

Yoga as a Health Promotion Lifestyle Tool: A Study on Medical Students from a Tertiary Care Centre

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Abstract

Introduction: Yoga has an important role in prevention and treatment of lifestyle-related diseases. One of the important components of Yoga is Pranayama. Physiologically, the benefits of pranayama can be described by more oxygen availability to all tissues of body by an increase in alveolar ventilation and improvement of respiratory muscle's strength and lung volumes by its regular practice.

Aim of the Study: To find out the beneficial effect of the Yoga in body and mind of the young medical students.

Materials and Methods: A total of 26 medical students between the age of 18-25 years from Shri Ramachandra Bhanj Medical College, Cuttack, Odisha, were taken for the study and the period of study was from June 2016 to December 2016.

Results: The male to female ratio was 16:10. The general feeling of well-being improved a lot. The mental performances such as memorization, sleep quality and duration, and betterment of mood were observed to be improving.

Conclusion: Yoga is one of the most efficient and an integrated technique for mindbody management.

Key words: Lifestyle tool, Non-communicable diseases, Pranayama, Yoga

INTRODUCTION

The word Yoga is derived from the Sanskrit word "to join" or "unity." It is described in spiritual terms as union of the individual consciousness with the universal consciousness. In another term, Yoga is the "union of mind and body" for balancing and harmonizing the physical and mental functions of body. This is done through the practice of physical postures (asana), breathing control (pranayama), and meditation.

Yoga is a way of life, which originated thousands of years ago from India. Patanjali described eight steps or "limbs" of Ashtanga Yoga. Yoga has an important role in prevention and

treatment of lifestyle-related diseases. One of the important components of Yoga is Pranayama. Physiologically, the benefits of pranayama can be described by more oxygen availability to all tissues of body by an increase in alveolar ventilation and improvement of respiratory muscle's strength and lung volumes by its regular practice.

There are five "Ts" of non-communicable diseases (NCDs) which act as risk factors for these diseases. These "Ts" are Tummy, tobacco, tension, trans fats, and life full of sedentary activities. Yoga by its very inherent nature is helpful to make the body active, introspective, and calm. It discourages tobacco and trans fats, thus reducing the risk factors of NCDs. There are enough data that suggest Yoga is effective in cardiovascular diseases (CVD), stroke, diabetes mellitus, mental disorders, etc., The coronary artery disease (CAD) risk in the offspring can also be reduced by doing appropriate Yogasana and avoidance of smoking by expectant mother.

Yoga originated from India thousands of years ago. It has been described in Bhagavad Gita and Patanjali Darshan.^{1,2}

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Bhagavad Gita defines it as lifestyle with consuming appropriate food, doing appropriate exercise, discharging duties properly, going early to bed, and getting up early. All these comprise Yoga and are shot way of remaining healthy without suffering. This definition is comparable to an aphorism quoted by Peter McDonald - there best physicians are: The doctors quite, and doctors' merry man.³

Patanjali is known as the father of modern Yoga. He described Yoga as Yoga Chitta vritti Nirodhah for the positive effects of Yoga on mind in his Yoga sutras. It means "Yoga steadies one's mind". He described Ashtanga Yoga as a tree which comprises eight steps, or "limbs" include "Yama" and "Niyama" (a code of conduct for an ethical lifestyle), "Asana" (physical postures), "Pranayama" (breath control/yogic breathing), "Pratyahara" (withdrawal of the senses from external objects to increase self-awareness), "Dharana" (concentration), "Dhyana" (meditation), and "Samadhi" (oneness with the object of meditation).⁴ Patanjali did not mention about tobacco or smoking because tobacco was unknown and unheard of during that period.

Yoga functioning can be compared with functioning of computer: Yama-software, Niyama software, Asana hardware, Pranayam hardware, Pratyahara software, Dharana software, Dhyana software, and Samadhi software. All limbs of Yoga are complementary to each other.

Yoga has become a popular method of physical and mental well-being and has an important role in the prevention of lifestyle-related diseases. It also has place as an adjuvant with the medicines in treating the chronic diseases related with a lifestyle such as diabetes, CVDs, and asthma. Yoga has been adapted for use in complementary and alternative medicine in Indian as well as western society.

Aim of the Study

The aim of the study was to find out the beneficial effect of the Yoga in body and mind of the young medical students.

MATERIALS AND METHODS

A total of 26 young medical students between the age of 18-25 years from Shri Ramachandra Bhanj Medical College, Cuttack, Odisha, were taken for the study and the period of study was from June 2016 to December 2016.

RESULTS

The male:female ratio was 1.6:1 (Table 1). The improvement of the students on certain factors after 6 months of Yoga was collected and highlighted in Table 2 with percentage

data. The improvement was found by decreasing tension, good health, possible quit of tobacco, decreasing obesity, increasing chest expansion, increasing calmness of mind, increasing quality of sleep, sleep duration, and memorization.

DISCUSSION

Pranayama is of many types such as anuloma viloma, surya bhedan, bhramari, and bhastrika but the core concept of all types is to take a deep (high depth) and slow breath (less rate). It conserves energy and recharges the tired cells. As we all know, 1st 150 ml of air, out of 500 ml tidal volume in each breath is not used for gaseous exchange called as dead space air, by practice of yogic breathing, there is more alveolar ventilation for the same respiratory minute volume and finally more oxygen is available to all tissues of body during Pranayama. Alveolar ventilation is significantly high in pranayama/yogic breathing as compared to normal breathing. Therefore, more oxygen can be extracted and available for tissues during yogic breathing. Better oxygen availability to tissue level is very helpful in reducing the tissue stress and daily wear and tear. Hence, Pranayama can help in the prevention of NDCs. If a person practices pranayama daily (means inspiration with more depth and fewer rates consciously), after a time period, he will develop a habit of slow and deep breathing unconsciously throughout the day. By this way, there will be an increase in availability of oxygen to tissue not only during pranayama but also throughout the day. Thus, daily practice of pranayama may increase the lifespan by keeping tissue more healthy for longer time (we know our rishi-munis who lived long life by practicing pranayama).

Table 1: Sex ratio of the students in the study

| Factors | Number of students |
|---------|--------------------|
| Sex | |
| Male | 16 |
| Female | 10 |

Table 2: Post-Yoga improvement in certain factors

| Factors | Post-Yoga status improvement (%) | |
|------------------------|----------------------------------|-----------|
| | Yes | No |
| Tension (n=22) | 22 (100) | 0 |
| Health (n=20) | 16 (80) | 4 (20) |
| Tobacco quit (n=6) | 6 (100) | 0 |
| Obesity (n=6) | 4 (66.67) | 2 (33.33) |
| Chest expansion (n=26) | 20 | 6 |
| Calmness (n=26) | 26 (100) | 0 |
| Sleep quality (n=26) | 23 | 3 |
| Sleep duration (n=26) | 21 | 5 |
| Memorization (n=26) | 26 (100) | 0 |

Yogic breathing also helps in improvement of respiratory muscle's strength and lung volumes, thus further increasing the availability of oxygen to tissue. It was shown that 2 months the pranayama, yoga breathing and stretching postures are used to increase respiratory stamina, relax the chest muscles, expand the lungs, raise energy levels, and clam the body supporting this study.⁵

Human body is composed of trillions of microscope cells which are the building blocks of body organs and systems. The cells get tired and exhausted after daily wear and tear and a time comes when they die. The dead cells are to be regenerated or replaced so that our vitality is restored. Exercise and Yoga are the most economical and easy method of charging the tired and exhausted cells. It looks anachronistic to think that exercise would energize the tired body. It is something such as charging the mobile phone battery, cameras, or watch routinely when they are discharge completely and rendered useless for any operations. Exercise and Yoga charges the body cells in the same way so that our physical, mental, and spiritual faculty remains active and agile all time and it is an efficient adjuvant for management of NCDs.⁶

There are five "Ts" of NCDs which act as risk factors. These five "Ts" are tummy tobacco, tension, trans fats, and life full of sedentary activities. Major NCDs, which are prevalent in India, are diabetes, hypertension, stroke, cancer, and CAD. Yoga is very helpful to make the body active, energize, and in reducing the risk factors of NCDs. Yoga is for physical, mental, and spiritual health without spending single penny.

Yoga is a way of living associated with several health benefits. The possible contributions of Yoga healthy living have been studies, and many positive correlations have been made. Yogic lifestyle is beneficial for health of almost all organ system of the body. Some important ones are discusses below.

Cardiovascular Benefits

We are all aware that prevalence of CAD, diabetes and other lifestyle-related diseases is increasing in India. Approximately 5.8 million Indians die from heart and lung diseases, stroke, cancer, and diabetes every year. High-level stress, sedentary, and distorted lifestyles are important contribution factors for this increment. Benefits of Yoga in the modification of cardiovascular risk factors and in the rehabilitation of cardiovascular risk factors and in the rehabilitation of the postmyocardial infarction patient are areas well documented.

Pranayama, meditation, ad asana are very helpful for preventions as well as reduction in the complication of

cardiovascular problems. Shavasana has a very beneficial role in reduction of high blood pressure. First to report the beneficial role of Yoga in hypertension was Dr. Datey and Dr. Udupa from India.⁷⁻⁹ Dr. Udupa from Banaras Hindu University observed a statistically significant fall in both mean systolic and diastolic pressure after 6 months of proper practice of Shavasana in hypertensive patients. He also found a significant reduction in needed doses of antihypertensive drugs in Yoga practitioner. In patients with mild hypertension, blood pressure could be controlled with Shavasana only, and no drug was needed in them at all. Sarvangasana has been also shown to be particularly beneficial in preventing and treating hypertension-associated left ventricular hypertrophy and diastolic dysfunction.¹⁰ Both Shavasana and Sarvangasana cause their beneficial effect by increase in parasympathetic activity and attenuation of sympathoadrenal and renin-angiotensin activity. Meta-analysis of 44 randomized controlled trials with a total of 3168 participants revealed evidence of effects of Yoga on reduction of most biological CVD risk factors such as systolic and diastolic blood pressure, heart rate, waist circumference, waist/hip ratio, and cholesterol.¹¹

Meditation has similar effects on the cardiovascular system as that of the beta-blocker drug. It helps patients lower their blood pressure, stress, and anger compared with patients who only attend a health education class. Those practicing meditation also lowered their blood pressure and reported less stress and anger and had greater survival. Slow breathing, as in practice of pranayama, enhances heart rate variability and baroreflex sensitivity by resynchronizing inherent cardiovascular rhythms and helps in prevention as well as in the treatment of CVD; It is also already shown that the practice of yogic postures restores baroreflex sensitivity which is impaired in essential hypertension.¹² Practitioner of Yoga abhors any kind of addiction such as tobacco-related cardiovascular or pulmonary diseases.

It has been observed that the recitation of the holy rosary and Yoga mantras (chanting) slowed respiration to almost up to six breaths per minutes, and enhanced heart rate variability and baroreflex sensitivity.¹³ Yogic practice, through the restoration of baroreceptor sensitivity, progressive attenuation of sympathoadrenal, and renin-angiotensin activity, caused a significant reduction in the blood pressure of patients who participated in Yoga exercise.¹⁴

Lifestyle diseases, participated CAD, have been noted to be the most important cause of the mobility and mortality all over the world. The main causative factors for CAD are: Smoking/tobacco, physical inactivity, faulty diet, hypertension, diabetes, high level of cholesterol, and stress. Lifestyle modifications such as change in smoking/tobacco

habits, control of hypertension, diabetes, and lipid profile are very helpful in prevention of CAD development.¹⁵

Yoga may be helpful in prevention of CAD by reducing stress and producing several cardioprotective effects.¹⁶ In many studies, it has been shown that Yoga exerts cardioprotective effects by lowering blood pressure, body weight, blood sugar, and lipids. Studies also show that Yoga may be useful for prevention and regression of early and advanced coronary atherosclerosis.^{14,17-20} The beneficial role of Yoga in ameliorating blood pressure and its inherent component of negating blood pressure and its inherent component of negating any type of addiction, i.e., no tobacco and no alcohol, provide additional benefits in recovery of stroke patients.

Yoga and diabetes mellitus: Diabetes is fast gaining the status of a potential epidemic in India with more than 65 million diabetic individuals currently diagnosed with the disease. The prevalence of diabetes is predicted to double globally from 171 million in 2000-366 million in 2030 with a maximum increase in India.

Genetic factors and environment factors such as sedentary lifestyle, obesity, physical inactivity, and excess calories intake play an important role in the development of diabetes. Visceral adiposity is associated with insulin resistance and metabolic syndrome by producing tumor necrosis factor- α , interleukin-6 (IL-6), resistin, visfatin, adiponectin, interferon- γ , and many other inflammatory cytokines. Lifestyle modification including increased physical activity and dietary modification weight reduction are important primary prevention strategies for diabetes in high-risk individuals. Yogasana, pranayama, and meditation have been considered as simple and economical therapies which can be used along with drug therapy of diabetes.

Short-term Yoga intervention programs have been shown to be beneficial for reducing the diabetes risk factors. By only 10 days Yoga practice, significant reduction in body weight, body mass index, waist-hip ratio, blood glucose level, median fasting insulin, and IL-6 were observed in a study carried in subject with prediabetes.

Long-term Yoga practice is associated with increased insulin sensitivity and attenuation of the negative relationship between body weight or waist circumference and insulin sensitivity. Various yogic postures have been noted to increase the sensitivity of β cells of the pancreas to the glucose signal. It is also postulated that practice of Yogasana may reduce the overall requirement of oral hypoglycemic drugs.

Yoga and mental disorders: In this era of life full with stress and strain Yoga has proved to be a panacea of several

psychosomatic disorders ranging from CAD to diabetes and cancer including its beneficial role in tobacco cessation and alcohol de-addiction. Yoga shows several beneficial physiological effects related to mental health. Depression is well-recognized to be associated with hypercortisolemia as a result of hyperfunctioning of hypothalamic-pituitary-adrenal axis. High cortisol is also found in increased stress condition. Yoga is effective in both types of disorders, i.e., stress and depression. Decreases in cortisol and increase in neurotrophic factors (BDNF), heart rate variability, and gray matter volume have been reported after Yoga practice.

Yoga is also helpful in maintaining the normal brain health and its proper functioning. A recent study suggested that a 6 weeks concentration, attention, memory, eye-hand coordination, and mental calculation ability, sequential or linear learning, etc.

Cutting CAD risk in offspring at birth: There are several steps which an expectant mother should undertake for the cardiovascular safety of her offspring developing in her womb. There is ample evidence now to prove that parental weight is a risk factor of the development of obesity in children. Weight of mother and father both affect the children body mass. Studies have shown that maternal smoking during pregnancy is associated with overweight and obesity in offspring. Further, high body mass index during early years of life increase CVD risk factors in later life. Therefore, doing appropriate Yogasana and avoidance of smoking by expectant mother can reduce the CAD risk in the offspring. Even if practiced correctly Yogasana's initial two steps that is 'Yama' and 'Niyama', it will be beneficial for mother as well as offspring. Quite realizing its primitive, particularly its intellect sharpening, effect, and preventive potentials Yoga is being popularized in school going children and expectant mothers. Yoga postures, namely, Vakrasana (twisted pose), Parvatasana (mountain pose), Bhadrasana (butterfly pose), and Shavasana (corpse posture) - are being advocated among pregnant mothers. There is a word caution that this should be taught by trained Yoga teachers and not by a novice or merely seeing pictures and practicing thereafter.

Yoga was propounded by ancient Indian ascetics and thinkers, but over the years there are several countries where researchers and practitioners of Yoga accepted and are practicing this science. Although practiced universally, there is a lot of myth surrounding this ancient practice. Some people say that Yoga is specific to Hindu religion, but it is not. Yoga is a scientific discovery of the way of self-transformation for well-being. Yoga is for all people of world in the same as any scientific discovery such as invention of electricity, internet, and all other electronic, and nonelectronic items. It is a science of integrating body,

mind, and soul, Yoga has very important role in prevention and adjuvant treatment of lifestyle-related diseases. Thus to conclude, Yoga is not specific to any religion, community, or country, rather it is for all.

India has rich tradition of healing by different systems of medicine, popularly known as Ayurveda, Yoga, Unani, Siddha, homeopathy, and naturopathy since long. Among these, Ayurveda and Yoga are important ancient heritage to tackle health and illness. The importance of self-discipline, yogic exercise, and herbal remedy in cardiovascular health has attracted the modern medicine scientists and doctors from all over the world for undertaking translational research in this area.

It is, therefore, necessary that MBBS doctors should know the basic principles and approaches of ancient systems of India. This sensitization would help them to prescribe medicines from Ayurveda, Yoga Unani, and Siddha. It will also help his patients in a comprehensive way. To being with, some classes should be introduced to sensitize medical graduates to other Indian system of medicine along with allopathic during their medical training period.

CONCLUSION

Yoga is one of the most efficient and an integrated technique for mindbody management. It is cost-effective and efficient method for the prevention of CVDs if practiced in a holistic way. There is need to evolve uniform strategy models of Yoga for clinical applications to develop easily accessible Yoga therapy services in hospital.

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