

Effect of Heartfulness Meditation on Quality Of Life, Heart Rate and Blood Pressure in Patients with Coronary Artery Disease.

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Abstract

Objective: The present study investigates the effect of Heartfulness meditation on quality of life, Heart rate and blood pressure control in patients with coronary artery disease.

Methodology: The study conducted on CAD patients of various age groups, Variations in heart rate, systolic blood pressure and quality of life scale (SF12) is recorded before and after a 30-minute Heartfulness meditation session for 3months and analyzed statistically.

Results: Meditation treatment show significant improvements in quality of life, heart rate reduction, and blood pressure control ($p < 0.001^*$) in patients with coronary artery disease.

Conclusion: Heartfulness meditation had a positive effect on sympatho vagal balance. Meditation produces relaxation response moderating sympathetic and parasympathetic activities and favorably regulates basic vital parameters.

Keywords: Heartfulness meditation, quality of life, heart rate, blood pressure, coronary artery disease(CAD)

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I. Introduction

Coronary artery disease (CAD) is a major cause of mortality and morbidity all over the world. According to a report of World Health Organization (WHO) in 2005, cardiovascular disease (CVD) caused 17.5 million deaths that occurred worldwide[1]. During the past 50 years, many studies have established a correlation between psychological risk factors (anxiety, depression, and hostility) and CHD[2]. While cardiovascular disease cause significant stress[3]. chronic stressors such as anxiety and depression are themselves independent risk factors for cardiovascular morbidity and mortality[4,5]. Chronic stress can negatively affect not only quality of life, but also physiological parameters such as respiration rate, heart rate, blood pressure, inflammatory markers and brain activity [6].

Quality of life defined as the degree to which an individual is healthy, comfortable, and able to participate in or enjoy life events .[7] It includes both a cognitive component (satisfaction) and an emotional component (happiness)[8]. Quality of life amalgamate aspects of physical, psychologic, and social health[9]. People with chronic disease, dietary restrictions, prolong illness, co-morbidities as well as financial and social constraints all contribute to the decrease in health related quality of life (HRQOL) [8].

In this artifact, we did a intervention study of the trait of Blood pressure, heartrate ,QOL questionnaire in CAD patients of practicing Heartfulness Meditation. Heartfulness is a simple, practical way to relax and meditate on the heart. Several research studies have been conducted showing the positive impact of Heartfulness Meditation in controlling stress, anxiety, vital parameters, heart rate variability, etc.,[10].

Heartfulness spiritual practice is a refined and modified form of Raja Yoga (yoga of mind) [11-13]. Studies have demonstrated the beneficial effects of Heartfulness meditation on physical health,

psychological health, emotional intelligence, sleep ,quality of life ,blood pressure and even on telomere length[14].

Vital sign are indicator of health status as these indicate the effectiveness of body's life sustaining function. Traditional vital signs are body temperature, heartrate, respiratory rate and blood pressure. A change in vital sign is often indicator of progressive disease. Heart rate is an independent predictor of cardiovascular and all-cause mortality in the general population and in patients with cardiovascular disease [15].

The resting heart rate of a human adult is about 70-75 beats perminute(bpm) [16].While an adolescent's is about 80-100 bpm[17]. The reference range in adults is normally between 60 bpm (rates below this are termed bradycardia) and 90 bpm (Rates above this are termed tachycardia). Several epidemiological and physiological studies have shown a significant correlation between HR and blood pressure. HR progressively increases with increasing one fifth of systolic and diastolic BP. However, HR is more strongly associated with systolic BP; this relationship being more apparent among males [18].

Alteration in BP are normal due to lifestyle changes such as exercise, medication, and sleep quality. Prolong increasing BP is a sign of imminent cardiovascular disease. Underlying cause of hypertension are artery stiffness, hyperthyroidism, diabetes, or heart valve problems. It is the most common cause of high blood pressure in people above the age of 60, Even though younger persons are also likely to be affected[19].

When conventional medicine becomes ineffective in improving circulation and optimizing vital parameters, alternate mind-body therapies such as meditation is considered as a complementary treatment option [20].

Another consequence measure of growing interest in medical research is health-related quality of life (HRQOL). HRQOL is defined as a multi-dimensional concept that includes domains related to physical, mental, emotional, and social functioning [21].There are several HRQOL measurement tools that have been developed and used in physical activity-related research[22].Most commonly used tool is SF12 .It is condensed version of SF36,The SF12 yields two summary measures, namely, a Physical Component (PCS QOL) and a Mental component (MCSQOL), which were generated using standardized scoring guidelines[23,24].

II. Materials and methods :

Studydesign-ProspectiveInterventionalstudy

Study subjects:

The present study included 60 patients aged above 40 years diagnosed with Significant coronary artery disease attending the department of cardiology, Sri Venkateswara institute of medical sciences, Tirupati.This study was conducted after the approval of institutional ethical committee(IEC N0.990).

Inclusion criteria

Subjects with age of 40-60 years of both sex were selected, Patients with significant CAD Willing to participate in the study and to continue meditation practice.

Exclusion criteria

Patients with structural heart disease, Patients with LV dysfunction, Current meditation practitioner.

Study design

- Patients enrolled in study are introduced to the 3day Heartfulness meditation process which is being conducted for 40-60 minutes daily on three consecutive days by a certified Heartfulness trainer followed by meditation on their own at home.
- Supervision by myself &Heartfulness trainer once in a month at SVIMS of 3 months duration.
- The vital parameters (Blood pressure, Heart rate) were recorded before and after 3 months of Heartfulness meditation practice by using "Electronic BP monitor"(Dr.Trust comfort 121).
- Data collection instruments, namely, the 12-item Short-Form 12 patient questionnaire used to measure QOL. SF-12 data were used to measure both Physical QOL, i.e. the physical component score (PCS) and Mental QOL, i.e. the mental component score (MCS). Lower mean scores indicate poorer QOL.

Statistical Analysis

Results were analyzed by using SPSS 19.0 version. All the data is analyzed by descriptive statistics using Mean and Standard deviation .Pre and Post intervention data analysis is done using students paired t-test. Statistical significance is considered at $P < 0.000$.

III. Result

Sixty CAD Patients were participated in the study, mean age in the patients was Mean 53.32 years and standard deviation is 7.21Meditation treatment Shows significant improvements in quality of life, heart rate reduction, and blood pressure control. Heart rate, bloodpressure, mental component scale shows highly statisticallysignificance and it doesnot show any significance in physical component score.

Table 1 Pre and Post mean, standard deviation values of SBP, DBP, HR and quality of life score of CAD PATIENTS

Age: (Mean: 53.32 Years and Standard Deviation is 7.21)

Parameter	Duration	Mean	Std. Deviation	t-stat	p-value
SBP	Pre	133.467	10.879	9.104	0.000*
	Post	123.667	5.859		
DBP	Pre	73.433	9.221	4.076	0.000*
	Post	69.267	5.297		
Heart Rate	Pre	84.083	5.585	3.817	0.000*
	Post	82.567	4.315		
Physical Component Scale (PCS) %	Pre	40.540	6.041	0.932	0.355 ^{NS}
	Post	40.875	5.686		
Mental Component Scale (MCS) %	Pre	39.998	6.710	4.111	0.000*
	Post	41.135	5.877		

Figure 1 :Baseline versus follow-up mean values of systolic blood pressure

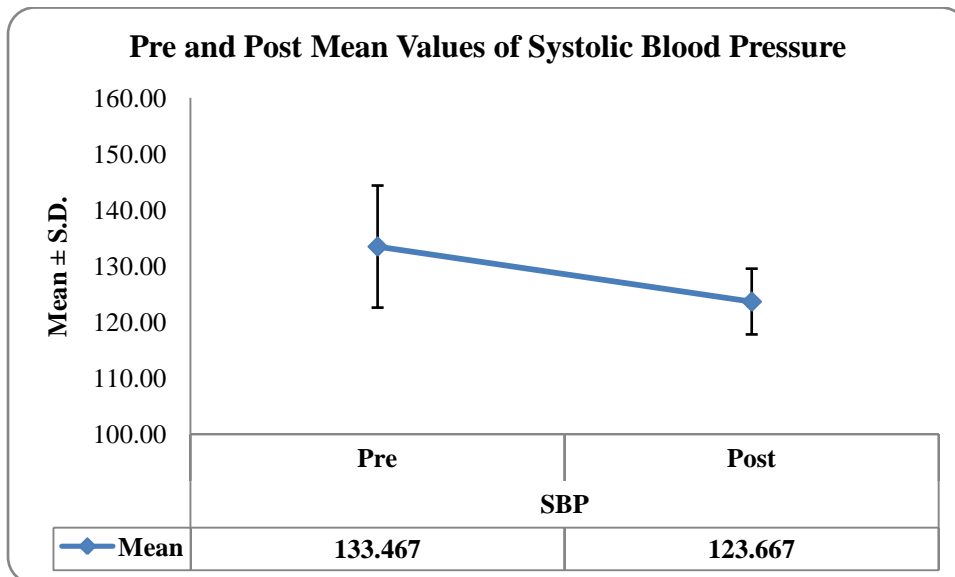


Figure 2 : Baseline versus follow-up mean values of diastolic blood pressure

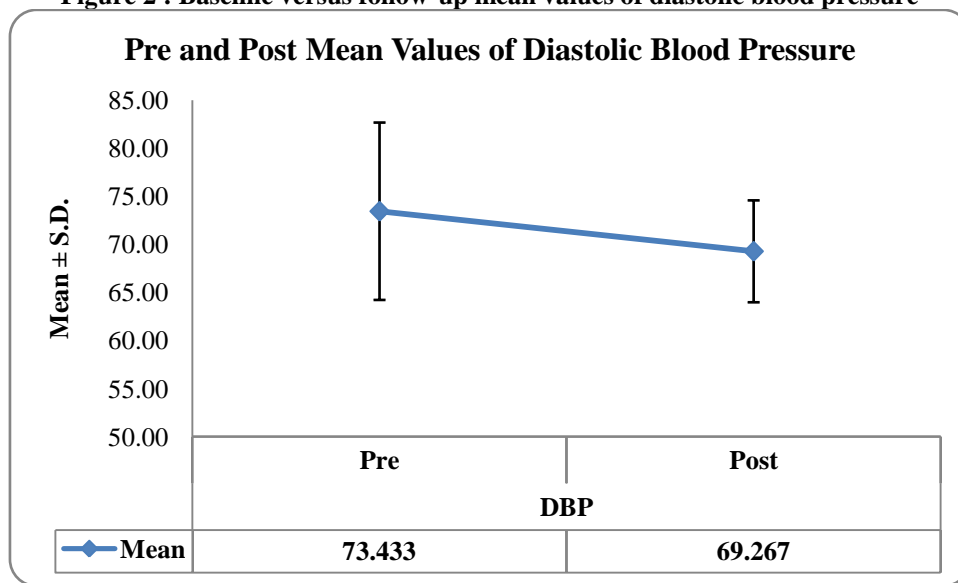


Figure 3 : Baseline versus follow-up mean values of Heart rate

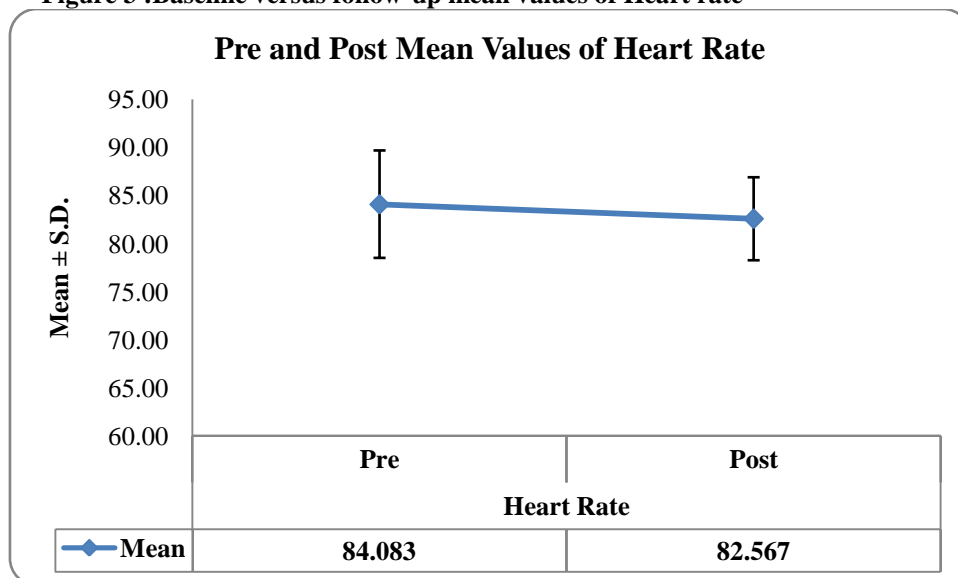
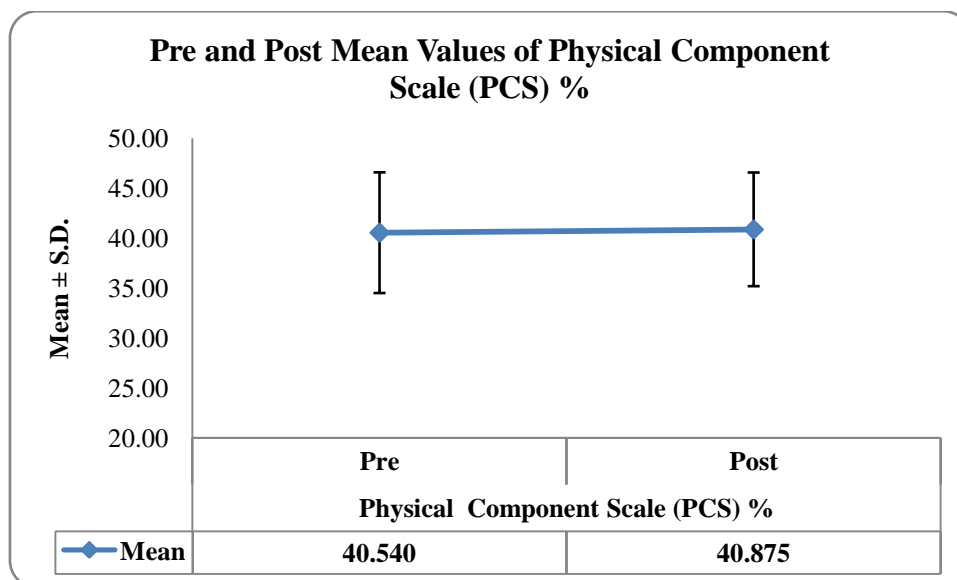


Figure 4 :Baseline versus follow-up mean values of physical component scale



Discussion

In the present study, 3months meditation treatment is associated with significant improvement in quality of life, heart rate and blood pressure control. There is significant improvement in patients who received meditation treatment. This observation indicates that treatment in Heartfulness meditation is associated with enhancement over substantial scope of quality of life .Heartfulness meditation produced significant declines in BP after 3 months for both men (by 9.8 mm Hg SBP and 4.1mm Hg DBP) and women.[Table1] Coronary artery disease remains one of the major cause of mortality and morbidity in India .Risk factors such as LDL,hypertension,diabetes,smoking, stress,behavior pattern have been identified to be strongly associated with CAD.The number of positive effects of meditation has been shown to reduce HR,BP.Regular practice of meditation consequentially helps in the management and prevention of coronary artery disease by reducing risk factors[26,27].

Improvement in the vital parameters in the present study were similar to those which were found in other studies on meditation[28].decline in systolic and diastolic blood pressure and the heart rate may be because of activation of parasympathetic state[29].

Meditation by modifying the state of anxiety,reduce the stress induced sympathetic over activity resulting in lowering of diastolic blood pressure and heart rate.it makes the person relaxed decrease the arterial tone and peripheral resistance[26,30].this could be another reason for fall in BP. Meditation affects the hypothalamus and brings about a decrease in the diastolic and systolic blood pressures through its influence on the vasomotor centre, which reduces the sympathetic tone and the peripheral resistance[30].

Heart rate is a direct indicator of sympathetic drive.Meditation produces relaxation response moderating sympathetic and parasympathetic activities thus regulates heart rate. The data in Table 3 shows heart rate are notably reducedduring meditation when compared to hear rate at rest[31].People who are Practicising Heartfulness meditation for 3months shows a significant reduction in SBP &DBP.It has been observed that meditation leads to reduction in stress and physiological arousal there by having a regulating effect on Autonomic nervous system (ANS) .Regulation of BP reduce the risk of peripheral artery disease, CAD, heart failure[32].

The observation indicates that practice of Heartfulness meditation is associated with betterment over an extensive spectrum of quality of life. Prior clinical studies have reported that meditation was associated with better moods states, quality of life, and reduction in tension and fatigue than exercise [33].

IV. Conclusion

Meditation treatment was associated with significant improvement in quality of life, heart rate and blood pressure control. Heartfulness practice as it may be an effective tool to control blood pressure,

heartrate, stress, anxiety etc. By practicing Heartfulness may also help enable individual to cultivate a quality of empathy, acceptance & individual peace. Therefore there is sufficient evidence that among stress reduction Programme Heartfulness is safe & effective treatment to patients with elevated blood pressure in preventing or treating hypertension and coronary artery disease.

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