



EFFECT OF AN INTEGRATED APPROACH OF YOGA THERAPY ON QUALITY OF LIFE IN CORONARY ARTERY DISEASE PATIENTS

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ABSTRACT

Background & Objectives: Anxiety and stress aggravates ill health in coronary artery disease (CAD) patients and also reduces the efficacy of medical or surgical treatment. Only medical management is not sufficient in these patients, lifestyle modification is very important for such psychosomatic disorder. Overall quality of life deteriorates in these patients. Yoga is one such potential intervention module of alternative and complementary medicine that is emerging as a foundation of mind body medicine which improves their ability to withstand stressful stimuli and thereby their quality of life.

Material and methods: 40 patients of stable CAD were recruited and Quality of life was assessed by using disease specific Seattle angina questionnaire (SAQ) and generic health status 'SF-36' questionnaire before and after 12 weeks of yogic lifestyle intervention during which they continued their conventional medical treatment. Student's paired T-test was applied to assess each domain of both the questionnaires.

Results: The domains covered by SAQ (physical limitation, angina stability, angina frequency, treatment satisfaction & overall quality of life) and domains covered by SF-36 (physical functioning, social functioning, physical impairment, emotional impairment, emotions, vitality, pain and global health) were found to be significantly improved in CAD patients after 12 weeks of yoga therapy.

Conclusions: Overall quality of life improves in CAD patients by adopting a yoga based lifestyle. It can be used as a complimentary or

adjunct therapy along with the conventional therapy for their treatment and rehabilitation.

Key words: Coronary artery disease, Quality of life, Yoga, Lifestyle intervention

INTRODUCTION

Coronary artery disease (CAD) is a major cause of premature mortality and disability in both developing and developed nations^{1,2}. The patients may suffer from angina, shortness of breath, fatigue and dizziness which restricts their physical functioning. Depression, anxiety, anger, and stress are important risk factors besides reduced physical activity, increased plasma cholesterol and hypertension in the pathogenesis of CAD. Recent investigations have provided convincing evidence that the present prevalent outer approach and unhealthy lifestyle behaviours can lead to activation of psychosocial factors like depression, anxiety, anger, hostility, isolation and chronic life stress which can contribute significantly towards development and promotion of CAD³⁻⁸. External pressures exceed the inner strength leading to sympathetic over activity and release of stress hormones which in turn may affect emotional and physical conditions deteriorating the overall quality of life in these patients. The presence of negative emotions, such as feeling of frustration, tension, and sadness were found associated with a 2-fold greater risk of myocardial ischemia during daily activities in patients with stable CAD⁹.

Over the last three decades, progress in coronary artery bypass grafting (CABG) and percutaneous interventions (PCI) has improved the prognosis of

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CAD but has not been able to address the basic issues of etiopathology, providing merely palliative relief at a high cost¹⁰⁻¹³. It is increasingly recognized that key outcome measure for any healthcare intervention for CAD is the change in their quality of life. Health related quality of life (HRQL) has become a growing issue of interest among clinicians to determine how patient perceive that specific intervention for changing their health as patients perspectives can be very different from that of clinician. There has been a rapid and significant growth in the measurement of quality of life (QOL) as an indicator of health outcome in patients with CAD. It is a subjective and multidimensional concept which measures physical, mental & social health, levels of anxiety and personality traits and can also predict mortality and treatment outcomes¹⁴. One of the studies had assessed different factors affecting and deteriorating the health related quality of life in stable CAD patients by using Ferrans and Powers' Quality of Life Index Cardiac Version-IV¹⁵. QOL also deteriorates in stable patients of CAD due to certain physical limitations which further aggravates their emotional stress and anxiety^{15,16}. This vicious cycle deteriorates their physical, emotional as well as social health.

Yogic lifestyle as a foundation of mind & body. Medicine may improve quality of life by reducing anxiety and stress in CAD patients. Yoga postures and pranayama harmonizes spiritual, mental and physical energy, thereby increasing inner strength to lead a stress-free and healthy life. It enhances individual's power of determination to manage and practice positive thoughts, emotions, attitudes, memories and adhere to healthy diet, exercise, sleep, medication and cessation of smoking¹⁷.

Effect of yogic lifestyle intervention on the quality of life in CAD patients has not been studied. Therefore this study was planned to see the effect of an integrated yoga regimen on their quality of life.

MATERIALS AND METHODS

Subjects

A total of 40 patients with stable CAD of age group 45-65 years (55.78 ± 8.95) were recruited from the outpatient department (OPD) of Medicine, Guru Teg Bahadur Hospital, Delhi. All the patients were on regular conventional medical therapy. Angiographically proven CAD patients whose condition was stable for the last 2-6 years belonging to middle socioeconomic class were selected as

subjects. Subjects having history of stroke, unstable angina, MI, tuberculosis, diabetes mellitus, renal disease etc. were excluded.

Study Design

This study was conducted in the Cardio-respiratory Lab of the Department of Physiology, University College of Medical Sciences (UCMS), Delhi. The ethical clearance from the ethical committee of the institution was obtained before starting the study. All the subjects underwent a thorough physical and clinical examination and informed & written consent was obtained after recruitment as a subject in the study. Demographic details like age, height, weight, BMI and other parameters like heart rate, systolic & diastolic blood pressures were also recorded before and after the study.

Assessments

Quality of life (QOL) was assessed in all the subjects with the help of a disease specific questionnaire (SAQ) and a generic health questionnaire (SF-36) before starting the yogic regimen as suggested by Thompson et al¹⁸. Disease specific QOL was assessed by Seattle Angina Questionnaire (SAQ) which is psychometrically designed to assess the functional status of patients with angina. It consists of 19 questions that quantify five clinically relevant domains: physical limitation, anginal stability, anginal frequency, treatment satisfaction, and disease perception/quality of life. Each domain of these questionnaires was scored separately on a scale from 0-100 with 0 being the worst and 100 the best possible score.

Generic health status was assessed by Short Form (SF-36) questionnaire which consists of eight subscales covering the dimensions of physical functioning, social functioning, physical impairment, mental health, emotions, vitality, pain and global health. Again each domain was scored separately on a scale from 0-100 with 0 being the worst and 100 the best possible score. Each questionnaire has its own particular strengths and weaknesses. SF-36 in conjunction with SAQ may help in predicting mortality; morbidity and unplanned hospital admission in CAD patients.

Intervention

All the subjects performed yoga asanas and pranayamas daily for 60 minutes (6 days/week) under the supervision of a yoga instructor in the

Yoga Lab of the Physiology department. This was followed by lectures and group discussions. These sessions were aimed at understanding the need for lifestyle change, weight management and stress and anxiety management Their diet was also modified and protein rich pulses, green vegetables, juicy fruits and very less fat were included as per recommended by the dietician. They continued their prescribed medical treatment as before.

Total duration of yoga regimen followed by CAD patients was 60 minutes.

It consisted of selected asanas, relaxation techniques & pranayama Asanas, deep breathing techniques & relaxation techniques : 35mins

Deep breathing techniques:

1. hand stretch breathing (hand in & out)
2. Tadasana breathing
3. Padsanchalana breathing

Standing series:

1. Katichakrasanas
2. Trikonasana
3. Ardachakrasana

Quick relaxation technique (QRT) in Shavasana 3-5 mins

Supine series :

1. Uttan padasana
2. Pavanmuktasana

Prone series:

1. Bhujangasana
2. Shalabhasana

3. Bhamari = 5mins
4. Anulom-Vilom =10 mins (Kriya)
5. Om Uchcharan= 5 mins

Dietary modification included a diet which consists of protein rich pulses, green vegetables, juicy fruits and very less fat as per recommended by the dietician. Counseling sessions were also organized which were aimed at understanding the need for lifestyle change, weight management, and importance of yogic interventions and management of psychosocial stress.

After 12 weeks of following yoga regimen, their QOL was assessed again with the help of above mentioned questionnaires.

Statistical Analysis

All the domains of SAQ and SF-36 before and after the yoga regimen were analyzed by using SPSS-20 software. Student’s paired T test was applied on all the domains of the questionnaires before and after 12 weeks of yogic regimen. P value was derived from two-tailed analysis and less than 0.05 was considered as significant.

RESULTS

This study included 40 stable CAD patients (Age 55.78 ± 8.95 years, BMI 29.2 ± 8.7) of both genders who served their own controls. In the present study almost all the domains of quality of life as assessed by SAQ were found to be improved after following 3 months of yoga regimen in CAD patients (Table-1). Improvement in physical limitation, anginal stability,

Table-1: Domains of SAQ questionnaire in CAD patients before and after 12 weeks of yoga regimen

Domains	Before Yoga (mean ± SD)	After Yoga (mean ± SD)	Significance
Improvement in Physical Limitation	55.786 ± 2.89	64.066 ± 2.45	.029*
Improvement in Angina Frequency	63.100 ± 3.53	71.620 ± 3.49	.078
Improvement in Angina Stability	64.570 ± 4.41	79.430 ± 2.35	.003*
Treatment Satisfaction	46.507 ± 3.25	70.235 ± 2.68	.000*
Quality of Life	60.163 ± 3.04	73.195 ± 2.08	.000*

Deep Relaxation Technique(DRT) in Shavasana 5-7mins

Sitting series:

1. Vakrasana
2. Gomukhasana

Kriya and Pranayama: 25 mins

1. Kapalbhathi Kriya(very slow-strokes)= 3 mins
2. Sukha pranayama= 2 mins

treatment satisfaction and quality of life was statistically significant (p<0.005). Episodes of anginal frequency was also improved i.e., reduced in numbers although not very significant (p=0.078).

Most of the domains of quality of life covered by SF-36 also showed significant improvement after 3 months of practicing yoga regimen. (Table-2)

Table-2: Domains of SF-36 Questionnaire in CAD patients before and after 12 weeks of yoga regimen

Domains	Before Yoga (mean ± SD)	After Yoga (mean ± SD)	Significance
Physical Functioning	20.43 ± 1.97	39.09 ± 3.21	.000*
Physical health improvement	35.00 ± 7.84	46.43 ± 8.22	.942
Emotional problems Improvement	22.46 ± 7.10	40.00 ± 8.28	.348
Energy/ Fatigue improvement	40.54 ± 2.47	62.94 ± 2.63	.000*
Emotional well being	43.00 ± 2.92	62.69 ± 2.74	.000*
Social functioning	47.55 ± 2.66	65.21 ± 2.16	.000*
Pain Improvement	48.67 ± 2.89	66.03 ± 2.69	.000*
General Health improvement	43.14 ± 2.13	59.20 ± 2.15	.00*

Physical, social and emotional functioning as well as general health improved significantly with reduction in pain and fatigue in CAD patients. Physical and emotional problems improvement with a sense of well being and calmness was observed in all the patients.

DISCUSSION

The results of present study indicate that quality of life in CAD patients was significantly improved as assessed by SAQ and SF-36 questionnaires before and after 12 weeks of integrated yoga therapy. It was demonstrated that anginal stability, treatment satisfaction, general health, physical, social and emotional well being significantly improved and pain and fatigue were significantly reduced in these in patients after yogic lifestyle intervention.

Yogic lifestyle intervention can down regulate the hypothalamic-pituitary-adrenal axis, which in turn can reduce sympathetic activity thereby reduces stress and anxiety which are known to aggravate the severity of CAD. Extreme fluctuations in sympathetic and parasympathetic can be suppressed by practicing yoga regularly.¹⁹ Yoga practices inhibit the hypothalamic and amygdaloidal areas responsible for fear, aggressiveness and rage and stimulate the rewarding pleasure centers in the median forebrain and other areas leading to a state of bliss and pleasure. This inhibition results in lowering anxiety, heart rate, respiratory rate, blood pressure and cardiac output in CAD patients^{20,21}. Consistent yoga practice improves depression and lead to a significant increase in serotonin levels coupled with decrease in the levels of monoamine oxidase, an enzyme that breaks down cortisol. This decreases the toxic effects of cortisol on the coronary artery

endothelium & thereby decreases the plaque formation^{22,23}.

The lifestyle intervention studies in small number of CAD patients have already documented a decrease in frequency of angina and heart attacks and regression of coronary blockages after dietary modifications, physical exercise and stress relaxation techniques²⁴⁻²⁶. Highly significant regression in coronary stenosis and psychological parameters like anxiety, depression, anger scores decreased and sense of well being improved²⁷. Patient's perspective about their quality of life was not assessed in these studies. Peric et al. found a significant relationship between severity of angina and quality of life (QOL) in CAD patients²⁸. A recent study by Lakkireddy et al has documented that yoga training reduced symptomatic atrial fibrillation episodes and improves arrhythmia burden, anxiety, depression and quality of life²⁹.

The findings of our study depict that 3 months of yoga therapy significantly improved almost all the domains of their QOL as assessed by SAQ and SF-36 which are reliable and validated tools to measure different dimensions of physical, mental and social health in CAD patients. QOL has now become a concerned topic among patients, their relatives as well as in healthcare professionals. Nowadays modern treatments focus not only on improvement in life expectancy, symptoms and functional status but also QOL. Patient's perspective towards any intervention is gaining importance and popularity.

CAD is widely recognized as a lifestyle disease, hence its management should also be lifestyle modification and focus should be on stress management in order to reduce the burden of the

disease. Reducing anxiety and stress in these patients may not only improves their quality of life but also improve the treatment efficacy. This study provides a good evidence for improvement in quality of life in CAD patients after yogic lifestyle modification. In the present study daily supervised 6 days/week sessions of yoga and pranayama by instructors were carried out so the patient compliance was taken care of. Moreover 2 questionnaires disease specific (SAQ) and general health (SF-36) were used and all the domains of quality of life were assessed. So besides seeing the effect of yoga progress of angina and treatment satisfaction its effect on emotional, social, physical well being and pain status was also seen. In our study emotional and social domain also improved significantly.

Literature is still very scanty where quality of life is assessed after yoga in CAD patients. Yogic lifestyle intervention as a component of complimentary and alternative medicine can thus be combined with the conventional medicine to get optimum results. Overall quality of life can be improved after yoga therapy and complications can be prevented in CAD patients by attaining optimal physical and mental conditioning.

CONCLUSIONS

In spite of tremendous advancement in medical technology conventional medicine has proved ineffective in tackling many disorders which have psychosomatic origin. As a non-pharmacological form of treatment, yogic lifestyle intervention can be helpful in CAD patients for their rehabilitation, prevention of complications, subjective well being and improvement in their overall quality of life.

LIMITATIONS OF THE STUDY

Subjects of both the gender were selected as subjects in this study so the effect of yoga regimen o QOL specifically in males and females could not be assessed.

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