

Effect of Yoga on Hypertension

Vungarala.Satyanand¹, Bhakthavatsala Reddy², Shaik.Mahaboobvali³,
Dhivya Mohanan⁴, Shaik.Salma⁵, F.J.Nuzhath⁶

¹Professor, Department of Philosophy of Nature Cure, Narayana Yoga Naturopathy Medical College and Hospital, Nellore-524002.(A.P.)India

²Cardiologist, Department of Cardiology, Narayana Medical College & Hospital, Nellore - 524003, A.P. India

³Scientist, Department of Advanced Research Centre, Narayana Medical College & Hospital, Nellore – 524003, A.P. India

⁴Lecturer, Department of philosophy of Nature cure, Narayana Yoga Naturopathy Medical College and Hospital, Nellore-524 002. (A.P.) India, ⁵Lecturer, Department of Yoga, Narayana Yoga Naturopathy Medical College and Hospital, Nellore-524 002. (A.P.) India,

⁶BNYS Final Year Student, Narayana Yoga Naturopathy Medical College and Hospital, Nellore-524002.(A.P.)India

Corresponding author : **Vungarala Satyanand**, Email ID : drsatyanand@gmail.com

ABSTRACT

Yoga is a remedy and highly effective in the treatment of high blood pressure. The present study aimed to evaluate the effectiveness of yoga in the treatment of high blood pressure. 100 subjects with complaints of high blood pressure attending the outpatient department of cardiology of Narayana medical college and hospital, Nellore are recruited into the study and after obtaining informed consent, yoga session was conducted in Narayana Yoga and Naturopathy Medical College and Hospital for a period of 12 weeks. The same number of age/sex matched control group with high blood pressure were also enrolled and kept without yoga techniques. During the period of treatment the symptom relief in the subjects is assessed periodically by a sphygmomanometer. Yoga is proved to be a best method to treat high blood pressure.

Introduction:

Now a day's High blood pressure is one among the leading contributors to burden of disease globally. ^[1] Almost 80 million U.S adults are suffering with High blood pressure currently. With less than half of those are having controlled hypertension, 62% of Cardio vascular diseases and 49% of Ischemic heart disease are caused due

to uncontrolled Hypertension. ^[2] Cardiovascular diseases prevalence is high in Indians, among these an important modifiable risk factor is hypertension. ^[3] According to JNC-7, the definition of hypertension is SBP as 140mmHg or higher or DBP as 90mmHg or higher or both. Whereas <120mm of Hg as SBP and <80mm of Hg as DBP is considered as normal blood pressure ^[4]. Yoga is

derived from the Sanskrit word “YUJ”, means to attach, to join or to unite. According to Patanjali Maharshi “yoga chitha vritti nirodhah”, means yoga controls the activities of mind. [5]Yoga is a beneficial multifunctional therapeutic modality in the treatment of variety of psychological and medical conditions such as depression, anxiety, post traumatic stress disorder, hypertension, cardiovascular diseases, bronchial asthma, COPD, Diabetes Mellitus, hypercholesterolemia etc. [4,5]In a research study, it states that yoga modulates the physiological system of the body, and effects specifically on the heart rate. This review is significant because yoga presents an effective method of treating hypertension that is non pharmacologic and therefore there are no adverse effects and there are other valuable health benefits [6]. Stress is one of the predisposing factors for hypertension. Hypertension is a leading risk factor for mortality and ranked 3rd as a cause of disability adjusted life years. Yoga reduces the cortisol levels thereby stress is reduced. Yoga promotes the flexibility of the arteries and reduces the rigidity of the arteries and also promotes the free flow of blood in the arteries thus resulting in control of hypertension. [7]Meditation and relaxation techniques offers a reduction in the diastolic and systolic blood pressures during the mental stress [8]. Several clinical trials investigated the efficacy of non-pharmacological interventions and lifestyle modifications to reduce blood pressure [9]. Yoga has received a considerable amount of study to date demonstrating significant cardio-respiratory benefits [10-14]. The aim is to investigate the effectiveness of yoga on the blood pressure in hypertensive patients.

Method and procedure:

The study was conducted with 100 subjects for a period of 3 months. The patients were recruited from the Out Patient of cardiology department and these patients were daily subjected to yoga session. The study protocol was executed after approval by the Institutional Ethical Committee. Informed consent was obtained from study participants. All subjects were screened by taking a medical history and clinical examination.

The same number of age/sex matched control group with high blood pressure were also enrolled and kept without yoga techniques. Both groups were advised to continue their regular medicines. Their Blood Pressure recorded at their first visit and thereafter before and after the yoga session for every 5 days. The Blood Pressure measurements were recorded by using digital Blood Pressure apparatus with the subject seated.

Inclusion criteria: Adult patients suffering from obesity, hypertension and dyslipidemia either singly or in combination, two or all the three, have been included in this study.

Exclusion criteria: Patients suffering from other disorders like liver disease, pulmonary diseases, malabsorption, thyrotoxicosis, alcoholism and non-co-operative patients were excluded from the study.

Study protocol:

The subjects were asked to perform Yoga, which includes pranayama for 30 min and Yogic Asana's for another 30 min every day. The study

was conducted with 100 subjects for a period of 3 months. The Blood Pressure of the patients was recorded in their first visit. They are asked to practice ardha matsyendrasana (2min), ardha pavanmuktasana (2min), bidalāsana (2min) and uttaanpadasana (2min), Anuloma viloma (2min) followed by savasana (5min) every day for 30 min.

Matsyendrasana: Sit in Dandasana with forward stretching of the legs on the floor. Fold the right leg and keep under the left thigh then cross the left leg keep near the right knee .now raise the left hand cross the left leg and catch hold the right ankle joint.

Ardha pavanmuktasana: (Single knee bending). Lie on the supine posture, raise the single leg and slowly bend the knee and try to touch the forehead on the knee.

Uttaanpadasana (straight leg raising): lie on the supine posture and slowly raise both the legs straight without knee bending. Maintain for 5 seconds with normal breathing. While exhaling slowly release both the legs without bending the knees.

Bidalāsana: (Cat pose): sit in vajrasana and kneel down on the floor with placing the palms between the two knees, while inhaling arch the spine and look towards the navel region. While exhaling make a curve in the spine and look upwards .practice it for 5 times. Uttanapadasana: (straight leg raising) Lie on supine posture and slowly raise the leg straight without knee bending.

Anuloma Viloma (Alternate nostril breathing): sit in sukhasana. Close the right nostril with the thumb, exhales through left nostril again inhale through left nostril. Close the left nostril with the ring finger, retain the breath then exhale through right nostril. Again inhales through right nostril retain the breath then exhale through left nostril. This is one round. Repeat for 10 rounds.

Savasana (Relaxation posture): Lie on supine posture. Legs and hands apart. Be relaxed.

After every five days Blood Pressure is again recorded. This procedure is followed for 3 months. The Blood Pressure measurements were recorded by using digital B.P apparatus with the subject seated. It was conducted at Narayana Medical College and Hospital, Narayana Yoga Naturopathy Medical College and Hospital, Nellore, India. Statistical analysis was done by using Z-test for comparison of two mean values. P value < 0.05 was considered as significant.

Result:

Total number of subjects included in this study was 100. These were no dropouts during the treatment period. Before, during (every weekend) and one week after completion of the treatment the observed average blood pressure scores were found to be as follows.

Among all the subjects before yoga, the mean value of systolic blood pressure is 154.2 ± 8.2 mmHg and mean diastolic blood pressure is 100.3 ± 6.4 mmHg and the mean BMI was observed as 27.4 ± 2.1 kg/m². In control group, the mean value of systolic blood pressure is 155.3

Table 2. Statistical analysis of blood pressure levels at first and last visit in control and yoga groups

YOGA GROUP	First visit	12 th Week	P VALUE
SBP	154.2 ± 8.2	122.3 ± 4.3	0.003
DBP	100.3 ± 6.4	81.7 ± 4.5	0.001
CONTROL GROUP			
SBP	155.3 ± 9.6	127.5 ± 5.9	0.005
DBP	100.2 ± 8.2	84.4 ± 4.1	0.043

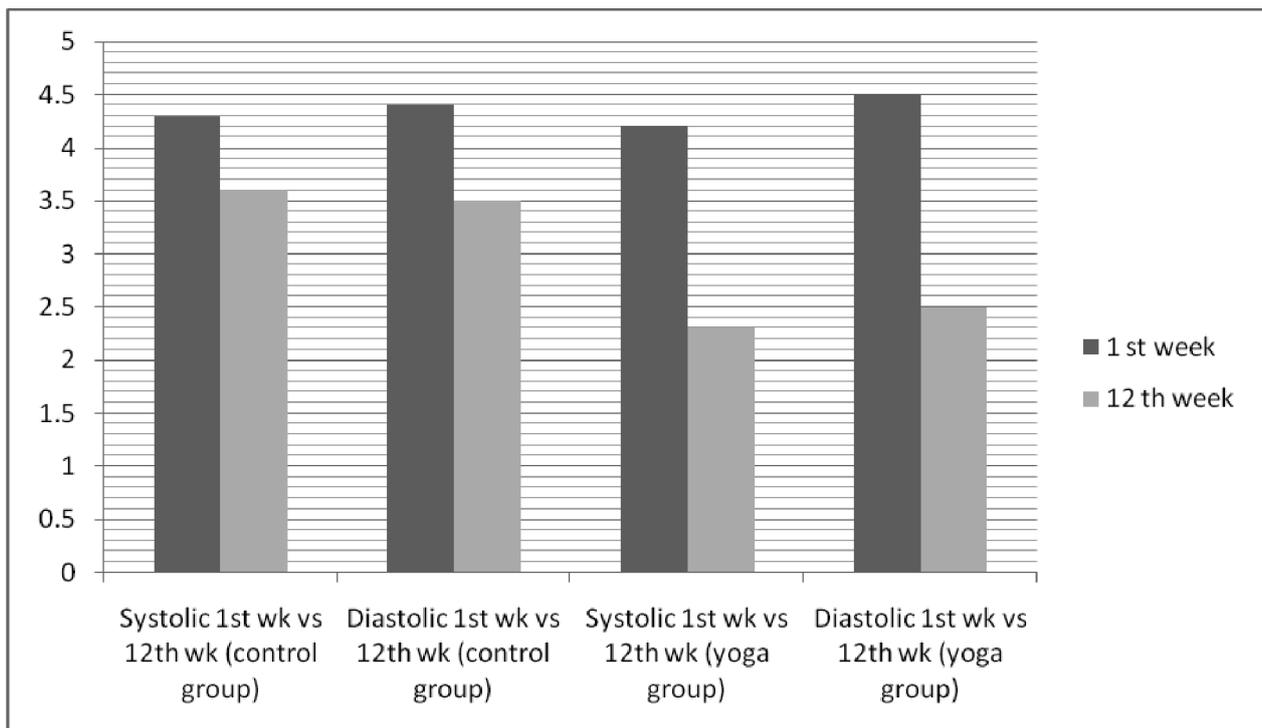


Figure 1. Blood pressure levels at first visit and 12th week in control and yoga groups

Discussion:

Hypertension leads to heart attack, stroke, and other cardiovascular events. Which is the condition, the pressure of the blood vessel walls is high. It increases the work load of the heart and it leads to hardening of the arteries, rupture of the vessel walls, and ailments of heart. Stress is a major reason for hypertension and modern day life, sedentary life, poor diet, can also induce HTN individually. Hypertension is commonly

called as ‘silent killer’ because it doesn’t show any symptoms and signs in earlier stage. When the blood pressure is high the feedback system cannot maintain homeostasis because the heart is sending signals to the brain that it needs more oxygen, there for the heart beats faster and harder to get the extra oxygen needed possibly causing higher blood pressure and this unable the heart’s homeostasis.

We suggested treatment for this disease include yoga, life style modification, dietary changes, withdrawal of alcohol & smoking and stress management.

Many proved studies show that yoga can reduce the blood pressure by effective and non-invasive way. It will achieve a balance between mind, body, and soul and also it improves the energy levels of the body. In yoga which includes asana, Pranayama, meditation are also plays an important role in reducing blood pressure. Apart from yoga other vigorous exercise puts over action on muscles and It will leads to stress on the whole cardiovascular system include heart pumping rate, pressure of the blood vessels. In Sanskrit Pranayama meant 'Art and science of breath'. Ours vital energy will controls by Pranayama. Pranayama can revitalize, reenergize, and restore the functions of the body. The parameters include age (49.17 ± 11.73), weight (67.57 ± 12.70) and duration of hypertension (25.2 ± 6.2) has been assessed respectively.

The effects of yoga on lowering blood pressure in more recent studies have mostly been modest however data from the Framingham Heart Study showed that a 2 mm Hg reduction in DBP could reduce the risk of stroke or transient ischemic attack by 14%. While a 10 mm Hg reduction in SBP, seen with prescription drugs and in some meditation studies, is associated with a 30% relative reduction in risk of stroke. Thus smaller reductions in BP [5 mm Hg in SBP or 2 mmHg in DBP] achievable through diet, some dietary supplements and mind body therapies can be expected to significantly reduce blood pressure.

Conclusion:

Effects of yogasanas come in various forms in physiological and psychological level. Although there have been many different studies in to the effects of meditation have been recently started to take notice by professionals in the field of the medical science. The positive effect of asanas in some cases is accepted and they have started to prescribe the use of meditation to the patients along with medicine. Although no ideal drugs or method has so far been discovered in science which neutralize the offending factors or root cause of stress induced hypertension. This is non invasive, non drug type of method advocated by physicians which reduces blood pressure.

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