



THE ROLE OF UNANI MEDICINE IN PREVENTING TUBERCULOSIS: A REVIEW OF CLASSICAL AND CONTEMPORARY PRACTICES

¹Dr Femina Zainab, ²Dr Mohammed Maqbool Hussain, ³Dr Fouziya Anjum, ⁴Dr Hafsa ⁵Dr Asiya Fatima,

⁶Dr Sumaiya Tabassum, ⁷Dr Syed Abdul Zahoor

¹PG scholar, ² Professor and HOD, ³Assistant professor, ⁴PG scholar, ⁵PG scholar, ⁶PG scholar, ⁷PG scholar

¹Department of Tahaffuzi wa Samaji Tib [Community Medicine],

¹Government Nizamia Tibbi College and General Hospital, Hyderabad, India

Abstract: Tuberculosis (TB) remains a major global health concern, claiming millions of lives despite being preventable and curable. The disease primarily affects the lungs and spreads through airborne transmission, with a significant proportion of infections remaining latent. While modern medical approaches focus on vaccination, early detection, and preventive treatment, Unani medicine has a historical legacy in TB management. Classical Unani scholars such as *Ibn Sina*, *Al-Razi*, and *Al-Majusi* have extensively documented TB (*Sil/Diq*) in their texts, describing its etiology, pathophysiology, clinical features, and treatment approaches. Unani physicians emphasized the role of intrinsic and extrinsic factors in disease development, highlighting the significance of imbalanced temperament, environmental conditions, and lifestyle factors. Preventive strategies in Unani medicine revolve around strengthening the immune system, maintaining bodily humors (*Akhlat*), and adhering to a regimen of healthy living. The integration of dieto-therapy (*Ilaj Bil Ghiza*), regimental therapy (*Ilaj Bil Tadbeer*), and herbal pharmacotherapy (*Ilaj Bil Dawa*) presents a holistic approach to TB prevention and management. This paper explores Unani perspectives on TB, offering insights into their preventive strategies, which can complement contemporary approaches to achieving the global goal of ending TB by 2030.

IndexTerms – Tuberculosis, Sil, Humma e Diq, Hifzan e Sehat, Dieto-therapy, Regimental therapy, Preventive measures

1.INTRODUCTION

Tuberculosis (TB) is a common yet challenging infectious disease to diagnose, treat, and prevent. Throughout history, it has caused more deaths than any other infectious disease. Despite being preventable and curable, TB remains the world's second-deadliest infectious disease after COVID-19, that too caused by a single bacterial agent. Before COVID-19, TB was killing nearly 1.5 million people a year, for decades, but attracting nowhere near the attention.

Caused by bacteria that primarily affect the lungs, TB infection often remains asymptomatic and non-contagious. However, only a small percentage of those infected develop TB disease, with babies and children at higher risk. When TB bacteria multiply, they can affect various organs, and symptoms may be mild for months, making it easy to spread unknowingly. Some individuals with TB disease may not experience any symptoms at all. [1,3,17,19]

In 2023, tuberculosis (TB) caused 1.25 million deaths, including 161,000 among people with HIV. An estimated 10.8 million people worldwide fell ill with TB, affecting 6.0 million men, 3.6 million women, and 1.3 million children. TB exists in all countries and affects all age groups. Approximately one-fourth of the global population is infected with *Mycobacterium tuberculosis*, though only 5–10% of those infected develop TB disease in their lifetime. [3,15]

TB is both curable and preventable, yet prevention remains one of the most underutilized strategies in combating the epidemic. Current evidence suggests that TB exists on a spectrum from infection to disease rather than a simple binary state, making it essential to understand the factors driving this transition and reaching the END-TB Strategy goals as defined by the WHO. Key prevention measures include vaccination, early detection, and preventive treatment. While complete eradication of TB transmission is not yet possible, implementing effective strategies can significantly reduce its spread. Achieving the goal of ending the TB epidemic by 2030 requires rapid diagnosis and treatment of active TB, along with identifying and managing latent infections to prevent disease progression. [3,14,15,16]

Ancient Unani texts contain numerous references to pulmonary tuberculosis, referring to it as *Sil* and *Diq*. Unani physicians such as *Ibn Sina*, *Al-Razi*, *Al-Majusi*, and others have extensively documented TB in their classical books, including its symptoms, causes, prevention, and treatment. [6,10,13]

2. MATERIALS AND METHODS

The concept of tuberculosis and its preventive measures in Unani medicine was explored by reviewing authentic Unani texts. Additionally, online platforms, including various websites and articles from Google Scholar, were searched using keywords such as “tuberculosis”, “sil/diq,” “Unani preventive measures,” “Ajsam e Khabitha,” “humma e diq,” “Taqaddum bi'l-Hifz,” and “hifzan e sehat.”

3. RESULTS OF LITERATURE SURVEY

In the Unani medical system, pulmonary tuberculosis is referred to as *Tap-e-Diq*, *Humma-e-Diq*, or *Tadarrun-e-Revi*. It leads to the formation of an ulcer in the lungs, known as *Sil*. TB fever is considered a severe condition that causes heat and dryness in the organs, particularly the heart, by depleting the body's natural moisture and fluids.

It is evident that despite the inability to observe microbes, Unani scholars could envision and comprehend their sources and reservoirs, modes of transmission of infections, and potential causes of infections turning into epidemics.

Ancient Unani literature contains numerous references to pulmonary tuberculosis, dating back to Hippocrates. The disease is characterized by fever, wasting, cough, and expectoration. Unani scholars used the terms *Sil* and *Diq* interchangeably, with *Sil* referring to emaciation and *Diq* denoting low-grade fever—both cardinal symptoms of TB.

Sil signifies the gradual deterioration of organs which Results due to steady melting down of organs, leading to overall body wasting,

Diq represents persistent fever that depletes bodily fluids. Hippocrates, regarded as the father of medicine, also treated these terms as synonymous. [7,11,12,21,23,24]

3.1 Etiology:

Unani physicians have divided the causes of *Sil* into preceding causes (*Asbab e Sabiqah*) and extrinsic causes (*Asbab e Badiya*).

- Preceding causes are infectious fevers (*Huma-e-Uffunia*), Compound fever (*Huma-e-murakkaba*), Day fever (*Huma-e-yoom*), Pneumonia (*Zatur-riyah*), Pleurisy (*Zat ul janab*).
- Extrinsic causes include anxiety, Malnutrition (*Naqs Taghzia*), and hot and dry temperament (*Haar Yabis Mizaj*).

They have also given emphasis on Predisposing factors such as, chronic diseases and environmental factors like congested areas, crowded places and lack of fresh air. It has also been believed that whenever changes occurs either in air or in water and get contaminated, they cause sepsis of humors (*Ufoonat-e-akhlaat*) and thus causing the disease.

Unani physicians described the infection (*Tadiya*) and epidemic (*Waba*) in their texts. *Sil* has been considered as an infectious and communicable disease. Unani Physicians had a concept about the infectious nature of the disease [*Sil*], the causing microorganisms (*Ajsam e Khabitha*), and specific type of material (*Madda*).

The ‘germ theory of disease’ was established as late as 1683 CE with the development of the first microscope. For obvious reasons, the concept of microbes as disease-causing agents does not find a direct reference in Unani medicine. However, there is an adequate understanding that certain *ajsam-e-khabitha* (‘bad substances’) can migrate from the diseased person to healthy persons, and may cause diseases. This theory of contagion is advocated by a number of Unani scholars.

- *Ahmad Bin Muhammad Tabri*, along with some other scholars, has identified the following conditions under the category of susceptibility, which, if not properly treated, may lead to *Sil*: Imbalance in temperament accompanied by harmful substances (*Sue-mizaj Maddi*), Diabetes mellitus (*Ziabetus*), kidney diseases (*Amraz-e-Kulliyah*), Bladder ulcers (*Busoor-e-Msana*).
- According to *Ibne Zohar*, tuberculosis establishes when body Become very thin, weak and body fluid dry up. Usually *Diq* Develops when vital organs (*Aza e aslia*) become hot & dry (*Har yabis*).
- According to *Ismail Jurjani*, *Diq* is a fever caused by abnormal heat (*Hararate ghariba*), when this heat is Associated with vital organs, especially heart then it dissolves the normal body fluids (*Rutoobate tabayee*) of the human Body which results in *Diq*.
- Renowned Unani scholar *Razi* described that *Diq* occurs due to pleurisy, pneumonia and inflammation of diaphragm and Lungs. [8,23,24]

3.2 Pathophysiology

Tuberculosis, the vitally overwhelming cause of death all over the planet, is a lung infection that spreads when mycobacteria-containing aerosols are formed from spitting, sneezing, coughing, or talking. These aerosol particles are capable of reaching the lower airways. The progression and development of pulmonary TB (which targets the lungs) depends on four stages: phagocytosis of the bacilli, their intracellular proliferation, the latent phase of infection, and lastly, the active form of TB. These stages can result in different clinical outcomes: spontaneous cure, active disease, dormant condition, and reinfection [18]

As per Unani medicine, in tuberculosis [*huma e diq*], abnormal heat (*Hararat-e-Ghair Tabayee*) persists in the body to such a degree that it dehydrates the body's fluids. Unani physicians divide the body into three main parts: Organs (*Aza*), Humours (*Akhlat*), and Pneuma (*Arwah*). They believe that this excessive heat settles in the organs, potentially drying up the fluids, particularly those in vital organs (*Aza-e-Aslia*). This abnormal heat also causes a fever known as *Huma-e-Diq* (tubercular fever). [19]

Majoosi described that there are three grades of Diq i.e.

1. *Diq Mutlaq*: This condition occurs when the fluids in the capillaries dry up due to abnormal heat, and it is considered the first stage of Diq.
2. *Zabool/Sil*: This term is used when abnormal heat causes the fluids of soft organs connected to vital organs to be destroyed, and it is known as Zabool.
3. *Mufattit*: This condition is recognized when abnormal heat dries up the fluids in the vital organs, and it is referred to as Mufattit^[10]

According to Ibn Sina, Diq is divided into three grades:

1. *First grade*: This occurs when abnormal heat (Hararat Ghariba) dries the fluids within the vital organs (Rutoobaat e Talliya), especially the fluid of the heart (Qalb), and is referred to as Diq Mutlaq.
2. *Second grade*: This grade is characterized by abnormal heat (Hararat Ghariba) destroying the fluids that are near to becoming or are about to form an organ (Rutoobaat Qareeb ba Iniqaad), and it is called Zabool.
3. *Third grade*: In this grade, abnormal heat (Hararat Ghariba) destroys the fluids present in the organs since birth (Rutoobaate Manviya), which is known as Mufattit.^[13]

3.3 Clinical Features

- *Signs in the First Stage*: The individual appears discolored, with low-grade and continuous fever.
- *Signs in the Second and Third Stages*: Facial cyanosis, sunken eyes, stretched skin on the forehead, weak and hard (Zaeef and Sulb) pulse, oily urine, continuous low-grade fever that rises after meals, hair loss, and diarrhea.

Additionally, *Razi* and *Ibn Sina* noted the following signs in the second stage: The individual may appear in a coma-like state (Subat), have oily stools, a weak voice, prominent bones, clubbed and folded nails, low blood volume, and the skin over the stomach becoming thin.

- Sputum contains dry fibrous tissue, emaciation of the body, night sweating, nails become curved and hair starts falling, ribs start protruding out leading to loss of appetite. In autumn season, the pulmonary tuberculosis patient's condition becomes more conspicuous and diagnosis becomes easier.^[6,10,12,25]
- TB can also cause infection of the bones, spine, brain and spinal cord, lymph glands, and other parts of the body. It can damage those areas and cause short-term (temporary) or permanent symptoms from the damage.^[20]

Pott's disease (spinal tuberculosis) in Unani medicine and compares it with modern medical knowledge. While Percivall Pott is credited with the disease's identification in 1779, classical Unani physicians had already described a similar condition under the term "*Hadaba*" (kyphosis).

- Unani texts, including those of *Hippocrates*, *Ibn Sina*, *Zakariya Razi*, and *Ali ibn Abbas Majusi*, discuss the link between lung diseases (e.g., tuberculosis) and spinal deformities.
- They believed that viscous humors accumulated in the spine, leading to kyphosis (hunchback) and abscess formation.
- Hippocrates and Ibn Sina described how respiratory infections could spread to the spine, causing vertebral destruction.
- Modern research confirms that spinal tuberculosis can result from pulmonary TB due to hematogenous spread.
- Cold abscesses, mentioned in Unani texts, are now recognized as a key characteristic of tuberculous abscesses in vertebral TB.^[26]

3.4 Diagnosis According to the Unani Concept

In Unani medicine, disease diagnosis is based on the following key indicators:

- *Physical Signs (Jismani Nishaniyan)*: These include a pale or dusty complexion, facial cyanosis, drowsy and sunken eyes, drooping earlobes, and tight, hardened blood vessels on the forehead.
- *Pulse (Nabz)*: The pulse becomes weak (Zaeef), rapid (Saree), and continuous (Mutawatir).
- *Urine (Baul)*: It appears oily due to the depletion of body fats.
- *Temperature Pattern (Trz-e-Hrarat)*: After consuming food, body heat rises sharply, similar to the reaction of water poured on quicklime.
- *Razi* suggested a diagnostic method where the patient is given food at different times—if fever consistently follows each meal, it indicates Diq (tuberculosis). Renowned physicians Ibn Sina and Ibn Rushd further elaborated that a tubercular patient's body temperature remains stable but spikes after meals, accompanied by a strong and enlarged pulse^[9,11]

3.5 Management

Management of the disease includes following Unani Therapies:

1. Dieto-therapy (*Ilaj Bil Ghiza*)
2. Regimental therapy (*Ilaj Bil Tadbeer*)
3. Pharmacotherapy (*Ilaj Bil Dwaa*)

Dieto-Therapy (Ilaj Bil Ghiza):

Unani physicians have emphasized enhancing the patient's resistance to effectively combat diseases. To achieve this, they have prioritized a nutritious diet, particularly one rich in protein. The following dietary recommendations have been made:

- Milk and Meat: Donkey's milk, goat's milk, and the meat of birds, fish, and chicken are recommended.

- Hydrating Vegetables: Cold and moist vegetables like *Khurfa* (*Portulaca oleracea*), *Khubbazi* (*Malva sylvestris*), *Kahu* leaves (*Lactuca sativa*), *Kaddu* (*Cucurbita moschata*), and *Kheera* (*Cucumis sativus*) are suggested for their hydrating properties.
- Honey and Honey Water: *Aasal* (honey) and *Maaul Aasal* (honey water) are advised for cleansing lung ulcers and reducing purulent expectoration.
- Specific Physician Recommendations:
 - *Razi* advises the consumption of fish, bird meat, barley water (*Maaul Shaer*), and rose water (*Arq-e-gulab*).
 - *Majoosi* recommends chicken, *teehu* meat, and *moong dal* in soup form.
 - *Ibn-e-Sina* supports fat-free soft meats, fish, and pulses.
 - *Azam* highlights the benefits of *Sarisham mahi* (isinglass) and advocates plenty of fluids to keep the body cool, address deficiencies, and strengthen vital organs. ^[8,10,11]

Regimental therapy (Ilaj Bil Tadbeer):

Unani scholars have outlined several non-pharmacological therapeutic methods for managing illnesses, including the following:

- Venesection (*Fasd*): Recommended for physically strong patients, particularly on the head and face.
- Purgative (*Mushil*): A combination of *Amaltas* (*Cassia fistula*) and *Turangbeen* (*Fraxinus ornus*) is suggested for detoxification.
- Decoction: A mixture of *Unnab* (*Zizyphus sativus*), *Sapistan* (*Cordia latifolia*), *Maveez Munaqa* (*Vitis vinifera*), and *Banafshan* (*Viola odorata*) may be administered afterward.
- Cupping (*Hijama*): In cases where venesection is contraindicated, cupping therapy is recommended.
- Massage (*Dalak*): Chest massage with rose oil or *khari* oil is suggested. For body massage, oils like pumpkin oil, opium oil, *neelofer* oil (*Nymphaea lotus*), and *banafsha* oil (*Viola odorata*) are advised, followed by a bath.
- Liniment (*Tila*): Application of cold liniments on the chest, such as *sandal* (*Santalum album*), *gulab* (*Rosa damascena*), *khurfa* (*Portulaca oleracea*), and *aab dhania sabz* (*Coriandrum sativum*), is recommended.
- Turkish Bath (*Hammam*):
 - *Razi* advises a bath with lukewarm water (*Hammam-e-Moatadil Ratab*) before and after meals.
 - *Ibn-e-Sina* recommends bathing before meals.
 - *Majoosi* suggests an oil massage following the bath.
- Sitz Bath (*Aabzan*): A lukewarm sitz bath followed by the application of *Roghan Banafsha* (*Viola odorata*) is recommended. ^[5,8,6,10,13]
- *Jalinoos* suggested that for a tuberculosis patient, they should be laid on a flat surface and taken to a bath, where lukewarm water is poured over their body or they are made to sit in a hot bathtub repeatedly. After this, they should be gently wrapped in a soft cloth, carefully lifted, and immediately immersed in cold water. Once removed, their body should be dried, their clothing changed, and they should be placed back on a flat surface before being returned to their room. Repeating this process multiple times is believed to be highly beneficial for TB patients. ^[4]

Pharmacotherapy (Ilaj Bil Dawa):

While treating a Sil patient Unani physicians have given Stress on mucolytic, desiccants and healing agents.

Here is a beneficial prescription from Unani medicine for managing cough, hemoptysis, and promoting ulcer healing in tuberculosis treatment:

Mamoolat-e-Matab (Clinical Prescription)

1. For Cough and Mucolysis:

- Qurs Tabasheer (*Bambusa arundinacea*) – 1 tablet in the evening.
- Gilo Sabz (*Tinospora cordifolia*), Aslussoos (*Glycyrrhiza glabra*), Tukhm Khayyarain (*Cucumis sativus*) – 3 gm each, mixed with:
- Arq e Hara Bhara – 60 ml
- Arq e Sheer – 60 ml
- Sharbat-e-Neelofar (*Nymphaea alba*) – 20 ml

2. For Hemoptysis and Ulcer Healing:

- Donkey milk, goat milk, and Kaddu (*Citrus vulgaris*) water – Initially 70 ml for 3 days, increasing by 10 ml per day till it reaches 210 ml, then tapering down similarly.
- If severe weakness is present, add:
- Qurs Kushta Khubsulhadid (Iron preparation) – 1 tablet after meals.
- Maul Zahab (*Gold preparation*) – 5 drops.
- Lu'ab e Behidana (*Cydonia oblonga*) – 3 in number.
- Sheera Maghz Tukhm Kadu (*Cucurbita moschata seeds*) – 3 in number.
- Sheera Maghz Tukhm Tarbooz (*Citrus vulgaris seeds*) – 3 in number.
- Sheera Tukhm Khurfa (*Portulaca oleracea seeds*) – 3 in number.
- All of the above taken with Sharbat-e-Neelofar – 20 ml.

3. For Additional Relief:

Qurs-e-Tabasheer (*Bambusa arundinacea*) and Qurs-e-Kafoor (*Cinnamomum camphora*) can be added if needed.

This regimen helps in reducing phlegm, stopping bleeding, strengthening the body, and promoting ulcer healing in tuberculosis. [10,11]

3.6 Preventive Measures In Unani System Of Medicine-Hifzan E Sehat

The Unani System of Medicine encompasses the Science of Maintaining Health (*Hifzan e Sehat*), offering a holistic and personalized approach to well-being. It provides guidelines tailored to various factors, including temperament, gender, age group, geographical region, season, and occupation. The system emphasizes not only disease prevention (*Taqaddum bi'l-Hifz*) but also the proactive promotion and maintenance of health (*Hifzan e Sehat*) as a distinct discipline, which should be prioritized even before disease prevention. Renowned for its effectiveness and safety, the Unani System of Medicine remains a trusted healthcare approach. [2]

The Unani perspective on disease prevention is based on the state of the human body. If the body is in an optimal state of health, it should be maintained through a lifestyle suited to an individual's temperament. If the body becomes susceptible to disease or experiences debility without disease, additional care is required through special diets, regimens, and even medications.

Methods of preserving health according to unani physicians:

- *Rabban Tabri* emphasized maintaining health through the consumption of appropriate foods and drinks, along with the proper elimination of waste from the body.
- *Zakariya Razi* proposed two key approaches: maintaining balance in daily activities and initiating preventive care at the earliest signs of disease by recognizing prodromal symptoms.
- *Ibne Rushd* outlined four methods for health preservation: appropriate diet and drink, proper waste elimination, moderation in mental activity, and maintaining the purity of inhaled air.
- *Ibne Sina* described health preservation as maintaining equilibrium through proper nutrition based on *mizaj* (temperament), effective waste elimination, moderation in physical and mental activity, balanced sleep-wake cycles, pure air, and proper care of bodily organs. [22]

Reducing the Risk of TB Infection

The risk of tuberculosis (TB) infection can be minimized by following simple precautions:

- Good ventilation: TB bacteria can remain airborne for several hours in poorly ventilated spaces, so ensuring proper airflow reduces transmission.
- Natural light: Ultraviolet (UV) light helps eliminate TB bacteria.
- Good hygiene: Covering the mouth and nose while coughing or sneezing prevents the spread of TB bacteria.

TB Prevention in Healthcare Settings

In medical environments, TB transmission is controlled through:

- The use of protective masks
- Effective ventilation systems
- Isolating potentially infectious patients
- Regular TB screening for healthcare workers

Strategies to End the TB Epidemic by 2030

Achieving TB eradication requires:

1. Rapid diagnosis and effective treatment of active TB cases
2. Identification and treatment of latent TB infections to prevent progression to active disease

For individuals exposed to active TB, wearing a high-filtration face mask and avoiding enclosed, poorly ventilated spaces is crucial. Workers at high risk, such as healthcare and shelter staff, should undergo routine TB testing.

In many countries with a high TB prevalence, the BCG vaccine is administered to infants and young children. However, its effectiveness in preventing TB varies. [14,20]

4. CONCLUSION

The Unani system of medicine provides a unique and comprehensive approach to tuberculosis prevention and management, emphasizing the balance of bodily humors, strengthening immunity, and maintaining overall health. Unani scholars, despite lacking direct knowledge of microbial pathogens, conceptualized TB as an infectious disease and devised preventive measures grounded in lifestyle modifications, dietary recommendations, and natural therapeutics. Their preventive strategies, including proper nutrition, environmental modifications, and the use of herbal remedies, align with modern preventive approaches.

The emphasis on a robust immune system through personalized lifestyle choices and the avoidance of predisposing factors highlights the relevance of Unani medicine in contemporary TB control efforts. To achieve the WHO's goal of ending TB by 2030, a multidisciplinary approach combining modern diagnostics with traditional preventive strategies is essential. Strengthening public awareness, improving access to treatment, and leveraging

Unani principles alongside modern medicine can significantly reduce TB's burden. By integrating ancient wisdom with scientific advancements, we can take a step closer to eradicating TB worldwide. Integrating Unani principles with modern TB prevention strategies can enhance early intervention and community-based prevention measures. With the rising global burden of TB, a holistic approach incorporating both conventional and traditional preventive methodologies is essential to mitigate its impact and achieve sustainable health outcomes. Future research should focus on validating Unani preventive measures through scientific studies to establish their efficacy and integrate them into mainstream TB prevention programs.

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