

AN AYURVEDIC EXPLORATORY STUDY OF VYANA VAISHAMYA IN HYPERTENSION

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ABSTRACT

Worldwide, one of the major causes of premature death is Hypertension and can lead to major health consequences, such as CHD, CHF, peripheral arterial disease, stroke, renal failure, and ultimately death. An approximate 1.13 billion people globally have hypertension. In modern science, HTN is a condition which can be managed but can't be cured. Modern treatment modalities are effective for the management of HTN (Blood pressure) but poses human beings to their unwanted complications on their long term use. The conventional antihypertensive drugs have many adverse effects & are not well tolerated which lead to non-compliance, switching & discontinuation of treatment. There is no direct description of HTN in *Ayurveda* but on the basis of its clinical presentation and similarity

between pathogenesis factors Essential Hypertension can be correlated With *Vyana Vaishamy*. The *Ayurvedic* drugs potency depends upon *rasa, guna, virya, vipaka & prabhava*. Apart from respective *guna-karma* of the drugs, biological action of a drug depends upon the combined effect of its composition. Also *Acharyas* have mentioned this as *prabhava* of the drug. *Ayurveda* has various classical formulations and single herbs like *Brahmi, Pushkarmoola, Jyotishmati, Sarpagandha, Saunf, Jatamansi etc. having hridya, kaphahara, vatahara, balya, raktaprasadana*, cardio protective etc. properties which are safe and cost effective too.

KEYWORDS: Essential Hypertension, *Ayurveda*, HTN, *Vyana Vaishamya*, Blood pressure.

INTRODUCTION

In modern era every person is running after life's goal, hence does not have time to think, act for healthy life and not able to follow proper *dincharya*, *ritucharya*, dietetic rules and regulations. A scientific & technological revolution has occurred over the last three decades. Due to the rapid modernization, people are leading more stressful & sedentary life which causes different metabolic disorders among which HTN is one.

HTN is becoming a major public health problem now days. HTN double the risk of cardiovascular diseases, including CHD, CHF, ischemic & hemorrhagic stroke, renal failure, peripheral arterial disease.^[1] Around 7.5 million deaths or 12.8% of the total of all annual deaths worldwide occur due to high blood pressure. It is predicted to be increased to 1.56 billion adults with hypertension in 2025.^[2]

Blood pressure is defined as the product of cardiac output and peripheral resistance. HTN is therefore, said to be caused by increased cardiac output and/or increased peripheral resistance.^[3]

There is no direct description of HTN in *Ayurveda* but on the basis of its clinical presentation and similarity between pathogenesis of *Vyana Vaishamya* and Essential Hypertension. Here, an effort was made to do a possible correlation with *Vyana Vaishamya*.

Ayurvedic view

Ayurveda is to promote health, increase immunity and resistance and to cure disease. *Tridosha* is the physiological core around which practical *Ayurveda* go round. *Dosha* has been considered as an important factor of the body which is responsible for the support, maintenance and protection to the body. The normal functioning of *dosha* produces health of the body whereas the abnormal states of *dosha* are responsible for the production of disease.⁴ *Dosha-kapha* and *pitta*, all *dhatu* and *mala* are carried by *vata dosha* for their routine work up.^[5]

Vata is the supporter of both structure and function of the body. It consists of – *Prana*, *Udana*, *Samana*, *Vyana* and *Apana*. It is the promoter of *aatma*, *cheshta*, speech and it also controls and conducts the mind. The creator of all the senses, the conveyer of all the sense-stimuli, the illustrator of all the *dhatu*s of the body.^[6]

Vyana Vayu plays more important role in developing heart disease because the first *dhaatu rasa* mainly seated in the heart, is transported by *Vyana Vayu*. The *preenana karma* (Nourishment) in body is done by *rasa dhaatu*, that is, the *rasa dhaatu* spreads throughout the body and nourishes all the vital organs and tissues. *Hridaya* is being considered as *moola* of *pranavaha* and *rasavaha srotasa* by *Acharya Charaka*. As heart is the *moola* of *rasavaha srotasa* and *vyana vayu* is present in *hridaya* so the relation between these two for understanding the pathogenesis and management of cardiac diseases must be more clarified. So conceptualization of *vyana vayu dushti* is essential.^[7]

Disease overview

A. *Nidana*

Excessive use of *ruksha*, *sheeta*, *laghu annapanna*, excessive elimination of impurity and blood, night awakening, excessive coitus, excessive movements such as jumping, physical exercise, wasting of *dhaatus*, excessive emaciation due to anxiety, grief and illness, suppression of urges, anger, fear, injury in vital parts, are some factors responsible for vitiation of *vata dosha*.^[8]

Along with *vyana vaishamya*, vitiation of *sadhaka pitta* and *avlambaka kapha* can be considered as main *dosha*, and *dushti* of *rasavaha*, *raktavaha*, *medovaha srotasa* in the manifestation of Essential HTN. So, the *nidana* of Essential HTN are:

B. *Vaya*(Age)

Vridhdha avastha is said to be *vata pradhana avastha*.^[9] In *vridhdha avastha*, due to *Sankocha* and *Kathinya* of the vessels perfusion of nutrition to the *Dhatus* also slows down which is caused by physiological aggravation of *Vata* due to its *Ruksha*, *Khara*, *Daruna*, *Shita Gunas*.^[10] Due to *Sankocha* and *Kathinya* of the vessels (reduction in the elasticity and lumen of the arteries) leads to rise in blood pressure.

C. *Sthaulya* (Obesity)

In etio-pathogenesis of *Sthaulya* due to excessive use of *Madhura*, *Snigdha*, *Guru Ahara* it leads to *Jatharagni Vaigunya* and *Medo-dhatwa agnimandya*. Due to *Medo-dhatwa agnimandya* production of *Ama* and *Apakva Medo vridhhi* takes place. When *Apakva Ama* deposits in *Rasavaha Srotasa* this may further leads to *Dhamani Pratichaya* (Atherosclerosis).^[11-12] which may be a responsible factor of essential hypertension. Moreover, *srotoavrodha* due to *pichhila*, *pralepi*, *snigdha guna* of *aama* results as *prakopa* of

vyana vata. The *apakva medo dhatu* itself impede the pathway of *vata*.^[13] This vitiated *Vyana Vayu* may result in rise in the blood pressure.

1. *Rasa* (Tastes)

Excessive use of *lavana* is responsible for vitiation of *pitta* and aggravating *rakta dhaatu*.^[14]

Tikta rasa can cause malaise, fatigue, giddiness, and mental confusion and *vataja* disorders when consumed excessively for longer duration.^[15]

2. *Madya* (Alcohol)

Madya having entered into the heart counteracts with the ten properties of *ojasa* with its corresponding ten properties *ushna*, *tikshna*, *sukshma*, *vyavayi* etc. and thus upsets the mind. Heart is the seat of the channels of *rasa*, *vata*, *pitta*, *kapha* intellect, senses, and *ojasa*. Hence by excessive drinking and consequent damage of *ojasa* thereby, heart as well as the *dhaatu* located there gets affected.^[16] Here, we can also say that due to *oja kshaya* which is *prakrita kapha* it will leads to increase in *vata* properties which further causes increase in cardiac output and so that rise in blood pressure.

In brief, *Rakta dushti* along with *vata* and *pitta prakopa* takes place due to *madyapana*, a conductive factor for essential hypertension.

3. *Mansika Bhava*

Vitiation of *Mana* by *Raja* and *Tama manasa doshas* takes place, which is located in *Hridaya*. *Mana* and *Hridaya* correlates with function of *sadhaka pitta* as mentioned by *Dalhana*.^[17] So, hampered function of *rasa-rakta vikshepana* of *hridaya*, being the cause for rise in blood pressure.

4. *Rasavaha Srotasa*

Excessive use of food which is *guru* (heavy), *sheeta* (cold), *atisnigdha* (oily food items) in nature and one who take food in excessive quantity and *atichintana* (one who does overthinking).^[18]

5. *Raktavaha Srotasa*

Taking *vidaahi annapana*, food which is *ushna virya* (hot) in nature, also exposure to sun and fire leads to morbidity of *raktavaha srotasa*.^[19]

6. MEDOVAHA SROTASA

This *srotasa* affected due to lack of physical exercise, day time sleep, excessive intake of fatty, oily foods, excessive alcohol intake.^[20]

A. SAMPRAPATI (PROBABLE PATHOGENESIS)

Table No. 1: Probable correlation of ayurvedic and modern pathophysiology of HTN.

1.	Increased-cardiac output	<i>Vyana vayu karma vriddhi</i> <i>Rasa dhaatu vriddhi</i> <i>Ashraya-ashrayi bhava (pitta-rakta)</i>
2.	Peripheral resistance	<i>Dhamani pratichaya</i> <i>Vriddhi in ruksha guna of vayu</i>
3.	Autonomic-Nervous System	Action of <i>Prana vayu</i> Mode of action of <i>Ida-pingla nadis</i>
4.	RAAS	Due to <i>Apana vayu avarana</i> over the <i>vyana vayu</i>

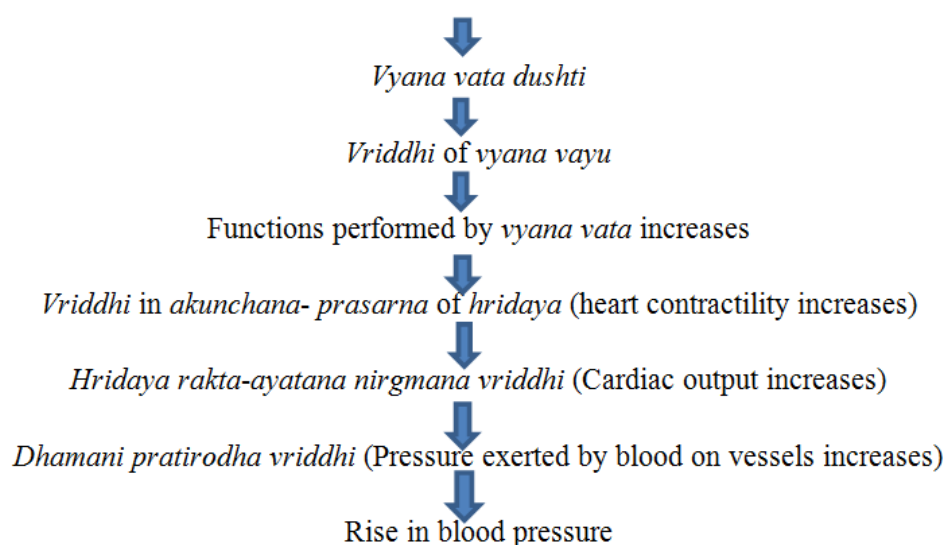
1. Hridaya Nirgama (Cardiac Output)

• Due To Action of Vyana Vayu

Vayu is said to be responsible for controlling and conducting all the activities in the body.^[21]

The heart generates electrical impulses on its own, which makes the heart contract during the systole as it has its pacemaker (SA node). Heart self-excitatory function can be attributed to the functioning of the *Vata Dosha*. *Charaka* clearly describes that *Vyana Vata*, persistently forces the blood out of the heart and distributes it in whole body.^[22]

Consumption of food items or performing activities that leads to vitiate *vyana vayu* (*Ati marga gamana, vishama cheshtaye, virodhi annapanna, ati ruksha anna sevana, bhaya, chinta, shoka*).^[23]



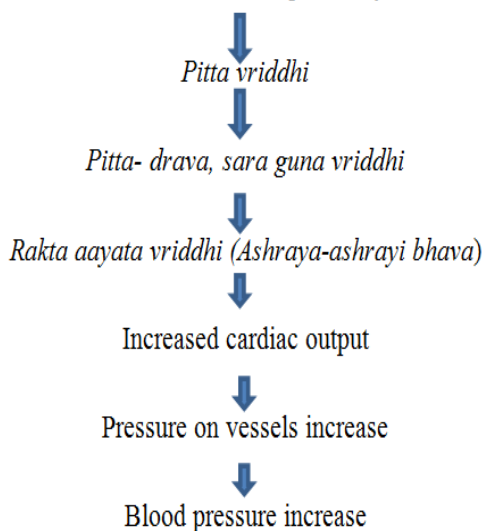
- **Due To Ashraya-Ashrayi Bhava**

Vitiation of *pitta* takes place due to excessive consumption of *amla*, *lavana*, *katu* rasa. As per *ashraya-ashrayi bhava*, *pitta* as *ashrayi* of *sweda* and *rakta dhaatu*. So, when there is an increase in *pitta dosha* there will be increase in *rakta dhaatu* as well. When increase in *drava* and *sara guna* takes place there will be rise in volume of *rasa* which will further leads to rise in cardiac output.^[24]

In HTN, complications like hemorrhagic stroke, hypertensive retinopathy can occur due to increase in blood volume in blood vessels. The same mechanism takes place in *samprapti* of *raktapitta* or pathogenesis of HTN due to *pitta dosha* as explained above.

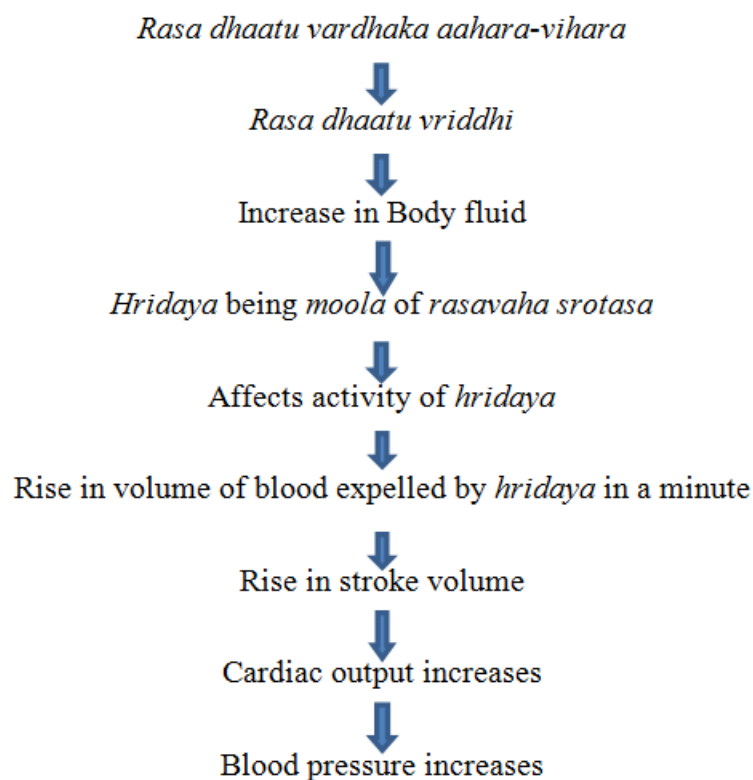
Prakriti of a person also plays an important role in increase in cardiac output. When a *pitta prakriti* person consumes *pittaja aahara-vihara* it leads to increase in blood volume and pathogenesis can takes place easily. Therefore, probability of having HTN is more in *pittaja prakriti purusha*.

Pitta prakopaka rasa (katu, amla, lavana) pradhanya aahara-vihara sevana



- **Due To Rasa Dhaatu Vriddhi**

When a person consumes *aahara dravya* and follows *vihara* which leads to increase (vitiation) in *Rasa dhaatu* (like *ati guru*, *ati snigdha anna sevana*, *ati chintana*)²⁵ can be a causative factor to increase blood pressure.



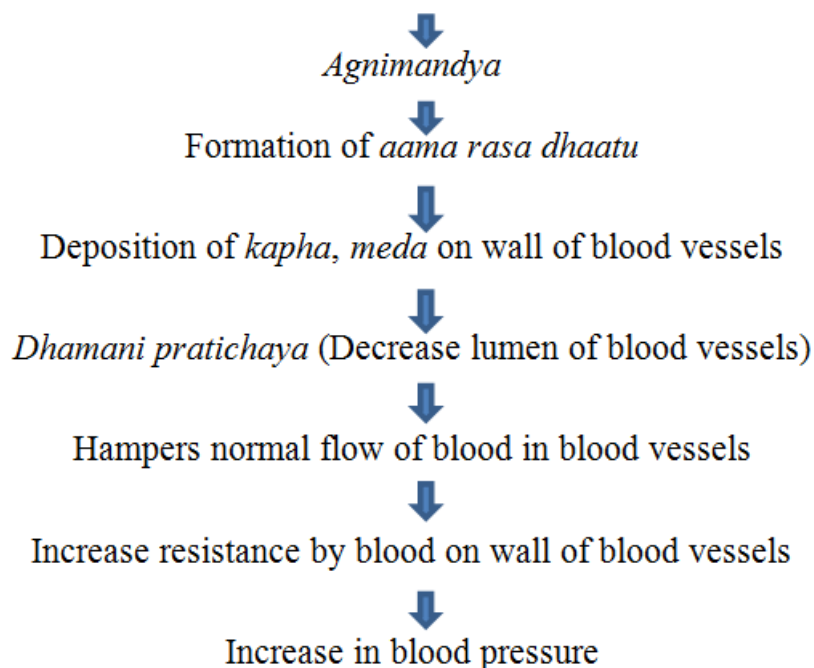
2. Paridheey Pratirodha (Peripheral Resistance)

• Due To Dhamani Praticchaya

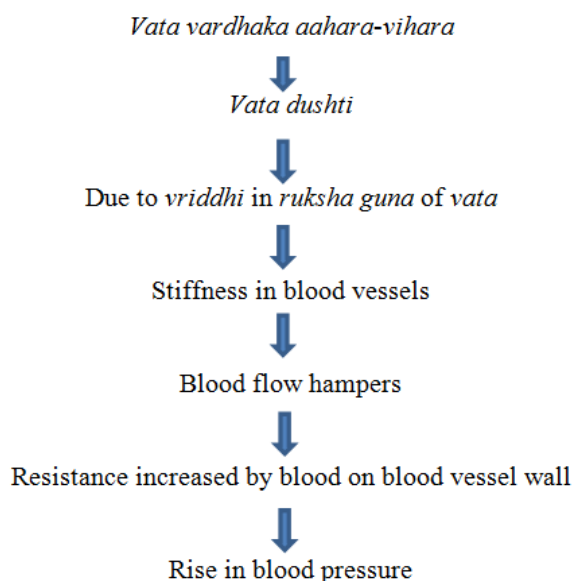
Vyana vayu is responsible for circulation of *rakta* in blood vessels throughout whole body from heart. Any change in morphology of blood vessel or disturbance in normal flow of blood in blood vessel will result change in pressure applied by blood on blood vessels.

Aahara consumed by us converted into two parts by *jatharagni* one is formation of first *dhaatu* that is *rasa dhaatu* and secondly, *mala bhaga*. Due to *manda jatharagni* there is probability of formation of *aama* in *rasa dhaatu*.^[26]

Rasa, Kapha and *medo vardhaka aahara-vihara* (excessive consumption of *madhura, amla, lavana rasa, snigdha, guru* and *abhishyandi bhojana, aasyasukha, swapnasukha, diwaswapna*)



- **Due To Vata-Ruksha Guna Vriddhi**



1. **Svaayatta tantrika pranaalee (autonomic nervous system)**

- **Due to action of prana vayu**

The heart rate is controlled by *Prana vayu* as it is situated in the *moordha* (brain) controls the *Hridaya* and does *dhamani dharana*.^[27] *Hridaya Dhruka* means the *Dharana* of heart is the typical function of *Prana Vayu*. It can be correlated with the vagal inhibition of nervous system.^[28]

It is said that *Prana vayu* is controlling *Hridaya* (located in *uraha*) and *Dhamanis* (spreading throughout the body).^[29] *Vikshepana karma* for blood to carry throughout the body has to be conducted by *Hridaya*. *Sankochana* (contraction) & *Vikasana* (dilatation) of *dhamani* is due to the effect of *prana vayu*. *Jeevana karma* to all the tissues of the body is the main function of *rakta dhaatu* and by the *Hridaya spandana*, *rakta* is kept in circulation. *Hridaya* is stimulated for increased and forceful *spandana* as well as increased peripheral resistance when there is a decrease in the supply of the "*prana*" *vayu* due to decrease in the diameter of *dhamnis* thereby increasing the *Raktabhara*.

• Concept of *Ida-Pingla Nadis*

Persistently elevated blood pressure has been linked to the deregulation of the autonomic nervous system or increased sympathetic activity.^[30] Two *nadis* namely *Ida* and *Pingla* known as *Chandra nadi* and *Surya nadi* respectively. Alternate nostril breathing patterns have different physiological and psychological effects on our body including metabolism and body weight, oxygen consumption, heart rate, stroke volume, blood pressure.

Right i.e. *surya bhedana* uninostril breathing increases systolic and diastolic pressure, whereas Left i.e. *Chandra bhedana* uninostril breathing decreases systolic as well as diastolic pressure.^[31]

2. Due To *Avarana*

The function of *Vyana Vata* is mainly blood circulation,^[32] so *vyana vayu* is main causative factor for occurrence of Hypertension.^[33] Vitiating of *vayu* can be either by its own *prakopa* due to etiological factors for *Vata* or may get impaired by the influence of other *Doshas* and *Dhathus*.

This concept of *avarana* on normal functioning of *vayu* also plays a major role in the *samprapti vighatana* of hypertension. Increased hormonal and enzymal action,^[34] change in the chemical constituents in the blood and atherosclerotic changes in the arteries due to lipid deposition.^[35] decreased sodium excretions,^[36] in hypertension can be considered under the pathologies of *anya-dosha avarana*.

Another type of *avarana samprapti* takes place when there is *anyonya- avarana* of *vayu*. The subtypes of *vayu* such as *vyana* and *prana vayu* occlude each other and cause the disease.^[37] The normal functioning of *prana vayu* which is situated in head gets disturbed due to factor like stress and it is not able to move properly in its body channels. When disturbed *prana vayu*

obstructs the path of *vyana vayu*, then there is disturbance in the autonomic functions of *vyana vayu*. Increased tone of Sympathetic nervous system produce catecholamine's that increases blood pressure and this process can takes place due to stress.^[38]

Some of the conditions of *avarana* which may results in *vyana vaishamya* are:

- a. *Pittaavritta vata- bhrama, tama, daha*
- b. *Vyanaavritta prana- excessive sweating, lomaharsha, suptagatrata.*
- c. *Samanaavritta vyana- moorcha, angasaada, kshaya of agni, oja and bala.*
- d. *Pranaavritta udana- shirograha, hridya roga.*
- e. *Pittaavritta prana- moorcha, bhrama*
- f. *Pittaavritta udana- moorcha, klama, ojo-bhransha, avsaada in sharira.*
- g. *Pittaavritta samana- atisweda, moorcha, jathraagni-avrodha.*
- h. *Pittaavritta vyana- sarvaanga daha, klama, vedana.*³⁹

• Due To *Avarana* of *Apana Vayu*

From *basti* excretion of *jala* and *lavana* takes place through medium of urine which is a function of *apana vayu*. When *apana vayu* gets *avritta* by *kapha*, *pitta*, *meda* or *mansa* it gets vitiated and normal functioning of *apana vayu* gets hampers. There will be no proper excretion of salt and water from body which leads to increase in their volume in body. Excess of water and salt in body leads to increase in *rasa dhaatu* and *rakta dhaatu dushti* respectively. In turn *vyana vayu* will get vitiated as *vyana vayu* is responsible for circulation of *rasa* and *rakta* in body. This mechanism further leads to increase in total blood volume which leads to increase in stroke volume of heart. This results in rise in blood pressure as cardiac output increases.

In *samprapti* of *prameha*, *Acharya* explained that *aaharaja-viharaja nidana sevana* which leads to increase in quantity of *kapha-pitta dosha* and *medo-mansa dhaatu*. These increased *doshas* and *dhaatu* make *vayu prakupitta* and do *avarana* of *vayu (apana vayu)*.^[40] As in the pathogenesis of Diabetic nephropathy, kidneys got affected, so normal function like excretion doesn't takes place which results in fluid overload on kidneys and affecting RAAS mechanism finally leading to rise in blood pressure.

B. *Poorvaroopa*

Poorvaroopa of *vata vyadhi* i.e. in *Vyana Vaishamya* also it is said to be *avyakta* and in most of the Hypertensive patients there is no presence of features like *poorvaroopa*.^[41]

C. Roopa

Vitiated *vyana vayu* causes *utsahaaani, balahaani, shopha, jwara, toda, romaharsha & sarva shaarigata roga*.^[42] and also causes imbalance in *sweda-asrika sravan*.^[43]

When *vyana* gets vitiated causes *vikara* in whole body i.e. *roga* of *sarvadeha* which can be seen in later stage of HTN as it involves *trimarma hridaya, basti* and *sira* -CHD, nephropathy and stroke respectively.

Chikitsa

त्रिधा व्यानं तु योजयेत्॥ (च.चि. २८/२२०)

In *vikriti* of *Vyana vayu*, the treatment adopted is same as the treatment done in *vikriti* of *udana, apana* and *samana vayu* like *Nasya, Vamana, Virechana, Basti* and *Shamana Chikitsa* as *Sthana* of *Vyana Vayu* is considered as “*Sarvangadeha*”.^[44]

I. Nidana Parivarjana

Causative factors should be strictly avoided.

- Excessive intake of salt, chilies, spicy foods, sours food, vegetable oils, junk foods, tea and coffee etc.
- Smoking and alcohol consumption.
- Day sleeping and awakening at night.
- Excitation, quarrelling, provocation, anxieties.
- Excessive indulgence in sexual activities.

Life Style Modifications

- Weight reduction
- Regular physical exercise, daily brisk walking for half an hour, practice of Meditation and Yoga.
- A good sound sleep and proper time awakening.
- To have balanced diet, more use of green vegetables and fruits in diet.^[45-46]

I.Shodhana Chikitsa

This is a specialized therapy of *Ayurveda* to eliminate toxins from the human body by the giving of bio-cleansing procedures i.e. *Panchakarma*. Here taking HTN as *Vyana Vaishamya*,

Basti can be one of the best *shodhana chikitsa*. As for *vata*, *basti* is mentioned as a line of treatment among three basic *shodhana* procedures.^[47]

- ***Basti karma***

- *Niruha basti*- With *shalaparni*, *prishnaparni*, *brhati*, *kantakari*, and *erandamoola*. Kwath of *yava*, *kulatha*, *bera*, *shalaparni*, mix *mahasneha* and *mansarasa* in it.
- *Lekhana basti*- to reduce *medo dhaatu*. It can be given by *Triphala kwaath*, *gomutra*, *madhu*, *yava kshara*, add *prakshepa* of *ushakadi gana* in it.
- *Anuvasana basti*- *Dashmooladi anuvasana*, *Chandanadi anuvasana*.^[48]
- ***Virechan karma***: *Mridu virechana* is indicated in *vata vyadhi*. It can be done by *Tilwaka siddha ghrita*, *Saatlaa siddha ghrita* or *eranda taila* with milk.
- ***Nasya and Dhoomapana***- Useful in any kind of *vata vyadhi*.^[49]

II. *Shamana Chikitsa*

a) **Single Drugs**

Drugs that are generally administered in the form of *Churna*, *Kwatha*, *Swarasa* and *Sita Kashaya* are *Sarpagandha*, *Jatamamsi*, *Yashtimadhu*, *Mandookparni*, *Brahmi*, *Ashwagandha*, *Shankhapushpi*, *Lasuna*, *Arjuna twaka*, *Punarnava* etc.

b) **Compound Drugs**

- ***Churna***: *Yashtimadhu churna*, *Sarpagandha churna*, *Shatavari churna*, *Ashwagandha churna*, *Arjuna twaka churna*.
- ***Modaka***: *Himsagar modaka*, *Vrihat Ashwagandha modaka*.
- ***Avaleha***: *Brahmi rasayana*.
- ***Vati***: *Sarpagandha Ghana vati*, *Brahmi vati*.
- ***Rasa-aushadhi***: *Rasaraja rasa*, *Chintamani chaturmukh rasa*,^[50] *Sutshekhara rasa*, *Laghusutashekhara rasa*.^[51]
- ***Asava-Arishta***: *Saraswatarishta*, *Arjunarishta*, *Ashwagandharishta*, *Punarnava asava*.
- ***Pishti***: *Mukta pishti*, *Jaharmohara pishti*, *Praval pishti*.
- ***Bhasma***: *Mukta bhasma*.
- ***Taila***: *Himsagar taila*, *Brahmi taila*, *Shatavartita Kshirabala Taila* - Medicated oil which is boiled with milk for hundred times. Five drops of oil are mixed with a cup of milk and given to the hypertensive person, then there will be assured benefits.^[52]

- *Rasna taila, Amritadya taila.*
- **Ghrita:** *Chitrakadi ghrita, Balaadi ghrita.*^[53]

III. Yoga & Asanas

Yoga and *asanas* involve breathing consciously and deeply while synchronizing your body movements. They can help control blood pressure naturally, primarily by relieving stress.

It helps in increasing immunity and reducing incidences of heart problems like heart attacks and strokes.

- **Vajraasana**- It increases arterial supply to vital organs like heart and brain, so increasing their efficiency. Good for digestion as increases vascularity of digestive organs.^[54]
- **Mayurasana**- It enhances working power of kidney and digestive organs. Increases blood circulation and purifies blood.
- **Pavanamuktaasana** – It helps to eliminate constipation. Obesity can also be checked. It also helps to cure the disease of lung and heart.
- **Shalabhasana** – It keeps heart, spine and lung healthy and strong and helps to get rid of obesity.
- **Sukhaasana** – With the help of meditation the mind can be kept under control, which in turn controls *vata*.^[55]
- **Bhastrika**- The practice of *Bhastrika pranayama* decreased significantly both the systolic and diastolic blood pressure, with a modest decrease in heart rate.^[56]
- **Bhramri**- Practicing *Bhramri pranayama* increases parasympathetic activity and decreases sympathetic activity causing a decrease in Heart rate, diastolic blood pressure, mean arterial pressure.^[57]
- **Dhanuraasana**- It improves the working of the kidneys, which flush and purify the blood better. It helps to balance and regulate the secretion of glycogen and insulin. It also stimulates the stomach glands, helping digestion.
- **Kapala-bhaati** – This pranayama is particularly useful for stress relief because it cleanses the system, calms the mind and generates *prana* throughout the body. It also improves elasticity of lungs and increases breathing capacity. By emptying stale air from lungs, one makes a way for a fresh intake of oxygen-rich air which helps to purify the blood, to strengthen the circulation and to cleanse the entire respiratory system.
- **Nadi-shodhana** – *Nadi shodhana* means purification of the nerve currents (*nadis*). The purpose of this breathing exercise is to counteract physical and mental tension. By

regulating the breath, and deepening and lightening it, one releases tension from the *nadis*, calm the mind, and feel relaxed.^[58]

II. *Pathya-Apathya*.^[59]

<i>PATHYA</i>	<i>APATHYA</i>
<i>AAHARA</i> -, yava (barley), godhuma (wheat), puranashaali (old rice more than one year after harvesting), kangu(a type of millet), jowar, red gram, kulatha (horse gram), mudaga (green gram), amalaki, bilva, phalsa, lemon, orange, mango, badara, mustard oil, atasi oil, cow's milk, takra, haldi, shunthi, methika, cinnamon, garlic, jeeraka, black pepper. <i>VIHARA</i> - Regular practice of exercise, <i>yoga</i> , <i>asanas</i> , timely sleeping and awakening, optimum activity, <i>udvartana</i> (dry massage with powder).	<i>AAHARA</i> - curd, black gram, bean, sprouted seeds, tuberous root(potato), dried meat, pork, fish, beef meat, sheep meat,. Excessive intake of salt, sour, spicy food items <i>VIHARA</i> - practice of sleeping in day and night awakening, stress, anxiety, anger.

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