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MHM Hafeel
Senior Lecturer, Institute of
Indigenous Medicine,
University of Colombo, Sri
Lanka

Abdul Azeez Rizwana
Lecturer, Institute of
Indigenous Medicine,
University of Colombo, Sri
Lanka

Management of epidemics diseases with special reference to COVID 19

MHM Hafeel and Abdul Azeez Rizwana

Abstract

Unani Medicine is one of the oldest medical systems extensively practiced presently in Iran, India, Sri Lanka, Bangladesh and Pakistan. The concept on Amrad-i-Waba'i is mentioned in Unani System derived from the principles put forwarded by renown scholars such as Hippocrates and Galen who were the pioneer in describing prevention and management of epidemic. Unani Physician like Razi, Ibn Sena, Kabeerudeen, Rabban al-Tabri and Azam Khan had viewed in their treaties that the main cause of Amrad-i-Waba'i as contamination of environment specially air and water. A Large number of single as well as compound drugs were recommended in the classical text of Unani Medicine in the prevention and management of Amrad-i-Waba'i. Clinical features of COVID-19 resemble with those of Nazla-e-Wabaiya and Humma-i- wabaī which are types of Amraz -i-Waba (epidemic diseases) and the aforementioned scholars' Unani classical text appraisal had provided key information for the prevention and management of epidemic diseases and COVID 19 condition alike.

Keywords: unani medicine; waba; epidemic disease; amrad-i-waba'i; unani management; COVID 19

Introduction

Epidemic diseases (Amrad-i-Waba'i) were discussed in Unani text under the subtopic "waba". It was mentioned in Unani Medicine that waba'i amrad were caused by putrefactive changes in the air, water, soil or environment which cause imbalance in khilt (humours) and this condition affects many people at same time period in particular geographical area. It was mentioned in Al Qanoon Fit Tib that ajsāmkhābītha (foreign body) pollutes the water which changes the quality of air and causes humma (fever) in a great number of the population at the same time. Humma-i-wabaī is mentioned in the classical Unani literature which is referred to epidemic fevers caused by putrefactive changes in the air. Such putrefied air when inhaled produces putrefaction of khilt resulting in fever, difficulty in breathing and death^[1, 2, 3].

The contamination of the air is caused when the bodies died during an epidemic are not disposed properly. The air may also get contaminated and putrefied due to rotten fruits, vegetables, collected water at one place, dead animals etc. Such contaminated air can produce infection in the human which manifests as body ache, excessive sweating, halitosis, bilious vomiting and diarrhea and changes in urine^[1]. Razi has quoted that 'those people whose waste products are not regularly and properly excreted from the body are more prone to acquire infection of epidemic diseases'^[4].

The Unani physicians have described the detail clinical manifestations of epidemic diseases; redness of the eye, hotness in the chest, polyuria, increased viscosity of urine, loss of appetite and ulcers around the mouth. It is also noted that some patients do not have a high-grade fever but feel internally burning sensation and anxiety. Clinical features of Nazlā-i-Wabaīyā (epidemic catarrh) mentioned in Unani literature are sore throat, sneezing, body ache fever, dry cough, difficulty in breathing, vertigo, diarrhea and fatigue which are also manifested in COVID 19^[5, 6].

The objective of this literary review was to investigate the basic concept of Waba from the Unani Medicine perspective and to compile the possible preventive and curative strategies for COVID-19 with special reference to accessible sources of Unani medicine.

Material and Methods

Data were collected from various Unani text books namely; Al Hawi fit Tib, Akseere azam (Al-akseer), Al Qanoon fit Tibb, Zakheerae khawarzaam shahi, Kamil-us Sanat and Kitabul kulliyat etc. Indexed Journals were searched in various scientific databases like Scopus,

Corresponding Author:
MHM Hafeel
Senior Lecturer, Institute of
Indigenous Medicine,
University of Colombo, Sri
Lanka

Pubmed, Elsevier, Google scholar, Medline, Research scholar, Research gate, Science direct, orchid etc. using terms like *wabā'-i-amrād* (epidemic diseases), *humma-i-wabā'i*, (epidemic fever), *tabī'at (mediatrix naturae)*, *ajśamkhabītha* (pathogenic organisms), *hifzmā taqaddam* (prevention), *'ilāj* (treatment), Unani concept of waba, Unani Management for COVID 19 and Role of Triyaqat in Amrad-i-Waba'i. After a through literature review, the collected data were organized in a logical order. A total of 95 literature were reviewed, of them, 24 were selected for the compilation of this review article.

Results and Discussion

Epidemic (Waba)

Waba is defined in Unani *Tibb* as the disease which affects a large group of people in a city at the same time in a very short period and kills the inhabitants. The changing simply in physical properties of air indicates, deteriorated composition of air such condition of air is termed *Waba*. *Waba* is caused as a result of changes in air that is contrary to *Tabiyat* (Physis) of human body and the changes of air is either air substance (*Jauhar Hawa*) or alteration of the quality of air with constant fever [7, 8]. It is also noted in Unani *Tibb* that *Waba* is a special type of infection that is caused through air, how stagnant water becomes corrupted. Atmospheric air contains Droplets (*Ajzai Maiya*), Dust (*Ajzai Arziya*), and Fire part (*Ajzai Nariya*) along with the Air part (*Ajzai Hawaia*) which are main impurities. The Putrefaction (*Ufoonat*) occurs mostly in the end of summer and autumn. The change in quality is unbearable of heat or cold. The quality of season is too much hazardous that the heat during the summer season is too much. Once the season changes from its natural state like the winter season will have changed to dry and hot and there will be either no rain or excessive raining. Similarly, in hot season or spring season there will be coldness and dryness. In case of autumn season, there will be hotness and wetness. Consequently, there will be a change in each season from its natural form, especially the summer air will be replaced by winter air and there would be abundant raining and southern winds will blow leading to spread of *Waba* such as fatal kind of fevers, varieties of plagues and many other diseases. When the air is altered then many complications are observed in inhabitants, because *Akhlat* of the body get corrupted [3, 4, 9]. Ibn Sin viewed that, air and water cannot be contaminated without admixture of *ajśam-i-khabitha*. He further stated that the contamination of air and water can occur when the dead bodies of the individuals who died because of an epidemic are not disposed properly. Ibn Sina says that *Waba* occurs by toxic substance which produces fatal swelling in moist organs and glands of the body specially gland in the areas of armpit and groin [1].

The following are the identified causes of *Waba* as stated in Unani *Tibb*. Impure and wet nature of air, excessive coitus, retention of morbid matter (*Akhlat raddiya*), widened pores, wet tempered body, history of excessive of bath (Hammam), putrefactive vapour (Bukharat) produced by garbage of cities, slaughter house, drain. Once the man breathes in such form of air which is not in good state, then there is an admixture of this with the already corrupted humour (*Akhlat*) present in the body. The consequence, of this admixture affects the spirit (*Arwaah*) of the body and leads to development of dreaded diseases (*Amraz Raddiya*) [3, 8, 9]. It is not feasible for any agent to bring about any change in

the body unless there is ability of receiving that particular cause. similarly, active agent (*Fa'il*) is not able to produce any change in the body without the prior presence of pertinent (*Munfa'il*) having the capacity to accept the change like in Hummai Waba [8, 10].

These *Waba* can affect even animals and the reason behind the corruption and vitiation of body fluids and *Arwah*. The plants, the trees, herbs and shrub would also get affected and there will be a deposition of a thick material such as in grape's juice (*Sheerai Angoor*), on the trees. Dust on leaves, the fruits will be affected both in pulp and its covering. When the air is much hot, it affects the digestion by dissolution of Innate heat (*Hararat Ghareeziyah*), dissolving the *Akhlat Damviyya* and changing the body colour to yellow by dominating *Khilt Safra* over other *Akhlat*. And there occurs changes in the heart (*Qalb*) as the flowing *Akhlat* get corrupt and vitiation occur. As a result, they are accumulated in spaces causing the weakness of organs [8].

Signs and Symptoms of Waba

Dry cough, difficulty in breathing (*Tanaffus azeem wamutawatir*) disorientation, feeling of various kinds of pain, sweating, cold extremities, burning in chest, dryness of tongue, fetid odour, thirsty, stretching and tensing in hypochondrium, nausea, bilious vomiting and diarrhoea, flatulence, stool is odorous and frothy, sometimes blackish. Urine is concentrated or diluted, and its colour is blackish, or yellowish, its precipitate (*Rusoob*) and odorous [10, 11]. Patients are habituated to putrid breath they are on high risk, and having poor prognosis. Even they don't realize that there is much warmth in their body and or they have clear manifestations because of *ufoonat*. Pulse becomes Continuous (*Mutwatir*) and small (*Sagheer*) with splenomegaly, lethargy, and loss of appetite. Externally neither the patient is feeling cold nor hot thus fever cannot be easily noticed while person having bad prognosis for the disease. Scarcity of insects from their dwellings is the typical signs of *Waba* [1].

Principle of management of epidemic (Usoole ilaj wa ilaj of Waba)

It is advised to eliminate the morbid matter from the body and to enhance immunity. Dryness of body is maintained by practicing bloodletting and purgation (*Fasd wa Ishaal*), *Fasd* is indicated in dominance of *dam* and elimination (*Istifragh*) of remaining *Khilt* is performed [10].

Patient is advised to stay in well ventilated residence thereby reduces the chances of contact amongst people and avoid cold air. Head is covered or turban prevents air born *Waba*. Cleanliness of environment is ensured by proper disposal of waste in appropriate places [3].

Aromas/scents protect from infection. Sanitization and disinfection of the environment is carried out by spraying and fumigation. Vinegar of sugarcane or onion, garlic, and Sandal (*Pterocarpus santalinus*, Linn.), Kafoor (*Cinnamomum camphora*), Uood Khaam (*Aquilaria agallocha*, Roxb.), Bed Mushk, Qustshirin (*Saussurea lappa*), Zafran (*Crocus sativus*), Chadela (*Parmeliaperlata*, Arch.), Ghaar (*Laurus nobilis*, Linn.), Nagar moth (*Cyperus rotundus*), Izkhar (*Andropogon choenanthus*, Linn.), Ab'hal (*Juniperus communis*, Linn.), Badaam Talkh (*Prunus amygdalus*), Post Anaar (*Punica granatum*, Linn.), Hilteet (*Ferula asafoetida*) are used as fumigant/spray [4, 7].

Kafoor and Arq gulab (burning incense used for medicinal

purposes). Lobaan, (Styrax benzoin W.G.Craib), Me'asaila (*Liquidamber orientalis* miller), Chandroos, Qaranfal (*Eugenia caryophyllata*, Thunb.), Kundur (*Boswellia serrata*), Murmaki (*Commiphora myrrh*), Sibr (*Aloe barbadensis*) are used to purify the air^[12, 13].

Dietary Measures (Ilag Bil Ghiza)

Less amount of food (Taqlaal Ghiza) intake is advised, since it has tendency of corruption. It is advised to avoid consumption of meat, alcohol, sweets, wet fruits, coitus during the period of Waba. Intake of fish is not indicated during outbreak of Waba. In case of loss of appetite forced eating is advised because, the patient would survive otherwise will lose the fight of life^[10, 11, 12].

Recommended Food (Ghiza): Cold extracts of Curd water (Ma'ur Raib), Diluted curd (chhaachh), Rose water (Arq Gulab), Cheese water (Misl Haamiz), drinking Vinegar (Sirka) with water, drinking of plentiful cold water, Lentil (Masoor), onion, apple and Zafraan. Consuming citrus and desiccant diet (Tursh wa Mujaffif aghziya) should be in restricted, because diet gets corrupted easily. Cold and exhilarant based fruits (fawakih), are indicated. Pickles (Mukhallilat) Kibr Mukhallal is useful in prevention of *Ufoonat*. Meat is cooked with *Lemon*, meat cooked with vinegar, vegetables and cumin (*Qarees*), and meat dish cooked with vinegar or prepared with citrus: Sumaq (*Rhus coriaria*, Linn.), unripe grapes water (*Aab Angoor Khaam*), lemon water (*Aab Lemon*), or Pomegranate water (*Aab Anar*), guva (amrood) apple (saib), Behi (*Cydonia vulgaris*), Heeng, and Dried barley (Kushkush shayeer). Consumption of chicks, lamb meat, Teetar, calf meat are used with vinegar and *Sumaq*, and these meat meal should be chewed well before swallowing^[4, 11].

Consumption of Roghan Badam shirin and Roghan Gau and massaging the body parts daily, Taking Haleela (*Terminalia chebula*), Tamar Hindi (*Tamarindus indica*, Linn.), Orange, Aab anar, Aab lemon, Maghz Floos Khayar Shanmbar (*Cassia fistula*, Linn.), Sheer Khisht (*Frax inousornus*, Linn.) are beneficial in waba. Jalinoos advised to drink of Gil Armani with vinegar and water is useful^[10, 13].

Prophylactic drugs recommended for prevention of waba

Sikanjabeen, comprising ingredients that poses the action of cold diuretics are advised. Tiryaaq Kabeer is indicated on empty stomach and no food is allowed till the medicine is digested. Steam inhalation is done with Kafoor, Qust, Kundur, Uood, Mushk and Murmaki. Administration of Gil Armani (*Arminina bole*) and Gil Makhtoom (*Sealing clay*) with vinegar is useful. Jalinoos advised to take *Gil Armani*, *sirka* and *Namak* together^[10, 13].

Management of COVID19 in Unani Medicine

Nazla-e-Wabaiya (*Epidemic influenza*) is described in Sharahi Asbab while Humma-e-Wabaiya is a distressing type of fever which occurs due to changes in the air (qualitatively / quantitatively) as a result air becomes contaminated. Contaminated air in turn causes abnormal temperament of *RooH* (Sprit) which leads to morbidity and mortality. Humma Wabaiya (epidemic fever) is characterized by fever, sneezing, sore throat, nasal irritation, malaise, cough, diarrhea, and delirium, pleurisy and pneumonia. Further Unani physician recognized the changes of the weather and its effects on human and constantly

observe the changes in weather^[5]. Rabban Tabari stated that individuals with excessive waste material in their body are frequently affected with Humma wabaiya. The dominance of temperature exists in Humma-e-Wabaiya while catarrh symptoms are more prominent in Nazla-e-wabaiya. Unani Medicine put forward great prominence on the prevention of disease and promotion of health through principles of six essential factors (Asbabe-Sittab Zarooriyah) of life^[1, 4, 5, 14]. It is evident that COVID 19 (SARS-CoV-2 virus) is transmitted through air which is contaminated by patients affected by COVID 19^[15]. It is also noted in Unani Tibb that *Waba* is a special type of infection that is caused through air in similar means how stagnant water becomes corrupted. It is stressed in Unani Tibb that Nazla wabaiya and Hummai Wabaiya are caused in epidemic through polluted air. Manifestation of COVID 19 coincides with Nazla wabaiya and Hummai Wabaiya which occurs as main manifestation of waba. In depth explanations were given on Nazla wabaiya and Hummai Wabaiya in classical texts of Unani Tib. Tiryaaq are the special formulations which are used for the treatment of various disorders including Amrad e Waba'i. Tiryaaq e Waba'i is a special formulation indicated in Amrad e Waba'I^[5, 14].

Therefore, we can infer that Unani scholars had an extensive knowledge on waba (epidemic) and they proposed various regimens in their treaties that are beneficial in the management of COVID19 as well which too occurs in waba. Unani scholars viewed that for any agent to bring about change in the body, unless there is any existing affinity for receiving the particular cause in the body. This concept refers to the fact that individual with weak constitution is affected by waba while COVID-19 affects mostly those who have the co-morbidity. Hence following Unani regimens can be recommended to manage COVID 19^[1, 4, 10].

Compound formulation (Murakkabat) prescribed during COVID 19

Sibr (*Aloe vera* L.), Murr makki (Commiphorone) 1 part each, za'fran (*Crocus sativus* L.), 2 parts. The drugs should be finely powdered and taken in a dose of 2.4 g per day^[10].

Managing fever: Qurs Kafoor 2-tab morning and evening and Joshnada made of Behdana, Unnab, Sapistan with Sharbat e Banafsha and sprinkling Khaksi (*Sisymbrium irio*, Linn.) morning and evening^[1, 4].

Managing respiratory diseases: gargling with a solution of sumaq (*Rhus coriaria* L., decoction), rub-e-toot (*Morus nigra* L.), rub-e-jauz (*Juglans regia* L.) and arq-e-gulab (*Rosa damascenab* Herrm.) before sleep is advised. Sharbat Banafsha and Sharbate Khashkhash are beneficial in respiratory illness (Cough)^[13].

Managing sore throat: Sharbat Toot Siyah^[6].

Managing weakness and improving Tabeeyat: Khamira Gauzaban Ambari Jawaharwala, Khamira Gauzaban, Tiryaaq wabai (Tiryaaq e Afa'i): Consists of three ingredients Zafran (*Crocus sativus*), Sibr/Elwa (*Alovebarbandensis*), and Murmaki (Commiphora myrrh) and Arq Gulab (Rose water)^[15, 16, 17, 18, 19, 20].

Qairooti is the ointments specifically prescribed for chest diseases. Qairooti aarad karsana is a polyherbal Unani

formulation based on the following ingredients: Aarad e Karsana (*Pisum sativum* L., Leguminosae, flour), Aarad e Hulba (*Trigonella adscendens*) Afan. & Gontsch., Leguminosae, flour) - 60 g each, Kalonji (*Nigella sativa* L., Ranunculaceae, seeds), Asl-us-Soos (*Glycyrrhiza glabra* L., Leguminosae, root) - 24 g each, Aqarqarha (*Anacyclus pyrethrum* (L.) Lag., Compositae, root) - 18 g, Roghan-e-Sosan (*Iris ensata* Tunb., Iridaceae, oil) and Bees Wax- both in equal amount to make a paste [15, 20, 21, 23].

Management of nazla-e-wabaiya / Nazla wa Zukam (catarrh): decoction of behidana (*Cydonia oblonga* Mill., Rosaceae) 3 g, unnab (*Ziziphus jujube* Mill., Rhamnaceae) 5 no., sapistan (*Cordia dichotoma* G. Forest) 9 No. and Khaksi (*Sisymbrium denophorum*) 5g [5, 23].

Management of diarrhea: habb-ul aas (*Myrtus communis* L., Myrtaceae) and tabasheer (*Bambusa bambos* (L.) Voss, Poaceae) are also prescribed. Relieve thirst: Sheera tukhm e kahu (*Lactuca sativa* L., Compositae, seed paste) is given [2, 5, 15, 24].

If pneumonia or pleurisy occurs, qairooti aarad karsana (10 g), Ayarig /Sibr/Aloe vera L. sap (1 g) and *C. sativus* L. stamen (1 g) are crushed, mixed and warmed slightly, then they are applied on the chest wall and covered with a cotton bandage Marham (Ayarig) warm local application [2, 5].

To strengthening to the body organs: Khamira Gauzaban Ambari Jawaharwala 12 gm or Khamira Gauzaban 12 gm with silver foil paper [6, 24].

General preventive measures of COVID 19

Quwwat-e-Mudafiat (immunity) is essential in maintaining health and recovering from diseases. Ibn-e-Sina and Ibn Rushad described that individual with weak quwwat-e-mudafiat who are suffering from other diseases are prone to be affected during waba and their prognosis is compromised. Person with weak quwwat-e-mudafiat require extra attention and quwwat-e-mudafiat should be improved. Razi (865–925 CE) described in his book *Al-Hawifit tib* that physically active individuals who exercise regularly are lesser vulnerable to get affected by amraaz-e-wabae (epidemic diseases). Further Zakariya Razi advised to avoid the places where wabae amraaz is spreading. If the condition becomes worse and inevitable, then the residents should stay in well-ventilated avoiding extreme hot or cold place, distant from the ground. He advised to avoid undue physical effort during waba [1, 4, 10].

Razi suggested concept of quarantine and advised to avoid airflow from the patient to a healthy person and to stay in well-ventilated places distant from the ground with optimum temperature, neither too hot nor too cold to reduce the chances of contracting the infection. It is also recommended to avoid unnecessary physical exertion during epidemics [4, 10].

Sanitization of the environment should always be given special importance as it serves as the medium for lodging and dissemination of the causative organism. Several drugs have been prescribed for spray, for application on curtains, as sanitizers on the body, and for fumigation. These drugs are mostly aromatic in nature; Kalonji (*Nigella sativa*), Seer (*Allium sativum*), Znajabeel (*Zingiber officinale*), aslassun (*Glycyrrhiza glabra*), Afsanteen (*Artemisia absinthium*), Tukhm-e Kasoos (*Cuscuta reflexa*), Khayarshamber (*Cassia fistula*), Gilo (*Tinospora cordifolia*) [13, 21, 22, 23]. Homes should be sprayed with diluted vinegar to keep the air clean.

Arq-e-Gulab (*Rosa damascene* Herrm.) should be applied on the body and curtains etc. If the air smells foul, then fumigation with sandal (*Santalum album* L.) and camphor is advised [9, 21].

According to Zakariya Razi and Ibn Rushd some aromatic drugs can destroy infectious agents and should be used as fumigants during epidemics. Fumigation: Qust (*Saussureacostus* (Falc.) Lipsch.), kundur (*Boswellia serrata* Roxb. ex Colebr.), ood (*Paeonia emodi* Royle.) and Murr (*Commiphora myrrha* Nees Engl.), amber (*Liquidambar acalycina* H. T. Chang), loban (*Styrax benzoides* W. G. Craib), sandroos (*Hymenaea verrucosa* Gaertn.) zafran (*Crocus sativus* L.), aabnoos (*Diospyros ebenum* J Koenig ex Retz.), mastagi (*Pistacia lentiscus* L.), mushk (*Moschus moschiferus* L.), izkhar (*Cymbopogon jwarancusa* (Jones) Schult.), abhal (*Juniperus communis* L.), Zanjabeel (*Zingiber officinale* Roscoe), sibr (*Aloe vera* L.), olive gum, etc. [4, 10].

Tiryaaq-i-Waba'i is one of the Unani formulation mentioned by renowned Unani physicians for prevention and management of epidemic and pandemic diseases under the name of Amrad-i-Wabai. During pandemic for preventive purpose Tiryaaq wabai (Tiryaaq e Afa'I) is given with Arq-I Badiyan 120 ml or Arq-i-Gulab 50 ml, for 2-3 days in every week. It is indicated for Daf'i Sumoom (antidote), Daf'i Athrat-i-Waba (antiepidemic) and Humma-i-Waba'i (epidemic fever) [17, 18].

Dietary modifications during COVID 19

It is advised to avoid meat, sweets, and fruits with high water content. If meat has to be taken, then that of birds found on mountains may be preferred over animal meat. Fish should be entirely avoided and it is advised to consume citrus and sour fruits, especially grapes, apples, lemon, etc. Oxymel prepared with Arq-e-Gulab is believed to provide effective protection during epidemics. Further Gajar, shaljam, mooli, piyaz, with lime, vinegar, salt and black pepper. Vinegar is also taken as a diet. It is described in *kitab al Al-Mansoori* that the people to take fruits particularly apple, grapes, pomegranate, barley water and lemon frequently for prevention of infectious diseases. Ibn Rushd recommended to take Imli (Tamarindusindica), Revandchini (Rheum emodi), Banafsha (*Viola odorata*, Linn.), Haleela Zard and Haleelas iyah (*Terminalia chebula*), Amaltas (*Cassia fistula* Linn), Turanjbeen (*Hedy sarum* Alhagi, Linn), Lablab/ Ishqpechan, Aabanar (water of pomegranate) these drugs have preventive effect on body as stated by Ibn Rushd [4, 10, 13]. Overeating and under-eating both are considered harmful as they have adverse effects on the bodily constitution [1].

Unani Medicine identifies the influence of environments conditions on the state of health of inhabitants. Unani Medicine not only stress the prevention of disease and promotion of health and treating disease through implementation of principles of six essential factors (Asbabe-Sitta Zarooriyah) which emphasis on the maintenance of a proper balance by keeping air, water and food free from all pollutants [22].

Conclusion

The systematic review of Unani classical texts and other authentic published sources revealed significant information on prevention and management of Epidemics Diseases (Amrad-i-Waba'i) which can be applied in the management

of COVID 19 conditions as well. The review findings prove the knowledge and skills of Unani Scholars who formulated the concept of Amrad-i-Waba'i based on their critical observation of environment and patients.

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