Assessment of Yoga Benefits for Better Cardiac Health among the Patients of Coronary Artery Disease and Myocardial Infarction

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Abstract

The practice of “Yoga” is increasingly attracting popularity all over the world because of its many therapeutic properties as well as other benefits such as safety and ease of practicing. There is a growing body of evidence that it has health benefits, particularly for the cardiovascular system. Yet, there is a great deal of confusion around the term “Yoga” in various research because it includes multiple diverse activities. As there are relatively scarce studies documenting the effect of Yoga as a preventative measure for coronary artery diseases and Myocardial Infarction (MI), therefore this study attempts to provide a comprehensive approach by combining recent research studies and randomized clinical trials. The present study uses an electronic database search using various databases like Science Direct, Scopus, PubMed, and Google Scholar to retrieve the relevant records to find the link between Yoga and its beneficial impacts on coronary artery disease and MI. However, the heterogeneity of studies as well as other limitations like sample size and limited randomized clinical trial prevents the generalization of the promising findings that need to be addressed for reaping the practice of Yoga.

Keywords

Cardiovascular Disease, Cardiac Rehabilitation (CR), Coronary Artery Disease (CAD), Myocardial Infarction (MI), Yoga

Imprint


1. INTRODUCTION

Yoga is said to have a wealth of mental and physical techniques that can be utilized to actively support both physical and mental well-being. It is a long-standing practice that dates back to the earliest central Asian civilizations. Its significance can be found in several cultural beliefs from other countries. It developed and flourished as a dynamic way of life and spiritual practice in India. Since high levels of physical activity are crucial for reducing obesity and CVD, the popularity of yoga as a form of exercise suggests that it might be a significant intervention for both primary and secondary CVD prevention [1]–[3].

Globally, “cardiovascular disease (CVD)” is the number one cause of death and disabilities (WHO 2011). CVDs are responsible for around 29.6% of all fatalities worldwide (WHO 2003). Coronary heart disease and stroke each account for 88,000 and 43,000 fatalities, respectively, in the United Kingdom each year (BHF 2012). In the US, cardiovascular disease (CVD) caused 35% of all fatalities in 2010, comparable to 48% in Greece, 15% in Ethiopia, 31% in Denmark, 30% in Costa Rica, 26% in Mexico, 45% in Germany, 32% in Japan, and 38% in China (WHO 2011a). By 2030, CVDs are predicted to cause around 23.6 million deaths. As per the federal data 2015, cardiovascular disease tops the list of the causes of highest mortality in the U.S as illustrated in Figure 1 where the share of heart disease is 23.4%, 22% share of cancer, 5.7% for chronic lower respiratory disease followed by stroke, accidents, diabetes, Alzheimer’s disease, Flu; Pneumonia, kidney-related disease and the least share of suicide [4]. Figure 2 illustrates the prevalence of CVDs as per ethnicity and gender in the U.S. population from 2015-2018 [5]–[8].

A significant contributing factor to CVDs has been identified as the stressors of modern life. Yoga could improve general health, especially cardiac health, in population densities that are subjected to significant psychological stress. A lot of research studies have shown that practicing yoga can greatly decrease the chance of
developing cardiovascular disease (CVD) among those who also smoke, have type 2 diabetes, high blood pressure, and have an aberrant lipid profile [9] - [11].

High levels of exercise have now been demonstrated to be extremely important in reducing diabetes, obesity, and CVD. Yoga therefore may help with the prevention of CVD because some forms, particularly Hatha yoga, are regarded as forms of exercise. Exercise has been proven to be effective when incorporated into primary and secondary prevention and treatment because evidence shows that it can reduce the chance of dying from CVD. Hence, this study aims to review the impacts of yoga on preventing and managing cardiovascular diseases.

2. LITERATURE REVIEW

2.1. Myocardial Infarction

The condition known as “Myocardial infarction (MI),” also termed a “heart attack,” is caused by complete or partial blockage of the blood flow to the myocardium. MI may either be “silent” and remain undetected or it can be a disastrous event that results in hemodynamic deterioration and sudden death. Coronary artery disease stands as the main cause of mortality in the US and is also the main factor in the majority of myocardial infarctions. The myocardium is deprived of oxygen when coronary arteries are blocked. Myocardial necrosis and cell death might occur if the myocard-
dium is continuously deprived of oxygen. In addition to stiffness in the chest, individuals could also complain of difficulty in their shoulder, neck, jaw, or arm. Numerous research studies support the positive effects of yoga practice in the treatment of MI.

An investigation performed by Prabhakaran et al. evaluated the effect of care based on Yoga on the major events of cardiovascular diseases and related conditions using a total of 3,959 patients with acute MI. The primary outcomes of their investigation were self-rated health and the incidence of a major cardiovascular event. The study’s findings demonstrated a considerable improvement in participants receiving Yoga-based treatment. However, there is still a lack in the study as the study was unable to see the statistical power [12].

Chattopadhyay et al. conducted a review of the literature and personal interview with yoga practitioners, CR practitioners, and post-MI patients to systematically recognize and select suitable relaxation exercises, breathing exercises, yoga poses, and lifestyle modifications that could be incorporated into a traditional CR framework. An individual yoga instructor with basic training was hired to administer a four-phase Cardiac rehabilitation (Yoga-CaRe) program. Their findings indicate the progress of a revolutionary Cardiac rehabilitation program based on Yoga, which has the possibility of offering a scaleable CR solution for India as well as a different CR option for the rest of the world [13].

Christa et al. performed a randomized controlled trial with two parallel groups in an Indian tertiary care hospital. They carried out the randomized clinical trial using a total of 79 patients and heart rate variability was used as a measure for analysis. The HRV time domain indices showed no significant between-group variations. Frequency domain indices revealed substantial HF power (absolute) and total power (nu) differences between the yoga group and the control group [14].

2.2. Coronary Artery Disease

Coronary artery disease refers to a condition that involves the major coronary arteries which run parallel to the surface of the heart. The microscopic arteries of the heart muscles are impacted by the coronary microvascular disease, another form of a heart condition. Many women than males have coronary microvascular disease. Depending on the kind, there are several causes of coronary heart disease. The waxy substance cholesterol, which accumulates within the lining of the coronary arteries to create plaque, is a common contributor to coronary artery disease. The major arteries of the heart might either partially or completely get blocked by this accumulation. When the microscopic blood arteries in the heart are not operating correctly, coronary microvascular dysfunction results. A heart-healthy lifestyle can stop the majority of people from developing coronary heart disease.

In a study carried out by Chhajer et al., clinical evaluation was completed using the “Saao safety wheel (SSW)” as a comprehensive tool, and yoga-based lifestyle modification counseling was administered to study subjects. According to the findings of their research, 98% of participants in the study had considerable improvements in their clinical results (BMI, lipid parameters, blood pressure) after strict adherence to lifestyle modification counseling components based on Yoga and the SSW, and cardiac patients had a lower heart attack risk and cardiovascular events [15].

Another research by Fakharirad et al. examined the effects of the combination of rehabilitation and yoga for a total of 8 weeks on cortisol and salivary levels of alpha-amylase in individuals who had had coronary artery bypass grafting. In their study, they used a t-test to carry out the analysis. The results of their study revealed that despite the standalone beneficial effect of rehabilitation when it is combined with Yoga gives an additional and synergistic value that can further help in the prevention of cardiovascular disease [16].

Tillin et al. carried out a clinical trial on the population of 35-80 years in the United Kingdom with a sample size of 40/40 and a mean age of 57.4 ± 3.3/56.9 ± 3.1. In their study, they used Yoga as in treatment group and usual care as a control for a total duration of 3 months. The results of their study revealed no significant improvement caused by Yoga [17].

3. METHODOLOGY

The intensive review study is carried out with the help of an electronic database search using databases such as “Scopus”, “Science Direct”, “PubMed”, “Research Gate, and Google Scholar. A combination of various specific keywords was employed to retrieve the relevant records including Cardiovascular Diseases, CVD Risk factors, Physical exercise, Physical activity, and Yoga. Below is the complete design used to carry out the review study as illustrated in Figure 3.
4. DISCUSSION

There are still more than 610,000 deaths per year that are related to heart disease, notwithstanding the decline in mortality rates over the past few decades. Cardiac rehabilitation is a comprehensive program that combines modification of risk factor, patient education, exercise instruction and stress management that is specifically adapted to the needs of each patient. Because of its mind-body and holistic strategy, to lowering stress, positively altering CV risk factors, and enhancing the overall feeling of individual well-being, yoga is a possibly precious sidearm in the cannon of Cardiac rehabilitation programs. Figure 4 shows a conceptual framework for complete Cardiac rehabilitation that incorporates yoga.

The conscious movement of the body during yoga leads to a state of mental calm, which has immediate physical advantages. A condition of “restful awareness” of the body is achieved by well-executed postures. Skeletal muscles are properly toned with regular and appropriate stretching. Yoga controls and enhances the quality and rhythmicity of breathing since breathing regulation is controlled by both the unconscious and conscious mind. Because breathing is necessary for the diffusion and distribution of oxygen in the body, controlling it enhances health, memory, activities, and life by improving how well tissues are oxygenated.
ing patients and programs through this multifaceted, mind-body discipline, which can seem intimidating and may be influenced by the presence of cardiovascular disease. It is impossible to exaggerate how important this comprehensive approach is to patients and staff, not just as a replacement for exercise. Additionally, the efficacy of this intervention depends on the yoga style and intensity that is chosen, the identification of the instructors, and the particular yoga intervention components such as modifications based on home programming, patient characteristics, dose & delivery. Some of the limitations of Yoga and its studies on cardiovascular health are listed below as illustrated in Figure 6:

- Outcome data is scant
- Small sample size
- Heterogenous nature of Yoga
- No uniform definition
- Short term follow-up
- Limited RCTs

4.1.1. Negative Effects

Yoga, like any kind of therapy, has the potential to have negative side effects, particularly when performed improperly, without proper teaching, or in extreme forms. The most crucial aspect of practicing yoga is picking the proper form and adapting it to each person’s needs and limits; for instance, Hatha yoga should be practiced in certain sequences to avoid causing nausea, vomiting, and stomach pain. If physically demanding yoga techniques are practiced without sufficient supervision, adverse effects on the musculoskeletal system are also conceivable.

Despite these restrictions, the majority of research examining the safety of yoga has shown very low rates of unfavorable outcomes. For example, following neck manipulations during yoga practice, a patient had vertebral artery occlusion. Exercises that bend the neck while standing on the shoulders should be undertaken by patients who have hypertension or CHD to prevent neck arterial damage. Additionally, these patients shouldn’t do inverted poses (shoulder stand and headstand). Exercises that induce pain or strain should be avoided by patients who have heart or lung problems. The two treatments should be used for a complimentary effect, and also most significantly, patients with any disease must not depend on yoga practice in place of traditional clinical practice.

4.1.2. Bias

Numerous studies have incorporated different aspects of lifestyle change, including low-fat diets, low-calorie, smoking cessation programs, and stress management techniques. The impact of lifestyle changes on lipid levels, vascular tone, and general health is well known. It is impossible to determine from this research if yoga practice enhances the results of lifestyle modification. There is also publication bias, where studies that demonstrate a therapeutic benefit are more likely to be submitted for publication and to be accepted than those that demonstrate
no therapeutic benefit. The absence of a proper control group in clinical studies must also be addressed. When doing yoga and meditation, patients are aware of it.

5. CONCLUSION

Yoga is an example of a mind-body practice that combines steady physical movement. Exercises like yoga have shown to be extremely beneficial for both the mind and body which is evident for cardiovascular health. It is possible that doing yoga activates various processes that have positive health effects on the heart and heart conditions. This is demonstrated by the above-discussed literature linked to yoga practice and its beneficial impact on CVD patients. However, to unequivocally demonstrate the benefits of yoga and establish its position in the current CV prevention and CR landscape, large-scale, carefully planned, randomized control trials in a variety of patient populations that assess long-term clinical effects are unquestionably required.

References