



Ayurvedic dietary strategies for Hypertension Management - A Systematic Review

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Hypertension, commonly referred to as high blood pressure, represents a significant public health issue that impacts millions of individuals globally. This condition is defined by increased blood pressure readings, which heighten the likelihood of developing cardiovascular diseases, experiencing strokes, and suffering from kidney impairment. The references relevant to the above concept were searched from different Samhitas. According to a study published in the National Family Health Survey-5, the age-standardized prevalence of hypertension in India is 22.4%, with 21.3% in women and 24.0% in men Age-Specific Prevalence. For up keeping community safe from such diseases government of India is taking various measures, this study also attempts to elucidate those measures for awareness of health seeking individuals. Elimination of this lifestyle ailment starts with eradicating causative factors with measurable consecutive effect by modifications. Holistic approach towards hypertension by Ayurvedic view is evaluated within the study with reliable explanation and understanding on the basis of sign and respective treatment modalities, that can be availed for management. Ayurveda emphasizes the importance of a balanced and appropriate diet to regulate hypertension. Therefore, certain recommendation which are scientifically proven for regulation of hypertension are also mentioned in the study. This review is an attempt to highlight the scenario of hypertension as disease with leading complications, its prevalence, approach of Indian government of its regulation and at last to undertake the relation of disease with possible explanation of Ayurveda including measures of its management through dietary intervention and lifestyle modification.

Keywords: Hypertension, Ayurveda, Management, Dietary, Recipes

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Introduction

Hypertension, commonly referred to as high blood pressure, represents a significant public health issue that impacts millions of individuals globally.[1] This condition is defined by increased blood pressure readings, which heighten the likelihood of developing cardiovascular diseases, experiencing strokes, and suffering from kidney impairment. Although standard treatment approaches typically focus on medication, traditional medical systems like *Ayurveda* provide an alternative viewpoint on addressing hypertension through changes in diet and lifestyle.

In *Ayurveda*, hypertension is predominantly linked to imbalances in the *Doshas*, particularly the *Pitta* and *Vata Doshas*. The *Pitta Dosha* is connected to heat, metabolism, and the management of bodily functions, whereas the *Vata Dosha* pertains to movement and circulation. An imbalance in these *Doshas* can disrupt the cardiovascular system, ultimately causing elevated blood pressure.[2]

Hypertension is classified into two main types:

Primary (essential) hypertension: This is the most common type and has no identifiable cause. It develops gradually over time due to a combination of genetic, lifestyle, and environmental factors. Primary hypertension is often associated with risk factors such as age, family history, obesity, sedentary lifestyle, stress, and poor dietary habits.

Secondary hypertension: This type of hypertension arises from an underlying medical condition or as a result of certain medications. It can be caused by kidney disease, hormonal disorders (such as adrenal gland problems or thyroid disorders), certain medications (such as oral contraceptives or corticosteroids), and other factors.

Ayurvedic treatment for hypertension typically involves lifestyle modifications, herbal remedies, and stress-relieving therapies. Lifestyle changes may include adopting a healthy diet low in sodium, saturated fats, and cholesterol, engaging in regular physical activity, maintaining a healthy weight, managing stress, limiting alcohol consumption, and quitting smoking.[3]

Ayurveda emphasizes the importance of a balanced and appropriate diet to regulate hypertension. Reduce the intake of salty, oily, and spicy foods.

Include fresh fruits, vegetables, whole grains, and legumes in the diet.

Incorporate foods rich in potassium, such as bananas, oranges, and leafy greens, as they help maintain healthy blood pressure levels.

This paper is attempt to provide better solution for this solution. The use of fortified meal and *Ayurvedic* recipes, that can contribute in the management of primary hypertension.[4]

Materials and Methods

The references relevant to the above concept were searched from different *Samhitas* that is *Charak Samhita*, *Sushruta Samhita*, *Shadangdhar Samhita* and different databases such as Research Gate, PubMed etc.

Observations

Gravity of hypertension as a major health-care concern-statistic and number.[5]

Global Prevalence

1. Worldwide, approximately 1.13 billion people have hypertension (WHO, 2019).
2. Hypertension affects approximately 21% of adults worldwide (WHO, 2019).

Mortality and Morbidity

1. Hypertension is responsible for approximately 9.4 million deaths worldwide each year (WHO, 2019).
2. Hypertension is a major risk factor for cardiovascular disease, accounting for approximately 45% of cardiovascular deaths (WHO, 2019).
3. Hypertension is responsible for approximately 54% of stroke deaths worldwide (WHO, 2019).

Regional Prevalence

According to a study published in the National Family Health Survey-5, the age-standardized prevalence of hypertension in India is 22.4%, with 21.3% in women and 24.0% in men.

Age-Specific Prevalence

1. Hypertension affects approximately 60% of people aged 60-79 worldwide (WHO, 2019).

2. Hypertension affects approximately 75% of people aged 80 and older worldwide (WHO, 2019).

Current interventions and treatment strategies

It involves multifaceted approach

Government Initiatives

Indian Hypertension Control Initiative (IHCI), a 5-year initiative involving Ministry of Health & Family Welfare, Indian Council of Medical Research, State Governments, and WHO India. The IHCI aims to accelerate progress towards Government of India's goal of reducing premature mortality due to non-communicable diseases (NCDs) by 25% by 2025.

Standardized Treatment Protocols

Standardized treatment protocols are also being implemented, with a focus on drug and dose specific standard treatment protocols. A study in Punjab and Maharashtra found that these protocols were effective in controlling blood pressure at scale.

Lifestyle Modifications

Lifestyle modifications, such as dietary changes, increased physical activity, and stress management activities like yoga, are also being promoted as part of a comprehensive approach to hypertension management.

Causative factor of Hypertension

Non-Modifiable Factors

1. Genetics: Family history of hypertension can increase an individual's risk.
2. Age: Hypertension risk increases with age, especially after 40 years.
3. Sex: Men are more likely to develop hypertension than women, especially before age 55.

Modifiable Lifestyle Factors

1. Physical Inactivity: Sedentary lifestyle can increase hypertension risk.
2. Unhealthy Diet: Consuming high amounts of sodium, sugar, and saturated fats can contribute to hypertension.
3. Obesity: Excess body weight can increase blood pressure.
4. Smoking: Tobacco use can damage blood vessels and increase hypertension risk.

5. Excessive Alcohol Consumption: Drinking too much alcohol can raise blood pressure.

Ayurveda based understanding of Hypertension[6]

1. Prana Vayu

In modern science, the functions of nervous system have been described similar to description of the *Prakrita Prana vayu*. *Hridayadrika'* function of *Prana vayu* can be correlated with the heart rate controlling function, which also controls the regulation of blood pressure by controlling *Vyana vayu* which has been believed to function like constriction dilatation of the vessels. So, any pathology of *Prana vayu* can cause abnormality of heart as well as vessels.

2. Vyana Vayu

Vyan Vayu is said to be responsible for various kinds of movements in the body. With the help of *Vyan Vayu*, heart contracts and circulates the blood (*Rasa Rakta Dhatu*) continuously all over the body. The contraction and dilatation of the vessels are also governed by *Vyana Vayu*.

3. Samana Vayu

According to *Sharangadhara* after the digestion process *Samana* helps in the transportation of *Rasa* in to the heart and from heart it circulates in the whole body.

4. Apana Vayu

Vitiation of *Apana vayu* hampers the excretion of the *Mutra*, so the body fluid level becomes imbalanced, which may affect the maintenance of normal blood pressure. From the above fact it can be concluded that *Apana vayu* also plays a role in regulation of normal blood pressure.

5. Avalambaka Kapha

The normal rhythmicity, conductivity, excitability, contractility, tone and refractory period of cardiac muscles can be correlated with *Avalambana Karma* of *Hridaya* by *Avalambaka Kapha*. Thus, it keeps heart in a healthy state and enhances its working capacity of continuous pumping action.

6. Agni

The *Agni* is the important factor in the pathogenesis of all the diseases. In EHT the *Agni* vitiation is occurring at 2 levels.

1. Jatharagni Mandya
2. Dhatwagni Mandya - Rakta Dhamni

7. Srotas

In the context of blood pressure *Rasavaha* and *Raktavaha Srotasas* are important as they are related with '*Rasa-Rata Samvahana*'. Also, essential hypertension is a psychosomatic disorder, so role of *Manas* is also very important in this case. Hence, it can be said that *Rasavaha*, *Ratavaha* and *Manovaha* are the *Srotasas* which are affected in hypertension.

Table 1: Mode of action of different cereals, fruits and vegetable in management of hypertension[7]

Food Items	Effect on Doshas	Properties
Tomato	Deepan	Antioxidants
Shastik Rice	Laghu, Tridoshshamak	Fibre rich
Ajwain	Laghu, Kaphapittahara	Anti-Inflammatory
Coriander[8]	Hridya Mutral	Diuretic
Cucumber	Mutral	Diuretic
Moong Dal	Deepan, Laghu,	Anti-oxidants, Anti-inflammatory
Apple	Kapha Pittashamak	Fibrous, Flavonoids
Brinjal	Vatashamak	Fibrous
Jwar (Sorghum)	Laghu Kaphapitta Shamak	Antioxidant Antihyperlipidemic
Bajra	Laghu, Deepan, Hridya	Rich in Mg, Ca, omega 3 fatty acids
Tur Dal	Sheets Kaphapittaghana, Deepan	Vasodilator
Rajmash	Virechak	Diuretic
Shigru (Moringa)	Hridya, Kaphavatashamak	Reduce Oxifative Stress, Improve vascular function
Oats	Tridoshshamaka	Aventhamides improve blood flow
Urad Dal	Vatakaphashamak, Balya	Rich in potassium, Vasodilator
Goose fruit, Bathua	Tridoshshamak	Vasodilator
Pomegranate	Pittashamak	Rich in polyphenols, antioxidants

Here are various recommendations of food which can taken on daily basis to keep a check on blood pressure levels.[10-13]

1. Cucumber Raita
2. Moong Dal sautéed with tomatoes and jeera (cumin)
3. Jowar and ajwain mixed roti

4. Oats khichdi mixed with tomato coriander, jeera.
5. *Krishra* 2 part moong dal & 1 part rice boiled with ajwain jeera & haldi
6. Oats porridge
7. *Rajmasha (Rajma)* veggie soup
8. Tur Dal Soup

Discussion

Improper lifestyle and food habits (*Viruddh-Ahara*) and *Atichintana* (excess worry, fear) vitiates all three *Doshas* and trigger the pathogenesis of hypertension. For effective management of hypertension various food recipe has been mentioned above which are rich in fibers and antioxidants and are *Dosha Prashman* in nature.[2]

These food items are rich in prebiotics are non-digestible fibers that feed the good bacteria in the gut promoting healthy gut microbiome. Prebiotics play a major role in managing hypertension by modulating gut brain axis,[9] Renin angiotensin system & Improve Vascular Function According to *Ayurvedic* point of view these are *Vata* and *Pittashamak* along with having *Mutral* (Diuretic) properties which keep check on blood pressure levels.[14]

Further Clinical trials need to be conducted on these value added recipes for understanding anti - hypertensive effects.

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