

Therapeutic Effect of Yogic Practices on the Management of Hypertensive Subjects

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Abstract

Background: The modern living life-style is known to produce various physical and psychological stresses resulting in increased blood pressure (BP) and heart rate (HR). The present study was designed to investigate the **Therapeutic Effect of yogic practices on the management of hypertensive subjects** and the possible beneficial effect of yoga on them.

Materials And Method: On the basis of medical officers diagnosis, thirty (N = 32) hypertensives, aged 30-60 years, selected from Haridwar through the method of accidental sampling. These patients were examined with variables viz, systolic and diastolic blood pressure, pulse rate. The subjects were randomly assigned into two groups. The exp. group-I underwent selected yoga practices, control group-II did not participate in any of the treatment stimuli. Yoga imparted in the morning and in the evening with 1 hr/session. day-1 for a total period of 3 Months. Medical treatment comprised drug intake every day for the whole experimental period. In this study “Pre- Post Single group design” was used and *t-test* has been used for statistical analysis.

Results: The result showed a significant changes ($p < 0.01$). The finding reveals that significantly reduced the level of systolic and diastolic blood pressure of the hypertensive patients. Therefore this Research Paper was undertaken to find that both the treatment stimuli (i.e., yoga and drug) were effective in controlling the variables of hypertension.

Conclusion : In conclusion, yoga has been found to decrease blood pressure as well as the levels of oxidative stress in patients with hypertension.

Key words Yoga, Prayer, Pranayam, Primary Hypertension

Introduction:

Hypertension is the most common cardiovascular disease affecting more than one billion people throughout the world. It is a major contributor of stroke, ischemic heart disease, heart failure, renal dysfunction and blindness. It is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India. More than 95% of hypertensives belong to essential type, having no particular cause. By treating hypertension and factors contributing to it, both mortality and morbidity can be reduced. As of 2000, nearly one billion people or 26% of the adult population of

the world had hypertension. (Deepa, T. et al. 2012).¹ It was common in both developed (333 million) and undeveloped (639 million) countries (Kearney PM, 2005).² However rates vary markedly in different regions with rates as low as 3.4% (men) and 6.8% (women) in rural India.

The seventh Joint National Committee on Detection, Evaluation, and treatment of high blood pressure defined hypertension as a systolic blood pressure (SBP) of 140mmHg or greater and diastolic blood pressure (DBP) of 90mmHg or higher. Hypertension is further classified into two groups based on the etiology as it is essential or primary hypertension and

secondary hypertension. Essential hypertension is diagnosed when there is strong family history and no identifiable cause can be found. More than 95% of hypertensive belongs to essential type of unknown aetiology and only few have identifiable cause, belonging to secondary type. (Kearney PM, 2005, JNC VII 2003).³

According to Ayurveda, health is “Prasanna aatmedriya manah swastha ityabidheeyate” (Sushutra 2007).⁴ The Pranayama which is an integral part of Yoga, energizer and balances the different systems of our body and controls the mind and other sense. Now a day’s Pranayama and prayer are considered to be an important part of modern medicine. Yoga is the best lifestyle. Its main aim is to attain the unity of mind, body and spirit through a pranayama (breathing exercises), and meditation. (Roopa BA,2011).⁵Prana (energy) and Ayama(to expand or control) from the word Pranayama. So it is the technique to change or control or expend the energy in the body. (Agrwal, Sarvesh Kumar, 2004).⁶ Training to yoga respiration selectively increases the respiratory sensation, perhaps through its persistent conditioning of the breathing pattern (Florence et al., 2005).⁷Perhaps one of the most powerful tools in yogic practices is the use of the breath to bring our consciousness back in tune with the Divine Cosmic Breath. This cosmic breath is the rhythm of life itself. Yoga breathing, or pranayama, is the science of breath control. Pranayama (breathing exercise), one of the yogic techniques can produce different physiological responses in healthy individuals (Upadhyay et al., 2008).⁸

One of these categories is psychological treatments which include silent prayer, psychotherapy, relaxation and prayer.⁹ In all cultures, prayer plays a vital role in the cure and improvement of patients. Silent prayer or non-verbal prayer was followed by useful physical effects such as decrease in the number of

breathes, heart rate, blood pressure and decrease in the temperature of the body and it also has positive effects on relief of sleeplessness.¹⁰

Objectives of the study

Assessment Of the Effect of Yogic practices (Pranayam & prayer) on Hypertensive patients.

Independent Variable - Pranayam & prayer

Dependent Variable - Primary Hypertension

Null Hypothesis: There is no significant effect of Yogic practices (Pranayam & prayer) on hypertensive patients.

Research Methodology:

Study Procedure:

A total of 32 patients of Primary hypertension of age group 30-60 were randomly selected from the Haridwar through the method of accidental sampling. The reading of SBP and DBP were taken before and after administering of Yogic practices. The Blood Pressure was measured in selected subjects using mercury sphygmomanometer in supine, sitting and in standing positions before starting their.

Research design:

“pre-post single group design” was adopted in this study.

Measurement of blood pressure:

Blood pressure was measured by the auscultatory method in the right arm in supine, sitting and standing positions, using a mercury sphygmomanometer with a cuff of 12cm width. All the subjects were made to rest for at least 10mins before taking the readings. The manometer cuff was snugly tied around the arm with tubing on the medial and the lower side. Systolic blood pressure was recorded to the nearest 2mm of Hg at appearance of first Korotkoff sound, and diastolic blood pressure was recorded to the nearest 2 mm of Hg at the disappearance of Korotkoff sound. Systolic and diastolic

blood pressure was recorded first in supine position, and then the standing position, with cuff tied to the arm. Readings were taken in all three positions and were analyzed.¹¹

Follow-up study:

Patients were followed for one month.

Tools required –

Sphygmomanometer (Instrument of mercury blood pressure meter)

Statistical Analysis –

t-test was used to measure the significant difference between the means of pre-test and post-test.

Result:

Table : Systolic blood pressure (SBP) Diastolic blood pressure (DBP)

Parameter of Blood Pressure	Group	Test	Mean	SD	Sed	Df	t-value	Significance Level
Systolic Pressure (mm.hg)	Control	Pre	145.3	3.70	1.39	30	4.46	P<.01
	Experimental	Post	145.2	3.69				
	Control	Pre	145.0	3.19				
	Experimental	Post	139.1	4.19				
Diastolic Pressure (mm.hg)	Control	Pre	91.7	2.81	1.09	30	7.08	P<.01
	Experimental	Post	92.7	91.7				
	Control	Pre	92.4	2.98				
	Experimental	Post	84	3.34				

Table 1 gives the mean pre and post SBP values as well as the statistical analysis of data for the hypertension patients. The obtained t-value is 4.46, which is significant at 0.01 levels. This shows that the Yogic practices lead to significant decrease in the SBP values of the hypertension patient and gives the mean pre and post DBP values as well as the statistical analysis of data for the hypertension patients. The obtained t-value is 7.08, which is significant at 0.01 levels. This shows that the Yogic practices lead to significant decrease in the DBP values of the hypertension patients. On the above table 1 shows the significance decreases in both SBP and DBP values. So, the null hypothesis is rejected. Yogic practices (Pranayam & prayer) decrease the level of hypertension.

In this study we used Pranayam & prayer) which reduced both systolic and diastolic blood pressure of the hypertension patient. During the follow-up study we observed that though a minimal

rise in blood pressure took place over the 3month period, both the groups showed good control of both systolic and diastolic blood pressures.

Discussion:

In the present study yoga practice for three months by the study group resulted in a reduction in the systolic BP and diastolic BP. The experimental group in this study showed a significant reduction in blood pressure levels both systolic and diastolic after 3 month of yoga practice and the effect was sustained when studied after 3 months of daily yogic practice. This is in agreement with previous clinical trials which reported changes in blood pressure with lifestyle and /or dietary modifications.

Blood pressure is mainly dependant on cardiac output and total peripheral resistance. The possible mechanisms are believed to be sympathetic nervous system over activity and consequent increase in peripheral vascular resistance. In addition,

direct pressure effect by the sympathetic nervous system and catecholamine release from the adrenal medulla may also be involved. (Castillo R.A, et al. 2000).¹² Yogic exercise involves physical, mental and spiritual task in a comprehensive manner. It also brings about the behavioural changes. Yoga in long duration affects on hypothalamus and brings about decrease in the systolic and diastolic BP through its influence on vasomotor centre, which leads to reduction in sympathetic tone and peripheral resistance (Khanamet al., 1996).¹³ Yoga involves pranayama i.e. voluntary alteration of the breathing pattern and scientists working on yoga found increased parasympathetic tone in yoga practitioners especially trained in pranayama (Wenger et al. (1961).¹⁴ Yoga training for two months resulted in a significant decrease in BP after yoga training has also been reported by Ray et al., (1986).¹⁵

Pranayama is best technique for boosting brain because more oxygen gives better brain function. one third of all the oxygen used in our bodies goes directly to the brain Benson and et .al.(2000).¹⁶ During practicing pranayama, all mental-physical disturbances are reduced because oxygen is very important component for body and brain. Increasing the flow of oxygen to brain will accomplish two things. First it will activate areas of brain that are usually inactive from lack of blood. Second, it will slow down the constant die off of brain cells. Our results are consistent with those reported by other studies of pranayama practices on blood pressure i.e. Okonta, et al (2012)¹⁷, Pramanik T. Et. al. (2009)¹⁸, Patil Smita V, et al (2016)¹⁹, Chintamani et al (2015)²⁰ and Bhavanani A.B., et al (2011)²¹, K. Makwana et. al. (1988)²², Joyotsana R. Bharashankar et. al. (2003)²³.

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The findings showed that prayer affects systolic and diastolic blood pressure. These findings are the same as the results of the previous research in this field²⁴ (14). The study by Mullers showed that people who attended church continuously (once a week or more) and prayed, had 1-4 mmHg decrease in their systolic and diastolic blood pressures in comparison to people who attended the church, irregularly²⁵ (15). The results of the research by Bernardy and his colleagues showed that Rosary prayer and Yogamantra decreases the number of breaths (about 6 breaths in a minute), intervals of breath taking, systolic and diastolic blood pressure and improves autonomic cardiovascular rates²⁶ (16). In the medical center of Duke University in northern Carolina in 2001, a descriptive cross-sectional research was performed to determine the relation between religious beliefs and race with 24-hours monitoring the blood pressure of 155 samples of black and white women and men. The findings showed that systolic blood pressure in people with strong beliefs is 6-7 mmHg less than people with weak beliefs²⁷ (14).

Conclusion

The result indicates that after three months of pranayama practice can decrease resting systolic and diastolic blood pressure for primary high blood pressure patients. Due to the Vagal cardiac and pulmonary mechanisms are linked, and improvement in one vagal limb might spill over into the other. Baroreceptor sensitivity can be enhanced significantly by slow breathing (supported by a small reduction in the heart rate observed during slow breathing and by reduction in both systolic and diastolic blood pressure).

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