



Review Article

CRITICAL REVIEW ON PREVENTION OF THE HRIDROGA ON THE BASIS OF SHAT KRIYAKALA THEORY OF AYURVEDA

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ABSTRACT

Objective: (1) To explore the measures available in the literature for prevention of *Hridroga* on the basis of *Shat Kriyakala* the theory of Ayurveda. (2) To develop a general preventive measure through Ayurvedic principles for the prevention of heart diseases. Data source: Classical Ayurvedic textbooks *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, commentaries, modern literature, and research journals available from database PubMed and Google Scholar were searched to interpret the concept of *Shat Kriyakala* (six stages of disease progression) for the prevention of *Hridroga*. Review methods: Both Ayurvedic classics and recent research on *Hridroga*, its risk factors, preventive strategies were explored. Results: Integrating preventive strategies like *Nidana Parivarjanam* (avoiding causative factors), *Dinacharya* (daily regimen), *Ritucharya* (seasonal regimen), *Vyayama* (regular exercise), *Sadvritta* (ideal code of conduct) and *Yoga* and *Pranayama* at each stage of *Shat Kriyakala* facilitates early detection, appropriate management, and restoration of homeostasis. Conclusion: By embracing Ayurvedic principles alongside contemporary medical insights, individuals can mitigate cardiovascular risks, enhance well-being, and optimize longevity.

INTRODUCTION

Nowadays, cardiovascular diseases are considered as a global burden, mainly due to improper diet, sedentary lifestyle, smoking, and tobacco usage, lack of physical exercise, increased mental stress and environmental changes^[1]. As WHO states cardiovascular diseases (CVD) are the leading causes of death globally, taking an estimated 17.9 million lives each year ^[2]. CVD's remained the top cause of death worldwide in 2023, with a significant impact on low- and middle-income countries. However, changes in social and economic conditions, lifestyle choices, dietary habits, and increased stress related to earning a livelihood likely have contributed to its heightened occurrence. This underscores the need for scientists and the scientific community to thoroughly investigate and describe this phenomenon.

In Ayurveda, prevention of the disease is the foremost part of treatment by modifying human lifestyle with the course of nature. *Acharya Sushruta* has mentioned the concept of *Shat Kriyakala* in *Sushruta Samhitha Sutra Sthana*, 21st chapter *Vranaprashna Adhyaya*. As per the concept of *Shat Kriyakala*, the stages of *Shat Kriyakala* are *Sanchayavastha* (stage of accumulation), *Prakopavastha* (stage of aggregation), *Prasaravastha* (stage of dissemination), *Sthansamshraya Avastha* (stage of localization), *Vyakthavastha* (stage of manifestation) and *Bhedavastha* (stage of complication) as shown below in (fig.1)^[3]. The role of Ayurveda in prevention and management of heart disease can be explained in a very systematic manner by inculcating the principles of *Shat Kriyakala* for early diagnosis of disease and providing proper management at specific stage of the disease. With the proper understanding of the prognosis of the disease, physicians can detect the changes in an early stage, like *Sanchaya*, *Prakopa* etc., based on the manifestation of *Dosha* and would be able to advise on the appropriate treatment at that stage and disease progress could be

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checked and homeostasis could be restored. The disease becomes stronger in successive stages making poor prognosis of the disease and reducing the chance of recovery.

MATERIALS AND METHODS

All the available relevant data were collected from Ayurveda classics: *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hrudaya*, commentaries, modern literature, and research journals available from the Database PubMed and Google Scholar. Clinical manifestations of heart disease have been studied and

incorporated based on *Shat Kriyakala* and possible preventive measures has been proposed.

Review of Literature

Concept of *Shat Kriyakala*

Stages of the *Shat Kriyakala (Vyadhi Kriyakala)*

1. *Sanchaya Avastha* (stage of accumulation)
2. *Prakopa Avastha* (stage of provocation)
3. *Prasara Avastha* (stage of propagation)
4. *Sthanasamshraya Avastha* (stage of localisation)
5. *Vyakta Avastha* (stage of manifestation)
6. *Bheda Avastha* (stage of chronicity)

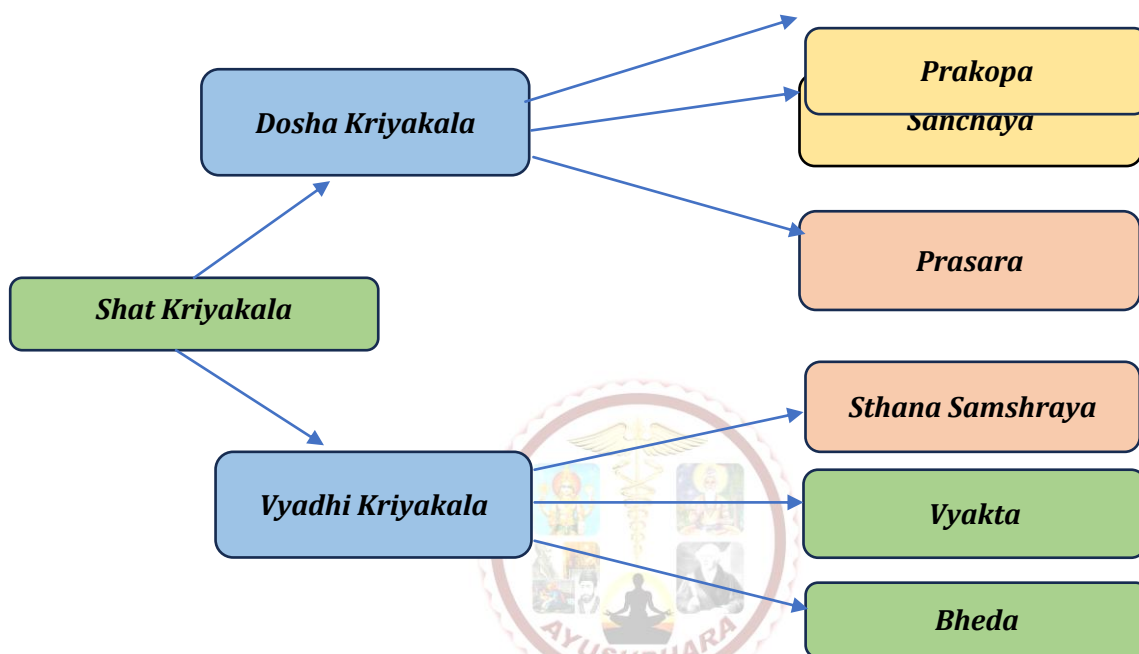


Fig.1 Stages of *Shat Kriyakala*

Sanchaya

Sanchaya marks the initial phase of *Kriyakala*, wherein *Doshas* accumulate in their designated locations within the body without being displaced. [4] This accumulation arises from diverse factors like causative agents, age, *Ritu* (seasonal variations), and fluctuations in *Doshas* throughout the day and night. The body naturally strives to maintain *Dosha* equilibrium, hence resisting factors that exacerbate their imbalance. [5]

• Clinical Manifestation of *Sanchaya* Stage in *Hridroga*

Individuals with high-fat diets, obesity [6], sedentary lifestyles [7], smoking habits [8], excessive alcohol consumption, genetic predispositions to dyslipidaemia, [9] family histories of cardiovascular disease [10], or conditions like hypertension [11], diabetes [12], hypothyroidism [13], and postmenopausal status [14] are at heightened risk for heart disease [15]. These factors contribute to the accumulation of *Tridosha's* (*Prana Vayu*, *Vyana Vayu*, *Sadhaka Pitta*, and *Avalambaka*

Kapha) in their respective sites. Gradually if these factors are not treated or continued it can potentially lead to the *Samprapti* (pathogenesis of disease) of the *Vyadhi*.

Prevention at the level of *Sanchaya*

At this stage, to prevent the occurrence of disease, one should follow the basic principle on which Ayurveda relies upon:

- *Nidana Parivarjanam* (prevention of the causative factors).
- Following *Satvika Ahara* (healthy diet).
- Regular exercise, Yoga, and meditation.
- Following the principles of *Dinacharya* (daily regimens), *Ritucharya* (seasonal regimen) and *Ratricharya* (night regimen).
- Specific *Ojovardhaka Kriya's* (that help in enhancing the *Ojas*), avoiding mental stress, anxiety, sorrows, or grief, iatrogenic factors like toxic effects of drugs

- *Dharana Vega* (suppression of urges) and *Adharaneeya Vegas* (non-suppression of natural urges) are the concepts described in the Ayurveda which must be followed to maintain the health and prevent the diseases.
- *Rasayana* (rejuvenating therapy) agents impede brain aging, assist in the renewal of neural tissues, and deliver anti-stress, adaptogenic, and memory-boosting effects.

Prakopa

Doshas that accumulate migrate from their own site to other sites. This is *Kriyakala* second stage and a second opportunity for protection against disease. [16] In this stage, the *Doshas* continue to accumulate in their respective sites. *Acharya Vagbhata* described this stage as the *Doshas* beginning to leave their original locations. [17]

• **Clinical manifestation in Hridroga**

The *Prana Vayu*, *Vyana Vayu*, *Sadhaka Pitta*, and *Avalambaka Kapha* in *Hridaya* gets vitiated and provoked due to the continuous *Nidana Sevana*. These *dosha's* gets accumulated in their other sites and further vitiate the *Rasa Dhatu* and cause *Vikriti*. To avoid the disease occurrence in stage of *Prakopa*, one must avoid taking the *Nidhana's* specifically mentioned below:

(i) *Samanya Nidana* i.e., general etiological factors of *Hridroga* which are common for all types of *Hridroga* [18,19].

(ii) *Vishesa Nidana* i.e., specific etiological factors of *Hridroga* which provoke humors of type either *Vata*, *Pitta* or *Kapha* [20].

Prevention at the level of Prakopa

The amount of *Doshas* accumulated determines the treatment. *Doshas* build up slowly if *Prakopa* is not adhering to *Chaya*; hence, *Shamana*, or suppression, is necessary. *Shodhana* (elimination of *Doshas*) is necessary if *Dosha Prakopa* is excessive or if *Chaya* is following them rather than in their own sites.

- Firstly, *Nidana Parivarjanam*, along with the *Nidana Parivarjanam*, proper diet good for healthy heart, healthy lifestyle, *Vyayama* and all the mentioned prevention at *Sanchaya* level can be advised in this stage also.
- Secondly *Guna Viparita* Chikitsa must be adopted as a treatment strategy for the already aggravated *Doshas*.

Prasara

The word "*Prasara*" itself means to spread. Aggravated *Doshas* have tendency to move all over the body in all directions. [21]

• **Clinical manifestation of Prasara stage in Hridroga**

Due to the *Nidana Sevana*, *Dosha's* are vitiated in their own sites as well as other sites which provoke the *Dosha's* to spread out of their seat and vitiate *Rasa Dhatu*. They travel to the *Hridaya* along with the vitiated *Rasa Dhatu* and manifest the *Vyadhi*. At this stage the *Ojas* (essence of vitality) is also affected by the vitiated *Dosha's*, which also cause *Oja Kshaya*. Because of the vitiation of *Tridosha* and *Oja Kshaya*, this stage includes the development of *Samarasa* and the deterioration of *Hridaya* and *Dashadhamanis*.

• **Prevention at the level of Prasara**

Prevention must be done mainly at the level of *Sanchaya*, *Prakopa* and *Prasara* because the disease has not yet established. According to the contemporary science the avoidance of risk factors can be considered in this stage for the prevention of heart disease. One must stop taking *Nidana*, should not violate the rules of food intake, follow *Dinacharya*, *Ritucharya*, *Sadvritta*, non-suppression of *Adharaneeya Vega's*, regular exercise, Yoga and Meditation, regular intake of *Rasayana* and certain lifestyle modifications. Along with the initial methods of prevention *Dhatu Shodana* should also be incorporated.

Sthanasamshraya

Sthanasamshraya, (the localization of *Doshas*), occurs when these imbalanced elements settle in specific areas, known as *Srotovagunya* (devoid of normal quality), where there is a depletion of tissue. [22] In this stage of *Kriyakala* premonitory signs and symptoms of the disease are seen [23].

• **Clinical manifestation of Sthanasamshraya in Hridaya**

Poorly manifesting symptoms of *Hridroga* (heart disease) may qualify as *Purvarupa*, according to *Acharya Dalhana*. In Ayurveda, prompt intervention and successful treatment depend on recognizing and comprehending these preliminary signs, or prodromal symptoms, of a disease.

At this stage the main *Dushya* or *Srotas* (channels) that are getting affected are:

- *Rasavaha Srotas*
- *Pranavaha Srotas*
- *Manovaha Srotas*
- *Samjnavaha Srotas*

Samjnavaha Srotas have their root in Hridaya

These references give the importance of the *Srotas* and its *Dusti* that happen in the stage of *Sthanasamshraya* that are capable in producing *Hridroga* in future, if not avoided in starting stage. The

Rasa has a tendency of *Srotorodha* (obstruction of channels), *Gaurava* (feeling of heaviness in the body) etc. Whenever it mixes with vitiated *Doshas* (mainly *Vata*) and circulates all over the body and enters the heart and *Dashadhamanis* (affected arteries), and causes the *Sanga* (obstruction) of *Pranavaha* and *Rasavaha Srotas*, *Hridroga* is produced. *Hridaya* is the principal seat of *Rasa*, so whenever there is *Rasadushti*, it is likely to be responsible to produce *Hridroga*. *Atikashaya* (excessive astringent taste), *Tikta* (bitter), *Ushna*, *Ruksha* (excessive intake of hot and dry substances) are responsible for the vitiation of *Vata* which is the precipitating causes for the *Hridroga*.

In *Hridaya*, due to *Karshana*, *Vyayama*, *Chinta*, *Bhaya*, *Trasa*, *Dushti* of *Doshas* (*Vyan Vayu*, *Sadhaka Pitta*, *Avalambaka Kapha* etc.), will affect the *Ojovaha Srotas* and *Ojakshaya* will also take place. These are responsible for the dysfunctioning of the heart due to increased catecholamine and free radicals which in sequence causes the injury of the endothelium and dysfunction of the endothelium in the arterial wall (*Dashadhamanis*) leading to cardiovascular diseases. Other *Nidhana's* like *Bhaya*, *Chinta*, *Trasa*, *Krodha*, *chintna* cause *Manovaha* and *Samjyavaha Srotodusti* that can also be a causative factor that affect *Hridaya* and gradually cause *Hridroga* in future [24].

Prevention at level of *Sthanasamshraya*

The first line of treatment should always be *Nidana Parivarjanam*, should not violate the rules of food intake, follow *Dinacharya*, *Ritucharya*, *Sadvritta*, non-suppression of *Adharaneeya Vega's*, regular exercise, Yoga and meditation, regular intake of *Rasayana* and certain lifestyle modifications.

Combined association of treating both the *Moola* of any *Srotas* and the *Vyadhi Pratyhanika Chikitsa* will be a constructive endeavour in treatment modalities in Ayurvedic field.

1. As mentioned above specific *Srotodusti Chikitsa* must be adopted by examining the patient thoroughly and based on his/her clinical presentation.
2. *Satvavajaya Chikitsa*: *Satvavajaya Chikitsa* potentiates *Sattva* with the intentions of modifying maladaptive symptoms caused by *Rajas* (arrogance) and *Tamas* (indolence) which are considered as illness-causing mental humors [25].

Vyakta

• Clinical Manifestation of *Vyakta* stage in *Hridroga*

All the signs and symptoms of *Hridroga* based on the *Dosha's* involved are collectively seen in this stage. Also, the cardinal signs due to which disease can be identified are also seen in this stage.

Prevention at level of *Sthanasamshraya* and *Vyakta*

Sthanasamshraya and *Vyaktavastha* have been considered together here. *Samarasa* and vitiated *Doshas* circulate in *Rasavaha Srotas* and *Pranavaha Srotas* at the *Sthanasamshraya* stage (*Hridaya* and *Dashavahadhamanis*). Even though the *Sama Rasa* is moving along its susceptible pathways (*Dashavahadhamani*), it is unable to fit through tiny pores in areas where *Srotodushti* has occurred. *Dhamanipratichaya* (atherosclerosis) is caused by this *Dushta Rasa*, which settles in such areas.

Hridroga signs and symptoms will appear in the *Vyakta* stage. At this point, the lumen (*Sanga*) of the *Rasavaha* and *Pranavaha Srotas* continues to narrow due to the continued progression of settled *Dushita Rasa* in *Dashavaha Dhamanis* (*Dhamanipratichaya*). *Hridroga* is produced because of this. Therefore, as mentioned above specific line of treatment must be adopted based on the *Dosha*, *Dushya*, *Desha*, *Kala*, *Agnibala* and *Vyadhibala* of the patient and prevent the further progression of the disease which is also a type of prevention.

Managing heart disease with an integrative approach involves using modern scientific methods to stabilize the condition during its acute stage. After stabilization, treatment can incorporate both contemporary science and traditional practices to manage the disease, prevent its progression, and improve the patient's quality of life.

Bheda (Stage of Complication or Chronicity)

The disease process advances to stage *Bheda* if appropriate treatment is not received for *Vyaktavastha*. When a condition reaches this point, it may serve as a risk factor for developing other illnesses, which is why we refer to it as *Nidhanarthakara Vyadhi*. If proper intervention and treatment are not initiated during this stage, the condition can progress and become untreatable.

• Clinical manifestation of *Bheda* stage in *Hridroga*

In this stage only *Bhedavastha* has been considered, as this stage is confined as *Upadravavastha* i.e. the stage of complications. *Klama*, *Avasada*, *Bhrama*, *Shotha* are the complications of *Hridroga* [26]. Likewise, heart failure, cardiac arrhythmia, heart block, Myocardial infarction and cardiogenic shock can occur, if due special and emergency measures are not taken.

Even if it is the stage of complication, all the preventable measure discussed above must be employed along with the specific treatment protocol has to be performed for the better living and to ensure no further complications of the disease.

RESULT

Unique concepts of Ayurveda have thrown light on the number of ways to prevent a disease as well as enhance the quality of life. *Dinacharya*, or a structured daily routine, helps prevent non-communicable diseases by promoting a healthy lifestyle. Early morning activities, like waking up during *Brahma Muhurta*, enhance health due to higher oxygen levels and a calming environment. Practices like *Abhyanga* (oil massage), *Snana* (bathing), and *Vyayama* (exercise) support well-being. Both traditional and modern sciences emphasize that consistent daily routines reduce stress and improve overall health, preventing lifestyle disorders. *Acharya Sushruta* emphasized the preventive benefits of *Vyayama* (exercise) by specifying the optimal duration for therapeutic purposes, known as *Balaardha Lakshanam*.^[27] This guidance ensures exercise is beneficial for health. However, modern incidents in gyms often occur because individuals exceed their capacity, focusing more on physical fitness than overall harmonious health. In Ayurveda, the *Manas* (mind) resides in the *Hridaya* so mental disturbances affect the heart first, causing discomfort or pain. This connection highlights the importance of the heart as the seat of the mind. Hence, meditation and yoga, which soothe the mind, are vital in preventing cardiovascular diseases. Diets high in fruits, vegetables, whole grains, and lean proteins, while avoiding processed foods and sugars, are key to preventing cardiovascular diseases. This aligns with Ayurvedic principles of *Pathya Aahara*. Mediterranean diet^[28], DASH diet^[29], and plant-based diets are cardioprotective and endorsed by health experts^[30]. Both contemporary and Ayurvedic approaches emphasize diet, along with sleep and moderation, for cardiovascular health. To prevent *Hridroga* (heart disease), early detection based on *Shat Kriyakala* can be combined with *Rasayana* therapy. *Rasayana* enhances nutritional status and the quality of *Dhatu*s (tissues), which improves overall vitality, strength, and longevity.

DISCUSSION

The concept of *Shat Kriyakala* holds huge importance in public health and disease control strategies. The fundamental principle of Ayurveda is to maintain the health of the healthy and treat the diseased, which can be accomplished by knowledge gained from *Shat Kriyakala*. The natural history of disease is a branch of modern research that employs the same idea. The factors that must be protected and maintained for preventing *Hridroga* are the main dosha's involved like *Avalambaka Kapha*, *Sadhaka Pitta*, *Vyana Vayu*, *Para Ojas* that is seated in *Hridaya*, *Srotas* involved like *Pranavaha*, *Rasavaha*, *Manovaha*,

and *Chetana* that is situated in *Hridaya* as shown in (fig. 2).

During the *Sanchaya* stage to prevent the occurrence of disease, one should follow the basic principle i.e., *Nidana Parivarjanam* (avoiding the causative factors) and thus *Doshas* get back to state of equilibrium.

In the next stage-*Prakopa*, when *Doshas* starts to get further vitiated one must adhere to the preventive principles like *Nidana Parivarjanam*, *Dinacharya* (daily regimen), *Ratricharya* (nocturnal regimen), *Ritucharya* (seasonal regimen), *Ritu sandhi Charya* (regimen during seasonal junction), *Sadvritta* (code of conducts), *Achara Rasayana* (ideal code of conduct), *Pathya Aahara Vihara* (healthy food and activities), Yoga, and meditation etc along with *Guna Viparita Chikitsa*.

During *Prasara* stage, when aggravated *Doshas* along with vitiated *Vata* move around the body, and cause derangement in *Rasa Dhatu* the same preventive measures along with *Hetu Linga Chikitsa* and *Vyadhi Chikitsa* should be followed, this prevents the further progression of *Vyadhi*.

In *Sthansamshraya*, the *Dushya* and *Dosha* interact and the disease arises anytime favourable conditions are met, here along with *Rasa Dhatu*, specific *Srotas* like *Pranavaha*, *Rasavaha*, *Manovaha* get involved. So, along with the first line of treatment like *Nidana Parivarjanam*, following *Dinacharya*, *Ritucharya*, *Sadvritta*, non-suppression of *Adharaneeya Vega's*, regular exercise, yoga and meditation, regular intake of *Rasayana* and certain lifestyle modifications, combined association of treating both the moola of any *Srotas* and the *Vyadhi Pratyanka Chikitsa* will be a constructive endeavour in treatment modalities.

Next in *Vyakta* stage all the symptoms characteristic of a particular disease becomes evident. By viewing the sign and symptoms at this stage, the diagnosis of a disease can easily be made and proper *Vyadhi Pratyanka Chikitsa* must be administered along with the preventive measures to arrest the progression of disease which is also one kind of prevention methodology.

The disease process advances to stage *Bheda* if appropriate treatment is not received for *Vyaktavastha*. Even if it is the stage of complication, all the emergency treatment protocol as well as preventable measure discussed must be employed along with the specific treatment protocol has to be performed for the better living and to ensure no further complications of the disease.

Proper following of *Dinacharya*, which includes regular exercise, bath, prayer, meditation, and wholesome diet, *Ritucharya* i.e., the seasonal

purification and *Sadvritta* as well as *Achaara Rasayana* which includes personality development and mental health care aids to this primordial prevention level by prevention of the possible risk factors. Incorporating dietary changes like reduced intake of salt, increased consumption of vegetables, fruits, pulses and cereals, vitamin C rich supplements and lifestyle modification like daily exercise, control hypertension, avoidance of alcohol and smoking etc. lies at the level of primary prevention by delaying or preventing the onset of disease. The aim of secondary prevention is to prevent the recurrence and progression of the disease.

Similar to this, contemporary science acknowledges the value of researching the natural history of diseases to create strategies for treatment and prevention.

In general, Ayurveda and contemporary science both stresses how important it is to understand how diseases progress to promote health and deliver the best possible therapy. The traditional classics have also mentioned various ways to prevent the *Hridroga*.

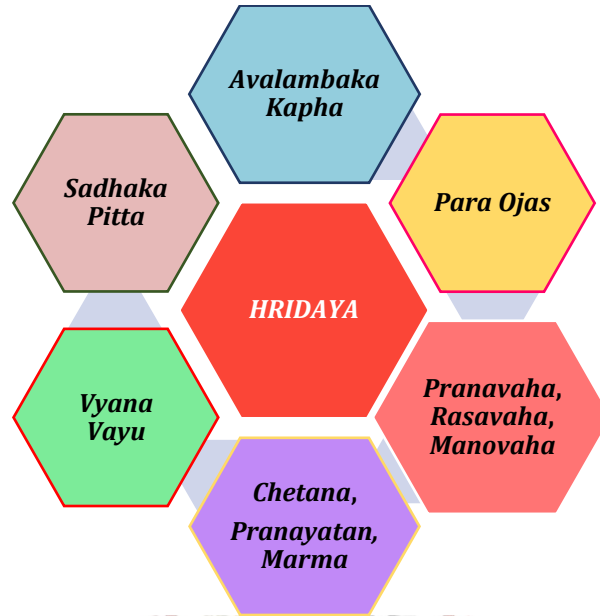


Fig. 2 Factors to Be Protected and Maintained for Preventing *Hridroga*

CONCLUSION

Preventive measures, including proper *Aahara* (diet), *Vihara* (activities), *Dinacharya* (daily regimen), *Ritucharya* (seasonal regimen), *Sadvritta* (ethical conduct), *Rasayana* (rejuvenation), Yoga, and meditation, improve quality of life and reduce cardiovascular risk. Timely intervention with medications, lifestyle modifications (*Pathya*), and exercises can break the pathology cycle, enhance patient quality of life, and manage both short-term and long-term consequences effectively, highlighting the need for early detection and stress management.

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