World Journal of Pharmaceutical and Life Sciences
WJPLS
www.wjpls.org
SJIF Impact Factor: 5.088

A COMPREHENSIVE STUDY ON "*HRIDAYA* AS *PRANAYATAN*"

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Article Received on 21/05/2019 **Article Revised on 11/06/2019** **Article Accepted on 01/07/2019**

ABSTRACT
In Ayurveda Acharya Charaka was the first person who briefly highlighted the importance of Pranayatana. According to his view, regarded as the vital components and dedicated a special chapter on Pranayatana in Sutrasthana as "Dashapranayatana" along with a little reference in Shareera sthana. There are many concepts in which acharyas spoke about delicacy and vitality of body (Prana) i.e.: Marma, Pranayatana etc. The word Pranayatana is formed by two words – Prana + Ayatana. Here Ayatana means Asraya Sthana (Seat) and Prana is a life. So, the Sthana which gives seat for Prana is called as Pranayatana (Seats of life). Pranayatana are 10 in number, viz. Murdha, Kantha, Hridaya, Nabhi, Guda, Basti, Oja, Shukra, Shonita and Mamsa. Pranayatan is a delicate and vital part of the body & its' trauma or complication results in death. Its concept needs to be studied substantially. Acharya Charak also described Hridaya as one of Trimarma & Acharya Shushrut designated Hridaya as Marma sthan of Sadhyapranhar variety. Both Acharyas had not described detail anatomy of this region. They have concluded this region as Pranayatan. They had not explained whether Hridaya Pranayatan is a single structure or complex; which needs to be analyzed the vitality of this region. In these regard, recent article on "epidemiology of cardiovascular disease" claimed that – "More than 80 percent of the deaths occurred in low- and middle-income countries in CVD (WHO, 2009e). The World Health Organization (WHO) estimated there would be about 20 million CVD deaths in 2015, accounting for 30 percent of all deaths worldwide (WHO, 2005).[8]"

KEYWORDS: *Hridaya*, *Pranayatan*, Quality of Life, Coronary artery Disease.

INTRODUCTION

Many attempts have been made to correlated various Ayurvedic Hrida-roga conditions to their modern parallels. Because of inadequacy to their research models, none however could reach to a conclusive submission. Researches in cardiac diseases in reference to the exploration of efficacy of individual compounds and comparative effectiveness research to multidrug therapy had been attempted primarily at various postgraduate research institutes of Ayurveda in India. These researches are by and large exploratory throughout the country and are limited to find clinical effect of certain compounds in certain cardiac conditions. In spite of their genuine focus upon exploratory analysis.

Some Acharyas have referred the concept of Marma as well as Dashapranayatana and said 'Hridaya Pranayatana'[3,4] in the list of "Dashapranayatana". They are mentioned below according to different authors.

1. Murdha, Jihvabandha, Kantha, Hridaya, Nabhi, Basti, Guda, Shukra, Ojus, and Rakta.[4]
2. Rasanabandha, Kantha, Hridaya, Nabhi, Basti, Guda, Shukra, Ojus, Raktha, and Murdha.[3]
3. Two shankhaPradesha, Tri Marma (Shiras, Hridaya and Basti), Kantha, Raktha, Ojus, Guda, and Shukra.[2]
4. Murdha, Kantha, Hridaya, Nabhi, Guda, Vasti, Ojus, Shukra, Shonita, and Mamsa.[5]

There are 19 Sadhyopranahara Marma mentioned in the classics which have vital significance.[10] Total 107 Marma are mentioned and given primary importance to Basti, Hridaya, and Shiras.[5] Hridaya was also described as "Pranayatan" & "Mahamarma" by Acharya Kashyapa.[7]

There are descriptions about Clinical Anatomy of Heart in contemporary science. Nowadays most commonly seen complications in cardiac region is Coronary Artery Blockage due to myocardial infarction & ventricular fibrillation.

CAD is frequently increasing now a days. It is one of the main reasons of cardiac deaths.

Stress is one of the main predisposing factors of CAD. After the age of 50 yrs., due to degenerative changes

most of the cardiac disease manifestation seen of coronary artery disease.

Table no. 1: Classification of Pranayatanas as per different classical texts.[10,11]

Pranayatan	Charak Sutrasthana -29	Charak Sharirasthana-07	Ashtanga Hridaya Sharirasthana -03
Shankha (Temporal)	+	-	-
Shankha (Temporal)	+	-	-
Hridaya (Heart)	+	+	+
Basti (Urinary - Bladder)	+	+	+
Nabhi (Umbilicus)	+	+	+
Kantha (Neck)	+	+	+
Rakta (Blood)	+	+ (Shonita)	+
Shukra (Semen)	+	+	+
Ojas	+	+	+
Guda (Anal region)	+	+	+
Murdha	-	+	-
Mamsa	-	+	-
Shirobandha	-	-	+
Rasanbandha	-	-	+

AIM

• Study on *Hridaya* as *Pranayatan*

OBJECTIVES

- Study of regional & applied anatomy of Heart.
- Study of pathology of Coronary Artery Disease.
- Survey of Quality of life in cases of CAD.
- To establish the vitality of *Hridaya* as *Pranayatan*

MATERIALS AND METHODS

- 30 diagnosed patients of Coronary artery Disease were selected according to inclusion criteria. Written informed consent of the patient has taken prior to case taking.
- 30 Healthy Individuals were selected.
- Case history of the patient & healthy individuals were taken with special case proforma with the help of data from SF-36 questionnaire. we studied quality of life of each group.
- High scores = lesser disability, Low scores = Higher disability

B. Inclusion criteria

• Age Group: 35-50 (Male & Female)

- 30 patients of CAD (Coronary Artery Disease) [Pre-diagnosed patients were enrolled for the study of their quality of life score. Post-diagnosed of CAD case were observed on their clinical signs & symptoms with the case proforma; radiological investigations 2D echo & chest x-ray reporting by concerned Cardiologist.
- 30 Healthy Individuals

C. Exclusion criteria

- Rheumatic Heart Disease
- Patients undergoing intensive medical treatment
- Congenital deformities
- Pregnant Females

Clinical Phase

30 patients of CAD (Coronary Artery Disease) [Pre-diagnosed patients] & 30 Healthy Individuals were enrolled for the study of their quality of life score. Post-diagnosed of CAD case were observed on their clinical signs & symptoms with the case proforma; radiological investigations 2D echo & chest x-ray reporting by concerned Cardiologist. Case history of the patient & healthy individuals were taken with special case proforma with the help of data from SF-36 questionnaire. we studied quality of life of each group.

OBSERVATIONS

- Between two groups it was observed that Group-B which had coronary artery disease patients; had much more impact on their quality of life. Also, Group-B has significant affect & causes according to their education; addiction, socio-economic status as well as their work pattern & mental or physical strain also affect their quality of life.
- Age: - According to modern science as age increases there is also significant degenerative changes will be seen. So, the stats of this study suggest the same that higher age group (i.e., 45-50 yrs.) were involved & suffered more from the disease which was higher 46.7% with compare to other age groups.
- **Gender**: - In this study Gender wise; male gender affected more in group-B which were disease patients. Also, their addiction habits were also affecting their disease pattern which was also calculated by stats. Male was noted as 80% of Group-B which denotes that male gender affected more from the disease.
- **Occupation**: - As per occupation office goers were seen more in the presented study which was 60% of all.
- **Addiction**: - Cigarettes & tobacco affects more to the disease patients' cardiac activity as seen in this

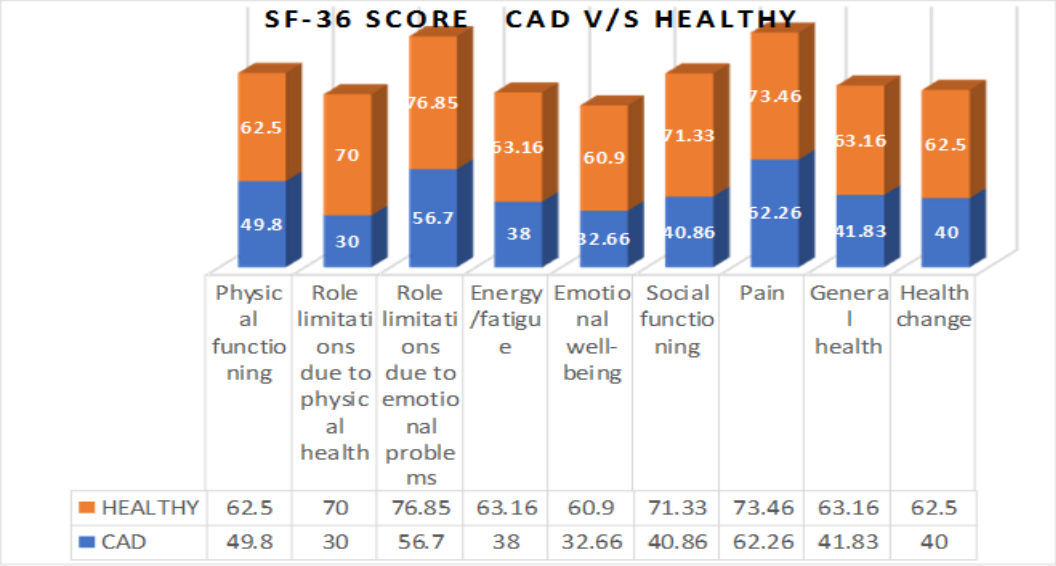
study of group -B which was 36.7% & 20% respectively in both. The third most important variable was current smoking status, which made a significant contribution to Coronary artery disease patients.

- ❖ **Work & strain wise**: - As observed in this study physical strain & Manual work type were more as per stats i.e., Manual work – 30% & Sedentary work type – 20% However, Physical strain affecting more to patients even after diagnosed.

- ➢ **SF-36 score**: - Score were calculated as per the method described by WHO in which patients suffering from coronary artery disease were scored less in each domain compared to healthy individuals. Physical role limitation due to physical health & emotional role functioning due to emotional health were significantly less in score which was 30% & 32.66% respectively. So, we can observe that physical & mental status both gets affected similarly by coronary artery disease.
- ❖ There is a direct relationship between perceived improvements in quality of life and reduction in angina has been documented by other investigators. Increases of SF-36 score in bodily pain, energy and vitality, social function and physical function. This may reflect improvement in dimensions of health directly related to the reduction or removal of angina chest pain post CAD or post PTCA.
- ❖ Both group wise SF-36 scores were compared with the help of mean average of each domain. There are 8 different domains which explained the quality of life of patients suffering from coronary artery disease with the healthy individuals. As sf-36 questionnaire scored from 0-100 in each domain. Higher the score; higher the quality of life. less score means less quality of life. Highest score would be 100. But as study was done; it has been observed that coronary artery disease patient's quality of life deteriorates as disease progress and also it does affect more physical than mental status.
- ❖ In CAD patients; physical functioning was 49.8% but in contrary their role limitations due to physical health was 30% which was the lowest score in all domains. Also, there was significantly higher score in pain which was 62.5%. So, we could observe that pain was not affecting the patients' life.
- ❖ In healthy individual; role limitations due to emotional problems were 72.8% which means mental status was better in healthy group. But in contrary emotional well-being was lowest score among them which was 62.5%.

Table no. 2: SF-36 score CAD v/s Healthy Individual.

Sr.no.	Domains	CAD	HEALTHY
1	**Physical functioning**	49.8	62.5
2	**Role limitations due to physical health**	30	70
3	**Role limitations due to emotional problems**	56.7	76.85
4	**Energy /fatigue**	38	63.16
5	**Emotional well-being**	32.66	60.9
6	**Social functioning**	40.86	71.33
7	**Pain**	62.26	73.46
8	**General health**	41.83	63.16



Graph no. 1 SF-36 score CAD v/s Healthy Individual Graph Distribution.

DISCUSSION

This study was done with the help of SF-36 health related quality of life questionnaire. The calculations were done with percentage method with the opinion of statistician. Charaka & Susruta both have considered Hrudya as Moolsthana of Pranvaha & Rasavaha Strotas. Relation of heart, Rasavaha & Pranvaha strotas reflects Pulmonary & circulatory system of modern science.

Even Dr.Gananath Sena had acknowledge that Hridaya did not mean a part of brain in the ancient philosophy of Yoga & Upanishad. Even though, Yoga shashtra denotes Hridaya as a part of Brain but in Ayurveda Hridaya is situated in the thoracic cavity called as Heart which is a part of cardiovascular system. Hridaya or heart is the only one & situated in thoracic cavity as one of the Koshthanga. (Ca.Sh.7 / Su.chi.2 / Bh.Sh.7 / A.S.Sh.5).

It is certain that certain channels, tracts & roots which have their origin in Hridaya and spread all over the body, carrying the Rasadhatu (i.e. Nutrients) as a Poshaka-substances to the next remaining Dhatus of the body. The organs and the channels through which this "Rasa-samvahan" (circulation) takes place are collectively termed as Rasavaha srotas and include following organs:

(i) Hridaya (Heart)
(ii) Sira -Jala (Network of Veins)
(iii) Dhamani – Jala (Network of arteries)
(iv) Rasayani-Jala (Network of lymphatics)

Despite of its contemporary importance, an ayurvedic description of cardiac disease has rarely been subjected to a critical analysis. In the absence of a clear correlation with heart diseases from conventional point of view and with that of Ayurveda, it is difficult to apply convincingly the medicine described in one text to the notion it is perceived by another. In broader sense, Ayurvedic description of heart diseases seems not limited to the diseases of heart but, instead, encompasses a broad range of conditions in and round heart and also the pathologies directly or indirectly affecting the function of the heart. It is for this reason, many conditions where primary pathology is a circulatory deficit are also considered as Hrida-roga in Ayurveda.

Discussion on *Hridaya* as *Pranayatan*

- As per this study; *Pranayatan* is not a single structure hence it is a complex structure which contains different parts of human body. *Hridaya* is a complex structure because it the origin of vascular system. So, most of the vascular disease always caused by dysfunction cardiac muscle & vessels. *Pranayatan* is seat of life and *Hridaya* is also a seat life as it gets affected due to disease also affecting the quality of life in human beings or it results in death.
- Heart is called as a hollow muscular organ. It contains 3 layers which of them myocardium is the most important and vital part. Myocardium is the only affecting by coronary arteries which the directly supply by the Arch of aorta.
- Coronary Artery disease (CAD) & valvular heart disease (VHD) are two main cardiac disease manifestation caused by different factors but also, they are mostly seen in patients age more than 50yrs. But in this study, it is also seen that the patients which are in age group of 35-40 yrs also suffering from the disease in early age. In current era, cardiac diseases are spreading at early age which is due to life style changes in individuals.
- Some of studies suggested the fact with confirmation angina (chest pain) often not associated with CAD; and that CAD often presented with absence of angina as well.
- There are different types of Heart diseases, myocardial infarction, valvular heart disease, rheumatic heart disease, coronary heart disease, mitral stenosis.
- Valvular heart disease (VHD) is a common pathological condition in clinical practices which is strongly connected to cardiac dysfunction and death. Although VHD occurs less frequently than coronary heart disease, heart failure, or hypertension, it remains an important cause of increased morbidity and mortality.
- Several studies show that valvular disease is frequent in industrialized countries or developed countries where the decrease in the prevalence of rheumatic heart disease has been compensated for by the increase in the prevalence of degenerative valve disease.
- Smoking (current or former), arrhythmia and coronary artery disease (CAD) were more frequently observed in participants with VHD than those without VHD.[1]
- The prevalence of DMS increases with aging to 2.5% in patients >90 years of age, and DMS is often associated with aortic valve stenosis.[2]
- Kruczan et al. have shown a global prevalence of obstructive CAD of 15.9%, 6% in patients aged less than 50 years. The prevalence of obstructive CAD in individuals aged less than 50 years was 3.3%. Hence this study was done between age group 35-50 yrs in both genders, it suggested that degenerative changes occurs at early stages of life in present era.
- The presence of left bundle branch block (LBBB) is often an indicator of structural heart disease. LBBB was also seen masking the symptoms of myocardial infarction. Accordingly, patients who develop LBBB are at increased risk of heart failure and sudden cardiac death. This caused by:-
  - Heart attacks (myocardial infarction)
  - Thickened, stiffened or weakened heart muscle (cardiomyopathy)
  - A viral or bacterial infection of the heart muscle (myocarditis)
  - High blood pressure (hypertension)

- Hridaya as a pranayatan includes the structures which are: - Myocardium, Pericardium, Valves (Aortic, Pulmonary, Mitral & tricuspid) & chambers of heart (Atriums & Ventricles), Arch of Aorta, coronary Arteries, coronary sinuses, Pulmonary arteries.
- Above all structure make a complex structure of Hridaya as pranayatan & so, they are vital parts. Dysfunction of any of the above structure can cause the sudden cardiac death or cardiac disease which may lead to hamper the quality of life.

CONCLUSION

- In this study, Hridaya Roga, patients who are suffering from Coronary Artery Disease, their quality of life hampered in comparison with healthy individuals.
- As per the study on Hridaya as pranayatan, Hridaya i.e., Heart is a seat of life where Prana seats and when this organ or the associated part of heart i.e. coronary artery injured in view of blocked due to plaques, quality of life deteriorates.
- As Dhamani is part of Hridaya i.e. Heart. so, the disease in coronary artery also established for the pranayatan because as per Ayurveda dhamani is directly related to hridaya & also acharya sushruta opines that roots of pranavaha srotas as well as Rasavaha srotas are hridaya & it's dash dhamanis and so the vitality of heart gets hampered by coronary artery disease or heart diseases.
- Dhamanis is directly related to hridaya. So, what affects the dhamanis also affects the hridaya as well. Also, prana seats in hridaya and dhamani. Hridaya is a vital organ if prana leaves from its place results in death.
- As per the review by literature Hridaya is a Pranayatan which is complex structure. SF-36 score suggests that physical functioning & role of emotional health both domains mainly affecting the quality of life in patients with coronary heart disease.
- Because of these elements affecting the quality of life in human being, this hampering of QoL concludes that Hridaya is a Pranayatan which includes these structures and & its vitality relevant in modern era.

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