Immediate Effect Of Yoga Nidra On Systolic And Diastolic Blood Pressure – A Single Arm Trial.

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Abstract: **Background**: *Yoga Nidra* is one of the finest ways to Self Realization, *Yoga Nidra* is a state of consciousness, which is neither sleep nor awaken, neither is it concentration nor hypnotism. It can be defined, as an altered state of consciousness. These days *Yoga Nidra* is practiced as a best-known technique to induce complete physical mental and emotional relaxation. The present study was conducted to evaluate the effects of yoga nidra on systolic and diastolic blood pressure among hypertensive individuals. **Methods:** A total of 40 subjects within the age of 35-65 years were selected for the study. Subjects who fulfilled the inclusion& exclusion criteria were appraised the purpose of the study and their rights as research subjects before the commencement of the study. The subjects included in the study group were given *Yoga Nidra* Practice for 1 hour duration. Their B.P was assessed before and after the practice. **Results**: Immediate effect of *yoga nidra* on hypertensive individuals showed significant decrease in the systolic and diastolic B.P. **Conclusion**: *Yoga Nidra* can be used an effective adjunct therapy along with other alternative therapies in individuals with essential hypertension thereby improves the quality of life.

KEY WORDS: Yoga nidra, Hypertension, blood pressure.

INTRODUCTION

Hypertension (HTN) is defined as a persistent elevation in systemic arterial blood pressure(> 140/90 mmHg) resulting from complex and interrelating aetiologies. [1, 2] HTN can be classified as primary (essential) HTN which has no identifiable cause and secondary HTN with an underlying medical cause. [3]HTN increases with the age and 80% of hypertensive individuals are above 45 years of age. Globally HTN is estimated to cause 13.5% of total deaths. It attributes to about54% of stroke and 47% of ischemic heart diseases and is considered as third ranked factor for disability adjusted life years (DALY). [4, 5]In India HTN is present in 25% of urban and 10% of rural population. [6] Recent studies revealed the prevalence of HTN to be 43.3% locally in coastal Karnataka. [7] As HTN is a major risk factor for cerebrovascular and cardiovascular complications, a slightest decrease in blood pressure may reduce the risk of their development [8, 9]Recent evidence suggests that reduction of the blood pressure by 5 mmHg can decrease the risk of stroke by 40%, of coronary heart disease by 15-20%, and reduces the likelihood of dementia, heart failure, and mortality from cardiovascular disease. [10] Inspite of various options for management of hypertension, its control is still a challenge for the physicians all over the world. The primary aspect of management is preventive including life style changes, dietary changes, physical exercise and weight management which have shown substantial reduction in BP. [11] In conventional medicine, anti-hypertensive drugs play a major role in management of hypertension but their use has been limited due to their tendency to cause adverse effects. [10] Hence to overcome this, non-pharmacological interventions such as Complementary and alternative medicine can be efficiently employed. [12]

Complementary and alternative medicine (CAM) is a group of diverse health care systems which can be used as an adjunctive or as an independent modality in treating and preventing various ailments. [13, 14] CAM therapies for hypertension includes yoga, naturopathy, herbal medicine, homeopathy, , progressive relaxation, guided imagery, diet based therapies, chiropractic and osteopathy. [15, 16] Studies suggested that there is an increased frequency in use of CAM by hypertensive individuals due to its safety and cost effectiveness. [16, 17, 18]

Yoga has emerged as a popular approach to blood pressure (BP) reduction and represents an attractive alternative in patients with mild to moderate hypertension preferring to avoid the use of medication or additional medication. Yoga is a systematic comprehensive mind body discipline which comprises of a wide variety of mental, spiritual and physical practices that helps to achieve inner harmony, mental and physical health. Yoga therapy encompasses the use of asana, pranayama, mantra and relaxation techniques along with dietary advice and yogic counseling that attempts to address the root cause of the problem rather than merely providing a symptomatic relief. [21]Yoga-nidra is an ancient Indian technique of enabling individuals to achieve a positive state of deep physical, mental, emotional and spiritual relaxation. [22] The present study aims at evaluating the immediate effects of yoga nidra on systolic and diatolic blood pressure.

4. METHODOLOGY

4.1 Subjects: 40 subjects between the ages 35-65 years were recruited for study from a Yoga Awareness Camp for hypertension conducted at SDM College of Naturopathy and Yogic Sciences Subjects who fulfilled inclusion and exclusion criteria were appraised

about the purpose of the study and their rights as a research subject. Subjects were pre-diagnosed known cases of primary hypertension belonging to either gender. A signed informed consents was obtained from the subjects by explaining the study objectives and methods.

4.1.2 Inclusion Criteria

- Age group between 35 to 55 years
- Gender: both male and female
- Patients with primary hypertension and who is under medication since last 5 years..
- Novices to the field of yoga

4.1.3 Exclusion Criteria

- Subjects under the influence of any psychoactive substances, sedatives, anxiolytics, anti-depressants.
- Subjects with any co-morbid conditions ex: hypertension with diabetes mellitus, epilepsy, bronchial asthma , and other systemic complications.
- Female subjects during their menstrual cycle will not participate in the experiment as menstrual cycle is known to influence the circulatory and humoral dynamics
- Females in their gestational period.

4.2. Ethical Considerations

A signed informed consent was taken from each subject before the commencement of the interventions. The study was approved by the Institutional Ethical committee of SDM college of naturopathy and yogic sciences.

4.3 DESIGN

- Design: A single arm pre-post study
- Sample Size : 40
- Method: 40 individuals were selected for the study after proper screening according to the diagnostic, inclusion, and exclusion criteria. The subjects were given Yoga Nidra Practice for 1 hour duration. Their blood pressure was assessed before and after the practice.
- The illustration of study plan:

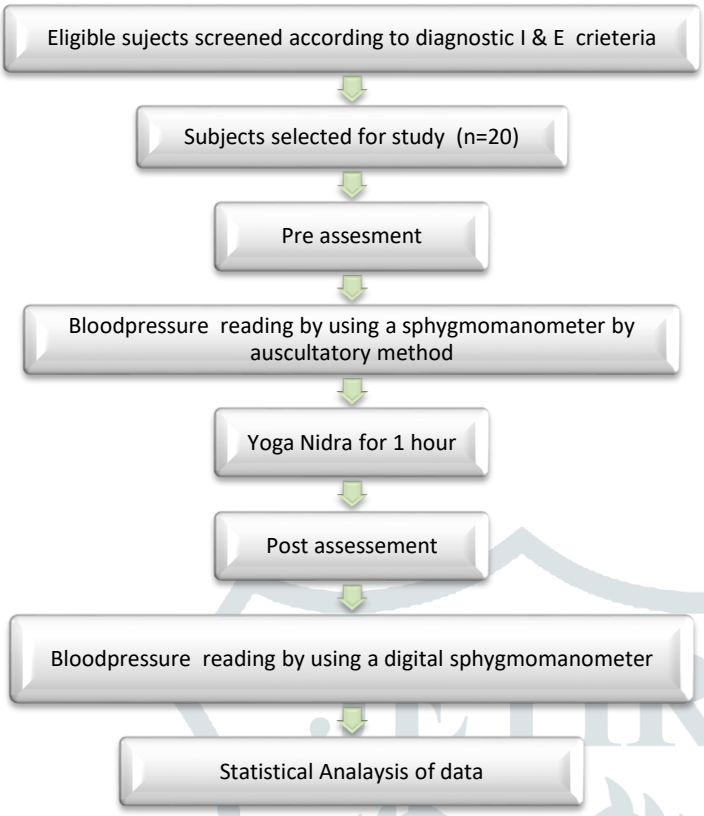


Fig. 1 Illustration of Study Plan

4.4 Assessment

- Blood pressure: Blood pressure was recorded pre and post-practice of *yoga nidra* by using digital sphygmomanometer. (OMRON – 7113)

4.5 Intervention:

All the 40 subjects underwent Yoga nidra session of 1 hour duration. *Yoga Nidra* also called "psychic sleep," is an ancient yogic practice that provides deep psychological and physical relaxation, while maintaining mental functions functional and alert. During *Yoga Nidra*, subjects lies down in corpse pose. Then instructor slowly guides them into deep relaxation using specific techniques in different stages. [23]

4.6 Data analysis

Statistical analysis was done by using Statistical Package for Social Sciences (SPSS Version 20.0). The data was screened for normal distribution using Kolmogorov-Smirnov test and analysed by using paired sample t-test. A value <0.05 was considered as significant.

5. RESULTS

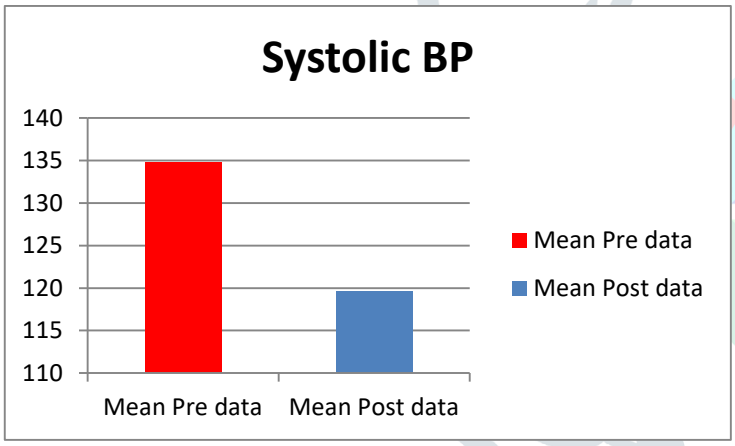
For systolic blood pressure the value of *t* is -10.602226. The value of *p* is < .00001. The result is significant at p < .05. thus indicates significant reduction in the systolic blood pressure after the practice of yoga nidra. For diastolic blood pressure the value of *t* is -7.513. 9The value of *p* is < .00001. The result is significant at p < .05. Thus indicates significant reduction in the diastolic blood pressure after the practice of yoga nidra.

Table 1: Statistical analysis of Systolic Blood Pressure

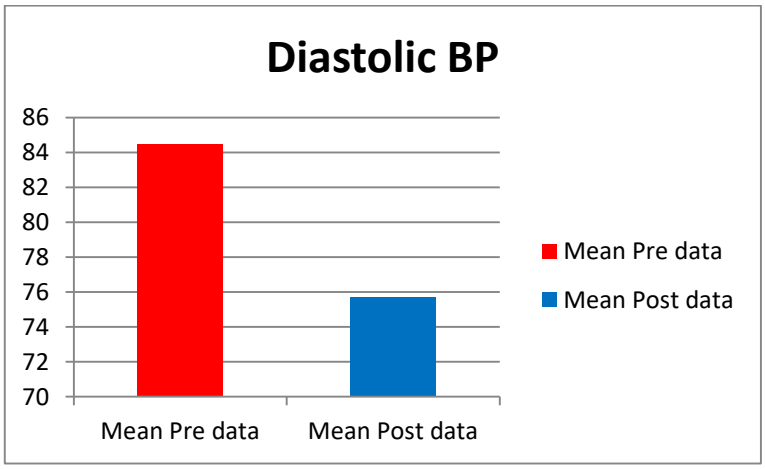
	Pre SBP	Post SBP
Mean	134.8	119.6
Variance	206.1128	118.4
Stand. Dev.	14.3566	10.8812
n	40	40
t	10.6022	
degrees of freedom	39	
critical value	2.0	

Table 2: Statistical analysis of diastolic blood pressure

	Pre DBP	Post DBP
Mean	84.45	75.7
Variance	80.6641	72.3179
Stand. Dev.	8.9813	8.504
n	40	40
t	7.5139	
degrees of freedom	39	
critical value	2.023	



Graph no1: Systolic blood pressure.



Graph no2: Diastolic blood pressure.

6. DISCUSSION

The autonomic nervous system is controlled by the hypothalamus along with hoemeostasis. The hemodynamic changes in a normotensive person during emotional stress and hypertension are similar. Sustained high blood pressure in seen in repeated hypothalamic stimulation. Stress is an important factor that aggravates blood pressure.The homeostatic mechanism in the hypothalamus is probably set at a greater level in hypertension, and in order to control blood pressure , it must be reset to the normal mode. Our cerebral cortex receives a wide variety of messages from the environment leading to an emotional and mental response. These messages are relayed on to the limbic areas leading to hypothalamic and pituitary responses which are reflected as physiological changes. Yogic practices leads to heightened cortical arousability and reduced limbic arousability at the same time, which expresses itself in human personality and subjective experience as exaggerated perceptual awareness and simultaneous reduction in emotional reaction. This resets the homeostatic mechanism in hypothalamus to normalcy thereby reducing the high blood pressure.[25]

The pathophysiology of acute and chronic essential hypertension which in turn increases cardiac output and peripheral resistance is attributed to increased sympathetic nervous outflow from central nervous system. The organism shows the 'fight or flight' response during stress due to the activation of sympathetic nervous system. In normal circumstances, the parasympathetic system takes over after the emergency and is mainly active during sleep. The continuous activation of sympathetic system leads to experiences of distress [9]. Yoganidra attempts to activate the parasympathetic system, and brings about sympatho-vagal balance by inducing complete physical, emotional and mental relaxation thereby reducing stress. [26]

7 LIMITATIONS

Despite the impressive results of the yoga nidra found in this study, interpretations of the study findings is warranted because of certain limitations, such as:

1. A smaller group design without a control group.
2. Smaller sample size might have influenced the result observed.
3. The duration of the study.

CONCLUSION

Practice of yoga nidra among hypertensive individuals was suggestive of significant decrease in the systolic and diastolic B.P. *Yoga Nidra* can be used an effective adjunct therapy along with other alternative therapies in individuals with essential hypertension thereby improves the quality of life.

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