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Review Article

## Role of Unani Medicine in Geriatric Care: A Holistic Approach to Healthy Ageing

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### Abstract

The rapid increase in the elderly population has become a major public health concern worldwide, bringing with it rising incidences of chronic diseases, functional decline, and psychosocial challenges. Conventional geriatrics provides symptomatic and disease-specific care, yet preventive and holistic approaches remain underexplored. The Unani system of medicine, rooted in Greco-Arab traditions of Hippocrates, Galen, Rhazes, and Avicenna, provides a comprehensive framework for understanding and managing ageing. It conceptualizes senescence as the progressive decline of innate heat (*Hararat Ghariziya*) and innate moisture (*Rutubate Ghariziya*), leading to a predominance of a cold-dry temperament and decline of faculties. Unani physicians developed specialized regimens for the elderly, known as *Tadābir-e-Mashā'ikh*, emphasizing regimenal therapy (*Ilaj-bil-Tadbeer*), dietotherapy (*Ilaj-bil-Ghiza*), and pharmacotherapy (*Ilaj-bil-Dawa*). These therapies aim to preserve vitality, restore humoral balance, and delay age-related degeneration. Classical formulations such as *Majoon Flasaqa*, *Jawarish Jalinus*, and *Itriphal* are recognized for their nootropic, immunomodulatory, and cardioprotective properties. Modern pharmacological studies support the antioxidant, anti-inflammatory, and neuroprotective potential of many Unani drugs, highlighting their relevance for cognitive decline, musculoskeletal disorders, cardiovascular disease, and psychological well-being in geriatrics. Furthermore, the Unani emphasis on lifestyle modification through *Asbāb-e-Sitta Zaruriyya* (six essential factors) aligns with contemporary preventive healthcare models. Despite promising evidence, challenges remain in standardization, clinical validation, and integration with modern geriatrics. This review underscores the role of Unani medicine as a holistic, preventive, and culturally relevant approach to healthy ageing, and calls for further scientific validation to strengthen its contribution to global geriatric care.

**Keywords:** Unani Medicine; Geriatric Care; Healthy Ageing; *Tadābir-e-Mashā'ikh*; Holistic Healthcare

## Introduction

Ageing is a universal biological process that brings about gradual physiological decline and increased vulnerability to disease. According to the World Health Organization (WHO), the proportion of people aged 60 years and above is rising rapidly worldwide, expected to reach more than 2 billion by 2050. This demographic shift poses enormous challenges to healthcare systems, as older adults experience multiple chronic illnesses such as cardiovascular disease, diabetes, cancer, osteoporosis, dementia, and depression<sup>1</sup>. Ageing is not only associated with physical frailty, but also with psychosocial issues, reduced independence, and financial burden on families and health services. The global focus has shifted from merely increasing life expectancy to promoting "healthy ageing" - maintaining functional ability and quality of life in later years<sup>2</sup>.

Geriatric care requires a comprehensive, multidisciplinary approach that goes beyond conventional treatment of diseases. It must address

prevention, early diagnosis, rehabilitation, psychological support, and lifestyle management. Elderly populations often present with multimorbidity, polypharmacy, and reduced resilience, which complicates modern biomedical management<sup>3</sup>. Thus, strategies that integrate preventive care, nutrition, exercise, mental health, and social engagement are critical. Health systems worldwide are exploring complementary and alternative medicine (CAM) to fill gaps in geriatric care, providing holistic and culturally acceptable healthcare solutions<sup>4</sup>.

Traditional systems such as Ayurveda, Traditional Chinese Medicine (TCM), and Unani have long emphasized preventive and promotive healthcare. These systems regard ageing not as an inevitable decline, but as a process that can be delayed or moderated through balanced lifestyle, diet, and natural therapies<sup>5</sup>. Unani medicine, in particular, views health as the equilibrium of humors (*Akhlat*) and temperament (*Mizaaj*). Ageing is explained as a depletion of innate moisture (*Rutubate Ghariziya*) and innate heat (*Hararat Ghariziya*), resulting in cold and dry temperament in old age<sup>6</sup>. Classical Unani

scholars such as Hippocrates, Galen, Razi, and Avicenna described the changes of senescence in detail, linking them to functional deterioration of body faculties<sup>7,8</sup>.

The Unani approach to geriatric care is captured in the concept of *Tadabeer-e-Mashā'ikh* (regimenal therapies for the elderly). These include moderate exercise, massage (*Dalk*), steam bath (*Hammam*), cupping (*Hijama*), balanced diet, and herbal formulations. Dietotherapy (*Ilaj-bil-Ghiza*) emphasizes easily digestible, antioxidant-rich foods, while pharmacotherapy (*Ilaj-bil-Dawa*) employs herbal and compound drugs such as *Majoon Waj*, *Majoon Flasa*, and *Itriphal Sagheer* with reputed anti-aging, neuroprotective, and cardiogenic effects<sup>1,5</sup>.

In the current global context, where elderly care has become a priority, revisiting Unani medicine offers an opportunity to integrate traditional wisdom with modern healthcare. Its preventive philosophy, focus on lifestyle, and natural therapies align well with the WHO's framework for healthy ageing. Scientific validation and integration of these approaches into mainstream geriatric care may help reduce disease burden, enhance quality of life, and promote holistic ageing across diverse populations<sup>3,6</sup>.

Unani medicine provides a holistic framework for geriatric care by emphasizing the preservation of balance between body, mind, and environment. The central philosophy is that ageing results from gradual depletion of innate heat and moisture, leading to cold and dry temperament. Care must therefore focus on restoring warmth, moisture, and vitality through regimenal, dietary, and pharmacological measures<sup>6,7</sup>.

Regimenal therapy offers preventive and restorative techniques such as massage, hammam, cupping, and exercise. These improve circulation, maintain flexibility, and support psychological well-being<sup>5</sup>. Dietotherapy advocates nutrient-rich, antioxidant foods—fruits, vegetables, legumes, honey, and green tea—to combat oxidative stress, strengthen digestion, and delay age-related decline<sup>7</sup>. Pharmacotherapy prescribes single and compound herbal formulations, such as *Withania somnifera* (Asgand), *Crocus sativus* (Zafran), and *Majoon Flasa*, which exhibit nootropic, immunomodulatory, and cardioprotective properties<sup>1</sup>.

What distinguishes Unani geriatrics is its personalized approach, tailoring regimens to the individual's temperament, comorbidities, and lifestyle. This aligns with modern concepts of personalized and preventive medicine<sup>3</sup>. Furthermore, its emphasis on *Asbab-e-Sitta Zaruriyya* (six essential lifestyle factors—air, food, sleep, motion/rest, evacuation/retention, mental state) offers a blueprint for comprehensive elderly care<sup>6</sup>.

By integrating Unani medicine into contemporary geriatric practice, healthcare providers can deliver culturally sensitive, cost-effective, and holistic interventions that not only manage disease but also enhance functional independence and quality of life in old age<sup>4,6</sup>.

## Historical Perspective

The roots of geriatric concepts in Unani medicine trace back to the Greco-Arabic medical tradition, which shaped the foundations of this system. Hippocrates (460–377 BCE), regarded as the “Father of Medicine,” emphasized the natural process of ageing as a gradual decline in innate heat and moisture, which he believed sustained life<sup>9</sup>. He described old age as a stage of cold and dryness, marked by weakness, poor digestion, and susceptibility to disease. Hippocrates stressed moderation in diet, lifestyle regulation, and preventive care to ensure a healthy transition into old age<sup>10</sup>.

Galen (129–216 CE), who systematized Hippocratic teachings, expanded on ageing by linking it with the deterioration of the body's faculties. He explained that the balance of humors (blood, phlegm, yellow bile, and black bile) shifts with age, leading to cold and dry temperament in old individuals<sup>11</sup>. Galen also contributed significantly to regimenal therapies, advocating massage, exercise, and simple diets for promoting longevity and delaying senescence<sup>12</sup>.

In the Islamic Golden Age, prominent Unani scholars further enriched these concepts. *Zakariya Al-Razi* (Rhazes, 865–925 CE) wrote extensively on ageing and geriatrics in his treatises. In *Kitab Al-Hawi* (The Comprehensive Book on Medicine), he described the physiological decline in old age and recommended light, nutritious diets, mild physical activity, and psychological support to maintain vitality<sup>13</sup>.

Avicenna (Ibn Sina, 980–1037 CE) provided the most comprehensive description of ageing in his magnum opus *Al-Qanun fi al-Tibb* (The Canon of Medicine). He identified old age as a cold and dry state due to the depletion of innate moisture and heat, affecting digestion, cognition, and immunity<sup>14</sup>. Avicenna emphasized individualized regimens tailored to temperament, including specific diets, herbal remedies, and lifestyle adjustments. He also highlighted the role of mental health, suggesting pleasant environments, companionship, and intellectual engagement for the elderly<sup>15</sup>.

These classical contributions not only enriched the theoretical basis of Unani geriatrics but also influenced later physicians in both the Islamic and European worlds.

## Classical Unani Texts on Ageing

Unani scholars preserved and elaborated these insights in classical texts, forming the foundation of geriatric care. The concept of *Tadabeer-e-Mashā'ikh* (regimens for the elderly) is found in several works, including *Kamil al-Sina'a al-Tibbiyya* by Ali ibn Abbas Majusi (Haly Abbas), *Al-Qanun fi al-Tibb* by Avicenna, and *Zakhira Khwarazm Shahi* by Jurjani<sup>16</sup>. These texts emphasized preventive regimens to slow ageing, focusing on the six essential lifestyle factors (*Asbab-e-Sitta Zaruriyya*): air, food and drink, sleep and wakefulness, motion and rest, retention and evacuation, and emotional states<sup>17</sup>.

Classical prescriptions included light, easily digestible diets such as soups, broths, honey, and fresh fruits. Herbal preparations like *Majoon Flasa*, *Itriphal*

*Sagheer*, and *Sharbat-e-Unnab*, *Arque Gaozaban* were recommended for strengthening digestion, memory, and cardiovascular health<sup>18</sup>. Regimenal therapies, such as cupping, massage with warm oils, and steam baths, were prescribed to maintain circulation and flexibility.

These classical perspectives reveal that Unani medicine has always viewed ageing as a modifiable process, where preventive regimens, balanced diets, and simple herbal remedies could delay decline and promote active longevity. The holistic nature of these texts aligns remarkably with modern geriatric principles, making them highly relevant in today's ageing societies.

## Philosophy of Ageing in Unani Medicine

**Temperament and Senescence-** In Unani medicine, the concept of temperament is central to understanding health, disease, and the ageing process. Each individual is born with a unique temperament formed by the relative balance of the four qualities-hot, cold, moist, and dry—derived from the humoral theory. Ageing, in this framework, is explained as a gradual alteration in *Mizaj* due to the depletion of innate heat (*Hararat-e-Ghariziya*) and vital moisture (*Rutubat-e-Ghariziya*). With advancing age, the natural predominance shifts toward a cold and dry state, predisposing the body to frailty, cognitive decline, and reduced capacity for repair<sup>19</sup>.

Unani scholars describe human life as a continuum divided into stages: childhood, youth, adulthood, and old age. Each stage has a dominant temperament—childhood is moist, youth is hot, adulthood is balanced, and old age is cold and dry<sup>20</sup>. This progression illustrates how senescence is not a sudden occurrence but rather a predictable transformation of temperament. Recognizing this shift, Unani physicians advocated early preventive care and adjustment in lifestyle regimens (*Asbab-e-Sitta Zaruriyya*) to slow down the transition and preserve vitality<sup>21</sup>.

The practical implications of this philosophy are evident in dietary prescriptions and regimenal therapies. Foods that provide warmth and moderate moisture, such as soups, honey, milk, and light meats, were recommended for the elderly. Gentle exercises, massages with warm oils, and exposure to mild sunlight were also suggested to maintain balance in temperament and prevent rigidity of tissues<sup>22</sup>.

**Imbalance of Humours in Ageing-** The humoral theory (*Nazariya-e-Akhlat*) forms the bedrock of Unani medical thought. It postulates that the human body is governed by four humors: blood (*Dam*), phlegm (*Balgham*), yellow bile (*Safra*), and black bile (*Sauda*). Health is maintained when these humors are in equilibrium, whereas disease arises from their imbalance. Ageing is interpreted as a progressive dominance of *Balgham* (cold and moist) and *Sauda* (cold and dry), leading to weakening of the faculties (*Quwa*)<sup>23</sup>.

In childhood, the abundance of *Balgham* contributes to growth, while in old age, its persistence results in sluggish metabolism, weak digestion, and lethargy. Simultaneously, the rise of *Sauda* is associated with dryness, rigidity of tissues, melancholy, and cognitive

decline<sup>24</sup>. The decline of *Dam* (associated with vitality and warmth) further explains fatigue and anemia, while reduced *Safra* correlates with diminished metabolic fire and poor appetite<sup>25</sup>.

To counter this humoral imbalance, classical Unani physicians prescribed therapies aimed at restoring equilibrium. Blood-enriching foods, mild laxatives, and herbal tonics were recommended to regulate *Dam*. Decoctions of herbs such as *Asgandh* (*Withania somnifera*), *Amla* (*Emblica officinalis*), and *Zafran* (*Crocus sativus*) were used for rejuvenation and mental clarity<sup>26</sup>. Unani texts also emphasize psychological well-being in old age, recognizing the impact of *Sauda*-related melancholia. Music therapy, companionship, and engagement in intellectual activities were suggested to preserve emotional stability and cognitive health<sup>27</sup>.

Thus, the philosophy of ageing in Unani medicine views senescence as an inevitable but manageable stage of life, arising from predictable alterations in temperament and humoral balance. By adopting preventive regimens, dietary moderation, and herbal therapies, the decline of ageing could be delayed, allowing for a healthier and more dignified old age.

## Unani Approaches to Geriatric Care

The Unani system of medicine provides a comprehensive framework for managing ageing through its four therapeutic modalities: *Ilaj-bil-Tadbeer* (regimenal therapy), *Ilaj-bil-Ghiza* (dietotherapy), *Ilaj-bil-Dawa* (pharmacotherapy), and *Ilaj-bil-Yad* (surgery). These approaches emphasize preventive, promotive, and restorative care, making them particularly suited for addressing the multifaceted challenges of geriatric health.

### Regimenal Therapy

Regimenal therapy is a cornerstone of Unani geriatrics, involving non-pharmacological interventions designed to maintain humoral balance, enhance vitality, and delay senescence. The elderly, who are prone to cold and dry temperaments, benefit from regimens that restore warmth and moisture while preventing rigidity and stagnation<sup>28</sup>.

Key regimens include *Dalak* (massage), which improves circulation, relaxes muscles, and prevents stiffness. *Hammam* (bath therapy) using warm water and medicated oils is recommended for rejuvenation, detoxification, and relief of musculoskeletal pain<sup>29</sup>. *Riyazat* (moderate exercise), tailored to the capacity of the elderly, maintains flexibility, strengthens the cardiovascular system, and prevents obesity<sup>30</sup>. *Taleeq* (leech therapy) and *Hijamah* (cupping) were occasionally used for localized pain, varicose veins, or sluggish blood flow, though these are applied cautiously in the elderly<sup>31</sup>.

Unani scholars also stressed psychological well-being. *Samā'* (music therapy) and engagement in intellectual or spiritual activities were advised to counter melancholia, improve memory, and reduce age-related cognitive decline<sup>32</sup>. Thus, regimenal therapy in Unani geriatrics



integrates physical, psychological, and social dimensions of health.

### Dietotherapy

Food is regarded as the first line of medicine in Unani philosophy, and dietary regulation plays a crucial role in geriatric care. Since ageing is associated with diminished digestive fire (*Quwwat-e-Hazima*) and predominance of cold-dry temperament, foods that are light, moist, and easily digestible are preferred<sup>33</sup>.

Unani physicians recommended soups prepared from chicken, mutton, or lentils, enriched with warming spices such as ginger and cinnamon<sup>34</sup>. Milk, honey, almonds, and dates were considered restorative, providing both nutrition and vitality<sup>35</sup>. Seasonal fruits like pomegranate, apple, and fig were prescribed to aid digestion, prevent constipation, and supply antioxidants<sup>36</sup>.

Moderation in eating was emphasized to prevent indigestion, obesity, and metabolic decline. Avicenna advised smaller, more frequent meals to compensate for the weakened digestion of the elderly<sup>37</sup>. Fluid intake was regulated, with lukewarm water and herbal decoctions recommended to avoid excessive phlegm production<sup>38</sup>.

In addition to physical nourishment, diet was believed to influence mood and cognition. For example, saffron was added to food for its reputed antidepressant and memory-enhancing effects<sup>39</sup>. Thus, dietotherapy offered both physiological and psychological benefits in promoting healthy ageing.

### Pharmacotherapy

When regimenal and dietary measures were insufficient, Unani physicians prescribed medicines of plant, animal, or mineral origin. These remedies were chosen according to the principle of opposites (*Ilaj-bil-Zid*), aiming to correct the dominant cold-dry temperament of old age<sup>40</sup>.

Herbal tonics (*Muqawwiat*) such as *Asgandh* (*Withania somnifera*), *Amla* (*Emblica officinalis*), and *Zafran* (*Crocus sativus*) were prescribed for rejuvenation, improved immunity, and cognitive enhancement<sup>41</sup>. *Majoon-e-Falasfa* and *Majoon-e-Jawahar* were classical compound formulations specifically indicated for senility, nervous debility, and memory decline<sup>42</sup>.

Laxatives (*Mulayyinat*) like *Ispaghula husk* and *Senna* were commonly used to prevent constipation, a frequent complaint among the elderly<sup>43</sup>. Mild diuretics were employed to address hypertension and fluid retention. Medicinal oils for massage, such as *Rogan-e-Badam* (almond oil) and *Rogan-e-Kunjud* (sesame oil), were applied for joint stiffness and neuralgias<sup>44</sup>.

Importantly, pharmacotherapy was administered cautiously, respecting the elderly's reduced tolerance and slower metabolism. Physicians emphasized the use of simple, single-drug formulations before resorting to complex compounds<sup>45</sup>.

### Surgery

Though not commonly employed in geriatric care, surgical interventions were part of the Unani tradition. Procedures such as *Jarahat* (surgery) were primarily

indicated for conditions like cataracts, abscesses, or tumors. Albucasis (*Al-Zahrawi*), a renowned Unani surgeon, described surgical instruments and techniques that remain relevant to the history of medical science<sup>46</sup>.

In elderly patients, surgery was approached with caution due to frailty and slower healing. Minor procedures such as cauterization (*Takmeed bi'l-Nar*) or excision of superficial lesions were more frequently undertaken than major surgeries<sup>47</sup>. While pharmacological and regimenal therapies were preferred, surgical methods were considered when absolutely necessary.

## Specific Age-related Disorders and Unani Management

Unani medicine has historically recognized that ageing (*Sheikhukhat*) predisposes individuals to a range of chronic, degenerative, and psychosomatic disorders. Classical physicians attributed these conditions to the dominance of *barid-yabis mizaj* (cold-dry temperament), impaired digestion, and weakening of the *quwa* (faculties). The following section explores common geriatric disorders and their Unani management.

### Cognitive Decline (Dementia, Alzheimer's disease)

Memory impairment, confusion, and progressive cognitive decline are described in Unani texts under terms like *nisyan* (forgetfulness) and *khafqan-e-dimagh* (dementia-like states). Avicenna attributed these conditions to derangements in the *rooh dimaghi* (psychic pneuma) and the accumulation of phlegm or melancholic humours in the brain<sup>48</sup>.

#### Management strategies:

- **Regimenal therapy:** *Dalak* (head massage) with medicated oils such as *Rogan-e-Badam* (almond oil) or *Rogan-e-Kusumb* (safflower oil) is recommended to improve cerebral circulation<sup>49</sup>. *Samā'* (music therapy) and engagement in intellectual activities are prescribed to enhance mood and memory.
- **Dietotherapy:** Light, moist foods enriched with saffron, almonds, walnuts, and dates are recommended to strengthen memory and cognition<sup>50</sup>.
- **Pharmacotherapy:** Compound formulations like *Majoon-e-Falasfa* and *Majoon-e-Jawahar* are classic nootropic tonics used to improve memory and reduce senility<sup>51</sup>. Herbs such as *Asgandh* (*Withania somnifera*), *Brahmi* (*Bacopa monnieri*), and *Amla* (*Emblica officinalis*) are indicated for neuroprotection<sup>52</sup>.

### Musculoskeletal Disorders (Arthritis, Osteoporosis)

Ageing often leads to weakening of bones and joints, manifesting as arthritis, stiffness, and fragility fractures. Unani physicians linked these to dryness of joints, accumulation of phlegm, and depletion of vital moisture (*rutubat-e-ghareeziya*)<sup>53</sup>.

#### Management strategies:

- **Regimenal therapy:** *Dalak* with *Rogan-e-Kunjud* (sesame oil) or *Rogan-e-Zaitoon* (olive oil) helps

maintain joint flexibility. Warm baths with decoctions of anti-inflammatory herbs (fenugreek, turmeric) are also advised<sup>54</sup>.

- **Dietotherapy:** A calcium-rich diet including milk, figs, sesame, and leafy greens is recommended to strengthen bones. Moderate use of warming spices prevents stiffness<sup>55</sup>.
- **Pharmacotherapy:** Unani formulations such as *Majoon Suranjan* (for arthritis and gout) and *Habb-e-Asgandh* are used to relieve pain and inflammation<sup>56</sup>. Herbs like *Suranjan Shirin* (*Colchicum autumnale*) and *Boswellia serrata* are traditional anti-arthritic agents<sup>57</sup>.

### Cardiovascular Health in Geriatrics

Unani medicine emphasizes the heart (*qalb*) as the center of vitality and spirit (*rooh*). With age, weakening of cardiac faculty (*quwwat qalbiya*) predisposes individuals to palpitations, hypertension, and heart failure<sup>58</sup>.

#### Management strategies:

- **Regimenal therapy:** Stress reduction through light exercise (*Riyazat*), controlled breathing, and music therapy is emphasized. Massage with cardiac-strengthening oils helps relaxation.
- **Dietotherapy:** Foods such as pomegranate, garlic, onion, and honey are prescribed for strengthening the heart. Avicenna recommended moderate wine (contextually) and rose preparations to soothe palpitations<sup>59</sup>.
- **Pharmacotherapy:** *Sharbat-e-Gul* (rose syrup), *Arq-e-Gulab* (rose distillate), and *Majoon-e-Arad Khurma* are cardi tonic remedies<sup>60</sup>. Herbs like *Terminalia arjuna* and saffron are employed as heart tonics<sup>61</sup>.

#### Management strategies:

**Table 1: Unani Approaches for Psychological Well-being and Sleep Disorders**

Approach	Description & Classical Examples
Regimenal therapy (Ilaj-bil-Tadbeer)	<i>Samāʿ</i> (listening to music, poetry), relaxation therapies, and companionship are prescribed to uplift mood. <i>Dalak</i> (massage) with warm oils induces relaxation and improves sleep.
Dietotherapy (Ilaj-bil-Ghiza)	Warm milk with honey, saffron, or nutmeg is a classical remedy for insomnia <sup>69</sup> .
Pharmacotherapy (Ilaj-bil-Dawa)	<i>Khamira Gaozaban</i> (herbo-mineral tonic) is used for anxiety and palpitation, while <i>Itrifal-e-Ustukhuddus</i> is prescribed for melancholia and insomnia <sup>70</sup> . Sedative herbs like <i>Valeriana wallichii</i> and <i>Nardostachys jatamansi</i> are also employed <sup>71</sup> .

### Evidence from Modern Research

**Preclinical and Clinical Studies-** In recent decades, Unani medicine has received increasing attention from modern researchers who seek to validate its safety and efficacy through experimental and clinical studies. Preclinical investigations using animal models and in vitro methods have demonstrated promising neuroprotective, anti-inflammatory, antioxidant, and

- **Preventive care:** Avoidance of fatty, heavy meals and excess salt is stressed to reduce cardiac strain<sup>62</sup>.

### Gastrointestinal and Metabolic Disorders

Digestive weakness (*zaʿf al-hazm*) is considered a hallmark of ageing. Elderly individuals frequently experience constipation, flatulence, anorexia, and metabolic syndromes such as diabetes and obesity<sup>63</sup>.

#### Management strategies:

- **Dietotherapy:** Easily digestible, moist foods such as soups, porridges, and boiled vegetables are recommended. Fiber-rich fruits like figs and prunes relieve constipation<sup>64</sup>.
- **Pharmacotherapy:** *Mulayyinat* (mild laxatives) like *Ispaghula husk* (*Plantago ovata*) and *Turbud* (*Operculina turpethum*) are prescribed for constipation<sup>65</sup>. *Habb-e-Muqil* and *Majoon-e-Dabeedulward* are used for hepatic and digestive disorders. For diabetes, *Qurs Tabasheer* and herbs like *Jamun* (*Syzygium cumini*) and *Karela* (*Momordica charantia*) are advised<sup>66</sup>.
- **Regimenal therapy:** Wet cupping and fomentation were employed for abdominal discomfort. Light exercise was encouraged to improve digestion<sup>67</sup>.

### Psychological Well-being and Sleep Disorders

Ageing is often associated with anxiety, depression, loneliness, and insomnia. Unani medicine stresses that psychological balance is crucial for *sehat* (health). Disturbances in the psychic faculty (*quwwat-e-nafsaniyah*) are attributed to excess phlegm and dryness in the brain<sup>68</sup>.

cardioprotective effects of several Unani formulations and single drugs. These findings provide a scientific basis for the traditional use of these remedies in geriatric care<sup>46</sup>.

**Clinical trials**, though relatively limited in number, also suggest positive outcomes. For instance, studies on Unani polyherbal formulations used for cognitive enhancement and joint health have reported improvements in

memory, attention, and mobility in elderly patients without significant adverse effects<sup>47</sup>. Similarly, Unani regimenal therapies such as *Dalak* (massage), *Hammam* (steam bath), and *Hijama* (cupping) have been shown to improve musculoskeletal flexibility, reduce chronic pain, and enhance quality of life in geriatric populations<sup>48</sup>.

An integrative approach combining Unani principles with modern diagnostics has proven useful in designing protocols for lifestyle diseases. For example, controlled dietary regimens (*Ilaj-bil-Ghiza*) and Unani herbal supplements have been employed in managing metabolic syndrome and mild cognitive impairment, aligning with global efforts to promote healthy ageing<sup>49</sup>.

## Herbal Drugs in Geriatrics

**Table 2: Unani Herbal Drugs with Modern Evidence in Geriatric Care**

Herb (Unani / Botanical name)	Traditional Role in Unani Medicine	Modern Research Evidence
<i>Withania somnifera</i> (Asgand)	<i>Muqawwi A'sab</i> (nervine tonic); used for vitality, stress reduction, and muscle strength	Adaptogenic and anti-ageing properties; enhances memory, reduces stress-induced neurodegeneration, improves muscular strength; clinical trials show improved cognition and sleep quality in elderly <sup>50</sup>
<i>Bacopa monnieri</i> (Barhami)	<i>Muqawwi Dimagh</i> (brain tonic); enhances intellect and learning	Preclinical: improves synaptic communication, reduces oxidative stress, protects against amyloid toxicity. Clinical: improves learning, memory retention, and cognitive processing <sup>51</sup>
<i>Terminalia arjuna</i> (Arjun)	<i>Muqawwi Qalb</i> (cardiac tonic); strengthens heart muscles and circulation	Clinical evidence: lowers cholesterol, reduces angina, improves ventricular function; antioxidant action prevents cardiovascular ageing <sup>52</sup>
<i>Allium sativum</i> (Garlic)	Prescribed for vascular and metabolic health	Antihypertensive, antiplatelet, and lipid-lowering effects; clinical trials show reduced arterial stiffness and improved endothelial function <sup>53</sup>
<i>Aloe barbadensis</i> (Sibr)	Cooling, detoxifying; supports digestion and skin health	Improves digestion, boosts antioxidant defense, supports wound healing; polysaccharides have immunomodulatory effects for vitality <sup>54</sup>
<i>Tinospora cordifolia</i> (Gilo)	Immune-enhancing, anti-ageing drug in geriatrics	Immunomodulatory, hepatoprotective, antidiabetic; improves insulin sensitivity, protects from oxidative stress; useful for diabetes, infections, debility <sup>55</sup>
<i>Commiphora mukul</i> (Muqil)	Used in arthritis and lipid disorders	Hypolipidemic, anti-inflammatory; clinical trials show reduction in LDL and triglycerides; effective in reducing joint pain and stiffness <sup>56</sup>
<i>Crocus sativus</i> (Zafran)	Brain and mood enhancer; valued in geriatrics	Neuroprotective, antidepressant, antioxidant (crocin, crocetin); clinical trials show benefits in depression and cognitive enhancement in older adults <sup>57</sup>

## Integrative Significance

The growing body of modern evidence suggests that Unani medicinal plants and therapeutic approaches can significantly contribute to geriatric healthcare. Their safety profile, especially when used in dietary or regimenal forms, makes them suitable for long-term use in elderly populations where polypharmacy and drug-related side effects are major concerns<sup>58</sup>. Despite encouraging findings, the current evidence base remains fragmented. More rigorously designed multicentric clinical trials, pharmacovigilance studies, and standardization of herbal formulations are necessary to establish broader acceptability. Collaborative research integrating Unani principles with contemporary biomedical methodologies could open new horizons in geriatric medicine<sup>59</sup>.

## Integration with Contemporary Healthcare

**Possibilities for Integrative Geriatrics-** The ageing population presents unique healthcare challenges that demand multidimensional approaches. Conventional biomedicine offers advanced diagnostics and disease-specific interventions, but it often falls short in addressing the multifactorial and chronic nature of geriatric disorders. The elderly commonly face polypharmacy, adverse drug reactions, frailty, multimorbidity, and reduced quality of life, all of which call for a holistic and patient-centred approach<sup>60</sup>.

Unani medicine, with its holistic principles, personalized regimens, and focus on prevention, offers an ideal complement to biomedical care. Its therapeutic modalities such as *Ilaj-bil-Tadbeer* (regimenal therapy),

*Ilaj-bil-Ghiza* (dietotherapy), and *Ilaj-bil-Dawa* (pharmacotherapy using natural formulations) can help maintain physiological balance, improve vitality, and reduce the need for multiple synthetic drugs. Evidence shows that Unani interventions for musculoskeletal conditions, cognitive decline, and metabolic disorders can enhance functional independence in the elderly<sup>61</sup>.

Integrative geriatrics promotes a model in which conventional medicine addresses acute and emergency needs, while Unani therapies contribute to long-term management, lifestyle regulation, and psychosocial well-being. For instance, Unani herbal remedies such as *Asgand* (*Withania somnifera*), *Brahmi* (*Bacopa monnieri*), and *Arjun* (*Terminalia arjuna*) have shown promise in clinical studies for improving cognition, cardiac function, and resilience in older adults<sup>62</sup>. Such integrative care models can improve adherence, minimize drug-drug interactions, and provide cost-effective options, especially in low- and middle-income settings.

### Policy Perspectives (AYUSH Initiatives in India)

Recognizing the potential of traditional medicine in elderly care, India has made significant strides in institutionalizing Unani and other AYUSH systems into mainstream healthcare. The Ministry of AYUSH has undertaken initiatives under the National AYUSH Mission (NAM) to support infrastructure development, training, and standardization of Unani therapies<sup>63</sup>. Special emphasis is placed on promoting AYUSH-based geriatric care through dedicated clinics, mobile healthcare units, and wellness centres that target chronic age-related conditions.

The National Health Policy (2017) explicitly acknowledges the role of AYUSH in preventive and promotive healthcare, highlighting integration as a strategic priority for managing non-communicable diseases and geriatric syndromes<sup>64</sup>. In practice, AYUSH wings have been established in many government hospitals, where Unani practitioners collaborate with biomedical specialists to deliver comprehensive care.

The AYUSH Research Councils, particularly the Central Council for Research in Unani Medicine (CCRUM), have initiated projects focusing on the efficacy of Unani interventions in geriatric conditions such as arthritis, insomnia, and cardiovascular health. Standardization efforts include the development of monographs, pharmacopoeial standards, and clinical research protocols to ensure safety and efficacy<sup>65</sup>.

Globally, India's AYUSH policies align with the WHO Traditional Medicine Strategy 2014–2023, which advocates integration of traditional medicine into health systems as part of achieving universal health coverage. The establishment of a WHO Global Centre for Traditional Medicine in India in 2022 further strengthens international recognition of AYUSH, including Unani geriatrics, as a contributor to sustainable healthcare<sup>66</sup>.

Additionally, India's collaboration with WHO on the Decade of Healthy Ageing (2020-2030) opens avenues for Unani medicine to contribute to global ageing

strategies. Integrating Unani principles of lifestyle modification, dietary regulation, and safe herbal pharmacotherapy with biomedical geriatrics offers a culturally sensitive, cost-effective, and scalable model for elderly care in India and beyond<sup>67</sup>.

### Challenges and Future Prospects

**Standardization, Safety, and Validation-** One of the foremost challenges in integrating Unani medicine into geriatric care lies in standardization of formulations and therapies. Many Unani drugs are polyherbal or herbo-mineral in nature, prepared according to classical recipes described in texts such as *Al-Qanoon fi al-Tibb* and *Kitab al-Hawi*. However, variations in raw material quality, geographic sourcing, and preparation methods often result in inconsistencies in chemical composition and therapeutic efficacy<sup>68</sup>. Ensuring Good Agricultural and Collection Practices (GACP), Good Manufacturing Practices (GMP), and pharmacopoeial standardization is therefore critical.

Another pressing issue is safety evaluation. Elderly patients are more vulnerable to adverse effects and drug-drug interactions due to polypharmacy and reduced physiological reserves. While Unani medicines are generally considered safe when used appropriately, lack of rigorous toxicological studies and pharmacovigilance frameworks can hinder wider acceptance<sup>69</sup>. The establishment of AYUSH pharmacovigilance centres has been an important step forward, but broader integration with hospital-based surveillance systems is required.

**Validation through clinical research** remains essential for global recognition. Although several pilot studies and observational trials support the role of Unani drugs in managing arthritis, insomnia, and metabolic disorders, large-scale, randomized controlled trials are limited<sup>70</sup>. Without such evidence, Unani geriatrics will remain underutilized in mainstream healthcare.

### Opportunities for Artificial Intelligence, Clinical Trials, and Digital Health

Emerging technologies, particularly artificial intelligence (AI) and digital health platforms, present exciting opportunities for Unani medicine. AI-driven tools can help in data mining of classical texts, identification of therapeutic patterns, and prediction of drug-disease correlations relevant to geriatrics<sup>71</sup>. Moreover, machine learning algorithms can be used to personalize treatment plans based on a patient's *mizaj* (temperament), lifestyle factors, and comorbidities, aligning traditional concepts with modern precision medicine<sup>78</sup>.

Digital health solutions such as mobile health apps can empower elderly patients to monitor diet, regimenal therapies, and drug adherence as prescribed by Unani physicians. These tools may also facilitate remote consultations and integrative care pathways. Importantly, AI-assisted clinical trial design could accelerate the validation of Unani interventions, improving both methodological rigor and cost-efficiency<sup>79</sup>.



## Global Recognition and Future Directions

The global movement towards integrative and sustainable healthcare provides fertile ground for the expansion of Unani geriatrics. The establishment of the WHO Global Centre for Traditional Medicine in India

(2022) reflects growing recognition of traditional systems, including Unani, as contributors to public health innovation<sup>73,80</sup>. The focus on the Decade of Healthy Ageing (2020-2030) by the WHO further aligns with Unani principles of preventive care, holistic lifestyle, and balance between mind, body, and environment<sup>80</sup>.

**Table 3: Strategic Steps for Broader International Recognition of Unani Medicine in Geriatric Care**

S. N.	Strategic Step	Description
1	Robust clinical evidence	Large-scale, multicentric clinical trials with standardized endpoints specific to geriatric health are required to validate efficacy and safety.
2	Interdisciplinary collaborations	Collaboration between Unani scholars, biomedical researchers, and data scientists will help bridge epistemological gaps and enhance credibility.
3	Regulatory harmonization	Harmonized global regulatory frameworks on safety, quality, and efficacy, along with international pharmacopeias and codified standards, are essential for research exchange and trade.
4	Capacity building	Training healthcare professionals in integrative geriatrics, including Unani modalities, will be crucial for scaling services and ensuring quality delivery.
5	Community outreach	Awareness campaigns targeting elderly populations can promote safe, evidence-based use of Unani therapies, strengthening trust and acceptance.

## Conclusion

Unani medicine offers a time-tested, holistic framework for addressing the challenges of ageing. Rooted in the principles of temperament, balance of humours, and individualized care, it provides unique insights into prevention and management of geriatric disorders. Through modalities such as regimenal therapy, dietotherapy, and pharmacotherapy, Unani care emphasizes not only symptom control but also enhancement of vitality, psychological well-being, and quality of life in old age. While the system has demonstrated promising potential in managing cognitive decline, musculoskeletal disorders, cardiovascular and metabolic conditions, greater efforts are needed in standardization, safety validation, and clinical evidence generation. With emerging opportunities in artificial intelligence, digital health, and integrative policy support under AYUSH and WHO frameworks, Unani geriatrics stands poised to contribute significantly to global healthy ageing. Bridging traditional wisdom with modern science will ensure its sustainable relevance in contemporary healthcare.

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