Effect of Yoga- Asanas and Pranayama on Diabetic Adults

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Abstract

The aim of the present study was to investigate the effect of Yoga exercises- Asanas and Pranayama on diabetic person. 50 diabetic persons of 50 to 65 years were randomly selected from Faizabad city of Uttar Pradesh. Yoga Asanas and Pranayama were conducted on respondents at government garden Faizabad for eight weeks continuous in the morning hours. Before starting the Asanas and Pranayama blood pressure, blood sugar, and hemoglobin were measured. After eight weeks it was observed that Asanas and Pranayama have reduced adults' blood sugar level, blood pressure and hemoglobin. These changes were observed due to Yoga exercises and it was found at normal level. These observations suggested that Yoga Asanas and Pranayama have a beneficial effect on controlling diabetic symptoms.

Key words- Asanas, Pranayama, Diabetic person.

Introduction:

Our ancient genes and our modern environment have collided. Unless our environment changes, the 'disability epidemic' imperils human existence as we now know it". Globally, as of 2013, an estimated 382 million people had diabetes, with type 2 making up about 90% of the cases (Melmed et. al, 2011). It's incidence is increasing rapidly, and by 2030, this number is estimated to be almost double (Wild et. al, 2004).

India has more diabetics than any other country in the world, according to the International Diabetes Foundation (2010), although more recent data suggest that China has even more (BBC news, 2010). The disease affects more than 50 million Indians - 7.1% of the nation's adults - and kills about 1 million Indians a year (Kleinfield, 2006). The average age at the onset is 42.5 years (IDF, 2010). The high incidence is attributed to a combination of genetic susceptibility plus adoption of a high-calorie, low-activity lifestyle by India's growing middle class (Kleinfield, 2006).

The word yoga means 'union': union of mind, body and spirit - the union between us and the intelligent cosmic spirit of creation- 'the oneness of all things'. Recent scientific studies (Singh, 1990; Harrison et. all, 1999) have shown the beneficial role of yogic exercises in management of asthma. Role of yogic exercises in management of cardiac diseases (Jayosinghe, 2004), diabetes (Malhotra et. all, 2005), chronic pancreatitis' (Sareen & kumah, 2006) , depressive disorders (Sharma et. All, 2005), epilepsy (Rajesh et. All, 2006), osteoarthritis (Ernst, 2006), multiple sclerosis (Pozzilli et. all, 2006), even for tuberculosis (Visweswaraiah & Telles, 2004) and pleural effusion (Prakasamma & Bhaduri, 1984) have been reported. The five principles of yoga are relaxation, exercise (Asanas), pranayama (breathing control), nourishing diet, and

positive thinking and meditation, Pranayama are yogic breathing techniques that increase the capacity of lungs. (Yadav & Das, 2001; Frostell, 1983) help to strengthen the internal organs improve mental control (Sharma et. all, 2005) and deepen your ability to relax (Granath, 2006).

The ancient Indian science yoga is a way of life which includes changes in mental attitude, diet, and the practice of specific techniques such as yoga postures (Asanas), breathing practices (pranayama), and meditation. (Taimini, 1961) Among different yoga techniques, breathing practices (pranayama) can be performed while seated, and are less challenging for people who are physically inactive (Ramdev, 2005). Yoga has proven its efficacy in the improvement of oxidative stress as well as in improving the glycemic status of diabetics through neuroendocrine mechanisms (Yadav et. all, 2005).

Pranayama:

Pranayama means control of life force through the art of breathing (Yogendra, 1965). Pranayama means breath control. In Sanskrit, prana means breath and Ayama means a control. In modern literature on yoga, prana, even in the compound pranayama, has been often interpreted to mean a subtle psyche force or a subtle cosmic element (Kuvalayananda, 1966). Prana means a subtle life force which provides energy to different organs (including mind) and also controls many vital life processes (e.g. circulation, respiration etcetera). Ayama signifies the voluntary effort to control and direct this prana (Geore, 1984).

Yoga-Asanas:

Asana is derived from the verb root “as” which means “to sit”, “to remain”, etc., According to Patanjali, Asana is defined as, “SITHRAM SUKHAM ASANAM”-PYS 11:46 meaning, that position which is comfortable and steady. Therefore asana means, a state of being in which one can remain physically and mentally steady, calm, quiet and comfortable.

Asanas are postures, which contribute to stability and sense of well-being. The stability here refers not merely of the posture but of the mind and the body as a whole. There were originally 84,00,000 Asanas representing 84,00,000 incarnations.

Asanas help in rejuvenating the pancreatic cells, thereby assisting insulin secretion. The muscular movements also help in bringing down the blood sugar levels by increasing the glucose utilization. Asanas induce relaxation, which also plays a key role in the healthy functioning of the internal organs of the body.

Two broad categories of diabetes are designated as type 1 and type 2 diabetes mellitus (DM). Type 1 diabetes is the result of complete or near total insulin deficiency. Type 2 diabetes mellitus is a heterogeneous group of disorder characterized by variable degree of insulin resistance, impaired insulin secretion and increased glucose production and abnormal fat metabolism3. Type 2 DM is more common than type 1 DM.

According to World Health Organization (WHO) at least 366 million people worldwide have diabetes in 2011. This figure will rise to 552 million by 2030.The number of people with type 2 DM is increasing in every country4.

India is called the diabetic capital of the world. Type 2 diabetes mellitus in Indians is

being increasingly seen in younger and less obese persons than in western countries.

Industrialization and improved facilities in our country in the past three decades have changed our lifestyle. There are decreased physical activities, excess food intake with fat dense calories and stress of working. All these factors contribute to increase prevalence of diabetes in our country. Increased longevity also contributes to the increased diabetic prevalence.

About 30% of type 2 diabetes is preventable by changing diet, increasing physical activities and improving the living environment. Yet without effective prevention and control programmers the incidence is likely to continuously rising globally. Now-a-days more stress is given on preventing type 2 diabetes mellitus and its complication by proper diet, exercise and mental relaxation.

On the physical level yoga asana (any posture which is steady and comfortable) are designed to tone, strengthen and align the body. These postures are performed to make the spine supple and healthy and to promote blood flow to all the organs, glands and tissue keeping all bodily systems healthy.

On the mental level yoga uses breathing technique Pranayama (control of prana, i.e. source of energy) and Meditation (dhyana) to quiet, purify and discipline the mind. So yoga is not a religion but a way of living with sound health and peace of mind.

Balaji et. all,(2011) reported that there was significant decrease in fasting and post prandial blood sugar in diabetic patients who underwent three month of yoga and pranayama. Sahay et all, (2007) reported the useful role of yoga in the control of diabetes mellitus. Twenty eight type 2 diabetics and 4 type 1 diabetics were studied for one month. They practiced 4 types of pranayama for 30 minutes followed by shavasana for 15 minutes. Patients developed a sense of well-being within 7 to 10 days, and showed a significant fall in fasting and post-prandial blood glucose values. In 17 patients, the requirement of drugs came down significantly.

Objective: The main objective of the present study was to examine the effect of Yoga exercises- Asanas and Pranayama on diabetic person.

Method

Sample**:** 50 diabetic males of 50 to 65 age range were randomly selected from Faizabad district of Uttar Pradesh. All participants were interviewed about their diabetic symptom.

Measures**:** Physical condition of diabetic male person were assess by qualify medical practitioner.

Designs**:** The pre-test and post- test research design ewer used in this study. Measurement for the variable was taken at in evening (pre-test) and after one month post- test. The data were collected again for all variables.

Tools: The tools used in this study in table-1:

Variables	Methods
Blood glucose	Computerized auto analyzer RANDOX-IMOLA
Hemoglobin	Computerized auto analyzer RANDOX-IMOLA
Blood pressure	Sphygmomanometer and Stethoscope

Procedure:

In this study participants were contacted on telephone, demographic information's were

obtained from them. In the pre-test condition study variables- blood glucose, blood pressure and hemoglobin were measured Asanas and pranayama activities were performed by all participants in the morning for one month period. After one month blood pressure, blood glucose and hemoglobin were measured.

Results:

Yogic Intervention:

Surya namakar, 3-7 turns of each, the pose being maintained for ten seconds adding each turn, every fortnight

Bhujangasana, 3-7 turns of each, the pose being maintained for ten seconds adding one turn each, every fortnight

Vajrasana, ¼ min to 1 min adding ¼ min per day.

Bhastrika- pranayama, 3-5 mins per day

Kapal- bhati, 5-7mins per day

Bhramari, 5 times a day

Variables	Pre-test		Post-test	
	Mean	SD	Mean	SD
Blood glucose	90.85	7.85	76.75	7.30
Hemoglobin	11.76	3.42	13.21	4.35
Blood pressure				
Sistolic	114.25	8.53	105.40	7.54
Diastolic	115.32	8.78	106.40	7.61

Table-2: Mean and SD values of study variable on pre-test and post-test

Table 2 shows that mean and SD values on pre-test of blood pressure, blood glucose and hemoglobin were higher than mean and SD values of post-test. Before post-test respondent were engaged in Yoga exercises like Asanas and Pranayama. These activities reduced their blood pressure and sugar level. The graphic representation of this finding is presented in Fig.1 and 2:

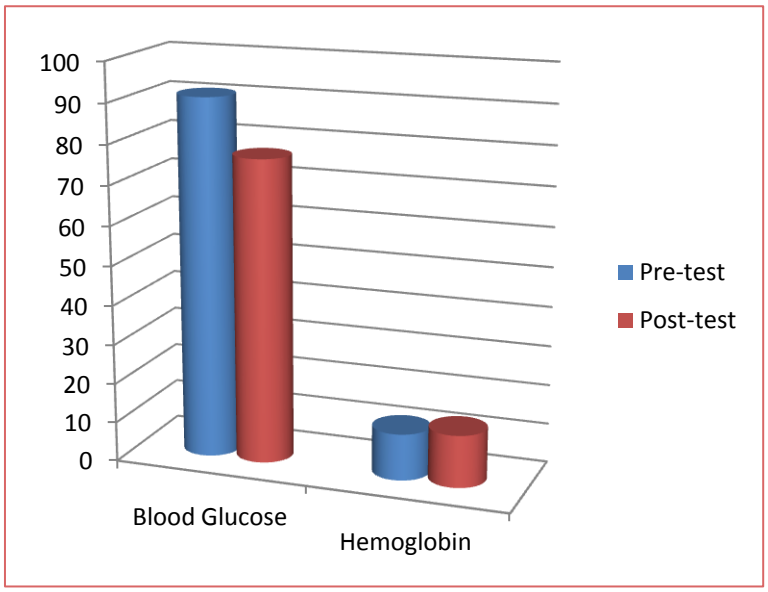

Figure-1: Graphic representation of Blood glucose and Hemoglobin of Diabetic Adults

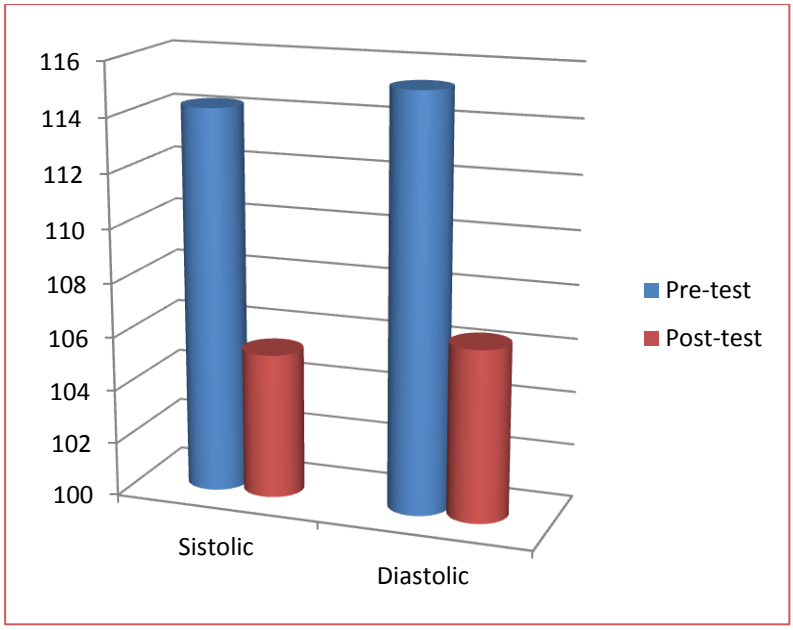

Figure-2: Graphic representation of Blood pressure

Figure 1 and 2 conform the findings of the study. The lines of the graph on both conditions are significantly spreading in proper direction.

Discussion:

It was assumed that there would be significant effect of Yoga- Asanas and pranayama on blood pressure, blood glucose and hemoglobin. As a result of one month of Pranayama and Asanas practice when compared to post-test condition. The results of the study reveal that there is significant reduction in post-test condition. Yogic exercises showed a positive and significant impact on diabetic adults.

In the case of systolic blood pressure, diastolic blood pressure it was found that the reduction level was significant in post-test condition.

Similar study is necessary to observe the efficacy Asanas and Pranayama on different age level and gender. Another suggestion may also be that these variables should be included with other variables and different time intervals with an organized manner.

From the statistical analysis of the results obtained in the present study and their comparison with other published reports, it may be concluded that yoga helps in decreasing blood sugar level and keep the diabetes in control. Kumar K (2012) there is a significant effect of Yogic intervention on serum glucose level on Diabetics. Manjunatha et, al.(2005) carried out a study to examine the hypothesis that yoga- Asanas help in the treatment of diabetes mellitus by releasing insulin from the pancreas.

The observations suggest that the performance of Asanas led to increased sensitivity of the B cells of pancreas to the glucose signal. The increased sensitivity seems to be sustained for long time resulting in a progressive long term effect of Asanas. The study is significant because, it has for the first time attempted to probe the mechanism by which yoga- Asanas

reduce blood sugar. In the present study there was a significant fall in the fasting blood glucose levels in the yoga group. These findings are similar to those reported by Mukherjee et, al. 1989.

In the present study, there was a decrease in glycosylated hemoglobin in the NIDDM patients undergoing Yoga practice. These findings are similar to those reported by articles (Bijlani et, al. 2005) of bibliography. The exact cause of reduction in HbA1c is not known. But the reduction in glycosylated Hb protects the patients from early development of various microvascular and microvascular complications of diabetes mellitus.

All the participants in the yoga group develop a sense of wellbeing without any side effect. So they are self-motivated to continue the yoga practice as a daily routine in their life. Practice of yoga Asanas and pranayama may be helpful in reducing body weight in obese person as a result of which remote complications of diabetes mellitus may be prevented. Further studies may be conducted to prove efficacy of yoga in control of obesity.

It can be concluded that yoga Asanas and pranayama may be used as an adjunct to medical therapy to optimize the biochemical parameters. Yoga therapy also improves the status of diabetics in terms of reduction of drug doses, physical and mental alertness and prevention of complications.

References:

1. Balaji PA, Varne SR, Ali SS. (2011), Effects of Yoga-Pranayama practices on metabolic parameters and anthropometry in Type 2 Diabetes. International Multidisciplinary Research Journal; 1:1-4.
2. Bijlani RL, Vempati RP, Yadav RK et al. A Brief But Comprehensive Lifestyle Education Program Based On Yoga Reduces Risk Factors For Cardiovascular Disease And Diabetes Mellitus. J Altern Complement Med. 2005 Apr;11(2):267-74.
3. China faces 'diabetes epidemic', research suggests. (2010) BBC News. March 25, Available from: URL: http://news.bbc.co.uk/2/hi/asia-pacific/8587032.stm
4. Ernst, E. (2006), Complementary or alternative therapies for osteoarthritis. Nat Clin Pract Rheumatol. 2: 74-80.
5. Frostell C, Pande .IN, Hedenstierna G. (1983), Effects of high - frequency breathing on p ulmonary ventilation and gas exchange. JAppl Physiol. 55; 1854-61.
6. Gale, J. (2010), India's Diabetes Epidemic Cuts down Millions Who Escape Poverty. Bloomberg news. November 7, Available from: URL: http://www.bloomberg.com/news/2010-11-07/india-s-deadly-diabetes-scourge-cuts-down-millions-rising-to-middle-class.html
7. Granath .1, Ingvarsson S, von Thiele U, Lundberg U. (2006), management: a randomized study of cognitive behaves therapy and yoga. Cogn Behav Ther. 35: 3-10.
8. Harrison TW, Oborne J, Wilding PJ. Tattersfield AE. (1999), Randomized placebo controlled trial of beta agonist dose reduction in asthma. Thorax; 54: 98-102.
9. Jayadeva Yogendra, (1965) "Pranayama" Journal of the Yoga Institute Vol. 7, p.111.
10. Jayosinghe SR. (2004), Yoga in cardiac health (a review). Eur J Cardiovasc Prev Rehabil. 11: 369-75.
11. Kleinfield, NR. (2006), Modern Ways Open India's Doors to Diabetes. New York Times. September 13,. Available from: URL: http://www.nytimes.com/2006/09/13/world/asia/13diabetes.html?pagewanted=all&_r=0
12. Kumar K; A Study on the Effect of Yogic intervention on serum glucose level on Diabetics; International Journal of Yoga and Allied Sciences, Vol. 1, No. 1 June 2012. pp 68-73

13. M.M. Geore, (1984), Anatomy and Physiology of Yogic Practices, (Lonavala: Kanchan Prakashan,), p.107.
14. Malhotra V, Singh S, Tandon OP. Sharma SB. (2005), The beneficial effect of yoga in diabetes. Nepal Med Coll J. 70: 145-47.
15. Manjunatha S, Vempati RP, Ghosh D, Bijlani RL. An Investigation into the Acute and Long-term Effects of Selected Yogic Postures on Fasting and Postprandial Glycemia and Insulinemia in Healthy Young Subjects. Indian J Physiol Pharmacol. 2005 Jul-Sep; 49(3):319-24.
16. Mukherjee A, Bandyopadhyay S, Benerjee S, Maity A. The influence of yogic exercise on blood sugar level in normal and diabetic volunteers. Indian J Physiol Allied Sic 1989; 43:105–12.
17. Mukherjee A, Bandyopadhyay S, Benerjee S, Maity A. The influence of yogic exercise on blood sugar level in normal and diabetic volunteers. Indian J Physiol Allied Sci 1989; 43:105–12.
18. Pozzilli C, Sbardelia E, De Giglio L, Tomassini V. (2006), Treatment Of multiple sclerosis -related fatigue: pharmacological and nonpharmacological approaches. Neurol Sci. 27: s297-s299.
19. Prakasamma M, Bhaduri A. (1984), A study of yoga as a nursing intervention in the care of patients with pleural effusion. J AdvNurs. 9: 127-33.
20. Rajesh B, Jayachandran D, Mobandas G, Radhakrishnarl. K. (2006). A pilot study of a yoga meditation protocol for patients with medical refractory epilepsy. JAltern Complement Med. 12:367-71.
21. Ramdev S: (2005), Pranayama: Its' philosophy and practice. Haridwar, India: Divya Prakashan,
22. Sahay BK. (2007), Role of yoga in diabetes. J Assoc Physicians India; 55:121–6.
23. Sareen S, Kumah V. (2006), Yoga for rehabilitation in chronic pancreatitis. Gut, 55: 1051.
24. Sharma VK, Das S, Mondal 5, Goswampi LJ, Gandhi A. (2005), Effect of Sahaj Yoga on depressive disorders. Indian JPhysiol Pharmacol, 49: 462-68.
25. Singh V. (1990), Effect of yogic breathing exercises (pranayama) on airway reactivity in subjects with asthma. Lancet. 335(8702): 1381-83.
26. Taimini IK: (1961). The Science of Yoga. Madras, India: The Theosophical Publishing House,
27. Visweswaraiah NK, Telles S. (2004), Randomized trial of yoga as a complementary therapy for pulmonary tuberculosis. Respirology; 9: 96-101.
28. Wild S, Roglic G, Green A, Sicree R, King H. (2004), Global prevalence of diabetes: Estimates for the year 2000 and projections for 2030. Diabetes Care; 27:1047–53.
29. Yadav RK, Das S. (2001), Effect of yogic practice on pulmonary functions in young females. Indian J Physiol Pharmacol.45: 493-96.
30. Yadav RK, Ray RB, Vempati R, Bijlani RL. (2005), Effect of a comprehensive yoga based life style modification program on lipid peroxidation. Ind J Physiol Pharmacol; 49(3):358-62.