www.jmscr.igmpublication.org
Impact Factor (SJIF): 6.379
Index Copernicus Value: 79.54
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossrefDOI: https://dx.doi.org/10.18535/jmscr/v6i11.81

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Research Paper

Study to evaluate the impact of Rajyoga meditation on psychosomatic aspects of hypertensive patients

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Abstract
Background: *Hypertension is a global health problem. Meditation techniques have been found useful in reducing elevated BP levels.*
Objectives: *To evaluate effects of Rajyoga meditation on High Blood pressure. To evaluate effects of Rajyoga meditation on psychosomatic components of hypertensive patients. This cross sectional study was conducted on the 20 patients who have a high Blood Pressure ≥140/90 mm of Hg attending the medicine O.P.D. at C.U. Shah Hospital and Medical College Surender Nagar. Patients were taught Rajyoga meditation one hour daily for 7 days as an intervention and followed for 30 days with daily 30 minutes meditation. Effects are seen on blood pressure.*
Results: *The mean systolic BP before meditation was 154.33 while after meditation 126 ($p< 0.005$), while mean diastolic BP was 96.2 and after meditation it was 94.3. There was significant decrease in almost all physical parameters like headache [$p < 0.05$], tinnitus [$p < 0.000$], shortness of breath [$p < 0.038$], palpitations [$p < 0.000$], as well as reduction in dosage of medications after meditation [$p< 0.058$]. Psychological symptoms like 20 % of subjects got relief from anger or peace-lessness, [$p < 0.05$], 15 % from various worries [$p <0.05$], 10% felt powerful [$p<0.01$] while 40 % relived from feeling of irritation [$p<0.001$]*
Conclusion: *This study demonstrates Rajyoga meditation is a successful intervention in controlling hypertension. It has also reduced psychosomatic symptoms of disease, doses of medication as well as shown overall improvement in health*
Keywords: *Rajyoga meditation, hypertension, medication, lifestyle modification.*

Introduction

Hypertension is a global health problem. Essential hypertension is high blood pressure for which there is no defined aetiology. It is best defined as that level of blood pressure at which treatment to lower blood pressure results in significant clinical

benefit –a level which will vary from patient to patient depending on their absolute cardiovascular risk. It doesn't have a known secondary cause. It is also referred as primary hypertension. It is one of the risk factors for cardiovascular system leading to premature death worldwide, killing nearly 8 million people every year and the problem is ever on the increase. Over 1 billion people are living with high BP. According to W.H.O. in 2008 the Global overall prevalence of high BP in adults aged 25 and over was around 40%. Males have a slightly higher prevalence of high BP than females in almost all countries. Ageing population is reported as major contributions to the increased prevalence of high BP in urban areas. Approximately 30% of the adults have never had their BP checked. Among those diagnosed with high BP, 35 percent do not receive essential treatment.(1)

Behavioural and Lifestyle related factors can put people at a higher risk for developing hypertension. These factors include tobacco use, unhealthy diet, excessive use of salt, physical inactivity, overweight, obesity and harmful use of alcohol. Risk of hypertension has also been found to increase with age and in comparison to earlier studies, hypertension prevalence increased particularly in younger groups.(2) Type A personality , hereditary factors & fast food have an important role in hypertension. It is dangerous to ignore high Blood pressure. The target organs for high B.P are kidneys, heart, brain. If left undiagnosed and uncontrolled, high blood pressure can lead to heart attack, enlargement of the heart and eventually heart failure. Blood vessels may develop bulges (aneurysm) and weak spots, making them more likely to rupture or clog. If this happens in the brain, a stroke may result. High BP can also lead to kidney failure, blindness and cognitive impairment.

Treatment for Hypertension include antihypertensive medicines and Lifestyle modifications such as weight reduction, DASH diet, reduction in sodium intake, increased outdoor physical activities and reduction in alcohol intake. Combination of anti- hypertensive medication and health promoting lifestyle modifications lead to reduction and management of BP to optimal level. But adherence to this combination in the long run is quite poor and high BP remains a persistent problem for many.(3)Antihypertensive medicines have also been found to produce certain side effects like insomnia, sedation, drowsiness, headaches, dry mouth.(4)

In order to avoid side effects and cost of drugs, patients prefer a non pharmacologic intervention to complement with or to avoid antihypertensive medicines. Therefore, keeping in view the magnitude of the problem, mind-body interventions such as relaxation techniques, stress management and meditation has to be used alone or in combination with lifestyle modifications. Lot of evidence exists regarding the effect of relaxation and stress management on BP.(5) However much is not known about the potential of meditation as an intervention for hypertension. The present study aims to have an objective evaluation of Rajyoga meditation along with medications as an intervention for the problem of hypertension. Various types of Mind-body interventions have been introduced to reduce Blood pressure. Relaxation Therapies for hypertension have been evaluated for over 30 years with no significant results.(6) However stress management therapies have been found to have some success in the reduction of BP.(7) But stress management interventions for high BP are not widely available.

Meditation is another mind body intervention for high blood pressure. It can be practised independently from other treatment programs. Moreover, it does not invite any social stigma, as it is not associated with mental health treatments and so it is a more acceptable intervention than other mind-body interventions. Meditation Interventions can further be divided into Mantra meditation, Mindfulness meditation and Rajyoga meditation.

Mantra Meditation

It focuses on a word, phrase or concept. The mantras often have soft sounds like "Om" and these words are supposed to produce different vibrations in different people and produce varying effects on the practitioners.[8] Transcendental meditation (TM) is one example of mantra meditation. Here mantras are used for sound value rather than meaning. Gradually mantras become secondary and then disappear, whereas self-awareness becomes primary and the individual transcends to a state of pure consciousness.[8] Transcendental meditation has been extensively studied as a meditation therapy in a number of studies.[9]

Mindfulness Meditation

Mindfulness meditation involves an attitude of openness, acceptance and reflection rather than impulse and judgement towards one's present experiences along with observation of thoughts, feelings and the external world through calm, detached sensory awareness.It focuses on the present moment and has been found in numerous religious cultures, meditation techniques and psychotherapies.[10,11] ManiKonda et,al studied the impact of contemplative meditation combined with breathing techniques (CMBT) on hypertensive patients. He found decrease in heart rate and decrease in systolic and diastolic blood pressure of the study subjects.[12]

Raj yoga meditation

Yoga is a Sanskrit word which literally means "link" or "Union". The word Raja means "King", "Sovereign" or "Supreme". Thus Rajyoga is defined as the Communion of the soul with the Supreme Soul. Rajyoga practice harmonizes the neurochemistry of hypothalamus, because it is related with emotional and mental functions, as the neurotransmitters are healthy, all internal bodily organs like the heart, lungs, stomach and kidney also function harmoniously. Rajyoga meditation induces relaxation response also. External events generally do not raise mental tension. Rather it is the repeated thinking over an event that takes the form of a vicious circle. The repetition goes on both consciously as well as unconsciously awake and asleep which raises mental tension to dangerous level. The control over the mind achieved through Rajyoga meditation makes us able to halt this repeated brooding over stressful events. We are able to easily re-channelize our mental energies into positive and even blissful directions and to get intuitive solutions to stress causing events which are life enhancing for all concerned, rather than negative or destructive towards self or others.

Materials and Methodology

The present study was a cross-sectional conducted on the patients attending the medicine O.P.D. at a Tertiary Care Hospital setting, Surendernagar, Gujarat. Before conducting the study approval is obtained from Institutional Ethical Committee. Patients who have a high Blood Pressure ≥ 140 / 90 mm of Hg were selected for the study. Blood pressure of patients was measured twice every fifteen minutes before meditation in sitting position. The purpose of the study was explained to the subjects and they were asked to come to learn Rajyoga meditation course for seven days. Before the start of meditation course, a questionnaire was given to them. Patients were taught Rajyoga meditation one hour daily for seven days. Rajyoga meditation was carried out with commentaries. After the course, the patients were asked to continue Rajyoga meditation daily for 30 minutes time for one month. Then again their blood pressure was recorded twice every 15 minutes in sitting position.

Results

Table no.1 shows socio-demographic characters of the study participants. Majority of study participants i,e 60% were from age group between 41-60 yr . More than half of participants i,e 65% were females. Most of them i,e 75% were educated upto or more than higher secondary level. Fifty five percent of them were housewives, 30 % were doing business followed by 10 % were doing service.

Table 1 Socio-demographic characters of the hypertensive patients

Socio-demographic character		No.	Percentage
Age	**21-40 yr**	04	20
	41-60 yr	12	60
	61-80 yr	04	20
Sex	**Male**	07	35
	Female	13	65
Education	**Illiterate**	01	05
	Primary	04	20
	Secondary	05	25
	Higher secondary	06	30
	Graduate & above	04	20
Occupation	**Housewife**	11	55
	Service	02	10
	Business	06	30
	Retired	01	05

Table 2: Comparison of Systolic and Diastolic Blood pressure pre and post intervention

Parameter	Pre-meditation	Post-meditation	t-test value	p-value
	Mean SD	Mean SD		
Systolic BP	154.33 ± 24.37	126 ± 14.42	3.07	0.006*
Diastolic BP	96.2 ± 8.3	94.3 ± 9.27	0.807	0.430

*p<0.05= significant

It is evident from Table no.2, that the mean systolic BP before meditation was 154.33 while after meditation 126. Thus meditation technique has shown significant impact on Systolic BP as t-value obtained with the help of paired t-test for comparing means is 3.07 which found to be statistically significant (p<0.005). As compare to systolic BP, Diastolic BP had shown minimal changes i,e before meditation mean diastolic BP was 96.2 and after meditation it was 94.3; which was statistically insignificant. But may be with long duration of practice of Rajyoga meditation this may also show beneficial effects on diastolic BP. The mean paired difference clearly reveals that systolic BP before meditation and after meditation was statistically significant.

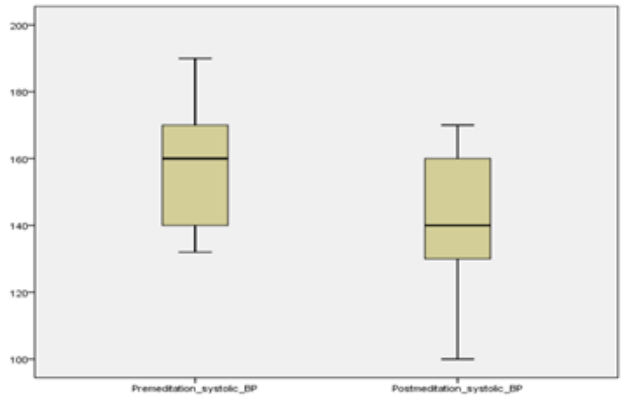

Fig.1 Diagrammatic representation of Systolic blood pressure before and after meditation

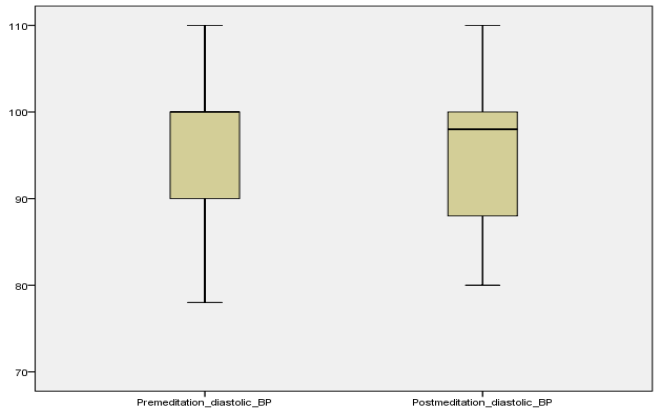

Fig.2 Diagrammatic representation of Diastolic blood pressure before and after meditation

As it can be seen from Figure No.1 that there are definite change in systolic blood pressure before and after meditation of 30 days practice only. Similarly in Fig. No. 2 pre and post meditation changes can be seen in diastolic blood pressure. But major differences can be observed in systolic than diastolic blood pressure.

Table 3: Distribution of subjects according to physical and psychological parameters pre and post meditation: (N=20)

Parameters	Symptoms	Pre-intervention	post-intervention	Chi-square value	p-value
Physical parameters	Headache	15 (75)	8 (40)	3.59	< 0.058
	Light headedness	12 (60)	8 (40)	3.33	>0.068
	Vertigo	10 (50)	7 (35)	3.53	> 0.06
	Tinnitus	3 (15)	1 (5)	12.59	<0.000
	Shortness of breath	9 (45)	6 (30)	4.31	< 0.038
	Palpitation	2 (10)	2 (10)	20.0	<0.000
	Reduction in Dose of Medication	15 (75)	7 (35)	3.59	<0.058
Psychological parameter	Anger	11 (55)	04 (20)	4.09	<0.043
	Mental tension	12 (60)	05 (25)	4.44	>0.62
	Worries	7 (35)	3 (15)	6.55	<0.035
	Powerlessness	4 (20)	2 (10)	8.88	<0.01
	Feels irritated	14 (70)	8 (40)	5.71	<0.003

Figures in parentheses indicate percentages
*p < 0.05 i,e statistically significant
**p < 0.01 i,e statistically highly significant
***p <0.000 i,e statistically very highly significant

When this study group had asked about physical and psychological symptoms due to high blood pressure; there was significant changes seen before and after meditation as shown in table 3. There was significant decrease in almost all physical parameters like headache [p < 0.05], tinnitus [p < 0.000], shortness of breath [p < 0.038], palpitations [p < 0.000], as well as reduction in dosage of medications after meditation [p < 0.058] Changes are found to be statistically significant. There was improvement in psychological symptoms of high blood pressure too. About 20 % of subjects got relief from anger or peace-lessness, [p < 0.05],15 % from various worries[p <0.05], 10% felt powerful [p<0.01]while 40 % relived from feeling of irritation[p<0.001] All these psychological symptoms had shown statistically significant changes after meditation except mental tension have not shown any statistical significance.

Discussion

Uncontrolled high blood pressure is a major risk factor for cardiovascular, nervous system & kidney morbidity & mortality despite the advances in hypertension management. Many of the therapeutic drugs are unfortunately becoming more and more known to interact with physiological & pharmacological responses. Blood pressure in increased to an abnormal level due to various psychosocial stresses, smoking, high cholesterol diet etc. In response to stress, sympathetic system is over activated who lead to increased heart rate, and blood pressure. It is postulated that by meditation catecholamine level is decreased. Meditation also causes slight parasympathetic over activity & decreased sympathetic activity. It is postulated that meditation also increases the level of endorphins in the blood. Therefore, this study is undertaken to study the effect of Raj yoga meditation on hypertensive patients. This study was carried out in tertiary care setting, Surendernagar, Gujrat. In our study, the mean systolic BP before meditation was 154.33 while after meditation 126. Thus meditation technique has shown significant impact on Systolic BP. Rajyoga meditation is seen to gradually reduce the sympathetic dominance thereby reducing in high blood pressure. As compare to systolic BP, Diastolic BP had shown minimal changes i,e before meditation mean diastolic BP was 96.2 and after meditation it was 94.3; which was statistically insignificant. But may be with long duration of practice of Rajyog meditation this may also show beneficial effects on diastolic BP. Similar findings were found in study by Gupta et.al.(2011)[13].He also recorded a significant change in various psychological

parameters. Patients with most adherence to Rajyoga meditation showed a highly significant decrease in anxiety score (P<0.005), Depression score (P<0.023), anger score (P<0.0001), improvement in the lifestyle change (P<0.001) and in their overall sense of wellbeing (P<0.003) as compared to least adherence. These findings were in congruent with study done by Maini et al [(14)] And found that mean heart rate, systolic blood pressure, diastolic blood pressure were significantly lower in subjects who practised meditation than non-meditation group. Agarwal et.al.(2015)[(15)], Kiran et al (2017) [(16)] ,Patel (2012) [(17)] also found similar results.

Regarding various physical and psychological parameters are compared before and after meditation, shown wonderful beneficial effects on hypertensive subjects. There has been found relief in headache [p < 0.05], tinnitus [p < 0.000], shortness of breath [0.038], palpitations [p < 0.000], as well as reduction in dosage of medications after meditation [p < 0.058]. This was found to statistically significant. Also there was relief in psychological variables like 20 % of subjects got relief from anger or peace-lessness, [p < 0.05],15 % from various worries[p <0.05], 10% felt powerful [p<0.01]while 40 % relived from feeling of irritation[p<0.001]after meditation practice which found to be effective in controlling blood pressure. Even it has been seen activation of parasympathetic nervous system as there is decrease in physiological and psychological variables too occurring with meditation. Relaxation causes reduction in irritation, anger, worries emotions which are thought to be provoking factors for high blood pressure. Several other studies too shown similar effects. Sukhsole (2012)[(18,19)], Ghar et al (2016).[(20)]

Conclusion

This study demonstrates the role of Rajyoga meditation as a successful intervention in controlling hypertension in majority of the patients. This study recommends meditation as a way to attain calmness and serene lifestyle having positive effects on physical and mental health. Ii has been found to provide relief in various physical symptoms of hypertension to patients like headache, palpitations, tinnitus, shortness of breath; as well as on psychological symptoms of hypertension like worries, irritation, and anger. There was significant reduction in systolic blood pressure than diastolic blood pressure. There was reduction in the dose of antihypertensive medications too. May be long duration of Rajyoga meditation practice is required to have an positive effect on diastolic blood pressure too.

Limitation

The sample size was very small, for application on large scale; large sample size would be required. The study period was very small otherwise better results might have been achieved.

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