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RESEARCH ARTICLE

NIDAN PANCHAK OF GARBHA UPADRAVA SHOTHA W.S.R GESTATIONAL HYPERTENSION

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Abstract

Pregnancy is a crucial phase for women, characterized by numerous physiological changes. One common condition during this period is hypertension, specifically known as pregnancy-induced hypertension (PIH). The incidence of PIH is increasing due to older ages at marriage and delayed conception. PIH generally manifests after 20 weeks of gestation and significantly contributes to both maternal and fetal morbidity and mortality. Hypertensive disorders of pregnancy (HDP) remain a significant challenge in obstetrics, affecting 5-10% of pregnancies and accounting for 16% of maternal deaths worldwide. Garbha upadrava shotha which we can correlate with endothelial dysfunction which we can correlate with gestational hypertension in modern. Although Ayurveda does not classify hypertension as a conventional disease, it provides valuable insights through the evaluation of doshas (body humors), dushyas (affected entities), srotas (body channels), and other related factors. This comprehensive approach, addressing physical, mental, and spiritual aspects, offers potential in both understanding and managing hypertension effectively.

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Introduction:-

Ayurveda's distinctive essence lies in its comprehensive perspective on the body, viewing it as an interconnected whole. Understanding the body's intricate harmony, where each component relies on others, poses a challenge when approached in isolation. In recent years, there's been a growing recognition of this holistic view of health, encompassing the multidimensional aspects of the body, mind, and soul, teachings that Ayurveda imparted ages ago.¹ Despite the conveniences of modern life, humanity has also incurred a toll, succumbing to numerous lifestyle ailments due to flawed lifestyles and stressful mental states. These factors disrupt the body's equilibrium and mental well-being through various psychosomatic pathways, giving rise to conditions like diabetes and hypertension. According to the World Health Organization, hypertension afflicted approximately 40% of individuals over 25 years old in 2008.² This condition directly contributes to a significant portion of stroke and coronary heart disease fatalities in India. Moreover, hypertension poses a grave risk to the brain, kidneys, heart, and peripheral arteries, potentially leading to fatal outcomes if left unaddressed.^{3,4} Its silent nature exacerbates the danger, with an overwhelming majority of sufferers displaying no symptoms. Despite extensive research, the precise origins of hypertension remain largely elusive, with genetics and environmental factors believed to play significant roles.⁵ Although Ayurveda doesn't categorize hypertension as a conventional disease, it offers insights into understanding it

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through assessments of doshas (body humors), dushyas (affected entities), srotas (channels of the body), and other relevant factors. This holistic approach, integrating physical, mental, and spiritual dimensions, holds promise in not only comprehending but also managing hypertension effectively. By delving into the interconnectedness of bodily systems and addressing imbalances at their root, Ayurveda presents a nuanced understanding of hypertension that extends beyond symptomatic treatment to encompass holistic well-being.

Pregnancy is a critical period for women, bringing numerous bodily changes. A prevalent condition during this time is hypertension, often referred to as pregnancy-induced hypertension (PIH).⁶ This condition is becoming more common due to the increasing age of marriage and delayed conception. Known in traditional terms as "Garbhajanya vishamayata," PIH typically develops after 20 weeks of gestation.⁷ It involves the onset of new hypertension and signals underlying health issues, either pre-existing or emerging during pregnancy. PIH is a significant contributor to maternal and foetal morbidity and mortality.

Hypertensive disorders of pregnancy (HDP) present a major unresolved challenge in obstetrics, affecting 5-10% of all pregnancies. These disorders account for 16% of maternal deaths globally. Garbhaupadrav shoth, or PIH, remains a critical medical issue during pregnancy, marked by hypertension and underlying pathological conditions. It affects nearly 10% of pregnancies worldwide. According to the report "Global Statistics – Pregnancy Induced Hypertension," the global prevalence of PIH among women is estimated at 13%.⁸ In regions like Asia and Africa, hypertensive disorders during pregnancy contribute to about one-tenth of maternal deaths, making it a leading cause of mortality among women of reproductive age.⁷

In India, studies by the Indian Council of Medical Research (ICMR) indicate that PIH affects approximately 10-20% of pregnant women.⁷ Hypertensive pregnancies are linked to a higher risk of adverse outcomes for both the mother and the baby. For the mother, these risks include preterm birth, acute renal and hepatic failure, antepartum and postpartum haemorrhage, and maternal death. For the foetus and newborn, risks include intrauterine growth restriction (IUGR) and perinatal death.

According to Ayurvedic principles, understanding the nature of an unknown disease involves examining dosha (biological energies) and dushya (bodily tissues) along with the disease's pathogenesis (samprapti). Therefore, it is essential to thoroughly understand gestational hypertension from an Ayurvedic perspective to provide effective treatment. By integrating these traditional insights with modern medical knowledge, better management and outcomes for PIH can be achieved.⁹

In 2009, World Health Organization stated that at least one woman dies and 20 are affected by the complications related to pregnancy or childbirth every minute. Incidence of pre-eclampsia is reported to be 8-10% in India, among the pregnant women.¹⁰ In a study conducted in India, the prevalence of hypertensive disorder of pregnancy was 7.8% with preeclampsia in 5.4%.¹¹ PIH refers to some conditions as mentioned in figure 1.

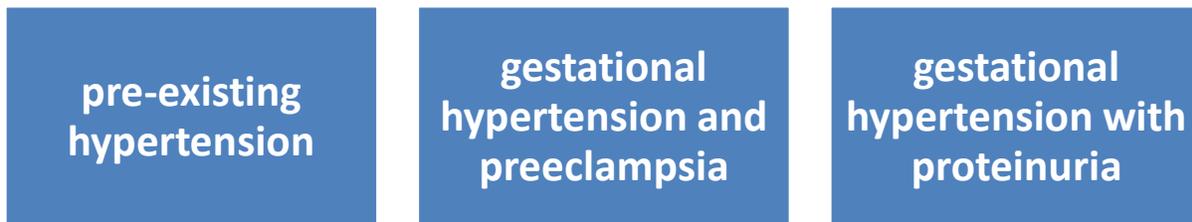


Figure 1;-

In Ayurvedic texts, there is a detailed account of symptoms associated with severe pregnancy-induced hypertension. These include Garbhini Shotha (pathological edema), Garbhini Aakshepaka (convulsions), Garbhini Mootragraha (oliguria), and Garbhashosha (intrauterine growth restriction). Although these symptoms are mentioned sporadically, ancient Ayurvedic scholars noted that their presence indicates a poor prognosis. They categorized these symptoms under Garbhpadravas, Arishta Lakshanas, and Asadhya Lakshanas of Mudhagarbha, signifying the severity of the condition.¹²

However, hypertension and proteinuria are not directly described in these texts, possibly because Ayurvedic diagnosis primarily relies on symptomatology, whereas modern identification of these conditions requires tools like a sphygmomanometer and urine tests. Ayurvedic classics do provide a comprehensive guideline called Masanumasika Paricharya for pregnancy care, which is highly effective in preventing pregnancy-induced hypertension (PIH) in cases of mild abnormal placentation resulting from poor lifestyle choices. Consequently, only severe cases of abnormal placentation, which manifest with key symptoms of PIH like Shotha (edema), are recognized at that time. This inclusion of edema under Garbhopadravas underscores the critical nature of these symptoms in Ayurvedic obstetrics.¹³⁻¹⁴

Detailed review:

In Ayurvedic texts, detailed guidelines known as Masanumasika paricharya are provided for pregnancy care, which are effective in preventing Pregnancy-Induced Hypertension (PIH) in cases of mild abnormal placentation resulting from an unhealthy lifestyle. Severe cases of abnormal placentation manifest as cardinal symptoms of PIH, such as oedema (Shopha), which is listed under Garbhopadravas (pregnancy complications). Kashyapa includes oedema in the list of Arishta Lakshanas, indicating poor prognosis. Acharya Sharangadhara's descriptions of Garbhavyapat conditions, particularly Upavishtaka and Jaraayudosha, closely relate to PIH. The pathophysiology of PIH mirrors that of Upavishtaka Garbhavyapat, where continued consumption of pungent and hot foods after the fetus reaches the stage of Sara (four months) leads to bleeding or other vaginal discharges.¹⁵ Similarly, Kroshana Jataharini, where the fetus causes various complications in the uterus, can be seen as an indirect reference to PIH.⁷

In Ayurveda, every disease results from Dosha Prakopa (aggravation of Doshas), and factors like diet and lifestyle (Aahara and Vihara) play a crucial role. The primary cause of Dosha vitiation is the consumption of harmful foods and lifestyles (Ahitasevana). Independent risk factors, such as excessive tea consumption and smoking, which aggravate Vata and Pitta Doshas, significantly increase PIH incidence. The Acharyas have advised against Garbhoghatakarabhava, which refers to diet and lifestyle choices contraindicated during pregnancy. When pregnant women ignore these guidelines, they risk developing Garbhini (pregnancy-related) diseases. Current etiological and provoking factors of PIH can be better understood when compared with the etiological factors described in Ayurvedic classics.¹⁵⁻¹⁶

Nidana / ETIOLOGY

Factors Influencing Pregnancy-Induced Hypertension (PIH)

Genetic Factors:

Hypertension often results from poor dietary and lifestyle habits passed down through generations, leading to genetic predisposition, now referred to as X syndrome (Beeja Dosha/Santana Dosha). Data reveals a robust positive relationship between family history and PIH. Although PIH is multifactorial, genetic and constitutional elements play significant roles, analogous to Beejadosha due to abnormalities in shukrashonita (sperm and ovum).

Excessive Salt Consumption

Epidemiological studies consistently show a strong link between high sodium intake and the prevalence of hypertension. Acharya Charaka specifically noted that the inhabitants of Saurashtra and Bahlika consume more salt in their diets. Such diets can aggravate doshas, advancing the pathophysiology of PIH.¹⁷

Age-Related Factors in Primigravida:

Elderly primigravidas typically exhibit a Pitta-Vata dominant state, while younger primigravidas are more Pitta dominant. Both Vata and Pitta are crucial in the etiopathogenesis of PIH, and the stage of life (Avastha) can contribute to disease manifestation. Additionally, primigravidas are often unaccustomed to the physiological changes and guidelines required during pregnancy.¹⁸

Extended Intervals Between Pregnancies:

According to the Sushruta Samhita, if a woman conceives after a six-year interval since her last delivery, the newborn may not survive long. Modern studies indicate that risks increase with intervals of ten years or more since the previous pregnancy. Aging can lead to DNA degeneration, potentially causing defects in placenta formation. This condition is Vata dominant, but Ayurvedic Rasayana therapy may slow degeneration.

Environmental Factors:

Several environmental factors contribute to the development of PIH, including alcohol consumption, smoking, and obesity. Alcohol increases Pitta dominance, exacerbating PIH conditions. Tobacco smoking can aggravate both Vata and Pitta and harm the Hridaya (heart), the seat of Pranavaha Srotasa (respiratory system).¹⁹

Psychological Factors:

Psychological stressors such as worry (Chinta), fear (Bhaya), and grief (Shoka) can exacerbate different doshas. Worry and grief primarily aggravate Vata, while fear also contributes to Vata imbalance.²⁰

Seasonal Variations:

Research indicates that the incidence of eclampsia is higher during the monsoon season when the weather is cooler, more humid, and with lower barometric pressure. In Ayurvedic terms, this period corresponds to Vata Sanchaya, Vata Prakopa, and Pitta Sanchaya, which facilitate disease manifestation.

Low Socioeconomic Status:

Women from poorer socioeconomic backgrounds often suffer from malnutrition due to nutritional deficiencies, leading to Dhatu Kshaya Avastha (tissue depletion) and subsequent Vata Vriddhi (Vata increase), which predisposes them to PIH.²¹

Rupa /SYMPTOMS

1. Uchharaktchapa: According to Sushruta and Vagbhata, Vyana Vayu, which resides in the heart (Hridaya), regulates the functions of Rasa and Rakta Samvahana (circulation of bodily fluids and blood) throughout the body. Therefore, Vyana Vayu maintains blood pressure by ensuring proper blood circulation, suggesting that hypertension can be considered a Vata, specifically Vyana Vaayu, related condition.^{21,22}
2. Proteinuria: Presence of protein in the urine, often associated with kidney issues.
3. Oedema: Acharya Kashyapa identifies Vata as the primary cause of oedema (Shotha). Initially, oedema appears in the lower extremities and is alleviated by rest, indicating a Vaataja type of Shotha. Garbhini Chardi (Vomiting): Occurs in severe cases.
4. Garbhini Mutragaraha (Oliguria): Due to oedema, fluid is retained in the body, resulting in reduced urine output, making it a consequence rather than an independent symptom.
5. Garbhini Shiroroga (Headache): Can be occipital or frontal, pulsatile or dull, continuous or intermittent. Pain is primarily a Vata condition, with the type of headache indicating a Vataja Shiroroga, varying according to associated factors (Anubandha).²³
6. Bhrama (Giddiness): Caused by an imbalance of Pitta and Vata, with Pittavrutta Vata being a possible factor.
7. Klama (Tiredness without exertion): Vata Prakopa (aggravation of Vata) leads to the vitiation of Rasa and Rakta, resulting in fatigue.²⁴
8. Nidranasha (Disturbed sleep): Linked to an increase in Vata and Pitta.²⁴
9. Garbhini Aakshepaka (Convulsions): Aakshepaka is a Vata disorder, more frequent in the third trimester, with 50% of seizures occurring before labor, often triggering labor soon after, indicating Vatakaala.
 - Viparitendriyarth (Visual Disturbance): Dalhana mentions this as a symptom of Asadhya Mudhagarbha (complicated pregnancy).

Samprapti / Pathophysiology

Ayurveda classics do not directly reference pregnancy-induced hypertension, but the symptoms can be understood through its principles. The term 'Garbhajanya vishamayata' can describe symptoms of pregnancy-induced hypertension. Hypertension risk factors such as genetics, obesity, hyperlipidemia (Snigdha, Guru ahara, Adhyasana), sedentary lifestyle (Alpa vyayama, Bhuktva divaswapna), and consumption of salty and spicy foods (Atilavana kshara amla katu) align with the causes of Raktadushti nidana in Charaka Samhita Sutra Sthana Vidhisoniteeya Adhyaya, Sopha Nidana, and Vatasonita Nidana in Astanga Hridaya.²⁵

The development of pre-eclampsia involves endothelial dysfunction and vasospasm due to abnormal placentation from failed trophoblast invasion into maternal spiral arteries. In Ayurveda, doshas, particularly vata, control pregnancy. According to Charaka Samhita Sutrasthana Vatakalakaleeyam Adhyaya, vata's functions, such as 'Karta Garbhakriteenam,' 'Sthoolanusrotasaam Bhetha,' 'Dhatumaanasamsthanavyakti,' 'Pravartanam Srotasa,' and 'Vibhago Dhatunaam,' are crucial for a healthy pregnancy. Vyana vata is responsible for blood circulation. Abnormal placentation reflects impaired vata dosha functions, leading to pregnancy complications like HELLP syndrome,

where Kapha and Pitta doshas also play roles.²⁴Vata dysfunction can result in Vinihanti Garbha or Vikritimapadayati, manifesting as pre-eclampsia symptoms such as low birth weight, fetal death, and preterm labor.²⁶

Sushruta described the Panchabhutikatva of Raktadhatu, highlighting that the Spandan guna is the function of Vayu Mahabhuta. Dalhan added that Spandan means "Kinchitchalanam" (a slight movement). An increase in this Chal Gun of Rakta can contribute to gestational hypertension, resulting in high blood pressure. In Ayurveda, blood is referred to as the "Apyabhava" of the body, and Raktadhatu is classified under Rasa Dhatu by Chakrapani. Thus, Rasa and Rakta Dhatu are primarily involved in the symptoms of gestational hypertension. Kashyapa explained that the Rasa Dhatu produced by the mother serves three functions: nourishing the mother, nourishing the fetus, and forming breast milk. Nutritional deficiencies can lead to Rasakshaya, which causes Vata imbalance, resulting in edema (Shotha) and hypertension.²⁷ The primary location of Vayu is the Pakvashaya. After the fifth month of pregnancy, as the fetus grows, the uterus exerts pressure on the Pakvashaya, causing Vata imbalance and leading to the development of Shotha.²⁸

Samprapti Ghatakas

1. Dosha – Vatapradhana tridosha
2. Dushya – Rasa, Rakta
3. Srotas – Rasavaha, Raktavaha, Manovaha
4. Srotodushti – Sanga
5. Vyaktasthana – Sarvasareera

Preventive Aspects

Swasthasya Swasthya Samrakshana encompasses the preventive measures outlined in Ayurveda, holding as much significance as curative measures (Vikara prashamana) for maintaining health. Ayurvedic texts detail preventive practices for Prasuti (obstetrics) and Streeroga (gynecology) through various Charyas or Paricharyas, such as Rajaswala charya, Rithumati charya, Garbhini Paricharya, and Soothika Paricharya.²⁹ Ayurveda advocates for pre-conceptional care to ensure a healthy progeny, involving pre-conception practices (Garbhadana purva paricharya) with Sodhana chikitsa and Samana chikitsa to prepare for conception.

The saying "Na hi vaatadrite yonir vanitaanam pradushyati" in Yonivyapath chikitsa emphasizes that no female reproductive disorder occurs without the involvement of Vata. As Vata governs bodily functions and plays a crucial role in conception and pregnancy-related hypertension, Sodhana chikitsa aims at Vatanulomana followed by Shamana chikitsa to stabilize Vatapradhana tridosha.

Medicines used should be Sophahara, Vatanulomaka, Hridya, Garbhasthapaka, and Raktaprasadaka, particularly if there is a history of pregnancy-induced hypertension.³⁰ Pre-conception care ensures a woman's physical and psychological readiness for pregnancy, continuing with Garbhini Paricharya (antenatal care) during gestation. Brihatrayis and Laghutrayis detail the regimen for pregnancy (Masanumasika Paricharya), recommending specific dietary and lifestyle practices each month to address physiological and pathological changes. Prevention through Garbhini Paricharya can avert many pregnancy-related conditions, although the management and medication choices differ for pregnant women, avoiding Teekshnaushadha and Sodhana procedures to protect both the fetus and the mother.

Garbhini paricharya improves maternal and fetal health, enhancing the likelihood of a healthy term delivery. Additionally, dietary regimens and Masanumasika Garbhasravahara, Garbhasthapaka, and Rasayana dravya contribute to positive pregnancy outcomes. Garbhasthapaka dravya counteracts harmful conditions for the fetus, while Rasayana dravya, with their antioxidant properties, act as free radical scavengers. Herbs like Shatavari, Guduchi, Amalaki, Draksha, and Jeevanti serve as Garbhini Rasayana.³¹ The accumulation of free radicals from abnormal placentation is a primary cause of pre-eclampsia; thus, early administration of antioxidant-rich drugs can prevent its development and related complications

Dietary flavonoids from Dadima, Amalaki, and Draksha also help prevent pregnancy-induced hypertension. Practices like Yoga and Pranayama can significantly enhance pregnancy outcomes in cases of pregnancy-induced hypertension, offering both preventive and curative benefits.³²

A study examining the impact of a specific yoga module on managing gestational hypertension found that yoga exercises, primarily aimed at relaxation and mindfulness, effectively manage high blood pressure in pregnant women by reducing maternal stress and anxiety. This stress reduction influences the neuroendocrine pathway and metabolic functions. Additionally, yoga activates the vagal nerve, enhancing parasympathetic output, which improves cardiac vagal function, lowering both blood pressure and pulse rate. Yoga also promotes a sense of well-being by affecting the hypothalamic-pituitary-adrenal axis, helping to counteract the negative effects of stress on this system.³³

Discussion:-

Pregnancy is a critical period for women, bringing numerous bodily changes. A prevalent condition during this time is hypertension, often referred to as pregnancy-induced hypertension (PIH). This condition is becoming more common due to the increasing age of marriage and delayed conception. Known in traditional terms as "Garbhauptadrava shotha," PIH typically develops after 20 weeks of gestation.³⁴

Ayurvedic classics do provide a comprehensive guideline called Masanumasika Paricharya for pregnancy care, which is highly effective in preventing pregnancy-induced hypertension (PIH) in cases of mild abnormal placentation resulting from poor lifestyle choices. Consequently, only severe cases of abnormal placentation, which manifest with key symptoms of PIH like Shoppa (edema), are recognized at that time. The development of pre-eclampsia involves endothelial dysfunction and vasospasm due to abnormal placentation from failed trophoblast invasion into maternal spiral arteries.

In Ayurveda, doshas, particularly vata, control pregnancy. Brihatrayis and Laghutrayis detail the regimen for pregnancy (Masanumasika Paricharya), recommending specific dietary and lifestyle practices each month to address physiological and pathological changes.³⁵ Prevention through Garbhini Paricharya can avert many pregnancy-related conditions, although the management and medication choices differ for pregnant women, avoiding Teekshnaushadha and Sodhana procedures to protect both the fetus and the mother.

Conclusion:-

The specialized descriptions of various regimes for the preconception, antenatal, and post-delivery periods in Samhita aim to prevent pregnancy-induced hypertension (PIH), pre-eclampsia, and eclampsia, thus promoting the health of both the mother and fetus. From an Ayurvedic perspective, the symptoms of these disorders are primarily due to the vitiation of Vata and Pitta doshas, particularly Vyana Vayu and Raktadushti, along with mental imbalances (Rajas and Tamas). Therefore, medications with properties that pacify Vata and Pitta, such as Hridya (cardiac tonic), Raktashodhaka (blood purifier), Anulomana (digestive aid), Rechaka (purgative for obstructed Vata), Medhya (intellect enhancer), Nidrajanana (sleep inducer), and Vatashamaka (Vata pacifier) are recommended. Additionally, Shothahara (anti-inflammatory), Agnidipaka (digestive stimulant), Garbhasthapana (uterine tonic), Balya (strengthening), and Brimhana (nourishing) properties are beneficial in managing PIH. Early identification of these conditions can prevent complications and aid in effective management.

Reference:-

1. Ross CL. Integral healthcare: the benefits and challenges of integrating complementary and alternative medicine with a conventional healthcare practice. *Integr Med Insights* 2009;4:13e20.
2. World Health Organization. Global brief on hypertension. 2013.
3. Kannel WB. Hypertension: reflections on risks and Prognostication. *Med Clin North Am* 2009;93.
4. Chen S. Essential hypertension: perspectives and future directions. *J Hypertension* 2012;30(1):42e5. <https://doi.org/10.1097/HJH.0b013e32834ee23c>.
5. Forjaz CLM, Bartholomeu T, Rezende JAS, Oliveira JA, Basso L, Tani G, et al. Genetic and environmental influences on blood pressure and physical activity: a study of nuclear families from Muzambinho, Brazil. *Braz J Med Biol Res* 2012;45(12):1269e75.
6. Williams Obstetrics, 23rd Edition, Section7, Obstetrical Complications, Chapter 34, Pregnancy Hypertension, Pg710
7. Kulkarni K "A Critical Review On Understanding And Management Of Gestational Hypertension - In Ayurveda." *IRJAY*. [online]2022;5(9); 97—103.
8. "Gestational Hypertension an Ayurvedic Perspective." Pooja Hemantkumar Pande, Varsha Deshmukh Ayurline: *International Journal of Research In Indian Medicine* 2021; 5(1):01- 07

9. Shastri K, Vidyotini Vyakhya, Charaka Samhita, Chaukhamba Bharati Academy, 2005, Ch. Sha. 8/21, Pg941)
10. Rakhshani A, Nagarathna R, Sharma A, Singh A, Nagendra HR. A holistic antenatal model based on yoga, Ayurveda, and Vedic guidelines. *Health Care Women Int.* 2015;36(3):256-75.doi:10.1080/07399332.2014.942900. Epub 2014 Aug 26. PMID: 25036466
11. <https://www.nhp.gov.in/disease/preeclampsia>.
12. Vibha Sheshrao Adhve & Vijay Nawale: Conceptual Study of Punarnavashtaka Ksheerabasti In Garbhini Shotha (Edema In Pregnancy.). *International Ayurvedic Medical Journal* {online} 2021.
13. Murthy K, Kashyapa Samhita, Ka. Khi. 9/40 Chaukhamba Samskrita Sanstana, Varanasi, 2006.Pp 192.
14. Prakashana, Varanasi, 2008.Pp.300 19) Tiwari P.V, Ayurvediya Prasuti Tantra Evam Streeroga, Part-1, Chaukhambha Orientalia, Vranasi, Revised And Enlarged Reprint In, 2014; 6: Pg-291-292-754
15. Tiwari P.V, Ayurvediya Prasuti Tantra Evam Streeroga, Part-1, Chaukhambha Orientalia, Vranasi, Revised And Enlarged Reprint In, 2014; 6: Pg-291-292-754.
16. Shastri AD, Sushruta Samhita, Sushrutsutrasthan .27/5 Chaukhamba Prakashan, Varanasi,2008.Pp.225
17. Vidyotini Vyakhya. Charaka Samhita. Chaukhamba Bharati Academy, Varanasi. 2005, Sharirasthana 8/21, p941.
18. Vidyotini Vyakhya. Charaka Samhita. Chaukhamba Bharati Academy, Varanasi. Part II, 2006, Chikitsasthana 3/115, p458.
19. BMC Women's Health. Seasonal variation in the incidence of preeclampsia and eclampsia in tropical climatic conditions. 15 October 2007.
20. Kashyapa. Kashyapa Samhita. Chaukhamba Samskrita Sanstana, Varanasi. 2006, Khilasthana 17/24, p340.
21. Ayurveda Tattva Sandipika. Sushruta Samhita. Chaukhambha Samskrita Sanstana, Varanasi. 2005, Sutrasthan 17/12, p72.
22. Sushruta. Sushruta Samhita, Nibandha Samgraha Commentary. Chaukhamba Surbharti Prakashana, Varanasi. 2008, Nidanasthana 8/6, p300.
23. Vidyotini Vyakhya. Charaka Samhita. Chaukhamba Bharati Academy, Varanasi. Part I, 2005, Chikitsasthana 28/62, p789.
24. D C Dutta. Text Book of Obstetrics. Hypertensive disorders in pregnancy. 6th Ed, 2004, Chapter 17, p221-242.
25. Vibha Sheshrao Adhve & Vijay Nawale: Conceptual Study of Punarnavashtaka Ksheerabasti In Garbhini Shotha (Edema In Pregnancy.). *International Ayurvedic Medical Journal* {online}.
26. Sushmita Bakale, Shreyes S, Yogitha Bali M.R, Sujatha S. Patil, Bharathi K S. Mild Pre Eclampsia (Garbhini Shotha) in Pregnancy - A Correlational Review. *AYUSHDHARA*, 2022;9(Suppl 1):21-25.
27. Sushrut samhita, anantram Sharma, chaukhamba prakashan, Varanasi, sushrut sutrasthan .27/5, pg.no.225
28. Kashyapa Samhita, Chaukhamba Samskrita Sanstana , Varanasi, 2006 , Ka. Su 18/, p230.
29. Vaidya Jadavji Trikamji Acharya. Moodagarbha Nidana. In: Susruta Samhita of Susruta with Nibandhasangraha commentary of Sri Dalhanacharya and Nyayachandrika Panjika of Sri Gayadasacharya on Nidana Sthana. Varanasi: Chaukhambha Sanskrit Prasthan; 2010. p. 300.
30. Kshama Kulkarni, Shreyas Swamidas, Rakesh Mishra. Garbhajanya Vishamayata w.s.r. to Pregnancy Induced Hypertension. *J Ayurveda Integr Med Sci* 2021;4:271-279.
31. Vrddha Vagbhatacharya. Ashtanga Sangraha. Chaukhambha Krishnadas Academy, Varanasi. Sharirasthana, Chapter-3, Shloka, 13: 208-209- 742.
32. Dina Maaliki, Abdullah A Shaito, Gianfranco Pintus, Ahmed El-Yazbi, Ali H Eid. Flavonoids in hypertension: a brief review of the underlying mechanisms. *Current opinion in pharmacology*.
33. Makhija, A., Khatik, N., & Raghunandan, C. (2021). A randomized control trial to study the effect of integrated yoga on pregnancy outcome in hypertensive disorder of pregnancy. *Complementary Therapies in Clinical Practice*, 43, 101366.
34. Veena Ajay Patil, Nirupa Ratan Taram and Kiran Shankar Singh. Review Article on Garbhini Shoth w.s.r to PIH. *World Journal of Pharmacy and Pharmaceutical Sciences*. Volume 9, Issue 10, 1357-1369.
35. Madhav Nidan, Ayushris Udarshanchokhamba Prakashan. Madhav Nidanuttarardha Edition 2012, 36/1-3 Page No 57, 59.