



QCVC	Committees	Scientific Activities	Central Hall	General Information	FAC
Thematic Units Arrhythmias and Electrophysiology Basic Research Bioengineering and Medical Informatics Cardiac Surgical Intensive Care Cardiomyopathies Cardiovascular Nursing Cardiovascular Pharmacology Cardiovascular Surgery Chagas Disease Echocardiography Epidemiology and Cardiovascular Prevention Heart Failure Hemodynamics - Cardiovascular Interventions High Blood Pressure Ischemic Heart Disease Nuclear Cardiology Pediatric Cardiology Peripheral and Cerebral Vascular Diseases Sports Cardiology Transdisciplinary Cardiology and Mental Health in Cardiology		<div style="text-align: center;"> <h2>Role of Yoga and Ayurveda in Cardiovascular Disease</h2>  <p>Madanmohan*</p> <p>Department of Physiology, Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER), Pondicherry, India</p> </div> <p>Cardiovascular Disease: World Scenario</p> <p>All over the world, cardiovascular disease imposes a significant morbidity and mortality. Inspite of greatly improved diagnostic and curative cardiology, millions die of heart disease every year. Although US health professionals and cardiologists do follow healthier lifestyle than general adult population, the incidence of higher BMI and obesity (8%), dyslipidemia (28%), hypertension (14%) and coronary events (4%) among them is a matter of concern [Abuissa et al. Am J Cardiol, 97: 1093, 2006]. In India, heart disease was relatively uncommon 50 years ago. However, there has been an alarming increase in the incidence of hypertension and coronary artery disease among the affluent sections. It is a matter of concern that relatively young (30-50 y) Indian professionals who are at the peak of their career and productivity become victims of angina. The most important cause is stress and strain of "modern" life characterized by competition, great speed and greater greed. Other causes are i) change in family structure leaving no cushion for one's day to day problems ii) opting for time-saving high fat, high calorie, nutrient-poor junk food iii) sedentary lifestyle, increase in automobile use and lack of physical exercise and iv) increase in elderly population.</p> <p>Hypertension is very common among intellectual and ambitious persons who are high up the professional / social ladder. In industrialised countries, upto 25% adults have diastolic pressure > 90 mmHg. In India, about 7% urban adults and about 4% rural adults are hypertensive. The incidence of coronary artery disease, cerebrovascular events and end-stage renal disease is increasing. Coronary artery disease alone accounts for about 30% deaths in men and is the single most frequent cause of deaths in men under 65 years.</p> <p>Strengths and Limitations of Modern Medicine</p> <p>Good health and freedom from disease is the greatest achievement, a blessing indeed and modern medicine, yoga as well as ayurveda aim at it. All these three systems have sound scientific basis and universal outlook. They are complementary and bound to come together. It is gratifying that yoga has started using modern technology and scientific methods while science has started studying the effects of yoga techniques. Modern medicine is based on observation and rational analysis and is objective in its essence. On the other hand subjective experiences, intuitive wisdom and creative illumination are the essence of yoga. The recent advances of modern allopathic medicine are awesome. Powerful drugs have conquered many infections and decimated epidemics. State of the art diagnostic techniques and advances in surgical procedures, molecular biology and genetic engineering are commendable. However, it primarily depends on drugs which have many harmful side effects. Over-treatment with drugs can have serious consequences. It does not have full answers for many chronic and degenerative diseases whose incidence is increasing rapidly. Many hypertensive and heart patients have to take life-long treatment using drugs that are not only expensive, but have many undesirable side effects.</p> <p>It needs to be emphasized that allopathy does not have all the answers and has its own limitations. Despite spectacular advances, it has not been able to deliver health care to large segments of population, especially in developing countries like India. Our national and international goal of "Health for all by 2000 AD" has remained a pipe-dream. High technology and expensive medicare mean low coverage as escalating diagnostic and curative costs render modern medicare beyond the reach of majority of our citizens. Yesterday's "wonder drugs" are being replaced by today's more powerful and "safer" drugs and this process continues. Resistance to antibacterial drugs, viral infections and autoimmune disorders remain problem areas. Allopathy is far from effective in chronic degenerative, old age and lifestyle disorders which are the bane of modern society.</p>			

It is clear that there is a pressing need for promoting yoga and ayurveda as complementary systems to augment modern medicare. They are natural allies and their coming together is inevitable and long overdue. Their full cooperation and ultimate merger will give us a more effective and enlightened health science that will be a boon to humanity. Popularisation of yoga and ayurveda will give a big boost to public health. As a result, there will be a great relief to our under-staffed, fund-starved and over-burdened public health delivery system. To achieve this beautiful goal, what we need is political and administrative will and affirmative action by health professionals.

Yoga and Ayurveda: an Introduction

Recently, there has been an increased awareness and interest in health and natural remedies among the general public as well as scientific community. The scientific – spiritual discipline of yoga is an effective and time-tested method for improving our health as well as prevention and management of diseases, especially chronic psychosomatic disorders. The first book of humankind, Rigveda, [5:81:1] mentions about yogic meditation by the wise. Yajurveda, [11:14] exhorts us to practice yoga for enhancing mental health, physical strength and prosperity. Upanishads are replete with yogic concepts. Lord Krishna is called as Yogeshwar (Lord of Yoga) and in 700 verses of his Bhagavadgita, the term yoga occurs 105 times. In addition, yoga related terms like pranayam, meditation and samadhi occur repeatedly in Bhagavadgita. In unequivocal terms, Yogeshwar Krishna emphasizes the superiority of a yogi [Bhagavadgita, 6: 46]. Patanjali (about 200 BC) codified the ancient marvel of yoga as ashtanga (8-limbed) yoga which is one of the six schools of Indian philosophy and is known as Yoga Darshan. More recently, modern research has established the scientific basis of yogic techniques and yoga has gained international acclaim and acceptance. Yoga has a sound and practical philosophy, scientific basis and universal, non-sectarian approach. It is a physical-mental-spiritual discipline for improving overall health and achieving union and harmony between our body, mind and soul. Yoga means union. The ultimate goal of yoga is union of our individual consciousness with the Universal Divine Consciousness in a superconscious state known as samadhi.

Modern medicine is materialistic and concerned primarily with our body. Drugs are the cornerstone of its management. In contrast, yoga is a holistic system for the integrated development of our physical, mental as well as spiritual aspects. Practice of yoga disciplines, strengthens, quietens and relaxes our body and mind. For prevention as well as management of stress and stress disorders and for achieving psychosomatic relaxation, there is no system as effective and far reaching as yoga. In contrast to negative side effects of drugs, yoga has positive, beneficial “side effects” in terms of improvement of our psychosomatic health.

Ayuh means life, Veda means knowledge and ayurveda means knowledge or science of life. Ayurveda, which is being practised in India for thousands of years is the world's first well organized health science that has sound scientific and philosophical basis. Its classical texts like Sushrut Samhita (600 BC) and Charak Samhita (100 AD) are a great source of information about holistic health, herbs, diseases and surgical treatment. Like yoga, ayurveda derives its origin to the hoary Vedas. Hence, it is one of the sub-Vedas (upa-Veda). Vedas describe prayer verses for energetic life of hundred years and beyond, with all the senses in perfect condition [Yajur Veda, 36:24]. For this, one should live a joyful life free from tensions and worries [Yajur Veda, 3:62]. The emphasis is on natural lifestyle, contact with elements of nature, life-enhancing rays from the rising sun, agnihotra (or homa, in which herbs and other items are offered to fire along with chanting of Vedic verses), use of health-enhancing herbs and living a divine life [Yajur Veda, 36:10; Atharva Veda, 9:8:22]. Vedic rishis lived such a nature-centered lifestyle based on the principles of yoga and ayurveda. Mantra chanting and noble actions purify and strengthen our mind and inner self. The result is improved psychosomatic health and natural healing.

Yoga and Cardiovascular Disease

The ancient marvel of yoga is the priceless gift of India to the world. Yoga is beneficial in health as well as disease as it is holistic and has promotive, preventive as well as curative potential. Our body, mind and spirit are intricately interrelated and constantly influence one another. The holistic science of yoga has been designed to have subtle effect on our whole being, body, mind as well as spirit. The all-pervasive stress and stress-induced disorders like hypertension and angina are fast growing epidemics and bane of “modern” society. The holistic science of yoga is the best method for prevention as well as management of stress and stress-induced disorders. The psychophysiological responses to yoga are opposite to the stress response. Shavasan, yoganidra, meditation and slow, rhythmic pranayam breathing are very effective in calming the mind and promoting psychosomatic health. Cardiac patients are sensitive and reactive. Yoga relaxation techniques calm the mind and make one emotionally balanced. Consequently, minor disturbances do not cause emotional upsets and cardiovascular problems.

Throughout the world, hypertension is a common condition and many patients are on life-long medication as a way of life. Drugs are expensive and have many adverse side effects. Hence, non-drug management like yoga should be the first choice. If diagnosed early, majority of the cases of essential hypertension can be managed effectively by yoga alone. In more advanced cases, yoga can decrease drug dosage and improve the overall quality of life. Besides being inexpensive, safe and

effective, yoga improves overall health and can be combined with allopathic or ayurvedic medication. For best results, yogic lifestyle should be adopted early in life as it has been demonstrated that atherosclerotic plaques in coronary arteries form early in life. Moreover, in a recent study, we have demonstrated that the levels of total and LDL cholesterol are higher in prehypertensive as compared to normotensive subjects [Pavithran et al. Indian J Physiol Pharmacol, 51:96, 2007]. Hence, yogic relaxation and yogic diet should be adopted early in life to prevent progression of the condition and development of hypertension. The effectiveness of yoga in the management of hypertension has been demonstrated from our laboratories [Vijayalakshmi et al. Indian J Physiol Pharmacol, 48:59, 2004] and also by earlier workers [Datey et al. Angiology, 20:325, 1969; Patel and North. The Lancet, 2:93, 1975]. Hence, it is recommended that yogic relaxation techniques should be adopted as the first line of treatment for prehypertension, borderline hypertension and mild hypertension. Yoga has therapeutic potential in other conditions also. In an interesting study, we have recently demonstrated that yoga relaxation training is beneficial in patients with benign ventricular ectopies [Ravindra et al. Int J Cardiol, 108:124, 2005].

Therapeutic effect of yoga may be due to i) management of stress ii) improvement of cardiorespiratory function and overall fitness and iii) modulation of autonomic function. Stress is an important causative factor in cardiovascular diseases like hypertension and angina. In an interesting work from our laboratories, we have demonstrated that subjects trained in yoga can achieve a state of deep psychosomatic relaxation associated with highly significant decrease in oxygen consumption within five minutes of practising savitri pranayam (a slow, rhythmic and deep breathing) and shavasana [Madanmohan et al. The Yoga review, 3:25,1983]. These findings are consistent with the report that yoga training not only produces a significant decrease in basal anxiety level, but also attenuates the change in anxiety score in stressful situations such as examination [Malathi and Damodaran. Indian J Physiol Pharmacol, 43:218, 1999]. It has also been reported that yoga training helps in development of resistance against stress [Udupa and Singh. JAMA, 220:1365, 1972]. Practice of asans and pranayams results in overall improvement in physical fitness and cardio-respiratory functions. In a study conducted on medical students, we have demonstrated that yoga training of 12 weeks duration produces a significant increase in respiratory pressures, breath holding time and handgrip strength [Madanmohan et al. Indian J Physiol Pharmacol, 36:229,1992]. This indicates an improved physical strength and cardio-respiratory function. We have also reported that after yoga training, exercise-induced stress to cardiovascular system is less severe [Madanmohan et al. Indian J Physiol Pharmacol, 48:461, 2004]. Yoga training promotes emotional and physiological balance. In an interesting study, it was found that a brief (15 min) yoga based relaxation training normalizes the function of autonomic nervous system by deviating both sympathetic and parasympathetic indices towards more "normal" middle region of the reference values [Toivanen et al. J Psychophysiol, 8:11,1994]. These studies show that yoga has a great potential to improve our physiological functions, psychosomatic health and overall performance.

Ayurveda and its Role in Health and Disease

Drugs have traditionally been the cornerstone of western allopathic medicine. The primary concern of allopathy is patient and his disease, drugs and other modes of treatment. On the other hand, ayurveda, which is a rich store house of health wisdom and herbs, has traditionally been holistic in its approach. The centre of its study and research is the whole human being, i.e. his physical body made of five elements of nature (pancha-bhoot), senses, mind and soul [Charak Samhita, Su, 1:42]. Soul, an entity different from matter, is also called as atma or purush. The concept of yoga and ayurveda that our personality includes the existence beyond our gross physical body is supported by modern parapsychology. Cure of physical ailments is not the primary goal of ayurveda. Charak gives the two main goals of ayurveda as i) protection of health and promotion of vitality of a healthy person and ii) cure of disease of a patient [Charak Samhita, Su, 30:26]. A distinctive feature of ayurveda is that it recognizes differences in the nature of our physical bodies (prakriti) and does not treat an organ / system in isolation. Its aim is not to discover bacteria for a disease and then drugs for their annihilation. Being concerned with our total health and welfare, ayurveda is called as holy science [Charak Samhita, Su, 1: 43].

According to ayurveda [Charak Samhita, Su, 11:35], the three pillars of healthy and long life are i) ahar, i.e. proper diet ii) vihar, i.e. proper activities and iii) brahmacharya, i.e. divine lifestyle and control of sexuality. A person whose lifestyle is based on these principles and is truthful, liberal, forgiving and serves noble persons will never be sick [Ashtanga Samgraha, Su, 4:46]. On the other hand, violation of these principles is the root cause of disease. In order to remain healthy, one must remain busy in good deeds based on noble intention. Ayurveda gives importance to brahmacharya which is usually translated as celibacy. Brahmacharya is not just celibacy. Its literal meaning is living a divine life for which control of sensuality and sexuality and right use of creative power are essential. Diet and fasting are fundamental in naturopathy. Ayurveda also considers improper and unnatural food habits as important factor in causation of disease. Undigested, junk food and accumulated wastes are considered toxic as they produce changes in blood, lymph and other body fluids resulting in imbalance of elements [Charak Samhita, Su, 9: 4,5]. With regulated diet, many diseases can be prevented and cured and without that, drugs can not give a real / lasting cure. Ideal diet according to ayurveda should be i) nutritionally balanced and life-giving ii) pleasing to senses iii) easily digested iv) fresh and natural, v) obtained, prepared, served and eaten with a pure and calm mind and vi) taken in moderation. Such a diet is called as "satvik diet" and is essential for yogic discipline. Pleasantly agreeable and easily digestible diet satisfies our senses and nourishes our body. Such a diet is also heart-healthy. For heart patients, ayurveda recommends appetising herbs like ginger.

Ayurveda emphasizes that in health, the elements are in balance and harmony (homeostasis) and there is inner joy. In ill health, this harmony is lost. Hence, the purpose of ayurveda is to restore the balance [Charak Samhita, Su, 9:4; Charak Samhita, Vi, 1:5; Sushrut Samhita, Su, 15:48]. A person is considered healthy when he is joyful and at ease with himself. For prevention of diseases and promotion of health, strength and longevity, ayurveda recommends purification of body at least once a year by panchakarma during spring or rainy season [Ashtanga Hridaya, Su, 13:30]. This improves digestion and restores inner balance and homeostasis. Disease can be effectively eradicated by purification, fasting and readily available herbs. However, it is emphasized that weak patients should not be given strong medicines, nor cleansing procedures. Ancient ayurvedic texts have given detailed description of herbs that increase mental power, physical strength, resistance, vitality and performance. Such herbs are called as rasayan. Ajashringi is described as cardi tonic herb and mango and pomegranate are heart-healthy fruits [Charak Samhita, Su, 4:9]. Heart patients are advised to avoid extremes and observe moderation in eating, exertion and sex. They should not stop natural urges like sneeze, urination and defecation.

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