

Sampurna Hriday Shuddhikaran: An Interventional Health Model to Improve Quality of Life in Chronic Heart Failure

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Abstract: Background: Heart disease is a worldwide problem affecting people in all communities. The burden of cardiovascular disease in India is immense. India will bear 60% of the world's heart disease burden in the next two years. Average age of heart patients is lower among Indian people who belong to the economically productive group. It is not only the lack of resources but also the inability to continue with the costly treatment that further adds to the woes of the patients. **Method:** Present investigations has been carried out in 200 chronic heart failure patients (Mean age = 55±9 years) using novel approach of Sampurna Hriday Shuddhikaran (SHS), an interventional health model. Preintervention & post interventional cardiac effort tolerance measured and compared. **Results:** Mean post intervention improvement in exercise tolerance measured by 6MWT (6 Minute walk test) in meters and ST (stress test) in seconds was 70.6 m in 6 min and 132.1±85.4 s in 9 min ($p = 0.03$), respectively. The corresponding improvement in VO₂ max and METs was 3.1±3.44 L/min and 2.23±1.9 METs. **Conclusion:** Sampurna Hriday Shuddhikaran (SHS) model is very much effective in improving the exercise tolerance of Chronic Heart Failure patients and this improvement is independent of Age, Sex and BMI of the study participants.

Key words: Sampurna Hridaya Shuddhikaran (SHS), Exercise Tolerance (ET), Chronic Heart Failure (CHF).

1. Introduction

Throughout the developed world, heart disease is worldwide problem affecting people in all communities. A recent study mentioned that India will bear 60 percent of the world's heart disease burden in the next two years [1]. In India prevalence of heart disease is reported to be 2.3 times higher in the urban population as compared to rural population. The causes and magnitude may vary with geographical location and socioeconomic status. To a great extent, the disease is lifestyle-related, and results from a kapha-provoking sedentary lifestyle, coupled with excess consumption of fatty foods, especially trans-fats, and insufficient intake of fruits and vegetables. Pitta factors such as stress and overwork are also known to play a major role. "Metabolic syndrome", as it is currently described, is

the precursor to heart disease [3]. Consisting of abdominal obesity, elevated serum cholesterol and triglycerides, elevated blood pressure, insulin resistance and a prothrombotic state (sticky blood that clots too easily), metabolic syndrome could more accurately be called kapha syndrome. So whatever may be the cause patients ultimately lands up in chronic heart failure. Chronic Heart Failure (CHF) is a condition in which the heart's function as a pump to deliver oxygen rich blood to the body is inadequate to meet the body's needs. CHF due to systolic or diastolic dysfunction resulting from ischemic heart disease, Myocardial Infarction (MI) leads to reduced Cardiac Output (CO). This generates neurohumoral responses resulting in activation of sympathetic system and secretion of ADH (Anti-diuretic hormone), BNP (Brain Natriuretic Peptide) and Renin angiotensin system stimulation. Consequently the blood volume increases due to salt and water retention and

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vasoconstriction increasing the peripheral resistance. Average age of patients with heart disease is lower among Indian people who belong to the economically productive group. It is not only the lack of resources but also the inability to continue with the costly treatment that further adds to the woes of the patients. At present there is no economical treatment available for cardiac failures. A comprehensive herbal therapy named Sampurna Hriday Shuddhikaran (SHS) was planned to reverse the effect of above pathophysiology.

Its use as a complementary therapeutic regimen under medical supervision is appropriate and could be worth considering. The present investigations have been carried out in 200 chronic heart patients including male and females. A novel herbal procedure Sampurna Hriday Shuddhikaran (SHS) is used for the management of them. The results suggest that SHS is very effective low cost intervention in improving the exercise tolerance of heart in Chronic Heart Failure; however this improvement was independent of age, sex and Body Mass Index (BMI).

2. Patients and Methods

Pre diagnosed 200 patients Mean age = 55±9 years of chronic heart failure were selected for the present investigation. Symptomatic patients (age 17–80 years) with congestive heart failure (grade 1–3 of New York Heart Association classification), of either sex, with an ejection fraction more than 25% and who provided written informed consent were included in study. Patients with a history of myocardial infarction in the previous 2 weeks, uncontrollable hypertension (systolic blood pressure ≥ 180 mm Hg and diastolic blood pressure ≥ 110 mm Hg), severe hepatic/renal insufficiency, or pregnancy or lactating were excluded.

A centre-based cohort study was conducted in “Madhavbaug Ayurvedic Cardiac Rehabilitation Center”, about 100 kilometres from Mumbai city (India). The protocol used in the present investigation was approved by the Institutional Ethical Committee of Madhavbaug. Preintervention clinical status of these

patients was assessed by using six-minute walk test (SMWT in meters) and Stress test (ST in second) to evaluate the exercise tolerance capacity, improvement in grade of symptoms (GOS), improvement in maximum oxygen uptake (VO₂ max), and metabolic equivalents (METs) taken on day 1. The initial readings were noted down. All the 200 subjects were then given two setting of the study procedure-Sampurna Hriday Shuddhikaran (SHS) every day. Heart rate and blood pressure was monitored every day before and after procedure. On the sixth day after completing the study procedure, Six minute walk test and stress test was repeated in all subjects to record exercise tolerance capacity after intervention. All activities were performed by skilled operators and evaluated by two experienced observers blinded to each other’s interpretation.

For exercise and stress Test, the modified Madhavbaug Cardiac Rehabilitation Centre (MCRC) Protocol was used — Total Duration 9 minutes, Speed: 1.6 Km/hr for first minute then speed increased every minute by 1 Km/hr till 5th minute, then speed was kept constant till 9 th minute. Inclination was kept constant of 2 degree till 4th minute then increase 2 degree every minute in 9 minutes.

Sampurna Hriday Shuddhikaran (SHS), A Herbal therapeutic procedure consist of four stages (Fig. 1–4) and takes 90 minutes. Procedure is carried out twice in a day for all consecutive six days by trained & skilled staff. The steps are as follows:

Snehan → Swedan → Hrid Dhara → Basti



Fig. 1 Snehan.



Fig. 2 Swedan.



Fig. 3 Hrid dhara.



Fig. 4 Bast.

Snehan: consist of sesame (Til) oil centripetal massage in strokes directed towards the heart, sesame oil is known antioxidant. Procedure helps in increasing venous return. Swedan: is thermal therapy to reduce salt and water retention through profuse seating. Here patients lie down in a closed wooden box with his neck outside and medicated steam is

passed inside the box. Hrid dhara: is a procedure where in warm herbal decoction is concentrated drop by drop constantly from certain high, which helps to reduce spasm of intercostal muscles and improves local blood supply by vasodilatation. Final stages Basti: here enema is given with Terminalia arjuna decoction. T. arjuna is a herbal medicine which helps in increasing force of contraction of heart muscles.

Sesame oil and Terminalia arjuna bark herbal decoction was used for the treatment and was administered to the patients by rectal route, i.e., as an enema.

For decoction, 5 gm of dried bark powder of T. Arjuna, 80 ml of saline water was added and the mixture was boiled till 1/4 of water remains giving rise to 20 ml used single dose. For Enema, 25 gm of powder in 400 ml water was boiled to evaporate water upto 100 ml.

Pre and Post intervention exercise tolerance data was assessed and compared, SPSS version 16:00 was used for data analysis. Statistical tools like Mean, SD, Pairedt' test, Pearson correlation coefficient was used.

3. Results

Table 1 Shows Improvement in 6 minute walking test, stress test, METS and VO2 max.

Table 1 6 minute walking test, stress test, METS and VO2 max.

Improvement	Mean	N	Std. Deviation
Six Minute Walk (in meters)	70.6	200	73.27
Stress test result (in seconds)	132.10	200	85.72
Metabolic Equivalentents	2.114	200	1.9
VO2 Max (Liters/Min)	3.10	200	3.4

4. Discussion

A total of 200 patients were evaluated. Mean age = 55±9 years; mean BMI = 24.5±3 kg/m²; pre-existing diabetes mellitus on treatment = 40%; and past history of coronary angiography or bypass = 7%.

The mean improvement in exercise tolerance as measured by 6MWT and ST postintervention was 70.6

m in 6 min and 132.1 ± 85.4 s in 9 min ($p = 0.03$), respectively. The corresponding improvement in VO_2 max and METs was 3.1 ± 3.44 L/min and 2.23 ± 1.9 METs. Patient symptoms also improved. Vital parameters were stable. No significant adverse events were seen in any patient.

The relation between gender and improvement in mean of 6 MWT ($P = 0.26$), ST ($P = 0.56$) and METS (0.58) was not statistically significant. Similarly the correlation between Age and improvement in Mean 6MWT ($r = 0.03$), ST ($r = 0.03$), a (0.07) was not statistically significant. The correlation between BMI and improvement in Mean 6MWT ($r = 0.1$), ST ($r = 0.01$) and METS ($r = 0.1$) was also not statistically significant.

It is well studied that exercise training and daily physical activities are essential for improving a cardiac patient physical fitness. Supervised cardiac exercise for 3 to 6 month generally is supported to increase patient peak of oxygen uptake by 11% to 36% with greatest improvement in most de-conditioned individuals [4, 5]. In the present investigation we propose that the SHS herbal treatment model with modified fitness training may help in oxygen uptake and reduced sub-maximal heart rate, systolic blood pressure and RPP. However, the detailed biophysical and biochemical mechanisms yet to be identify. Another study mentions that cardiac effort tolerance improved by 121 seconds measured by stress test with bruce protocol after one month of PTCA [6].

In present study after SHS therapy with MCRC protocol on stress test gives improvement in cardiac effort tolerance of 132.1 seconds on sixth day.

From above discussion we can conclude that Sampurna Hriday Shuddhikaran (SHS) model is very much effective in improving the exercise tolerance of Chronic Heart Failure patients and this improvement is independent of Age, Sex and BMI of the study participants.

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