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# RISK FACTORS MANAGEMENT OF CVDS WITH UNANI SYSTEM OF MEDICINE

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**ABSTRACT**

Cardiovascular diseases are a group of disorders of heart and blood vessels, including coronary heart diseases, congenital heart diseases, cerebrovascular diseases, rheumatic heart disease, deep vein thrombosis and pulmonary embolism. CVDs alone claim 17.3 million lives yearly. Risk factor modifications are the best approach till date to combat with this world's leading death causing problem. Unani system of medicine also incorporated life style modification for the control and prevention of CVDs.

## INTRODUCTION

Atherosclerosis or "thickening of tunics" was first described by Leonardo da Vinci, 1400 years ago.[1] Since then it is continuously to be described macroscopic and microscopically by numerous of pathologists. Atherosclerosis is a condition where arteries become narrowed and hardened due to the formation of plaque around the arterial wall. The disease disrupts the blood flow to the vital organs posing serious cardiovascular complications like MI or stroke.[2] It is a slow process that continues with the ageing and goes on till it engulfs the lives, if not prevented or treated in time. The pathogenesis of atherosclerosis is a complex entity involving several contributing factors like oxidative stress affecting the Nitric oxide function and inducing chronic inflammation. The cellular changes stimulated under the influence of a number of factors and enzymes governing the development and progression of atheromatous plaque.[3]

Cardiovascular diseases (CVDs) are the leading non-communicable diseases; nearly half of the 36 million deaths due to non-communicable diseases are caused by CVDs.10% of global disease burden is attributed to CVDs. In India the mortality due to CVDs has increased from 2.25 million (2010) to 2.94 million (2015).[4,5] By managing the risk factors cardiovascular diseases can be prevented to a greater extent.

### Risk factors

The exact cause of atherosclerosis is still unknown. However, certain traits, conditions, or habits may raise the risk for the disease. These conditions are known as risk factors.[6] According to Framingham Heart Study, the risk factors can be divided as –

### I. Major risk factors

**a) Lipids:**

Based on various clinical and animal studies, it has been established that there is a direct relationship between raised lipids to atherosclerosis development.

HDL: which is considered good cholesterol, transports cholesterol from cells to liver as well as possess anti-inflammatory property. Thus, prevents the risk of getting CHD. It is seen in various epidemiological studies that for every 1 mg/dl increase in HDL level there is 2% decrease in the risk of CHD development in men & 3% in women.[7]

Triglycerides: Prospective Cardiovascular Munster study showed a significant association between hyper-triglyceridemia & CHD development.

LDL: ox-LDL is mainly responsible for the development & continuation of atherosclerosis. It has been proved by various clinical trials.

VLDL (Very low density lipoproteins): promotes atherogenesis.

According to a prospective epidemiological study of MI, other lipoproteins (Lp) like apolipoprotein, lipoprotein apo C-3 & Lp (a) increases the risk of MI & angina along with high LDL.[8]

**b) Hypertension**[7]

Studies showed a positive association of hypertension with CVDs. The risk of developing CVD becomes twice for every increase of 20 mm Hg in systolic & 10 mm Hg in diastolic B.P. in the age group of 40-70 yrs.

**c) Smoking**[9]

Many studies proved the direct correlation between number of cigarette smoking per day & Ischemic heart disease. Smoking induces inflammatory response in vessel wall by stimulating monocyte adherence to the endothelial cells.

**d) Diabetes**[7]

Diabetes increases the risk of developing CVD 2-3 times. The risk is higher in females than males.

**e) Obesity**

Obesity is a metabolic disorder associated with CHD, CVDs, Diabetes mellitus type 2, hypertension, certain cancers & sleep apnea. The data based on various studies reported higher BMI during childhood raises the risk of CHD in adulthood more in males as compared to females.

**f) Physical inactivity**

Various epidemiological studies confirmed the direct association of physical inactivity to CHD. The relative risk of sedentary & active individual's data from CHD is 1.9

**g) Unhealthy eating habits**[6]

Saturated and Trans fats, sodium and sugar items hasten the process of atherosclerosis.

**h) Age**[10]

As the age advances, risk of getting CVD increases. In males the risk increases after 45 yrs of age & females after 55 yrs of age.

**i) Gender**

Males are at higher risk than females for the development of CVD. Estrogen plays a protective role against atherosclerosis. Therefore, it is seen that the rate of development of CVD in females increases after menopause.

**j) Family history**[6]

The risk of development of CVD increases if either maternal or paternal side history of CVD is positive

**k) Metabolic syndrome**[8]

Metabolic syndrome raises the risk of CVD. According to National cholesterol education program criteria**,** metabolic syndrome diagnosis can be made if a person has 3 or more of the following features-

1. Elevated triglycerides (≥150 mg/dL)
2. Low HDL cholesterol (men<40 mg/dL; women <50 mg/dL
3. Impaired fasting glucose (≥110 mg/dL)
4. High blood pressure (≥ 130/85 mm Hg), and
5. Increased waist circumference (men >40 inches; women >35 inches.

**l) Haemostatic factors**

Elevated plasma fibrinogen, von Willebrand factor and plasminogen activator inhibitor-1 have been shown to account for atherosclerosis.

**II. Emerging risk factors**

**a) Homocysteine**

It's an amino acid. Hyperhomocysteinemia may become a cause of atherosclerosis progression. That may be seen in different pathological conditions like vitamin $B_{12}$, $B_6$ or folic acid deficiency etc. It has direct toxic effect on endothelial cells.

**b) Inflammatory markers**

High sensitivity C-reactive protein (CRP) is a sign of inflammation in the body. Data have shown that increased level of CRP in the blood is a risk of atherosclerosis. Whereas Matrix metalloproteinase-9 & interleukin-10 are also novel predictor for atherosclerosis & Coronary artery disease.

**III. Other risk factors**

**a) Alcohol**[6]

More than 2 drinks a day may develop atherosclerosis as it may damage the heart muscles & worsen other risk factors like hypertension.

**b) Stress**[11]

Stress stimulates various stress hormones such as catecholamine, corticosteroids, glucagon, growth hormone, rennin, homocysteine. These stress hormones lead endothelial injury and induction of adhesion molecules on endothelium.

**c) Sleep apnea**[6]

It's a disorder that causes one or more pauses in breathing or shallow breaths while sleeping. It may trigger the risk of Hypertension, Diabetes, Stroke & MI.

**Unani concept of Cardiovascualr diseases**

Unani physicians described atherosclerosis as a disease of vessels (*Amraze majari ←Amraze khilqat←Amraze Mufrada*) i.e. a condition in which *sharain* (vessels) get narrowed & obstructed by *sudda*. This obstruction occurs due to some defect or abnormality occurring in the II & III stages of digestive processes. According to Unani concept, there are four basic types of digestive processes taking place inside the human body- *Hazme maedi, kabidi, urooqi* and *azwi*. Improper timings, quantity and quality of food and excessive use of cold and moist or cold and dry food items, after passing through *hazme kabidi* (*Hazme doem*) produces excessive phlegm & sauda. Coldness produces *Ghaleez* and *Luzuj akhlat*, further increase in coldness congelate serous humor i.e. *Shaham*. These *raddi akhlat*/humors when reach to blood vessels, affect their places of digestion i.e. *Hazme saani (Hazme urooqi)*. As a result of which the vessels supplying the respective organs (like heart, brain, kidney etc.) also get affected.[12]

**Preventive approaches of atherosclerosis in Unani medicine**

*Avicenna* in his book *Al Qanoon* mentioned that beside pharmacological treatment there are certain *tadabeer* which if adopted can prevent as well as treat a number of diseases. These *tadabeer* he called as *Husn Tadabeer* .WHO also stated that Non-communicable diseases arise mainly due to changing pattern in lifestyle. These can be easily prevented to a great extent by life style modifications. These *tadabeer* mentioned in Unani medicines as- Diet modifications, Riyazat, Dalak and Hammam.[13]

**a) Ghizai tadabeer/Dietary modifications**[14]

*Avicenna* and other Unani physicians like *Maseehi* advised to take

- *Ghiza lateef* e.g. honey, fig, pistachio etc. which produces *lateef* and *saleh khoon* that itself prevents the formation of *sudda*.

- *Ghiza Hareef and muqatta balgham e*.g. mustard seeds, soya, cumin, garlic, etc. This type of food stuff usually make thick viscous phlegm thin and then help to excrete them out of the body by changing it into *marrah safra*.
- *Ghiza Maleh e*.g. small fish, *maul jubn, maul laham* etc. These food items decreases blood viscosity and increases blood circulation thus, preventing heart and other organs from ischemia.
- *Ghiza Haamiz* e.g. vinegar, etc. These dietary stuffs break the viscid and thick humors into pieces so that obstruction will be released.
- Avoid constipation and flatulence producing food stuffs like Brinjal, potatoes, beef, cabbage etc. as they produce *ghaleez khilt* and *bukharat* that affects heart.

**b) Dalak (massage) and Riyazat (Exercise)**[15,16]

Massage with *muhallil* oils and daily exercises like morning or evening walk may *tahleel* the *raddi akhlat* (waste), open the pores of the skin and excrete the waste from body.

**c) Hammam**[15]

Buqrat in his book *Kitabul fusool* mentioned that *hammam* with *haar shireen* water helps to release obstructions

**d) Advia**[17,18,19]

For the prevention and treatment of obstruction in vessels (atherosclerosis), the eminent Unani physician-*Avicenna* advised to follow the principle of ***Istifragh-i-madda*** (excretion of matter) and ***Taqweeyat-i-azu*** (strengthening the vital organ). The matter causing obstruction can be evacuated by two means-one by making the *ghaleez*/thick *akhlat* thin and other by making *lesdar* and *luzuj*/viscous matter less viscous i.e. reducing its viscosity.

- When the *madda* is *ghaleez*/thick- *Avicenna* recommends the use of *Mulattif* (softens "salabat" or hardness of the vessels and produces "latafat" in the blood), *Muhallil* (resolves thick and viscous humors), *Mufatteh* (dilates the blood vessels), *Murakhkhi & Mulayyan drugs* (relaxant and laxity producing drugs) to make the matter *lateef* (thin).
- When the *madda* is *lesdar and luzuj*/viscous-*Avicenna* in his compilation mentioned the use of *Mudirr-i-Bawl* (evacuate undue amount of matter via urine), *Jali* (Liquifies the *madda* and clean the vessels) and *Muqatteat* (breaks the *madda* into small pieces so that it can be easily expel out of the vessels) to reduce the viscosity of matter.
- *Baghdadi* in his book adverted that if *Mulattif* drug with *Mundij* (concoctive), followed by *Istifragh*, will prevent the formation of *sudda.*

➢ For the purpose of ***Taqweeyate azu,*** *Avicenna* recommends the use of *advia qalbia* after *istifragh* because the *advia istifraghia* weakens the *badani quwa*, so there is a need for *muqawwiyat* (tonics). He mentioned the use of *advia harra qalbia* (eg Aabresham, Mushk, Daroonj aqrabi, Amber, Zaranbad, Qaranfal, Zafran etc.) for *taqwiyate azu* as they not only strengthen the heart but also act as *muqawwiy-i- rooh*. *Rooh* is the source of *quwa*, and *quwa* performs functions so it should be strengthen.

## CONCLUSION

In conclusion, this review shows that to lessen the impact of CVDs on individuals and society, a comprehensive approach is needed that requires a combine approach to reduce the risks associated with CVDs. Unani system of medicine has given a radical knowledge to understand the pathophysiology of CVDs, its prevention and management through a coalescent regimen of dietary modifications, physical and therapeutic approaches.

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