly his emphasis on psychological and behavioral interventions, resonate with contemporary approaches to pain management (Lin, Wan, and Jamison, 2017). This section explores the continuities between Avicenna’s methods and modern practices, identifies key differences, and examines the ongoing relevance of his principles in the context of holistic health.

Table 2 highlights the differences and similarities between ancient and modern approaches to pain management.

**Table 2:** Historical Comparison of Pain Management between Avicenna and Modern Medicine

Aspect	Avicenna’s Approach	Modern Medicine
Pain Perception	Mind-body interaction	Neurophysiological understanding
Treatment Methods	Psychological and behavioral focus	Pharmaceuticals, CBT, Surgery
Holistic Health	Balance of humors, lifestyle adjustment	Integrative Medicine, Mindfulness

**1- Continuities and Innovations**

Avicenna’s integrative methods for pain management prefigure several modern approaches that combine psychological, behavioral, and physiological elements (Hanser, 2016). One of the most striking continuities between Avicenna’s methods and contemporary practices is his recognition of the mind-body connection in pain perception and healing (Lumley and Schubiner, 2019). Avicenna understood that pain was not merely a physical experience but also influenced by emotional and mental states. His view parallels modern disciplines like psychosomatic medicine, which focuses on the relationship between psychological factors and physical health, as well as CBT, a widely used treatment for chronic pain that addresses both the mental and physical aspects of suffering (Lee, et al., 2014).

In modern CBT, patients are taught to recognize and change negative thought patterns and behaviors that exacerbate their perception of pain. This approach mirrors Avicenna’s belief that emotions and thoughts could intensify physical pain (Modir, and Munoz, 2018). Avicenna recommended treatments that targeted the mind, such as calming words, relaxation techniques, and environmental modifications, to reduce emotional distress and alleviate pain (Zurron and Berna, 2019). Even though Avicenna’s understanding was based on philosophical and observational knowledge rather than the detailed neurobiological mechanisms known today, the underlying principle of using the mind to manage pain remains the same.

Another significant continuity is Avicenna’s use of behavioral interventions like distraction, music therapy, and environmental modification (Livingston and Collette-Merrill, 2018). He believed that engaging the patient’s mind and providing sensory distractions could help alleviate pain (Mao, et al., 2022). Today, distraction techniques are commonly used in pain management, particularly in treating acute pain, such as during medical procedures or pediatric care (Herr, 2018). Music therapy, which Avicenna recommended as a means to calm the patient and divert attention from pain, is now a recognized complementary therapy in hospitals, particularly for cancer patients and those with chronic pain



conditions.

MBSR, another modern technique, shares conceptual similarities with Avicenna's emphasis on mental calmness and emotional balance (Cherny, et al., 2021). MBSR teaches patients to focus on the present moment, helping them reduce stress and cope with chronic pain more effectively.

While many of Avicenna's principles align with modern practices, there are important areas where contemporary science has evolved beyond his theories, particularly in the fields of neuroscience and pharmacology. Like his contemporaries, Avicenna's understanding of pain was grounded in the humoral theory of medicine, which posited that health was determined by the balance of four bodily fluids: blood, phlegm, yellow bile, and black bile (Hillinger, et al., 2017). Today, we know that pain is a complex process involving the nervous system, with signals transmitted from peripheral nerves to the brain via specific pathways.

In addition, pharmacology has vastly expanded the options available for pain relief since Avicenna's time (Maindet, et al., 2019). While Avicenna prescribed various herbal remedies and compounds for pain management, modern medicine offers a wide array of pharmaceutical options.

## **2- Relevance to Holistic Health**

Despite the advancements in modern pain management, there is a growing recognition of the limitations of purely biomedical approaches, particularly in the treatment of chronic pain. This recognition has led to a resurgence of interest in integrative and complementary medicine, where many of Avicenna's principles find renewed relevance (Chen and Michalsen, 2017). His holistic approach to treating pain, which emphasizes balance in all aspects of life, resonates strongly with modern holistic health practices that aim to treat the whole person, not just the symptoms of a disease (Lin, Wan, and Jamison, 2017).

In integrative medicine, conventional medical treatments are often combined with complementary therapies like acupuncture, yoga, mindfulness, and dietary counseling to address the physical, emotional, and spiritual dimensions of health. Avicenna's insistence on treating the mind and body as a unified system aligns with this approach (Zurron and Berna, 2019). His belief in the importance of psychological interventions, such as calming words, environmental changes, and relaxation techniques, finds modern expression in therapies like guided imagery, relaxation training, and biofeedback, all of which are used to help patients manage chronic pain by reducing stress and improving mental well-being (Crawford, et al., 2014).

Moreover, Avicenna's use of herbal remedies and dietary recommendations as part of his pain management strategy is reflected in today's use of nutritional therapy and herbal medicine as adjuncts to conventional treatments. For instance, many integrative practitioners recommend anti-inflammatory diets or supplements such as turmeric and omega-3 fatty acids to help manage chronic pain. This practice echoes Avicenna's advice to balance the humors through food and lifestyle (Elvina, et al., 2020).

Also, Avicenna's insights into the importance of emotional health in pain management have influenced modern approaches that prioritize mental and emotional well-being as part of a comprehensive pain treatment plan. Psychosomatic medicine, which explores how psychological factors contribute to physical illnesses, shares many of the same prin-



ciples that Avicenna championed (Borzan and Raja, 2009). The recognition that chronic stress, anxiety, and depression can exacerbate physical pain has led to the widespread use of mental health therapies alongside medical treatments, reflecting the holistic perspective that Avicenna pioneered.

Finally, Avicenna understands the importance of the physician-patient relationship. His belief that trust, compassion, and communication between doctor and patient were essential for healing remains central to modern holistic health practices. Today, patient-centered care emphasizes the need for empathy, active listening, and a strong therapeutic alliance, all of which are integral to Avicenna's philosophy of healing (Andersson, et al., 2012).

### **Impact and Legacy**

Avicenna's integration of psychological, behavioral, and physiological approaches profoundly impacted medieval and Renaissance medicine, not only in the Islamic world but also in Europe (Ghaffari, et al., 2022). His works became central to medical education and practice, bridging ancient Greek knowledge and the advancements of the Islamic Golden Age and providing a foundation for later developments in medical science (Markatos, et al., 2018).

In the Middle East, Avicenna's medical theories were widely adopted and extended by subsequent scholars. His work became part of a rich Islamic scholarly tradition that preserved and advanced the knowledge of earlier civilizations, including Greek, Persian, and Indian medicine (Moosavi, 2009). Avicenna built upon the work of earlier scholars, including the Persian physician al-Razi (Rhazes, 865-925 CE), helping establish Islamic medicine as an essential bridge for disseminating medical knowledge to Europe. (Zargaran, et al., 2011). Avicenna's emphasis on rationalism and empirical observation was especially influential, marking a departure from the more mystical or superstitious elements that characterized early medieval medicine (Lindroth, 1999).

### **1- Contemporary Relevance**

In the 20th and 21st centuries, there has been a resurgence of interest in holistic and integrative approaches to medicine, which closely align with many of the principles Avicenna advocated (Kelishadi and Hatami, 2012).

Interestingly, while modern medicine has made great strides in the treatment of acute conditions and infectious diseases, it has struggled to address chronic illnesses and pain.

This focus has led to a growing demand for integrative approaches that consider the whole person, mind, body, and environment rather than focusing solely on physical symptoms (Saffari and Pakpour, 2012).

### **2- Challenges and Critiques**

While Avicenna's approach to pain management and holistic health was groundbreaking in his time, modern science has advanced significantly beyond his theories in several areas (Tashani and Johnson, 2010). One of the key critiques of his work is its reliance on the humoral theory of medicine, which was the dominant paradigm during his era (Sadeghi, et al., 2020). In the humoral theory, health was determined by the balance of four bodily fluids (blood, phlegm, yellow bile, and black bile). Modern biomedical science



has long since debunked this viewpoint (Keskinbora, and Keskinbora, 2016). Today, we understand that imbalances of fluids do not cause pain and disease. However, various complex interactions between biological, neurological, and environmental factors are involved in causing pain and disease (Deleo, 2006).

Advances in neuroscience, for example, have provided a far more detailed understanding of how pain is processed in the body (Thacker and Moseley, 2012). Modern science recognizes that pain is mediated by a network of nerve cells, receptors, and pathways in the brain and spinal cord, with neurotransmitters like endorphins and serotonin playing a key role in modulating pain signals (Teets, Dahmer, and Scott, 2007). While Avicenna understood the importance of the brain and nervous system in pain perception, his explanations were limited by the scientific knowledge of his time (Mazengenya and Bhikha, 2018). As a result, many of his treatments, though effective, lacked the precision that modern medical interventions can offer (Apkarian, Baliki, and Geha, 2009).

Another criticism of Avicenna's methods lies in the realm of pharmacology. While his use of herbal remedies and plant-based treatments was innovative for his time, modern pharmacology has surpassed these methods in both efficacy and safety (Zargarán, et al., 2016). Today's pharmaceutical treatments for pain, such as NSAIDs (non-steroidal anti-inflammatory drugs), opioids, and anticonvulsants, are grounded in a detailed understanding of the molecular mechanisms by which these drugs interact with pain receptors and pathways in the body (Macrae, Davies, and Crombie, 1992). Avicenna's remedies, though often effective, were based on empirical observation rather than the detailed biochemical knowledge that informs modern drug development (Ditton, 1980).

In addition, Avicenna's methods were limited by the technological constraints of his era. While his recommendations for environmental modification, distraction, and relaxation techniques remain valuable, modern medicine benefits from advanced technologies that allow for more direct intervention in pain management (Shoja, et al., 2009). For example, techniques like spinal cord stimulation, nerve blocks, and minimally invasive surgeries offer targeted pain relief that would have been impossible in his time (Keskinbora, and Keskinbora, 2016).

Despite these critiques, it is important to recognize the enduring value of Avicenna's contributions within the context of his historical period. His emphasis on treating the whole person (mind, body, and spirit) continues to resonate in modern medicine, particularly in the field of integrative health (Khodaei, et al., 2017). While scientific advancements may have surpassed the specifics of his methods, the principles underlying his approach remain relevant in today's healthcare landscape (Mazengenya and Bhikha, 2018).

### **Conclusion**

Avicenna's integrative approach to pain management, which developed nearly a millennium ago, remains remarkably relevant in contemporary medicine. His recognition of the interconnectedness of mind, body, and environment in health and disease foreshadowed many modern medical practices, particularly in the field of integrative and holistic health. By combining psychological, behavioral, and physiological methods, Avicenna treated pain not merely as a physical condition but as a complex experience shaped by emotional and environmental factors. His use of distraction, music, and environmental modifications to alleviate pain, as well as his belief in the healing power of mental tranquility,



prefigured modern techniques like CBT, MBSR, and psychosomatic medicine. The enduring value of Avicenna's holistic perspective lies in its comprehensive approach, which addresses both the mind and body, offering a more patient-centered model of care. As the limitations of purely biomedical approaches to chronic pain become more apparent, his methods continue to resonate, particularly in integrative medicine, where complementary therapies such as music therapy, dietary adjustments, and environmental modifications are increasingly combined with conventional treatments.

Despite the significant advances in neuroscience and pharmacology that have expanded our understanding of pain, Avicenna's focus on the interconnectedness of mind, body, and emotional well-being remains highly relevant for contemporary pain management. His insights suggest that future research should continue to explore interdisciplinary approaches that combine historical medical wisdom with modern scientific techniques. Future research directions might include a deeper interdisciplinary study of the historical evolution of pain management, tracing how ideas like Avicenna's have influenced contemporary practices. Comparative studies between his approaches and current non-pharmacological treatments could also provide new insights into the efficacy of holistic therapies. Moreover, exploring the role of environmental and psychological factors in chronic pain could further validate Avicenna's early recognition of these elements in pain perception and management.

#### **Authors' Contribution**

Mohammad Radmehr contributed significantly to the conceptualization and design of the review article. He conducted an extensive literature review, drafted the initial manuscript, and provided critical insights into the integration of key findings. Habib Zakeri played a pivotal role in data collection, organization, and analysis of the reviewed literature. He also revised the manuscript for intellectual content and ensured the accuracy of the clinical perspectives discussed. Aliasghar Karimi contributed to the synthesis and interpretation of the data, critically reviewed the manuscript for coherence and scientific integrity, and provided valuable feedback to enhance the quality of the work.

All authors approved the final version of the manuscript and agreed to be accountable for all aspects of the work, ensuring its accuracy and integrity.

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#### **Conflict of Interest**

None.

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