

**COMPREHENSIVE AYURVEDIC PROTOCOLS FOR STAGE-WISE MANAGEMENT  
OF HYPERTENSION: A CLINICAL PERSPECTIVE****<sup>1</sup>Dr. Adarsh Kallimath, <sup>2</sup>Dr. Madhu S. and <sup>3</sup>Dr. Sinchana S. R.**<sup>1</sup>Assistant Professor, Department of Kayachikitsa, Sri Dharmasthala Manjunatheshwara College of Ayurveda & Hospital, Hassan.<sup>2</sup>Associate Professor, Dept. of Swasthavritta and Yoga, Rajeev Institute of Ayurvedic Medical Sciences & Research Center, Hassan.<sup>3</sup>Final Year Postgraduate Scholar, Department of Shalya Tantra, Sri Dharmasthala Manjunatheshwara college of Ayurveda, Hospital & Research Centre, Udupi.**\*Corresponding Author: Dr. Adarsh Kallimath**

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**ABSTRACT**

Hypertension, commonly known as high blood pressure, stands as a pervasive global health concern and a significant contributor to the burden of cardiovascular diseases. It presents a critical risk factor for conditions such as stroke, myocardial infarction, heart failure, and renal failure. Hypertension is a major cause of premature death worldwide.<sup>[1]</sup> An estimated 1.28 billion adults aged 30–79 years worldwide have hypertension, most (two-thirds) living in low- and middle-income countries. An estimated 46% of adults with hypertension are unaware that they have the condition and less than half of adults (42%) with hypertension are diagnosed and treated<sup>1</sup>. Hence treating Hypertension is a must in all its stages. Two hundred years in the past, modern medicine had yet to be established, until then all the communicable and non-communicable diseases were managed with Ayurveda. This article provides ayurvedic insights into hypertension, considering dosha imbalances and lays emphasis on lifestyle factors, dietary choices and advocates an integrated approach for Stage 1 and Stage 2 hypertension, and tailored recommendations for specific conditions like LVH, hyperlipidaemia, and diabetic hypertension. Hence this article guides Ayurvedic practitioners in implementing treatment regimens in Hypertension for individuals seeking better health.

**KEYWORDS:** Ayurveda, Hypertension, Nityasevaneeya, Amalaki, Lashuna, Vyayama.**INTRODUCTION**

High blood pressure is a worldwide problem and major global health burden. Whether alone or combined with other metabolic diseases, high blood pressure increases the risk of cardiovascular disease.<sup>[2]</sup> Hypertension is defined as a systolic blood pressure (BP)  $\geq 130$  mm Hg or a diastolic blood pressure  $\geq 80$  mm Hg or taking medication for hypertension.<sup>[3]</sup> Most cases of hypertension are idiopathic, which is also known as essential hypertension.<sup>[4]</sup> Hypertension has been one of the most significant comorbidities contributing to the development of stroke, myocardial infarction, heart failure, and renal failure.<sup>[4]</sup> In a survey in India, the overall prevalence based on readings at the time of the first visit was 34.12% and the prevalence based on the average of three readings on the third occasion was 26.9%.<sup>[5]</sup> Hence, treating hypertension is essential for preventing serious complications, preserving organ function, and promoting overall health and well-being.

Ayurveda offers unique insights into the understanding and management of hypertension. Dosha imbalances, particularly aggravated Pitta and Vata, along with the formation of Ama play crucial roles in Ayurvedic interpretations. Taking into account an individual's constitution, lifestyle, and mental well-being, Ayurvedic interventions prioritize key components such as lifestyle factors, dietary choices, and personalized approaches.

This article aims to provide a comprehensive perspective on hypertension, bridging the insights from modern medicine with the principles of Ayurveda. Ayurveda recommends specific formulations, single drugs and therapies tailored to individual constitutions and aims to address individuals towards optimal health, well-being, and the prevention of this prevalent cardiovascular condition.

## REVIEW OF LITERATURE

Raised BP remains the leading cause of death globally, accounting for 10.4 million deaths per year.<sup>[6]</sup> Hypertension is the most important modifiable risk factor for coronary heart disease, stroke, congestive heart failure, end-stage renal disease, and peripheral vascular disease. Usually other risk factors like diabetes are also commonly associated with hypertension.<sup>[5]</sup> Therefore, health care professionals must not only identify and treat patients with hypertension but also promote a healthy lifestyle and preventive strategies to decrease the prevalence of hypertension in the general population.

**Defining** high blood pressure (BP) is extremely difficult and arbitrary.<sup>[7]</sup> At present, the classification of BP for adults aged 18 years or older based on recommendations of the JNC 7 is as follows.<sup>[8]</sup>

- **Normal:** Systolic lower than 120 mm Hg, diastolic lower than 80 mm Hg
- **Prehypertension:** Systolic 120-139 mm Hg, diastolic 80-89 mm Hg
- **Stage 1:** Systolic 140-159 mm Hg, diastolic 90-99 mm Hg
- **Stage 2:** Systolic 160 mm Hg or greater, diastolic 100 mm Hg or greater

From another perspective, hypertension may be categorized as either essential or secondary.<sup>[9]</sup> Primary (essential) hypertension is diagnosed in the absence of an identifiable secondary cause. Approximately 90-95% of adults with hypertension have primary hypertension, whereas secondary hypertension accounts for around 5-10% of the cases.

**The pathogenesis** of essential hypertension is multifactorial and complex. Multiple factors modulate the blood pressure (BP) including humoral mediators, vascular reactivity, circulating blood volume, vascular calibre, blood viscosity, cardiac output, blood vessel elasticity, and neural stimulation.<sup>[7]</sup> In young adults, PreHTN, the intermediate stage between HTN and normal blood pressure, is associated with sub-clinical atherosclerosis and target-organ damage.<sup>[10]</sup>

**In physical examination** one needs to look for signs of Coarctation of the aorta, Aortic valve disease, Renovascular disease or fibromuscular dysplasia (FMD), Polycystic kidneys, Endocrine disorders, Thyroid disorders. These make up the common treatable causes of secondary hypertension.<sup>[4]</sup>

**Workup includes**<sup>[4]</sup> 12 lead ECG, Fundoscopy, Blood workup including CBC, ESR, Creatinine, EGFR, Electrolytes, HbA1c, Thyroid profile, Lipid profile, Serum uric acid, Urine albumin to creatinine ratio and Ankle-brachial pressure index. Imaging including carotid Doppler ultrasound, echocardiography, and brain imaging whenever necessitated.

**The management** of hypertension subdivides into pharmacological and nonpharmacological management.

Non-pharmacological and lifestyle management are recommended for all individuals with raised BPs regardless of age, gender, comorbidities or cardiovascular risk status which are weight management, salt restriction, smoking management, and exercise.<sup>[4]</sup>

Pharmacological therapy consists of angiotensin-converting enzyme inhibitors (ACEi), angiotensin receptor blockers (ARBs), diuretics (usually thiazides), calcium channel blockers (CCBs), and beta-blockers (BBs), which are instituted taking into account age, race and comorbidities such as the presence of renal dysfunction, LV dysfunction, heart failure, and cerebrovascular disease.<sup>[4]</sup>

Antihypertensive medications, essential for managing high blood pressure, may bring about adverse effects such as hypotension, dizziness, fatigue, orthostatic hypotension, electrolyte imbalances, potential renal impairment, sexual dysfunction, cough, edema, and altered blood glucose levels. Ayurveda, with its holistic approach, offers alternative options with potentially fewer side effects. Consulting with both conventional and Ayurvedic healthcare professionals can help individuals achieve optimal blood pressure control while minimizing adverse effects.

## CRITICAL ANALYSIS

Ayurveda offers unique insights into the understanding and management of hypertension. Dosha imbalances, particularly aggravated Pitta and Vata, Ama, Dhatudushtis and Srotodushtis play crucial roles in Ayurvedic interpretations.

Rasa Dhatu through the 24 Rasavahini dhamanis moves and nourishes, develops, sustains and maintains each and every part of the body.<sup>[11]</sup> Mutra facilitates Kleda vahana – excretion of the excess kleda from the rasadhātu. Sweda does Kleda Vidhridhi<sup>[12]</sup> – maintains the kleda in the skin by secreting sweat. The functions of Mutra and Sweda play a crucial role in regulating the appropriate blood volume, a critical factor in ensuring the maintenance of normal blood pressure.

The three doshas—Vata, Pitta, and Kapha—govern various functions within the body, including the regulation of blood pressure. Specifically, Vyana Vata, located in the Hridaya, assumes a pivotal role in facilitating Rasa Samvahana throughout the body.<sup>[12]</sup> This function is paramount in regulating blood circulation, thus may play a crucial role in maintaining normal blood pressure. Apana Vata is situated in the lower portion of the body, mainly in the Pakvashaya, Shroni, Basti, Medra and Uru.<sup>[12]</sup> It is responsible for the excretion of Mutra and thereby responsible for maintainance of normal blood volume.

Manas is one of the pillars of life. It does the functions of Chintya, Vicharya, Oohya, Dhyeya and Sankalpa which are the thought processes of the mind.<sup>[13]</sup> As the Manas is situated in the Hridaya<sup>[13]</sup>, the emotions like Kama, Krodha, Lobha, Shoka, Atichinta will affect the Hridya and Vyana vata and blood pressure as well.

Nadi pareeksha is an important tool to examine the status of the heart and blood circulation. It is one among the Ashta sthana pareekshas.<sup>[14]</sup> Presence of Vata nadi irrespective of status of Agni, Ahara, Kala etc may help suspect hypertension. Mean arterial pressure is elevated in HTN and an experienced physician can determine the mean arterial pressure by hardness of pulse and its amplitude.<sup>[15]</sup> Nadi pareeksha continues to be a valuable tool for monitoring progress and adjusting treatment plans toward maintaining optimal blood pressure and overall well-being.

## AN INTEGRATED APPROACH

### 1. NON-PHARMACOLOGICAL APPROACH

- The DASH diet is a nutritionally based approach to prevent and control hypertension.<sup>[16]</sup> DASH promotes the consumption of vegetables and fruits, lean meat and dairy products, and the inclusion of micronutrients. It also advocates the reduction of sodium in the diet to about 1500 mg/day.
- Physical activity and/or exercise are shown to delay development of hypertension. Regular exercise should therefore be recommended for all individuals including normotensives, prehypertensives, and hypertensives.<sup>[17]</sup>
- Ayurveda mentions Nityasevaneeya Dravyas<sup>[13]</sup> to consume on a daily basis. It includes consumption of Shashtika Shali, Mudga and Yava (Whole grains), Jangala mamsa (Lean meat), Dugdha, Go Ghrita (dairy products) and Madhu (Honey).
- Amalaka (*Embellica officinalis*) can be consumed on a daily basis either in the form of fruit or dried powder along with honey and cold water. Amla reduces oxidative stress, prevent development and progression of hypertension, as well as cardiac and renal hypertrophy.<sup>[18]</sup> Addition of Amla to the currently available hypolipidemic therapy offers significant protection against atherosclerosis and CAD, with a reduction in the dose and adverse effects of the hypolipidemic agents.<sup>[18]</sup>
- Nityavyayama has to be practiced as a part of Dinacharya.<sup>[12]</sup> Daily exercise helps both prevent and treat hypertension.<sup>[17]</sup>
- Abhyanga (Oil Massage) on a daily basis helps blood vessels retain elasticity and extensibility which may delay Atherosclerosis. It also reduces sympathetic activity and reduces vasoconstriction. It also reduces anxiety and thereby bringing about neurohumoral control of blood pressure.

**In prehypertension non pharmacological approach alone is sufficient to prevent and delay Hypertension.**

### 2. PHARMACOLOGICAL APPROACH

#### a) Stage 1 Hypertension

1. Continue non-Pharmacological approach with Vyayama, Abhyanga and Amalaka consumption. Also consider DASH Diet.
2. Shigru (*Moringa Oleifera*) Soup 100 ml BD 30 mins B/F.
3. Lashuna (Garlic cloves) – 3-4 cloves morning 30 mins B/F.
4. Punarnavashtaka kwatha 20 ml BD A/F Morning and Afternoon with warm water.
5. Padabhyanga with any oil for 15 minutes at bedtime.
6. Yoga and meditation atleast 20 minutes/day.

➤ Consider 3 office BP checks after 6 weeks, if under control continue OP treatment, if not plan for IP basis treatment as follows.

1. For obese hypertensives, Sarvanga Udwartana + Bhaspa sweda for 3 days. Later Sarvanga Abhyanga with Himasagara Taila + Dhanyamla Parisheka for 4 days
- For Non-obese, Sarvanga Abhyanga with Himasagara Taila + Dhanyamla Parisheka for 7 days
2. Shirodhara with Takra + Jatamamsi Churna + Amalaki Churna for 7 days
3. Padabhyanga with Brahmi taila for 7 days
4. Siravyadhana one sitting.
5. Continue above mentioned oral medication after discharge
- Consider 3 office BP checks after 6 weeks, if under control continue oral medication with same IP procedures every 6 months
- If not under control follow steps as given for Stage 2 hypertension

#### b) Stage 2 Hypertension

- Continue non-Pharmacological approach
- Choose formulations and combine from below based on requirement and BP levels
- One formulation among 1,2 is compulsory
- 1. Varunadi Kashaya 30 ml BD A/F morning and Afternoon
- 2. Punarnavashtaka Kwatha 30 ml BD A/F morning and Afternoon
- 3. Arjunarishta 30 ml BD A/F
- 4. Prabhakara vati 1-0-1 A/F (optional)
- 5. Drakshadi Kashaya 30 ml BD A/F (optional)
- 6. Hridayarnava Rasa 1-0-1 A/F
- 7. Shiva Gutika 1-0-0 B/F (optional)
- 8. Saraswatharishta 15 ml BD A/F (optional)
- 9. Brahmi Ghrita 15 ml HS A/F
- 10. Sarpagandha Vati 1-0-1 AF (Burst therapy SOS) Not indicated for > 2 weeks
- Consider Compulsory IP Treatment once in 6 months as follows.
- 1. Deepana Pachana as required

2. Snehapana with Brahmi Ghrita/Kalyanaka ghrita/Tiktaka ghrita/Sukumara Ghrita until samyak snigdha lakshanas

#### For Vishrama Kala

3. Sarvanga Abhyanga with Ksheerabala taila + Dashamoola Parisheka.
4. Shirodhara/Shiroabhyanga with Himasagara taila.
5. Siravyadhana 1 sitting.

#### After Vishrama Kala

6. Virechana with Trivrut Lehya + Draksha Kashaya or Avipattikara churna + Triphala Kashaya.
7. Follow strict samsarjana krama and gradually start diet as mentioned in non-pharmacological approach.

#### After Samsarjana

8. Anuvasana basti with Kalyanaka Ghrita/ Lashunadhya Ghrita/ Gandharvahastadi taila for 7 days (optional)
  - Consider 3 office BP checks after 6 weeks, if under control continue oral medication with same IP procedures every 6 months.
  - If not under control consider adding Antihypertensive medication as per Physician's opinion and continue OP and IP management as mentioned above.
  - If BP well-regulated or Hypotensive, slowly down-titrate Antihypertensive medicine with careful and regular monitoring of BP and continue Ayurveda management.

#### c) Special clauses

Condition	Considerations for additional therapy
LVH present	Gokshuradi Guggulu 1-0-1 A/F
Hyperlipidemic	Medoharavidangadi loha 1-0-1 A/F Strict adherence to Amalaki, Lashuna Consumption. <sup>[19]</sup> Also consider Madhutaika basti in IP basis.
If Diabetic, Goal BP (<130/90 mm Hg)	Guduchyadi Kashaya 30 ml morning B/F or Nishamalaki churna 5gms morning B/F or Tab. Goranchi 1-0-1 AF.
Isolated Systolic Hypertension	Treat as per Stage 1 Hypertension.
White-coat or Masked HTN	Non-Pharmacological Therapy.
Secondary Hypertension	Treat the cause. If Residual HTN then non-Pharmacological therapy. Treat as per Stage 1 Hypertension if required.

#### RESTRICTIONS AND CAUTION

- Smoking cessation, Alcohol moderation, and Sodium restriction to less than 1.5 gms/day (salt restriction includes restricting all types of lavanas)
- Avoid prescribing Sarpagandha for long term (risk of Parkinsons and depression<sup>[20]</sup>)
- Avoid Yastimadhu (*Glycyrrhiza glabra*<sup>[21]</sup>) (risk of hypertension and arrhythmia)
- Keep strict check on patient's compliance/adherence to therapy.

#### DISCUSSION

Ayurveda plays a significant role in the management of hypertension by addressing the root causes and imbalances in the body providing emphasis to the prevention and promotion of the health. Avoiding etiological factors of disease is considered as the first line of management.<sup>[11]</sup> In the management of hypertension, non-pharmacological methods such as correction of lifestyle, diet etc. is proven to reduce the risk of coronary heart disease (CHD) which is leading cause of morbidity and mortality.<sup>[22]</sup> Many of the chapters in classical texts such as Dinacharya, Ritucharya, Matrashtiteya, Navegannadharniya etc. are particularly dedicated to healthy lifestyle.<sup>[23]</sup> The treatment outlined in this article takes into account the Prasara Avastha of all three Doshas, and specifically addresses imbalances in Rasa, Rakta and Meda. In conjunction with lifestyle modifications, the approach

incorporates targeted measures such as promoting Vata Anulomana, restoring balance to all three Doshas, enhancing the vitality of Rasa and Rakta (Rasa-Rakta Prasadakara), and mitigating issues related to lipid metabolism (Medohara karmas). Therefore, the aforementioned therapeutic approach holds considerable potential in managing hypertension through Ayurveda and integrated Approach.

#### CONCLUSION

With the help of recent advancements in the medical science the diagnosis of Hypertension has been made possible at an early stage and thus effective management can be offered at this stage itself to avoid risk of damage to vital organs. The integrated approach presented in this comprehensive perspective on hypertension provides a holistic framework for prevention and management of the same.

The non-pharmacological approach, including the DASH diet, physical activity, specific ayurvedic recommendations and the pharmacological approach presented for Stage 1 and Stage 2 hypertension incorporates formulations and therapies tailored to individual needs. Furthermore, the article provides specific guidelines for various conditions such as LVH, hyperlipidaemia, and diabetic hypertension, showcasing the versatility of Ayurvedic interventions. In essence, this integrated approach not only addresses the



management of hypertension but also promotes overall health and well-being.

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