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## Congestive Heart Failure in the Light of Ancient Wisdom of Unani Medicine: A Review

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### ABSTRACT

Congestive heart failure is a complex clinical syndrome that causes functional impairment of ventricular filling and ejection of blood. It can cause dyspnea, fatigue, and fluid retention, affecting exercise tolerance and causing pulmonary and peripheral edema. Moreover, it is a burgeoning and life-threatening syndrome characterized by significant morbidity and mortality, poor functional capacity and quality of life, and high costs. Worldwide congestive heart failure affects more than 64 million people. Nowadays: congestive heart failure is correlated with *Suqūt-e-Qalb Imtilā'ī*, by modern Unani physicians. However, the disease is mentioned in classical Unani literature under the headings of *Ikhtilāj-e-qalbi* (arrhythmia), *Rabw* (cardiac asthma), *Buhr* (cardiac asthma), *Khafaqān* (palpitation), *Istisqā' Lahmī* (anasarca), *Du'f al-Qalb* (weakness of heart), *Intiṣāb al-Nafas* (orthopnoea), *Sudda-e-Urooq-e-Qalb* (coronary artery obstruction), *Ghashī* (syncope), *Tasallub-al-Sharāyīn* (arteriosclerosis) and *Imtilā' bi Hasbil Aw'iyā* (congestion of blood vessels). Congestive heart failure and mortality are on the rise despite the significant advancements in contemporary medicine and guidelines directed medical therapy for congestive heart failure. Congestive heart failure hospitalizations make up 1-2% of Western hospital admissions, with the highest 30-day readmission rate (20-25%) in congestive heart failure patients reflecting due to high comorbidity burden. Unani drugs, despite advancements in modern medicine, still significantly impact patient health. They are traditionally used for cardiac ailments like palpitations, coronary artery disease, heart weakness, and cardiotoxic. Unani medicine especially *Khamīrajat* (fermented confections) used in various cardiac diseases is cardio-protective and cardiotoxic. According to reports, complementary and alternative medicine is used by up to 61% of cardiac patients with coronary artery disease and those at risk for arteriosclerosis. Therefore, a thorough evaluation of the Unani literature on cardiac illness and its treatment in the Unani system of medicine is needed to decrease congestive heart failure social and economic burdens have become a major global public health priority. This review is an effort to summarize the Unani classical literature on congestive heart failure.

**Keywords:** Suqūt-e-Qalb Imtilā'ī, Congestive heart failure, Cardiotoxic, Ghashī (syncope), Ikhtilāj-e-qalbi (arrhythmia), Khafaqān (palpitation).

### INTRODUCTION

Congestive heart failure is defined as a complex clinical syndrome that results from any structural or functional impairment of ventricular filling or ejection of blood which in turn leads to the cardinal clinical symptoms of dyspnea and fatigue and signs of congestive heart failure, namely edema and rales [1].

### Epidemiology of congestive heart failure

Worldwide an estimated 64.3 million people are living with congestive heart failure. In developed countries, the prevalence of known congestive heart failure is generally estimated at 1% to 2% of the general adult population. The prevalence in Australia is 1% to 2% based on national surveys, but echocardiographic and biomarker studies showed that the prevalence in Indigenous communities is 5.3%, despite a lower mean age (Figure.1). Over 60% of the cases discovered through screening were previously unidentified patients of congestive heart failure from the Middle-East and Asia-Pacific regions in trials increased from 2.0% in 2005 to 12.8% in 2011, while the contribution of patients from Western Europe and North America declined simultaneously.

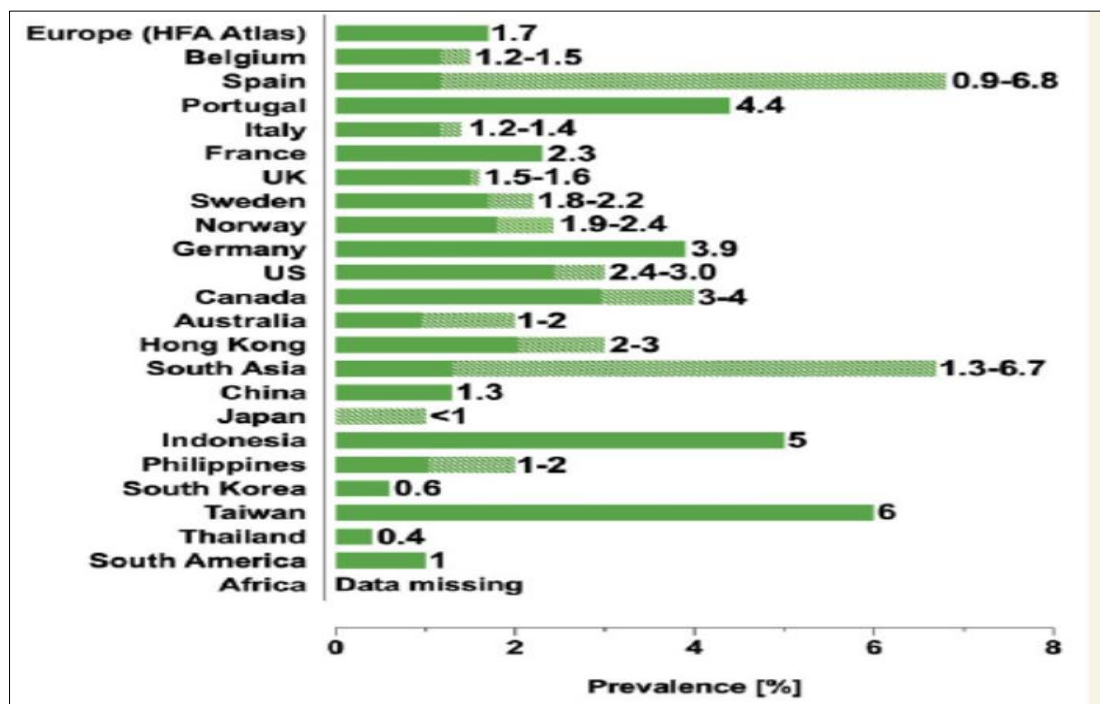


Figure 1: Prevalence of congestive heart failure

The incidence of congestive heart failure in the USA and European countries varies greatly from 1 to 9 cases per 1000 person-years and strongly depends, again, on the population studied and the diagnostic criteria used. According to Conrad and colleagues' population-based

study, there was a decline of 7% of all-type congestive heart failure noted between 2002 and 2014 from 3.6 to 3.3/1000 person-years (figure 2) [2,3].

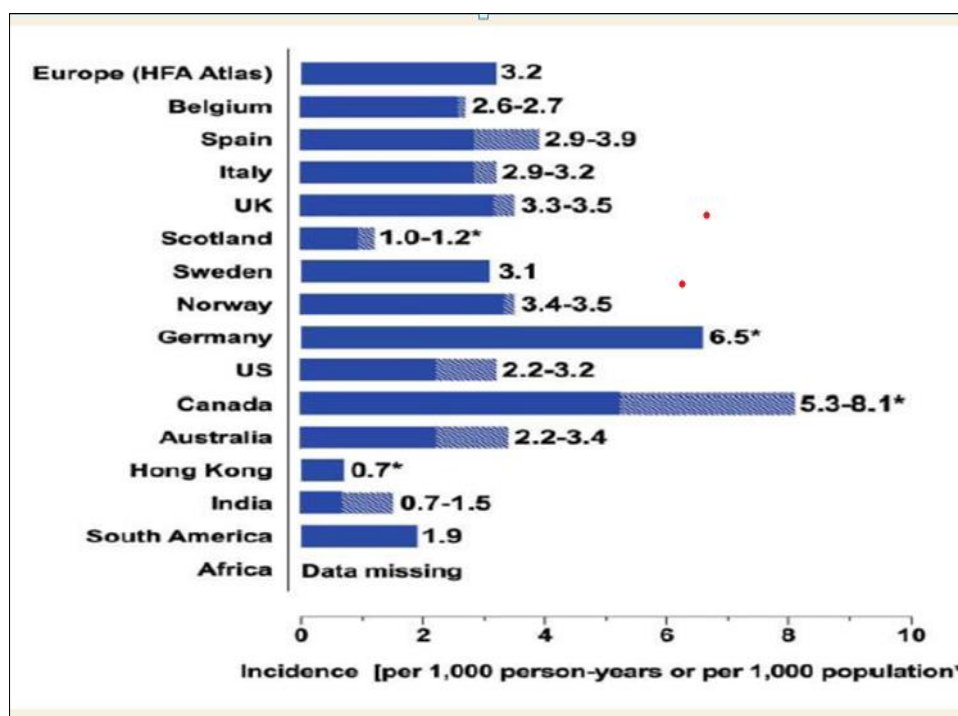


Figure 2: Incidence of congestive heart failure

### The global burden of congestive heart failure

Especially, lower and middle-income countries even though estimated to carry 80% of the cardiovascular disease burden. In the

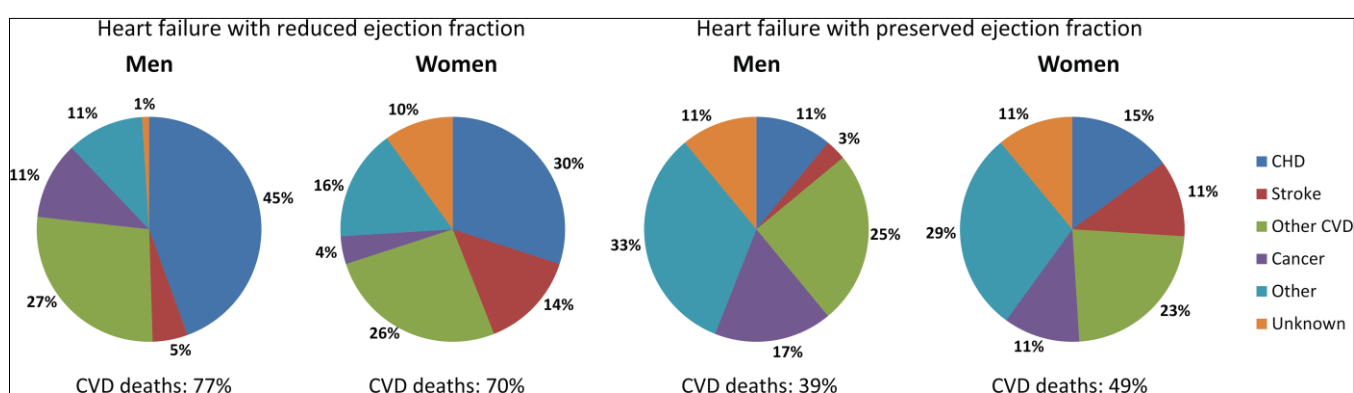
Prospective Comparison of ARNI (Angiotensin Receptor Neprilysin Inhibitor) with ACEI (Angiotensin Converting Enzyme Inhibitor) to Determine Impact on Global Mortality and Morbidity in Congestive heart failure (PARADIGM-HF) trial, for example, congestive heart

failure with reduced ejection fraction (HFrEF) patients from Asia-Pacific regions and Latin-America were found 10 years younger compared to European and Northern-American patients. Similarly, Asian HFpEF patients in the Asian Sudden Cardiac Death in Congestive heart failure (ASIAN-HF) registry are also a decade younger than HFpEF patients in the Olmsted County cohort and have a relatively high comorbidity burden. Particularly the diabetes burden is high in Asia, despite a much lower prevalence of overweight/obesity (21.6–26.2% in Southeast Asia compared to 69.6% in the USA). In developing countries, infectious diseases including HIV and rheumatic fever remain important causes of congestive heart failure. In Latin America, Chagas cardiomyopathy, a preventable parasitic disease, is responsible for about half of all congestive heart failure cases. Congestive heart failure in these regions is not primarily a disease of the elderly because infections occur at all ages. In fact, in sub-Saharan Africa, about half of all

patients hospitalized are under the age of 55 years. As congestive heart failure numbers also continue to rise, due to diseases associated with a Western-type lifestyle, such as obesity, diabetes and ischemic heart disease developing countries struggle under a double disease burden [2,3].

### Prognosis of congestive heart failure

The prognosis of congestive heart failure is poor and quality of life remains severely reduced. In age and risk factor-adjusted models, incident congestive heart failure conferred a fivefold increased risk of death. The economic burden of HF on worldwide healthcare systems and economies is substantial and is even expected to increase due to the raising prevalence of the disease. A recent meta-analysis including over 1.5 million all-type congestive heart failure patients, estimated the 1, 2, 5 and 10-year survival to be 87%, 73%, 57% and 35%, respectively (Figure. 3) [1,2,3].



**Figure 3:** Underlying causes of death by gender and left ventricular ejection fraction in 463 patients in the Framingham Heart Study. Cardiovascular disease (CVD); coronary heart disease (CHD)

### Unani Concept of Congestive Heart Failure

The Unani system of medicine has been an integral part of the Indian system of medicine. Unani treatment is preferred because has fewer side effects, an emphasis on the quality of life, a holistic approach, psychological dimensions and cost-effectiveness.

Congestive heart failure is not explicitly described in classical Unani literature. The contemporary Unani physicians have literally translated it as *Suqūt-e-Qalb Imtilā'ī* to describe the general decline in heart functions. In Unani medicine, the signs and symptoms of congestive heart failure are distributed throughout the descriptions of many diseases but not under a singular disease entity of cardiac disorders. Although congestive heart failure is known today as *Suqūt-e-Qalb Imtilā'ī*, the disease's genesis and symptoms are most similar to those of *Ikhtilāj-e-qalbi* (arrhythmia), *Rabw* (cardiac asthma), *Buhr* (cardiac asthma), *Khafaqān* (palpitation), *Istisqā' Lahmī* (anasarca), *Du'f al-Qalb* (weakness of heart), *Intisāb al-Nafas* (orthopnoea), *Sudda-e-Urooq-e-Qalb* (coronary artery obstruction), *Ghashī* (syncope), *Tasallub-al-Sharāyīn* (arteriosclerosis) and *Imtilā' bi Hasbil Aw'iyā* (congestion of blood vessels).

#### *Intisāb al-Nafas* (orthopnea)

Renowned Unani Scholars like Ibn Hubl Baghdadi and Zakariya Razi described *Intisāb al-Nafas* (orthopnea) as a type of *Zeequn Nafas* (breathlessness) called *Rabw* which is caused by an accumulation of

*Ghalīz Rutūbat* (viscid fluid) in the bronchopulmonary branches and pulmonary vessels. Such fluid because of its *Burūdat* (cold) changes the temperament of the liver from *Harr* (hot) to *Bārid* (cold) leading to the development of ascites. In severe conditions patient could not lie down and was even unable to sit due to breathlessness. It is called *Intisāb al-Nafas* (orthopnea i.e. breathlessness in lying down position) [6,7]. This description corresponds to the clinical features of congestive heart failure. This is similar to right congestive heart failure which is a sequela of chronic obstructive lung disease. The sign and symptoms of Chronic Cor Pulmonale are breathlessness, pedal oedema, orthopnea, congestive hepatomegaly, hepatic tenderness, ascites (occurs secondary to neurohormonal activation, elevated RV filling and right arterial pressures, or increased levels of carbon dioxide and hypoxemia, which lead to peripheral vasodilatation and oedema formation) cyanosis (secondary to a low cardiac output), in the setting of chronic obstructive lung diseases, the circulatory bed undergoes vascular remodelling, vasoconstriction and destruction. As a result, pulmonary artery pressures and right ventricle afterload increase, setting the stage for Cor Pulmonale. The systemic consequences of Cor Pulmonale relate to alternations in cardiac output as well as salt and water homeostasis. Anatomically, the RV is a thin-walled, compliant chamber suited to handle volume overload than pressure overload, thus, the sustained pressure overload eventually leads to RV dysfunction and failure [1].

**Table 1:** Description of *Suqūt-e-Qalb Imtilā'ī* in Unani Medicine

Disease	Discussion	References
<i>Intiṣāb al-Nafas</i>	Orthopnea: A condition in which the patient can breathe only in a sitting posture with raised head at night. It manifests itself either as a disease or as a symptom of any other disease	4, 5, 6
<i>Buhr</i>	Cardiac asthma: Shortness of breath due to congestion of arteries of the lungs	5
<i>Du'f al-Qalb</i>	Weakness of heart: Weakness of heart i.e, the heart is unable to perform its function	4, 5, 7, 8
<i>Khafaqān</i>	Palpitation: A feeling of increased beating of the heart which is within the notice of the patient	4, 5, 7, 8, 9
<i>Istisqā' Lahmī</i>	Anasarca: It is a generalized and massive oedema of the body	10
<i>Tangi-e-Tanaffus</i>	Dyspnoea: Difficulty in breathing due to accumulation of viscid fluid in the lungs	10
<i>Ikhtilāj-e-qalbi</i>	Arrhythmia: Involuntary movement of the muscles of the heart characterized by rapid randomized contractions of the myocardium causing a totally irregular often rapid heart rate	11,12
<i>Sudd-e-Urooq-e-Qalb</i>	Obstruction of coronary arteries: Obstruction of coronary arteries limits the movement of hot and harmful air outside the heart and penetration of fresh air within the heart, i.e, leads to impairment in blood flow and thus oxygen delivery to the myocardium	13
<i>Ghashī</i>	Syncope: It is a disease of the heart in which voluntary functions of the heart nearly stop. The patient becomes pale and their pulse is feeble	14
<i>Tasallub-al-Sharāyīn</i>	Arteriosclerosis: Hardening and thickening of the walls of the arteries	15,16,17,18,19, 20, 21, 22, 23, 24, 25, 26, 27
<i>Imtilā' bi Hasbil Aw'īya</i>	Congestion of blood vessels: Occur due to <i>Su-e-Mizaj damwi</i> characterized by excess blood accumulation in the blood vessels, especially veins	19, 25

**Du'f al-Qalb (weakness of heart)**

Akbar Arzani and Ibn Hubl Baghdadi also mentioned *Du'f al-Qalb* [4,5,7,8] as a weakness of the heart i.e., the heart is unable to perform its function which is systole and diastole properly. Any adversity occurring in the heart leads to *Du'f al-Qalb* which can eventually result in congestive heart failure. *Du'f al-Qalb* develops as a result of those factors which cause *tahleel* (dissolution) of *Hararāt* (heat) or overthrow it resulting in the development of *Du'f al-Qalb* which can be correlated with congestive heart failure with reduced ejection fraction (HFrEF) which occurs when the left ventricular ejection fraction is 40% or less and is accompanied by progressive left ventricular dilatation and adverse cardiac remodelling.

**Khafaqān (Palpitation)**

*Khafaqān* literally means “palpitations” which by Ahmed Bin Tabri has been defined as an abnormal beating of the heart [4]. In classical Unani literature, it has been described to be caused by many factors which may be grouped as cardiac and extracardiac causes [4,5,8,9].

**Cardiac Causes of khafaqān mentioned are-**

- *Imtilā'* of heart or body which is attributed to chronic congestive heart failure (CHF).
- *Warm-e-Ghisha-ul-Qalb* (pericarditis), *Imtilā' Gilaf-ul-Qalb* (pericardial effusion and cardiac tamponade)
- The other cause may be an excessive accumulation of *Khilt-e-Sawdā'* in coronary arteries which can be correlated to atherosclerosis and coronary artery disease in conventional medicine.

**Non-cardiac causes of khafaqān mentioned are-**

- High output state like acute blood loss from the body.

- The cause of *khafaqān* may be present in the following organs and membranes- lungs, uterus, brain, intestine, pleura and pericardium.
- Snake and Scorpion bite as these possess cardiotoxin [7,9].

**Istisqā' Lahmī (Anasarca)**

Further, Abu Mansoor-al-Hasan Qamri in his book *Ghina Muna* describes that *Tangi-e-Tanaffus* (dyspnea) occurs due to the accumulation of *Rutūbat-e-Lazujiya* (viscid fluid) in the lungs, leading to breathlessness on lying down position, running and brisk walking if *Tangi-e-Tanaffus* (dyspnea) is associated with cough then the chances of recovery are more however, if not accompanied by cough, then it may be fatal. The patient feels suffocation during sleep and awakens from sleep leading to death. The reason for these symptoms is *Hararāt-e-Qalb* (increased cardiac activity), which reduces oxygen delivery to the heart, resulting in inflammation of the lung and, eventually, *Istisqā' Lahmī* (anasarca). The cause of *Istisqā' Lahmī* is considered as *Du'f Jigar* (weakness or malfunction of the liver) due to *Sudad* (obstruction) or *Sū' Mizāj Bārid* (cold temperament) or in association with spleen, stomach, intestine or mesenteries. It leads to an inability of the liver to metabolise *Akhlāt* (humour) properly and retains watery content in excess that are accumulated in the whole body primarily as periorbital oedema, pitting oedema of feet and ankle [2]. This concept of *Burūdat-e-Jigar* (coldness of liver) leading to *Istisqā' Lahmī* (anasarca) [10] is similar to congestive hepatomegaly, as patients with long-standing congestive heart failure led to chronic liver injury which results in ascites and congestive hepatomegaly and cardiac cirrhosis. Additionally, the description of a fulminant breathless condition during sleep may be correlated with a classical attack of paroxysmal nocturnal dyspnea (PND). It is the sudden and dramatic development of acute dyspnea occurring in the early hours of sleep. PND signifies the earliest symptom of acute left-sided congestive heart failure [1].

### ***Ikhtilāj-e-qalbi* (Arrhythmia)**

Zakariya Razi, a renowned Unani scholar in his famous book, *Kitab-al-Hawi* described *Ikhtilāj-e-qalbi* to be an arrhythmic activity of the heart in which there is neither proper contraction nor relaxation thereby leading to suppression of *Hararāt Gharīziyya* (innate heat/vital heat) due to decreased organ perfusion and sudden death. This may be correlated to arrhythmias which are the precipitating factor and risk factor for congestive heart failure. Arrhythmia varies depending on the rate, duration, associated heart disease, and comorbidities and includes palpitations, chest pain, dyspnea, diminishes exertional capacity and occasionally syncope. The compromised hemodynamic, i.e., function during ventricular tachycardia is caused by ineffective ventricular contraction, reduced diastolic filling due to abbreviated filling periods, loss of AV synchrony and concurrent myocardial ischemia. Similarly, Cardiac arrhythmia to be a manifestation of congestive heart failure had been described in the famous Unani book *Kitab al Taiseer* years ago [11, 12].

### ***Sudd-e-Urooq-e-Qalb* (obstruction of Coronary arteries)**

Ismaeel Jurjani in his famous book *Zakhira-e-Khwarazam Shahi* described that *Sudda-e-Urooq-e-Qalb* (obstruction of coronary arteries) limits the movement of hot and harmful air outside the heart and penetration of fresh air within the heart, i.e, leads to impairment in blood flow and thus oxygen delivery to the myocardium which is responsible for acute chest pain occurring as a consequence of the suppression of *Rooh-e-Haiwaniya* (oxygen). It could be related to the obstruction of coronary arteries (coronary artery disease) which is a prominent cause of congestive heart failure. Additionally, he mentioned that excessive accumulation of abnormal humour in *Ghilaf-e-Qalb* (pericardial sac) compressing the heart is another cause which impairs cardiac contraction and relaxation and thereby leading to a decrease in cardiac output [13].

### ***Ghashī* (Syncope)**

In *Furooq-al-Amraz* the author differentiated obstructions in bronchopulmonary branches, pulmonary arteries and pulmonary veins. He stated that the causative matter in these diseases and the symptoms like breathlessness are found commonly in all these diseases but the severity of cough which occurs in a later stage is less without or with least sputum in vascular obstructive diseases. In pulmonary vascular disease, breathlessness and fatigue aggravate walking or climbing stairs or in anger. This concept can be correlated with pulmonary embolism which is the cause and precipitating feature of congestive heart failure [11].

According to *Majoosi*, *Ghashī* encompasses the condition in which there is congestion of the vessels that causes inefficient blood supply to the organs and hence patient becomes unconscious, this concept may be justified in view of syncopal attacks which is the cardinal feature of congestive heart failure [14].

### ***Tasallub-al- Sharāyīn* (Arteriosclerosis)**

There are descriptions of *Nabz-e-Sulb* (hardness of artery), *Tasallub-al- Sharāyīn* (arteriosclerosis) and *Sakhti-e- Sharāyīn* in classical texts. These circumstances are triggered by *Yubūsat-e-mizaj* (dryness) leading to *Yubūsat-e-Urooq* (dryness of arteries) these cascade of events triggers the hardening and narrowing of arteries [15-28]. Now studies have unravelled that arteriosclerosis is the major risk factor for

the development of coronary artery disease and eventually, congestive heart failure.

### ***Imtilā' bi Hasbil Aw'iyā* (Congestion of blood vessels)**

*Suqūṭ-e-Qalb Imtilā'ī* (CHF) has several corresponding features as are found in *Imtilā' bi Hasbil Aw'iyā*. *Imtilā' bi Hasbil Aw'iyā* is defined as an accumulation of blood in the veins and characterized by the following clinical features such as lethargy, fatigue, redness of the body, sluggishness in activities, engorgement of veins, excessive perspiration, coloured and concentrated urine, anorexia, increased heart rate, confusion, difficulty in concentration, impairment of memory, headache, breathlessness, and orthopnoea [19, 25].

## **DISCUSSION**

Around the world, more people are turning to complementary and alternative medicine (CAM) According to reports, complementary and alternative medicine is used by up to 61% of cardiac patients with coronary artery disease and those at risk for arteriosclerosis. According to Mayo Outpatient Cardiac Clinic research, at least 82.5% of cardiac patients used some sort of complementary and alternative medicine. From 9% to 65% of people worldwide utilize CAM and from 4% to 61% of cardiac patients specifically [29, 30, 31]. Despite guideline-directed medical treatment of congestive heart failure, the prognosis remains poor, and the quality of life remains severely reduced. Hospitalizations due to congestive heart failure represent 1–2% of all hospital admissions in the Western world. Congestive heart failure is, of any diagnosis, associated with the highest 30-day readmission rate (around 20–25%). Approximately half of the patients will be admitted at least once within 1 year after diagnosis, 20% will be readmitted again within that same year, and over 80% will be readmitted within 5 years. Around 35% of 30-day readmissions are for congestive heart failure and about half are for other cardiovascular causes in general. In age and risk-factor-adjusted models, incident congestive heart failure conferred a fivefold increased risk of death. Recent studies have indicated that the congestive heart failure burden in the young is increasing. Although the causes of the opposite trend in the younger population are unknown, links have been drawn between it and the persistent rise in obesity prevalence around the world and its comorbid conditions, which also affect younger patients and include type 2 diabetes, hypertension, and atrial fibrillation. As this demographic segment matures, more years will be spent with congestive heart failure-related impairment, so if the growing incidence of congestive heart failure in younger adults keeps up its current trajectory, the burden of congestive heart failure will increase in the future [1, 2].

Apart from these, the drugs used in the treatment of congestive heart failure have several limitations like Digoxin which increases cardiac contractility on chronic use becomes resistant and does not enhance cardiac output. The congestive heart failure ranks among the most costly chronic illness. Out patients visits and medications for congestive heart failure poses a significant financial burden on the patients. Many Unani drugs are traditionally used for cardiac ailments, such as palpitations, coronary artery disease, weakness of the heart and as cardio-tonics. Therefore, there should be a persistent push to include complementary and alternative (CAM) into the practice which should be cost-effective, lessen the social and economic burden, and can be used as adjuvant therapy along with guideline-directed medical treatment among congestive congestive heart failure patients. Therefore, we should have a thorough

knowledge of the Unani concept of congestive heart failure patients for its successful treatment.

## CONCLUSION

Congestive heart failure is known today as *Suqūt-e-Qalb Imtilā'ī*, the disease's genesis and symptoms are most similar to those of *Ikhtilāj-e-qalbi* (arrhythmia), *Rabw* (cardiac asthma), *Buhr* (cardiac asthma), *khafaqān* (palpitation), *Istisqā' Lahmī* (anasarca), *Du'f al-Qalb* (weakness of heart), *Intisāb al-Nafas* (orthopnea), *Sudd-e-Urooq-e-Qalb* (coronary artery obstruction), *Ghashī*, (syncope), *Tasallub-al-Sharāyīn* (arteriosclerosis) and *Imtilā' bi Hasbil Aw'iyā* (congestion of blood vessels). The natural history of congestive heart failure as an individual disease into the prognosis of the diseased individual is difficult, and physicians are understandably reluctant to communicate explicit quantitative information on prognosis to their patients. Many prognostic markers of death and hospitalization have been identified, but the clinical value of prognostic models is limited and individual risk stratification remains challenging. There is a persistent push to include complementary and alternative medicine (CAM) into the practice of traditional medicine in the twenty-first century (Integrative Medicine). The exponential rise in public interest in complementary and alternative medicine therapies across the globe cannot be ignored any longer by the scientific community. About 26 to 42% of individuals with cardiovascular disease or at risk for it use supplements as part of their treatment or prevention. For this, purpose we should have knowledge about the concept of congestive heart failure in Unani system of medicine.

## Conflict of Interest

None declared.

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