EFFECTS OF MATSYASANA, SETUBANDHASANA AND USTRASANA IN HYPERTENSION

Dr. Neha Nilesh Lavhade

Assistance Professor
Ojas college of Physiotherapy, Jalna Maharashtra.

Abstract-
Backgroud: Hypertension is a real hazard factor being developed of cardiovascular illness, stroke, and ceaseless kidney sickness. Baroreflex is one of the body's homeostatic systems that help to keep up pulse at about steady level. Yoga asana can be used for reducing hypertension by controlling baroreceptor.
Aims: Effectiveness of matsyasana, setubandhasana and ustrasana in hypertension.
Objectives: To study the effect of matsyasana , setubandhasana and ustrasana in hypertension.
Material & method: 63 hypertensive adults with age group 35-45 years, both male and females participated in the study. They were given Yoga postures for 12 weeks. The blood pressure was measured using sphygmomanometer.
Result: Data was analysed and tabulated using Microsoft excel and graphpad.Paired t test was done for intergroup comparison.
Conclusion: Significant changes was found only in systolic B.P. of 41-50 years of age,and no significant changes was found in SBP in other age group.There was no significant changes found in DBP and pulse rate in all age group.

***Keywords*: Hypertension, Baroreflex, Yoga Asanas.**

INTRODUCTION:

Hypertension, which is defined as a persistently high blood pressure (BP) with systolic blood pressure (SBP) greater than or equal to 140mmHg and diastolic blood pressure (DBP) greater than or equal to 90mmHg.[1] Hypertension is major ceaseless way of life infection and real general medical problem for example evaluated to influence more than 1 billion individuals worldwide and represent 13% of passing. Continuously 2025, it is assessed that roughly 1 of every 3 grown-ups age more than 20 years or 1.56 billion individuals worldwide will have hypertension.[1]Hypertension is real hazard factor being developed of cardiovascular illnesses, stroke and ceaseless kidney sicknesses.[2]

Baroreflex or baroreceptor reflex is one of the body's homeostatic systems that help to keep up pulse at about steady level. The baroreflex gives a fast negative input circle to ANS in which a raised circulatory strain reflexively causes the pulse to diminish and furthermore causes the circulatory strain to diminish.[3] It is very important reflex that is sensitive to rapidly changing postures and pressures Hypertension can be managed by many ways like Pharmacological management, Exercise, Lifestyle modification. Drugs like captopril, nifidipine, labetalol are used. In a newly diagnosed uncomplicated hypertensive patients. The 1st line of drug include ACE inhibitors. Exercise like aerobic exercises and strengthening exercises can be given to reduce hypertension according to ACMS. Aerobic exercise include walking, brisk walking, cycling, swimming, etc. and in lifestyle modification smoking cessation, dietary included.[5]

There are a few non pharmacological strategies for controlling high BP, for example, physical activity, yoga unwinding procedures and decrease in day by day salt intake, these elements are likewise contributing in change of hazard factors in charge of improvement of hypertension.[6] Yoga, word originates from Sanskrit for union and aims to harmonize mind, body, spirit. Traditional yoga incorporates the 8 limbs as -set by patanjali – Yamas and Niyamas (moral and ethical restraints), Asanas(posture) ,Pranayama(regulation of breathing), Pratyahara (internalisation of senses), Dharan (concentration),Dhyana(meditation) and Samadhi(self realization). Yoga gives a standout amongst the best.

Aims: Effectiveness of matsyasana, setubandhasana and ustrasana in hypertension.
Objectives: To study the effect of matsyasana ,setubandhasana and ustrasana in hypertension.

MATERIAL & METHOD:

Subjects:

Sixty three hypertensive adults with age group 35-45 years, both male and females participated in the study. Subjects were randomly selected from Aurangabad and jalna city. Age ranging from 35 to 55 years, both male and female, People on hypertensive medications, Adults suffering from hypertension ,Candidates those who are willing to participate and sign the informed consent are included in the study. People below 35 years of age ,People with neurological condition , severe cardiac and respiratory conditions like COPD, Myocardial infarction, CABG etc. are excluded from the study.

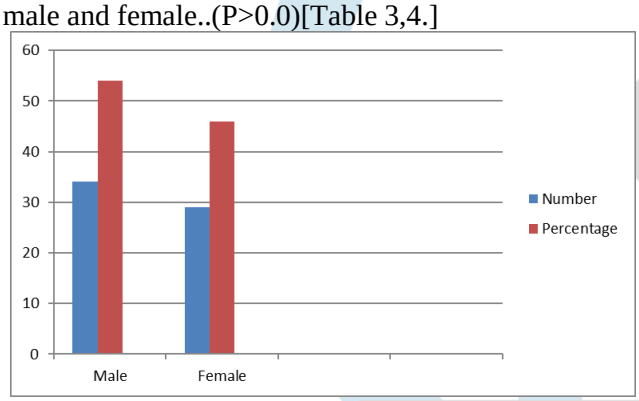
Method:

The written consent was taken. Blood pressure and heart rate of each patient was measured by sphygmomanometer ,pulse oximetry, three fingers method respectively. First of all clear explanation about data and yoga training was asked to the patient. In study, patient was explained about the duration of yoga postures i.e. 10 times of each yoga posture daily. Materials used for the study were data collection sheet, Informed consent form ,Yoga mat ,Sphygmomanometer ,Pulse oximetry.

Pre session measurement was taken. Yoga Postures like matsyasana, setubandhasana and ustrasana were taught to subjects. Subjects were asked to do this asanas once a day for 12 weeks. Post session measurement were taken.

Result:

Data was analysed and tabulated using Microsoft excel and graphpad.Paired t test was done for intergroup comparison. As seen in table 1. males (54%) are more prone to have hypertension as compared to female (46%).Table 2. Shows shows statistically significant changes in both male and female..($P<0.05$). The comparison of diastolic blood pressure,pulse rate from 1st week to 12th week according to gender, it shows statistically non significant changes in both male and female..($P>0.0$)[Table 3,4.]



Graph showing distribution of patient according to their gender.

Gender	No	%
Male	34	54
Female	29	46
Mean±SD	31.5±2.5	50±3.97

Table 1. Age wise distribution.

Gender	1st week Vs 3rd week			1st week Vs 6th week			1st week Vs 12thweek			Inference
	Mean±SD	T-value	P-value	Mean ±SD	T-value	P-value	Mean±SD	T -value	P-value	
Male	127±0.3	0.1177	0.9070	127±0.3	0.3504	0.7283	125±0.4	2.287	0.0288	Significant
Female	128±2	0.1696	0.8666	125±1.4	2.300	0.0291	124±3.1	3.280	0.0028	Significant

Table 2. Comparison of systolic blood pressure according to gender

Gender	1st week Vs 3rd week			1st week Vs 6th week			1st week Vs 12thweek			Inference
	Mean± SD	T-value	P-value	Mean ±SD	T-value	P-value	Mean±SD	T -value	P-value	
Male	82±0.2	0.083	0.9336	80±1.2	1.165	0.2523	79±2	0.2407	0.8113	Non significant
Female	82±0.7	0.1086	0.9144	80±2.3	1.950	0.0613	81±0.02	1.295	0.2060	Non significant

Table 3. Comparison of diastolic blood pressure according to gender.

Gender	1st week Vs 3rd week			1st week Vs 6th week			1st week Vs 12thweek			Inference
	Mean± SD	T-value	P-value	Mean ±SD	T-value	P-value	Mean±SD	T -value	P-value	
Male	77±2.9	0.5341	0.5969	80±1.2	0.8774	0.3866	79±2	0.7964	0.4315	Non significance
Female	81±2.3	0.8794	0.3867	83±3.4	1.933	0.0635	86±0.02	0.0244	0.9807	Non significant

Table 4. Comparison of pulse rate according to gender.

Discussion:

Among 63 selected hypertensive patients, our study uncovered that patients maturing from 46-55 years with level of 76% have higher predominance of hypertension contrasted with more youthful age gathering of rate 24%. As previous studies stated that, risk of hypertension increases with age, due to structural changes occurred in arteries especially stiffness of large arteries.[22] Males (54%) are more prone to have hypertension than females (48%) in our study, hypertension prevalence is less than women until 45 years of age, is similar in both sexes from 45 to 65 years of age and is much higher in women than men over 65 years of age due to post menopausal changes, physical inactivity and overweight or obesity.[23] Higher prevalence of hypertension in male, arises from difference in sex chromosome, presence of transcription factor SRY, sex determination region on

y chromosome have potential mechanism that involve sympathetic nervous system and rennin angiotensin system. Males are more vulnerable for substance abuse, alcohol , stress as proved by previous studies.[24]

Several studies have confirmed that the yoga training results in significant reduction in systolic and diastolic blood pressure.[15] Yoga postures like matsyasana , setubandhasana and ustrasana have effect on stretch reflex which increases baroreceptor activity and thus help to decrease blood pressure. These three yoga postures were perform by patients regularly for 10 times per day per session with hold time of 15-30 seconds. After each session vitals were taken that includes systolic, diastolic blood pressure and heart rate as outcome measure. According to our data analysis in our study, we compared the values systolic, diastolic blood pressure and heart rate from 1st week to 12 th week according to age group and gender, it showed there was statistically significant changes found only in systolic blood pressure of 41-50 years of age group in both gender ($P<0.005$) and no significant changes found in systolic blood pressure in other age group. There was no significant changes found in diastolic blood pressure and pulse rate in all age group in both male and females($P>0.005$).In our investigation, there was self management of intervention and vast majority of patients beyond 50 years old experienced issues to play out some yoga postures that influences the outcome.

Limitations:

1. Study was done with narrow spectrum of sample size.
2. The patients were taken under hypertensive medications.
3. Self supervision of intervention influences the outcome.

CONCLUSION:

According to our study, effect of matsyasana, setubandhasana and ustrasana postures in hypertensive patients showed significant changes in systolic blood pressure only in age group of 41-50 years in both male and female. There were no significant changes in diastolic blood pressure and pulse rate.

Conflict of Interest: None

Funding Sources: None

REFERENCES:

1. Rashid Abdul AR, Khalid Y, Chia YC. Management of Hypertension. *Malays Fam Physician.* 2011; 6:1.
2. Cohen D. Yoga and hypertension. *Journal of yoga and physical therapy* ,2013; 3:2157-7595.
3. Gadham J, Sajja S, Rooha V. effect of yoga on obesity hypertension and lipid profile. *International journal of research in medical science* 2015;3:2320-6012.
4. Goyal R, Lata H, Walia L, Narula MK.. effect of pranayama on rate pressure product in mild hypertensive. *Intenational journal of applied and basic medical researches* 2014;4(2):67-71.

5. Rashid Abdul AR, Khalid Y, Chia YC . management of hypertension. *The official journal of the academy of family physicians of Malaysia* 2011; 1:6.

6. Sembulingam P. Sembulingam K, arterial blood pressure. *essential of medical physiology*, 7th ed. : the health sciences ; 2016: p 633-685.
7. Patel N. Yoga and rehabilitation in cardiovascular conditions. Yoga and rehabilitation; 1st ed. : Jaypee brothers ; 2008; p 167-168.
8.Schwartz SI,Griffith LSC,Neistadt A,HagforsN. *Chronic carotid sinus nerve stimulation in the treatment of essential hypertension.* Am J Surg.1967;114(1):5-15.
9. Hutchinson S,Ernst E.*Yoga therapy for coronary heart disease*: a systematic review. Focus on alternative and complementary therapies.2003;8:144.
10. Raub JA. *Psycho physiologic effects of Hatha Yoga on musculoskeletal and cardiopulmonary function*: a literature review. Journal of alternative and complementary medicine.2002;8(6):767-812.
11. Fagard R. *Exercise therapy in hypertensive cardiovascular disease* 2011; 53(6):404-11.
12.Wolff M., Sundquist k *Impact of Yoga on blood pressure and quality of life in patients with hypertension*-a controlled trial in primary care BMC cardiovascular disorders2013,13:111.
13. Sharma R, Gupta N, Bijlani RL*: Effect of Yoga based lifestyle intervention on subjective well being Ind J physio pharmacol* 2008,52.123-131.
14. Bhavanani A.B, *Immediate effect of sukha pranayama on cardiovascular variables in patients of hypertension.*2011;21:73-6.
15. Murugesan R.,Govindarajulu N. *Effect of selected Yogic practices on the management of hypertension.*1999;44(2):207-210.
16. Murthy SN,Rao NS,Nandkumar B,Kadam A:*Role of naturopathy and Yoga treatment in the management of hypertension.*2011,17:9-12.
17. Hagis M.states R.,etal*; Effectiveness of Yoga for hypertension*: systematic review and meta –analysis 2013:1-13.
18. V.S. cowen and T.B.Adams, *physical and perceptual benefits of Yoga asana practice* :result of a pilot study, Journal of bodywork and movement therapies, 2005; 9(3):219.
19.Jayasinghe S.R, Yoga in cardiac health(a review),*European Journal of cardiovascular Prevention and Rehabilitation*,2004;11(5):369-375.
20. T.Deepa,G.sethu,and N.Thirrunavukkaeasu, *Effect of Yoga and medication on mild to moderate essential hypertensives*,Journals of clinical and diagnostic Reseach,2012;6:21-26.
21. Barrett CJ,Guild S-J,Ramchandra R.,MalpasSC. *Baroreceptor denervation prevents sympathoinhibition during angiotensin 2-induced hypertension.*2005;46:1-5.
22. Pinto.E. Blood Pressure and *Ageing*. 2007;83(3):109-114.
23. Gudmunds dother.H, Hoieggen.A. *Hypertension in women: latest finding and clinical implications.*2012;3:137-146.
24. Ely.D.,Underwood.A. *Review of the Y chromosome, sry and hypertention*.2010;75(11):747-753.