

The Effect of Yoga module on Hypertensive Pregnant Woman - A Pilot study

Research Article

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Abstract

Background: Yoga is an ancient science of life which provide holistic approach to the health. Its analytical approach is depending on the signs and symptoms present in the patients. As Pregnancy induced hypertension is the instrumental disease, there is no direct reference of it in Ayurveda and yoga. But there are many references in ancient texts about hemodynamic system including *Hridaya*, *Dhamani*, *Shira* etc which are commonly affected by the high blood pressure. **Aim and objective:** To assess the role of specific Yoga module in the management of gestational hypertension. **Materials and Methods:** For the present study total 15 patients were selected and Yoga module was advised to the diagnosed hypertensive pregnant woman for 5 days a week for 8 weeks and assessment was done after completion of Yoga module. **Results:** In pregnant women, after applying t test, statistically highly significant result $P>0.001$ were found in Systolic, Diastolic blood pressure and pulse rate after Yoga Module therapy. **Conclusion:** Yoga helps to improve physical, mental, and spiritual health. Yoga improves the cardiovascular system, immune system, and quality and length of sleep. Yoga regulates five types of *Vata* which helps to maintains circulation and metabolism in body, by reliving stress yogic procedure reduce the systolic and diastolic BP.

Key Words: Yoga, Hypertensive Pregnant Woman, Gestational hypertension.

Introduction

The cardiovascular system contributes to homeostasis of other body systems by transporting and distributing blood throughout the body to deliver materials (such as oxygen, nutrients and hormones) and carry away wastes. Blood pressure is the hydrostatic pressure exerted by blood on the walls of a blood vessel. BP rises to about 120 mm Hg during ventricular systole and drops to about 80 mm Hg during ventricular diastole. Though Pregnancy Induced Hypertension (PIH) as a separate disease entity has not been described in Ayurvedic classics but various references collected from *Kashyapa Samhita*, *Charaka Samhita*, *Sushruta Samhita*,

Ashtanga Samgraha, *Ashtanga Hridaya*, *Sharangadhara Samhita* and *Harita Samhita* when put together give the idea about this condition. In Pregnancy induced hypertension there are 3 cardinal symptoms Hypertension, Oedema (*Shopha*) and Proteinuria. When these symptoms are associated with convulsions, Eclampsia takes place. *Harita* specifically

described that *Ashta Garbhopadravas* in which he dealt *Shopha*, *Chardi*, *Hrillasa*, *Atisara*, *Aruchi* and *Vivarnata* along with *Jwara* and *Shosha*. Here *Shopha* as a *garbhopadrava* can be considered as indirect example of PIH. *Vivarnatwa* may occur due to anaemia or blood loss. Blood loss may occur due to APH in the form of Abruptio placentae which is a common complication of Pre-eclampsia. *Charaka* and *Vagbhatta* have mentioned *Padashopha* as one of the symptoms of *Vyaktagarbha*. (1) but it cannot be considered as a symptom of PIH. But while describing the causes of *Nija Shotha*, *Charaka* and *Vagbhatta* mentioned *Garbhasampidana* as one of the causes of *Nija Shotha* or in other words pregnancy can cause pathological oedema which is one of the cardinal symptoms of Preeclampsia. So, it can also be considered as an indirect reference of PIH. (2) *Kashyapa* has also mentioned specific treatment of *Shopha* and *Shopha* is also included in the list of features denoting *Arishta Lakshanas*. (3) *Kashyapa* has also described specific treatment for *Akshepaka* and *Aptantraka* in *Garbhini*. But it is not told that these symptoms are due to *garbha* but due to its presence in *Garbhini*, we can consider it as an indirect reference of PIH (mainly Eclampsia).

While describing the *Asadhya Lakshanas* of *Mudhagarbha* *Sushruta* and *Vagbhatta* have mentioned *Viparitendriartha* (perception of non-existent or opposite things by sensory organs), *Akshepa* (convulsions), *Shwasa* (dyspnoea) and *Bhrama* (giddiness) which are present in Eclampsia also. *Kashyapa* has described under the *Asadhya* symptoms

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of *Mudhagarbha*. This can also be considered as an indirect reference of PIH because of oedema is a predominant symptom of PIH. Hypertension affects the uteroplacental flow leading to IUGR in cases of Preeclampsia. Our Acharyas have mentioned this *Garbhashosha* (IUGR) at several places. According to *Charaka*, due to deficiency of proper nourishment to the foetus or bleeding

P/V after conception, the foetus suffers from *Shosha* i.e., emaciation. Aggravated Vayu is also said to be a cause of *Shushkata* of foetus. *Sushruta* explained the causes of *Vatabhipanna garbha* that due to vitiation of Vayu, foetus gets dried up, does not fill mother's abdomen completely and moves very slowly. *Dalhana* elaborated that due to the effect of Vayu there is absence of *ojas*. *Vagbhata* says if *Garbhini* takes *Vata* aggravating *ahara – vihara*, causes aggravation of Vayu and this aggravated *Vata* dries *rasavahi* channels of the foetus, thus it suffers from *Vata* disorders, becomes emaciated and remains in the uterus for years. According to *Kashyapa* Mohini and *Kroshna* are the examples of *Sadhya Jataharini* affecting the pregnant women. In Mohini *jataharini* either non attachment of embryo or its expulsion after attachment occurs along with death of pregnant woman due to unconsciousness.

When the foetus situated in *Kukshi* (uterus) creates various complications then she is known as suffering from *Krishana Jataharini*. So, these *Jataharini* can be considered as an indirect reference of PIH. (4)

The purpose of the pilot study is primarily to establish the efficacy of yoga module and demonstrate freedom from unwanted side effects in human. Appropriate Therapy plays a paramount role in the success of treatment, as only few previous research work has been carried out on gestational hypertension using yoga and Ayurveda (5), the present study tries to find an effective yoga module management of this disease. Yoga includes a combination of breathing, stretching, posture, and meditation that improvise health and spiritual growth in the person. (6) It increases a practitioner's positive affect and control over negative thoughts, as well as decreases blood pressure, depression, anxiety, and stress. For the present study module of Deep Breathing, *Sukshm vyayam* (body parts movements), Asanas (body posture) and deep breathing meditation was advised to the patients. Yogic procedure is reported to have hypotensive effect on clinical studies (7) (8). This pilot study was planned considering the above told aspects with following aims and objectives.

Aims and Objectives

1. To study the etiopathogenesis of pregnancy induced hypertension as per Ayurvedic concept.
2. To assess the role of specific Yoga module in the management of gestational hypertension.

Materials and Methods

Selection criteria of the patients: For the present study total 15 patients were selected from Garbh Sanskar Challenge (GSC) course group, Pune.

Inclusion criteria

- Primigravida women aged 18-35 years having B.P. > 140/90 mm Hg for the first-time during pregnancy.
- Pregnant lady having rising of systolic B.P. at least 30 mm Hg or rising of diastolic B.P. at least 15 mm Hg over the previous known B.P.
- Pregnant lady having other associated symptoms i.e., headache, epigastric pain, oedema etc.

Exclusion Criteria

- Preeclampsia and Eclampsia (pre-eclampsia with convulsion)
- Patients suffering from cardiac and liver disease etc.

Criteria for diagnosis

Diagnosis was done on the basis of rise of B.P. evident at least on two occasions and 4 or more hours apart.

Methods

Yoga module was advised to the diagnosed hypertensive pregnant woman for 5 days a week for 8 weeks. Prior consent was taken before starting therapy and assessment was done after completion of Yoga module. It includes following steps:

Breathing exercise

- Deep Breathing: 2 min
- Om chanting: 3 min 9 times
- *Brahamari pranayama* (bee breath): 5 min 12 cycles
- *Anulom- vilom (Nadi shodhan)*: 5min 12 cycles 6-6 alternate

All exercise were advised for 15 minutes in morning

Sukshm vyayam

Upper body exercises

- Hand and shoulder exercise for 10 min
- Eye exercise-eye ball exercise, eye rotation
- Neck rotation
- Hand movements
- Shoulder rotation
- Shoulder- blade stretching

Lower body exercises

- Leg rotation, leg movements for 10 min
- Above routine follow 5 days a week for 8 weeks

Asanas

Any 4 asanas to be done alternate days after above pranayama and *sukshama vyaam* for 5 days a week for 15 min

1. *Marjarasana* (Cat stretch)
2. *Konasana-1* (standing sideways bending one arm)
3. *Veerbhadradasana* (warrior pose)
4. *Trikonasana* (triangle pose)
5. *Badhakonasana* (butterfly pose)
6. cat and cow pose
7. Balancing table pose
8. *Vakrasana* (twisted pose)
9. *Parvatasana*
10. *Balasana*
11. *Sukhasana*
12. *Parsva savasana* (side corpse pose)

After asana again Labor breathing, deep breathing meditation for 10 min

Observation and results

Table no. 1 Bowel habit of 15 Hypertensive Pregnant Woman

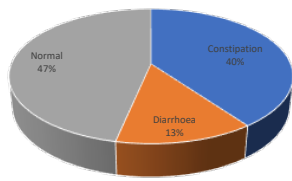
Bowel habit	No of patients	Percentage	
Constipation	6	40.0	
Diarrhoea	2	13.3	
Normal	7	46.7	

Table no. 2 Sleep pattern of 15 Hypertensive Pregnant Woman

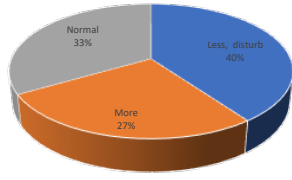
Sleep pattern	No of patients	Percentage	
Less, disturb	6	40.0	
More	4	26.7	
Normal	5	33.3	

Table no. 3 Pregnancy in weeks of 15 Hypertensive Pregnant Woman

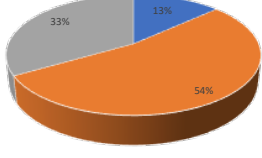
Pregnancy in weeks	No of patients	Percentage	
Below 12 weeks	2	13.3	
12w to 16 w	8	53.3	
16 to 20 w	5	33.3	

Table no 4. Paired t test for objective criteria Systolic blood pressure in Hypertensive Pregnant Woman

Parameter	Mean \pm SD		% Change	SE	t	p value
	Before treatment SBP	After treatment SBP				
Systolic blood pressure	152 \pm 6.141	132.5 \pm 4.86	12.80	2.00	9.712	<0.001
Significance	Highly significant					

In pregnant women, after applying t test, statistically highly significant result $P>0.001$ were found in Systolic blood pressure after Yoga Module therapy, whereas Change of Systolic blood pressure was 12.80% after treatment.

Table no 5. Paired t test for objective criteria diastolic blood pressure in Hypertensive Pregnant Woman.

Parameter	Mean \pm SD		% Change	SE	t	p value
	Before treatment DBP	After treatment DBP				
Diastolic blood pressure	109 \pm 9.82	87.8 \pm 12.24	19.43	1.5	13.29	<0.001
Significance	Highly significant					

In pregnant women, after applying t test, statistically highly significant result $P>0.001$ were found in Diastolic blood pressure after Yoga Module therapy, whereas Change of Diastolic blood pressure was 19.43 after treatment

Table no 6. Paired t test for objective criteria Pulse rate in Hypertensive Pregnant Woman

Parameter	Mean \pm SD		% Change	SE	t	p value
	Before treatment SBP	After treatment SBP				
Pulse rate	87.6 \pm 15.9	78.8 \pm 9.49	10.04	2.3	3.786	<0.01
Significance	Significant					

In pregnant women, after applying t test, statistically significant result $P>0.001$ were found in Pulse rate after Yoga Module therapy, whereas % Change of Pulse rate was 10.04 after treatment.

Discussion

The pranayama (the breath) strengthens the diaphragm and intercostals muscles, subsequently strengthening the muscles in a practitioner's lungs, which may explain the improvements in cardiovascular health. Practitioners report that yoga aids them in dealing with difficult situations, such as better navigating their negative emotions. Interestingly, while different styles of yoga vary psychologically, slow-breathing appears to be the common thread between them. Current research makes clear that, physiologically, meditation puts a practitioner into a state similar to sleep. (9) Though technically awake, these practitioners experience a feeling of unboundedness, while being unaware of space, time and even body-sense. They describe their mind as being at peace. During therapy Statistically highly significant result $P > 0.001$ were found in Systolic and diastolic blood pressure after Yoga Module therapy, whereas Change of Systolic blood pressure was 12.80% after treatment and Change of Diastolic blood pressure was 19.43 after treatment. whereas statistically significant result $P > 0.001$ were found in Pulse rate after Yoga Module therapy, whereas Change of Pulse rate was 10.04% after treatment. Yoga improved functioning in the cardiovascular system through heart rate and blood pressure reduction. The authors theorized that this improvement was due in part to the breath (pranayama), the practice of pranayama strengthens the muscles involved with this type of breathing

Yoga module (yogic breathing and meditation) were mostly focused on relaxation and rest with awareness, which have been shown to be effective in management of high blood pressure in pregnant women, it their reducing maternal stress and anxiety. The reduction in the pregnant women stress effects on neuroendocrine pathway, metabolic function also yoga activated the vagal nerve which improved parasympathetic output leading to enhanced cardiac-vagal function decrease the BP and pulse rate also yoga promotes a feeling of well-being by affecting the hypothalamic pituitary adrenal axis. (10) yoga and meditation on hypothalamic pituitary axis and brain to reverse the deleterious effects of stress.

Conclusion

Pregnancy induced hypertension is one of the common complications met during pregnancy and contributes significantly to maternal and perinatal morbidity and mortality. yogic procedure helps in relieving stress reduce the systolic and diastolic BP. Also, yoga and meditation decrease cortisol level, stimulate brain and increase cerebral blood flow which help in process by which new neurons are formed in the brain.

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