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Review Article

Diqq al-Shaykhūkha and Sarcopenia: A Historical and Conceptual Review of Muscle Wasting in Old Age

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Abstract

Background: Age-related decline in muscle mass and function is a significant contributor to morbidity in the elderly. In modern medicine, this condition is recognized as sarcopenia. Classical Unani literature describes a comparable condition termed *Diqq al-Shaykhūkha*, characterized by progressive weakness and wasting in old age. **Objective:** To explore the historical and conceptual understanding of *Diqq al-Shaykhūkha* in Unani medicine and to compare it with the modern biomedical concept of sarcopenia. **Methods:** A narrative and historical review was conducted. Classical Unani texts, including works of Ibn Sīnā, Rāzī, and Jurjānī, were analyzed for descriptions of aging and wasting disorders. Contemporary literature on sarcopenia was retrieved from databases such as PubMed, Web of Science, and Google Scholar using relevant keywords. A comparative thematic analysis was performed. **Results:** The analysis revealed substantial similarities between *Diqq al-Shaykhūkha* and sarcopenia in terms of age of onset, progressive muscle wasting, associated weakness, and contributing factors such as inadequate nutrition and reduced physical activity. While Unani medicine explains the condition through concepts like diminished *Harārat Ghariziyya* and increased dryness, modern medicine attributes it to multifactorial mechanisms including aging, inflammation, and hormonal changes. Preventive strategies in both systems emphasize diet and physical activity. **Conclusion:** *Diqq al-Shaykhūkha* can be regarded as an early conceptualization of age-related muscle wasting analogous to sarcopenia. Recognizing this relationship highlights the continuity of medical knowledge across traditions and supports the integration of historical insights into contemporary geriatric research.

Keywords:

Diqq al-Shaykhūkha; Sarcopenia; Unani Medicine; Aging; Muscle Wasting; History of Medicine

1. Introduction

Sarcopenia is a degenerative skeletal muscle disease usually affecting the elderly population. It encompasses apathological reduction in muscular strength, mass and functions ^{1,2}. Primary type of Sarcopenia is agerelated. Sarcopenia affects all populations across the globe. Global prevalence of Sarcopenia has been reported a prevalence of 15.2% and Indian prevalence of Sarcopenia has been reported at 14.2% in older adults and 3.2% in younger adults ³. The recent report suggest that Sarcopenia may affect young people as well ⁴. Sarcopenia is associated with an elevated risk of various negative health outcomes, complications after surgery,

extended hospital stays in patients with different medical conditions, as well as increased likelihood of falls, fractures, metabolic disorders, cognitive impairment, and mortality in the general population ^{5,6}. The exact cause is unknown, research indicates a complex interaction of intrinsic and extrinsic variables. Furthermore, age is an essential factor in Sarcopenia onset, with inadequate physical activity and altered gene regulation being two critical processes driving its advancement ^{7,8}. Physical activity and nutritional status represent key regulators of muscle metabolism and phenotype, reflecting their utility for accomplishing healthy aging ⁹. Lifestyle modifications are essential for ensuring better autonomy for older people. Specifically,

physical exercises such as resistance training, have been demonstrated effective in improving muscle strength and function, subsequently enhancing flexibility and balance^{8,9,10,11}. Resistance exercise training is currently approached as a first-line treatment for Sarcopenia, being a superior form of physical activity for enhancing muscle mass and strength^{12,13}. Resistance exercise is considered a promising intervention, yet appropriate prescription is necessary for maximizing desirable effects. In the traditional Unani system of medicine, classical condition *Diqq al-Shaykhūkha* closely correspond to the clinical manifestations of Sarcopenia. *Diqq al-Shaykhūkha*, *Diqq* meaning weakness, *Shaykhūkha* refers to old age denotes the general debility and physiological decline seen during senescence, characterized by diminished *Quwwat* (strength), reduced *Harārat Gharīziyya* (innate heat), fatigue, and weakness^{14,15,16,17,18,19}. These conditions describe a progressive weakening of bodily faculties due to age, which aligns conceptually and symptomatically with Sarcopenia. Therefore, Sarcopenia can be interpreted as the modern medical equivalent of *Diqq al-Shaykhūkha*, offering a valuable bridge between traditional Unani wisdom and contemporary geriatric medicine. Despite growing recognition, Sarcopenia remains under-diagnosed and under-treated, particularly in resource-limited settings. Conventional treatment options, though effective, are not always feasible or accessible to all segments of the population, especially the elderly.

Aging is a universal biological phenomenon that has intrigued physicians, philosophers, and scholars across civilizations. Although aging itself is not a disease, it is accompanied by progressive structural and functional changes that predispose individuals to morbidity, disability, and dependency. Among these changes, the gradual loss of skeletal muscle mass and strength is particularly significant because it directly affects mobility, balance, metabolic health, and overall quality of life.²⁰

In contemporary biomedical science, age-related muscle loss is conceptualized as sarcopenia, a condition now formally recognized as a geriatric syndrome. Sarcopenia is associated with adverse outcomes such as falls, fractures, hospitalization, institutionalization, and mortality. Over the past three decades, sarcopenia has emerged as a major focus of geriatric research, leading to the development of diagnostic criteria, consensus definitions, and preventive strategies.^{21,22}

However, concern with physical decline in old age is not unique to modern medicine. Historical medical systems devoted considerable attention to senescence and its manifestations. The Unani system of medicine, rooted in Greco-Arabic traditions, offers a sophisticated theoretical framework to understand aging based on concepts such as temperament (*Mizāj*), (innate heat) *Harārat Gharīziyya*, and (innate moisture) *Rutūbat Gharīziyya*. Within this framework, Unani scholars described several degenerative conditions affecting the elderly, including *Diqq al-*

Shaykhūkha, a form of chronic wasting specific to old age.

Despite growing interest in integrative and traditional medicine, the historical relationship between *Diqq al-Shaykhūkha* and sarcopenia has not been sufficiently explored in academic literature, particularly from the perspective of the history of medicine. This review aims to bridge that gap by presenting a comprehensive historical and conceptual analysis of *Diqq al-Shaykhūkha* and correlating it with the modern understanding of sarcopenia. By doing so, the paper seeks to highlight the continuity of medical thought across centuries and underscore the relevance of classical medical knowledge in addressing contemporary health challenges.

2. Methodology

This review was conducted using a narrative and historical review methodology, appropriate for studies in the history of medicine. Both classical Unani medical literature and modern biomedical literature were systematically explored to examine concepts related to age-associated muscle wasting.²³

3. Sources of Classical Unani Literature

Primary Unani sources were consulted to understand the historical and conceptual framework of *Diqq al-Shaykhūkha*. These included authoritative classical texts such as *Al-Qānūn fī al-Tibb* by Ibn Sīnā, *Al-Hāwī fī al-Tibb* by Zakariyyā Rāzī, and *Zakhīra Khwārazm Shāhī* by Jurjānī. Additional references from Greco-Roman physicians such as Hippocrates and Galen, as preserved within Unani literature, were also reviewed. These texts were analyzed for descriptions related to aging, chronic wasting, muscle weakness, etiopathogenesis, and preventive principles in old age.

4. Search Strategy for Modern Literature

To correlate Unani concepts with contemporary biomedical understanding, a comprehensive literature search was conducted using electronic databases including PubMed, Web of Science, and Google Scholar. The search focused on peer-reviewed articles published in English. The following keywords and their combinations were used: “sarcopenia,” “muscle wasting,” “age-related muscle loss,” “pathophysiology,” “clinical manifestations,” and “aging.” Boolean operators (AND/OR) were applied to refine the search strategy.²⁴

5. Selection and Analysis of Studies

Relevant review articles, consensus papers, and key original research articles addressing the definition, pathophysiology, clinical features, and historical evolution of sarcopenia were included.²⁰ Articles unrelated to aging or skeletal muscle loss were excluded. The selected literature was analyzed narratively, and key themes were identified and compared with descriptions found in Unani texts.

This integrative approach allowed for a conceptual comparison between *Diqq al-Shaykhūkha* and sarcopenia, highlighting similarities and differences across historical and modern medical paradigms.

6. Aging and Muscle Wasting in the History of Medicine

Concepts of Aging in Ancient Greek Medicine

Ancient Greek physicians were among the earliest to systematically study aging. Hippocrates (460–370 BCE) viewed aging as a natural process characterized by a gradual decline in bodily heat and moisture. According to the Hippocratic corpus, youth was associated with warmth and moisture, whereas old age was dominated by coldness and dryness. These qualitative changes were believed to impair nutrition and tissue maintenance, leading to physical weakness and emaciation.²⁴

Galen (129–216 CE) further elaborated these ideas within his humoral framework. He described old age as a state of diminished innate heat and increased dryness, resulting in reduced metabolic activity and impaired regeneration of tissues. Galen explicitly noted that muscles in the elderly lose their firmness and strength, contributing to reduced physical capacity.²⁵ These observations laid the foundation for later medical theories on senescence.

Transmission into Unani Medicine

The Greco-Roman medical tradition was preserved and expanded by Arab and Persian scholars during the Islamic Golden Age. Unani medicine, as it developed between the ninth and thirteenth centuries, incorporated Hippocratic and Galenic principles while enriching them with original observations and clinical insights.

In Unani literature, aging (*Shaykhūkha*) is recognized as one of the natural stages of life. It is characterized by the progressive depletion of (innate moisture) *Rutūbat Gharīziyya* and weakening of (innate heat) *Harārat Gharīziyya*.^{14,15} These changes compromise digestion, assimilation, and tissue nourishment, predisposing the elderly to degenerative conditions. Muscle wasting was not viewed merely as a cosmetic issue but as a marker of declining vitality and functional impairment.

7. The Concept of Diqq in Classical Unani Literature

Meaning and Classification of Diqq

The term *Diqq* in Unani medicine broadly denotes chronic wasting and emaciation.¹⁴ Classical texts describe multiple forms of *Diqq*, distinguished by their etiology, affected age group, and clinical course. While *Diqq* was often associated with chronic infectious or inflammatory conditions such as phthisis, Unani scholars also recognized a distinct form related to senescence, known as *Diqq al-Shaykhūkha*.

This differentiation reflects an advanced nosological understanding, acknowledging that similar clinical manifestations may arise from different underlying causes. *Diqq al-Shaykhūkha* was specifically attributed to age-related physiological decline rather than external pathology.¹⁵

Descriptions by Ibn Sīnā and Other Scholars

Ibn Sīnā (980–1037 CE), in his seminal work *Al-Qānūn fī al-Tibb*, discussed wasting disorders occurring in the

elderly and emphasized that old age itself predisposes individuals to chronic weakness and emaciation.¹⁴ He attributed this to excessive dryness, reduced digestive power, and diminished capacity of organs to retain nourishment.

Zakariyyā Rāzī (865–925 CE) also described the vulnerability of elderly individuals to wasting conditions due to weakened faculties (*Quwā*).²⁶ Jurjānī, in *Zakhīra Khwārazm Shāhī*, provided detailed clinical descriptions of senile weakness, emphasizing the importance of diet and lifestyle in mitigating degeneration.²⁷

8. Diqq al-Shaykhūkha: Etiopathogenesis and Clinical Features

Etiopathogenesis in Unani Framework

According to Unani theory, *Diqq al-Shaykhūkha* arises primarily due to the dominance of dryness (*GhalbaYubūsat*) along with a decline in vital heat.¹⁵ With advancing age, there is a gradual depletion of innate moisture, which plays a crucial role in maintaining tissue integrity. At the same time, there is weakening of the digestive (*Quwwat Hādima*) and nutritive (*Quwwat Ghādhiya*) faculties, leading to impaired digestion and assimilation of nutrients. Reduced physical activity further aggravates this condition, while an inadequate or improper diet fails to compensate for the body's nutritional needs. Collectively, these factors result in insufficient production and proper distribution of healthy humors, ultimately causing poor nourishment of tissues, particularly the muscles.^{14,15,16,17,18,19}

Clinical Manifestations

Classical Unani texts describe *Diqq al-Shaykhūkha* as a slowly progressive condition characterized by generalized weakness, loss of muscle bulk, and a noticeable reduction in endurance and stamina. Patients often experience easy fatigability along with gradual emaciation over time.¹⁴ Importantly, these features closely resemble the clinical presentation of sarcopenia as described in modern geriatrics.

9. Sarcopenia: Evolution of a Modern Concept

Historical Development of the Term

The term sarcopenia was first introduced by Rosenberg in 1989 to describe age-related loss of skeletal muscle mass.²⁸ Over time, the concept evolved to incorporate not only muscle quantity but also muscle strength and physical performance. This evolution reflects growing recognition of functional outcomes as central to geriatric health.⁵

Pathophysiology and Risk Factors

Modern research identifies sarcopenia as a multifactorial condition influenced by aging-related hormonal changes, chronic low-grade inflammation, and neuromuscular degeneration.²⁹ In addition, physical inactivity and inadequate protein and energy intake further contribute to its development (Figure 1).³⁰ These factors interact in a complex manner to accelerate muscle protein breakdown while simultaneously impairing muscle regeneration.³¹

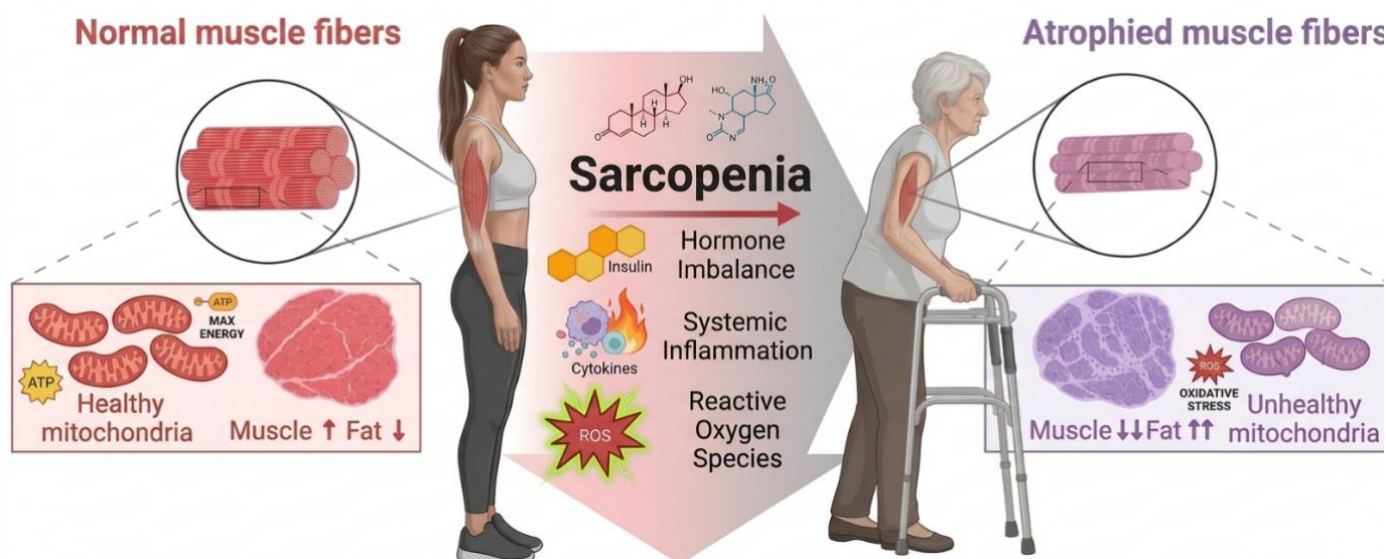


Figure 1 Pathophysiology of Sarcopenia

Clinical Significance

Sarcopenia is now recognized as a major contributor to frailty and disability. It increases the risk of falls, fractures, hospitalization, and mortality, making it a critical focus of public health and geriatric care.³²

10. Comparative Analysis: *Diqq al-Shaykhūkha* and Sarcopenia

A comparative analysis reveals substantial conceptual overlap between *Diqq al-Shaykhūkha* and sarcopenia despite differences in theoretical language.^{33,34}

Table 1: Comparison between *Diqq al-Shaykhūkha* and Sarcopenia

Aspect	<i>Diqq al-Shaykhūkha</i> (Unani)	Sarcopenia (Modern Medicine)
Age group	Elderly	Elderly
Nature	Chronic, degenerative	Progressive, degenerative
Primary pathology	Wasting due to dryness	Muscle mass and strength loss
Etiology	Weak vital heat, poor nutrition	Aging, inactivity, inflammation
Symptoms	Weakness, emaciation	Weakness, frailty
Prevention	Diet, activity, lifestyle	Nutrition, exercise

This comparison supports the view that Unani physicians recognized a condition analogous to sarcopenia centuries before modern diagnostic frameworks (Table 1).

11. Preventive and Therapeutic Principles: Historical Insights

Unani Preventive Strategies

Unani medicine places strong emphasis on prevention, particularly in old age, by advocating a holistic lifestyle approach. It recommends the use of an easily digestible, nutrient-rich diet to ensure proper nourishment, along with the maintenance of moderate physical activity to preserve strength and function. Therapeutic measures such as massage (Dalak) are advised to improve circulation, while (bath therapies) Hammāmh help in maintaining flexibility and vitality.³⁵ Additionally, the use of tonics is encouraged to strengthen the vital faculties and support overall health.

Modern Preventive Strategies

Modern medicine similarly emphasizes the importance of resistance and strength training to maintain muscle mass and function, along with adequate intake of protein and essential micronutrients to support muscle health.³⁶ Physical rehabilitation plays a key role in preserving mobility and functional independence, while preventing a sedentary lifestyle is considered crucial in reducing the progression of muscle loss. The convergence of these strategies highlights enduring principles in geriatric care.^{37,38,39}

Discussion and Future Recommendations

The analysis presented in this review demonstrates that *Diqq al-Shaykhūkha* represents a historically grounded conceptualization of age-related muscle wasting. Although Unani medicine employs a humoral and

temperament-based framework, its clinical observations closely align with modern descriptions of sarcopenia.³³ Classical Unani scholars carefully documented the gradual loss of strength, muscle bulk, and vitality in the elderly and attributed these changes to diminished innate heat, increased dryness, and weakened nutritive faculties. These explanations, though expressed in pre-modern scientific language, correspond conceptually to modern understandings of reduced anabolic signaling, inflammation, and impaired muscle regeneration.

From the perspective of the history of medicine, the correlation between *Diqq al-Shaykhūkha* and sarcopenia illustrates the continuity of medical thought across centuries. It challenges the perception that geriatric syndromes are exclusively modern constructs and demonstrates that physicians of the past possessed a nuanced understanding of aging-related degeneration.⁴⁰ The Unani emphasis on prevention, moderation, diet, and physical activity further reflects an early public health approach to aging that remains relevant today.

At the same time, it is important to acknowledge the limitations inherent in historical comparisons. Classical Unani descriptions are qualitative and lack the quantitative diagnostic criteria used in contemporary medicine. Nevertheless, the value of these texts lies in their detailed clinical observations and holistic approach to aging, which can enrich modern perspectives when interpreted cautiously.

Future research should focus on interdisciplinary approaches that integrate historical medical knowledge with modern biomedical science. Systematic textual analysis of classical Unani manuscripts may yield deeper insights into age-related disorders and their management. Translational research exploring Unani preventive principles—such as dietary moderation, lifestyle regulation, massage, and bath therapies—may offer supportive strategies for promoting musculoskeletal health in the elderly.

Comparative clinical studies and observational research may further evaluate the relevance of traditional regimens in contemporary geriatric care, particularly in culturally appropriate settings. Additionally, historians of medicine are encouraged to examine aging and degeneration as recurring themes across medical traditions, thereby enriching the global narrative of geriatric medicine.

Incorporating historical perspectives into medical education and geriatric research can foster a more comprehensive understanding of aging, emphasizing continuity rather than rupture between traditional and modern medical systems. Such efforts may contribute to more holistic and culturally sensitive approaches to the prevention and management of sarcopenia.

12. Limitations of the Study

This study has certain limitations that should be acknowledged. First, the review is primarily narrative and historical in nature, which inherently involves a degree of subjectivity in the selection, interpretation, and comparison of classical and modern sources.

Although efforts were made to include authoritative Unani texts and relevant contemporary literature, the possibility of selection bias cannot be entirely excluded. Second, classical Unani descriptions of *Diqq al-Shaykhūkha* are qualitative and lack standardized diagnostic criteria, making direct comparison with modern definitions of sarcopenia challenging. The absence of measurable clinical parameters in historical texts limits the ability to establish precise equivalence between the two concepts. Third, the study relies on translations and interpretations of classical texts, which may lead to potential variations in meaning and understanding. Some original concepts may not be fully captured due to linguistic and contextual differences. Fourth, the review does not include empirical or clinical data to validate the conceptual correlation between *Diqq al-Shaykhūkha* and sarcopenia. Therefore, the findings remain theoretical and require further validation through clinical and interdisciplinary research.

Finally, the scope of the study is limited to selected classical and modern sources, and it does not encompass all available literature across different medical traditions. Future studies incorporating broader sources and quantitative analysis would strengthen the evidence base and enhance the generalizability of findings.

13. Conclusion

Diqq al-Shaykhūkha, as described in classical Unani literature, can be regarded as an early medical conceptualization of age-related muscle wasting. Its strong resemblance to sarcopenia highlights the depth of historical understanding of aging and degeneration. Recognizing this connection enriches the historiography of medicine and supports further interdisciplinary research bridging traditional and modern medical sciences.

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