

Integrative Understanding of Rog Nidaan and Vikrutividnyan: A Holistic Approach to Disease Diagnosis in Ayurveda

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ABSTRACT

Ayurveda, the ancient Indian system of medicine, emphasizes the holistic understanding of disease causation and manifestation through its profound diagnostic frameworks of Rog Nidaan (pathology) and Vikrutividnyan (study of abnormality). These principles form the foundation of Ayurvedic clinical diagnosis by encompassing not only the physical symptoms but also the psychosomatic and environmental factors influencing health. Rog Nidaan focuses on identifying the root cause (Nidana), premonitory signs (Purvarupa), clinical features (Rupa), and pathogenesis (Samprapti), while Vikrutividnyan elaborates on the study of imbalance in Doshas, Dhatus, and Malas. Together, they guide practitioners to diagnose diseases at an early stage and design individualized therapeutic interventions. The integrative analysis of these concepts with modern diagnostic methods presents a comprehensive approach for understanding disease etiology, early detection, and prevention. This paper aims to explore the theoretical foundations, diagnostic tools, and applied relevance of Rog Nidaan and Vikrutividnyan, while also comparing their principles with modern pathophysiological understanding. The fusion of these systems may lead to the development of predictive, preventive, and personalized healthcare frameworks rooted in Ayurvedic philosophy.

KEYWORDS: *Rog Nidaan, Vikrutividnyan, Dosha-Dhatu-Mala theory, Ayurvedic pathology, Integrative diagnosis*

INTRODUCTION

Ayurveda, the ancient Indian system of medicine, defines health (*Swasthya*) as a dynamic state of equilibrium among *Dosha* (biological humors), *Dhatu* (tissues), *Mala* (waste products), and *Agni* (digestive fire), along with mental and spiritual well-being. Disease (*Roga*) is viewed as a deviation from this equilibrium. The concepts of *Rog Nidān* (diagnosis of disease) and *Vikrutividnyān* (understanding the pathological process) are central to identifying and managing imbalances within the body. Unlike modern medicine, which often focuses on symptomatology and organ-specific pathology, Ayurveda emphasizes a person-centered diagnostic model based on functional disturbances of the *Dosha-Dhatu-Mala* system.

This integrative understanding allows the physician to identify the root cause (*Hetu*), the stage of disease development (*Samprapti*), and the individualized treatment pathway. In the modern era, where lifestyle disorders and psychosomatic diseases are prevalent, revisiting *Rog Nidān* and *Vikrutividnyān* provides valuable insights into holistic diagnosis and disease prevention.

LITERATURE REVIEW

Concept of Rog Nidān in Classical Texts

The term *Nidān* in Ayurveda refers to the means of knowing a disease, encompassing both the cause and diagnostic methods. The *Charaka Samhita* outlines *Rog Nidān Panchaka*, a fivefold approach to diagnosis that includes *Nidāna* (causative factors), *Purvarupa* (premonitory symptoms), *Rupa* (clinical features), *Upashaya* (therapeutic tests), and *Samprapti* (pathogenesis). This framework ensures a comprehensive understanding of disease from its origin to manifestation.

Similarly, *Sushruta Samhita* emphasizes *Nidān Sthana* as an essential section, correlating structural and functional abnormalities with clinical presentation. This ancient classification bears resemblance to the stages of pathophysiology described in modern pathology.

Concept of Vikrutividnyān

Vikrutividnyān refers to the science of understanding the deviation from normal physiology (*Prakriti*). Every individual has a unique *Prakriti* determined by the predominance of *Doshas*, and disease arises when these *Doshas* become vitiated (*Vikruti*). Understanding *Vikruti* is essential for differential diagnosis and treatment planning. According to *Charaka*, the physician must assess the *Dosha*, *Dushya*, *Srotas*, *Agni*, and *Ama* to determine the pathological state. The knowledge of *Vikruti* provides insight into disease chronicity, severity, and prognosis, forming a bridge between *Nidān* (diagnosis) and *Chikitsa* (treatment).

Modern Correlation and Integrative Perspectives

Modern medicine identifies disease based on cellular, biochemical, and molecular changes, whereas Ayurveda focuses on functional imbalance. Recent interdisciplinary studies have begun correlating *Dosha* imbalances with genetic polymorphisms, metabolic patterns, and immune profiles. For example, *Vata* dominance may relate to neuroendocrine variations, *Pitta* with metabolic activity, and *Kapha* with anabolic tendencies. Thus, *Rog Nidān* and *Vikrutividnyān* can be seen as precursors to personalized medicine, which is now gaining prominence in biomedical research.

THEORETICAL FRAMEWORK OF ROG NIDĀN PANCHAKA

The concept of *Rog Nidān Panchaka* represents the fivefold diagnostic framework in Ayurveda that systematically explains the cause, early signs, symptoms, therapeutic responses, and pathogenesis of a disease. It forms the foundation of the diagnostic process in Ayurvedic medicine, offering both preventive and curative insights. This model ensures a comprehensive understanding of the disease process from its origin (*Hetu*) to its manifestation (*Rupa*), thereby guiding effective treatment strategies. Each component—*Nidāna*, *Purvarupa*, *Rupa*, *Upashaya*, and *Samprapti*—plays a unique role in evaluating disease dynamics, physiological imbalance, and the individual's response to pathological changes.

1. Nidāna (Causative Factors)

Nidāna refers to the root causes or etiological factors that initiate disease formation. Ayurveda classifies *Nidāna* into several types:

- **Aharaja Nidāna (Dietary causes):** Unwholesome, incompatible, or excessive food habits disturb the *Doshas* and initiate disease.
- **Viharaja Nidāna (Lifestyle-related causes):** Irregular sleep, lack of exercise, and improper daily routines (*Dinacharya*) contribute to physiological imbalance.
- **Manasika Nidāna (Psychological causes):** Emotional disturbances such as anger, fear, or grief lead to psychosomatic diseases by affecting *Doshas* and *Manovaha Srotas*.
- **Agantuja Nidāna (External causes):** Environmental factors, injuries, infections, or toxins are also recognized as disease initiators.

By identifying *Nidāna*, the physician can not only confirm the diagnosis but also plan preventive measures to eliminate causative factors before the disease progresses. In modern terms, this aligns with identifying risk factors and predisposing conditions in epidemiology and preventive medicine.

2. Purvarupa (Premonitory Symptoms)

Purvarupa denotes the early, premonitory signs that precede the full manifestation of disease. These are subtle indications of *Dosha* imbalance within the body before structural or functional changes become apparent.

For example, loss of appetite or mild fatigue may indicate the early stage of *Jwara* (fever), while slight dryness and roughness in the body may point toward *Vata*-related disorders. Recognizing these *Purvarupas* allows physicians to intervene at a reversible stage of the disease, preventing progression to more severe conditions.

This concept corresponds to **the prodromal phase** in modern medical science, where non-specific symptoms appear prior to disease onset. It reflects Ayurveda's preventive approach by emphasizing early detection and correction of imbalance through diet, lifestyle, and mild therapies.

3. Rupa (Clinical Features or Symptoms)

Rupa refers to the fully manifested clinical signs and symptoms that confirm the presence of a specific disease. These are the observable and perceivable expressions of the underlying *Dosha-Dhatu-Mala* imbalance. Each disease has its own set of *Rupas*, which are identified

through careful examination of the patient using *Darshana* (inspection), *Sparshana* (palpation), and *Prashna* (interrogation).

For instance, *Jwara* (fever) is characterized by *Rupa* such as increased body temperature, fatigue, and thirst; *Amlapitta* (acid dyspepsia) presents with sour belching, burning sensation, and nausea.

The *Rupa* stage is equivalent to the clinical manifestation phase in modern diagnostics. In Ayurveda, it not only confirms the diagnosis but also helps assess the severity, chronicity, and stage of the disease for appropriate treatment selection.

4. Upashaya (Therapeutic Examination)

Upashaya involves the observation of relief or aggravation of symptoms following specific therapeutic measures. This diagnostic tool helps validate the diagnosis through experimental application of diet, lifestyle, or medicines. If symptoms improve with certain interventions (*Anupashaya*), the diagnosis is confirmed; if symptoms worsen, the diagnosis is reconsidered. For example, if abdominal discomfort is relieved by the administration of *Pitta*-pacifying herbs, it confirms *Pitta*-dominant pathology. Similarly, fasting may alleviate *Kapha*-related conditions but worsen *Vata* disorders.

This step parallels the **empirical or differential diagnostic approach** in modern medicine, where treatment response helps confirm a suspected disease or rule out alternatives. *Upashaya* thus bridges the gap between theory and clinical practice, validating the physician's diagnostic reasoning.

5. Samprapti (Pathogenesis or Disease Progression)

Samprapti is the most critical aspect of *Rog Nidān Panchaka* as it explains the mechanism and sequence of events leading from *Dosha* aggravation to disease manifestation. It outlines how causative factors disturb the equilibrium of *Doshas*, interact with *Dushyas* (tissues), obstruct *Srotas* (channels), and result in functional and structural derangement.

Ayurveda describes six distinct stages (*Shatkriyakala*) of *Samprapti*:

1. **Sanchaya (Accumulation)** – The initial collection of *Doshas* in their respective sites.

2. **Prakopa (Aggravation)** – Further increase and irritation of *Doshas*.
3. **Prasara (Spread)** – Migration of vitiated *Doshas* through body channels.
4. **Sthana Samshraya (Localization)** – Deposition of *Doshas* in susceptible tissues (*Khavaigunya*).
5. **Vyakti (Manifestation)** – Appearance of clinical features of the disease.
6. **Bheda (Complication)** – Chronicity and differentiation of disease types.

Understanding *Samprapti* enables the physician to determine the stage of the disease and select appropriate interventions—*Shodhana* (purificatory therapy) in early stages or *Shamana* (palliative therapy) in advanced conditions.

This concept aligns closely with the modern understanding of **pathophysiological mechanisms**, describing how cellular or biochemical disturbances progress into clinical illness.

Integrative Relevance of Rog Nidān Panchaka

The *Rog Nidān Panchaka* framework provides a holistic view of disease formation that encompasses cause, manifestation, response, and mechanism. It emphasizes not only the disease process but also the patient's constitution (*Prakriti*) and environmental influences. In modern biomedical context, *Nidāna* can be compared with etiology, *Purvarupa* with prodromal signs, *Rupa* with clinical features, *Upashaya* with therapeutic testing, and *Samprapti* with pathogenesis. Thus, this framework serves as a valuable tool for integrating Ayurvedic diagnostics into contemporary health systems, enhancing both preventive and personalized medicine.

Table 1: Comparative View of Rog Nidān Panchaka and Modern Diagnostic Stages

Ayurvedic Concept (<i>Rog Nidān Panchaka</i>)	Description (Ayurvedic View)	Closest Modern Correlation	Diagnostic Relevance
Nidāna	Identification of causative factors such as diet, lifestyle, and emotions	Etiology / Risk factors	Determines preventive and curative strategy

Ayurvedic Concept (<i>Rog Nidān Panchaka</i>)	Description (Ayurvedic View)	Closest Modern Correlation	Diagnostic Relevance
Purvarupa	Premonitory signs of impending disease	Prodromal or early stage	Useful for early diagnosis and prevention
Rupa	Fully developed symptoms	Clinical manifestation	Confirms disease presence
Upashaya	Response to therapeutic trials	Empirical therapy or differential diagnosis	Helps verify diagnostic hypothesis
Samprapti	Pathogenesis through <i>Dosha-Dhatu-Mala</i> imbalance	Pathophysiological mechanism	Explains progression and severity of disease

ROLE OF VIKRUTIVIDNYĀN IN DISEASE UNDERSTANDING

The science of *Vikrutividnyān*—literally meaning the knowledge of pathological variations—forms a crucial component of Ayurvedic diagnostics. It deals with understanding the deviation from normal physiological balance (*Prakriti*) and explains how such disturbances lead to disease. In Ayurveda, health is defined as the harmonious functioning of *Dosha*, *Dhatu*, *Mala*, and *Agni*. Any deviation from this equilibrium is termed as *Vikruti*. Thus, *Vikrutividnyān* provides insight into the processes that transform a healthy state into a diseased one, offering a theoretical and practical foundation for diagnosis, prognosis, and treatment planning.

Understanding Prakriti and Vikruti

Every individual is born with a unique *Prakriti*—a constitution determined by the predominance of *Vata*, *Pitta*, and *Kapha Doshas* at conception. This inherent constitution governs physiological, psychological, and metabolic characteristics, influencing disease susceptibility and therapeutic response.

When these *Doshas* deviate from their natural balance due to internal or external causes,

Vikruti arises. The study of *Vikruti* involves analyzing the nature, location, and intensity of *Dosha* vitiation, as well as its impact on *Dhatus* (tissues) and *Srotas* (body channels).

By comparing *Prakriti* (the baseline state) and *Vikruti* (the pathological deviation), physicians can identify the degree and direction of imbalance, similar to comparing physiological and pathological states in modern pathology. This correlation helps determine both the cause (*Hetu*) and the prognosis (*Sadhya-Asadhyata*) of the disease.

Dosha-Dushya-Samurchana: The Foundation of Pathogenesis

A central concept in *Vikrutividnyān* is *Dosha-Dushya-Samurchana*, which denotes the interaction between vitiated *Doshas* and susceptible *Dushyas* (body tissues). Disease manifests when disturbed *Doshas* encounter weakened or predisposed tissues, resulting in functional or structural impairment.

For example:

- *Vata* aggravation in weak *Asthi Dhatu* (bone tissue) leads to degenerative disorders like arthritis.
- *Pitta* vitiation in *Rakta Dhatu* (blood tissue) produces inflammatory skin conditions.
- *Kapha* vitiation in *Meda Dhatu* (fat tissue) results in obesity and metabolic syndromes.

This principle parallels the modern concept of **pathogen–host interaction** and **tissue susceptibility**, where disease occurs only when both causative agents and conducive conditions coexist. Hence, *Vikrutividnyān* provides a dynamic, multi-layered understanding of disease mechanisms beyond mere symptomatic observation.

Assessment of Agni and Ama in Vikruti Analysis

In Ayurvedic pathology, *Agni* (digestive and metabolic fire) and *Ama* (toxic metabolic residue) play pivotal roles in the progression of disease. Impaired *Agni* results in incomplete digestion and metabolism, leading to the accumulation of *Ama*, which blocks *Srotas* (body channels) and aggravates *Doshas*.

Assessment of *Agni* and *Ama* forms an integral part of *Vikruti Pariksha*. Clinical signs such as heaviness, lethargy, coated tongue, loss of appetite, and foul-smelling stools are indicators

of *Ama*-induced pathology.

Understanding these factors helps determine whether a disease is *Sama* (associated with *Ama*) or *Nirama* (free from *Ama*), thereby influencing therapeutic decisions—*Langhana* (lightening therapy) and *Shodhana* (detoxification) are preferred in *Sama* conditions, whereas *Brimhana* (nourishing therapy) is indicated in *Nirama* states. This analytical approach closely aligns with modern biochemical understanding of metabolic and toxic disorders.

Levels of Vikruti: Dosha, Dhātu, and Mala Imbalance

Vikruti manifests at multiple physiological levels, including *Dosha*, *Dhātu*, and *Mala*.

- **Dosha Vikruti:** Imbalance among *Vata*, *Pitta*, and *Kapha* alters body functions such as movement, digestion, and stability.
- **Dhātu Vikruti:** Improper nourishment of body tissues leads to weakness, degeneration, or hypertrophy, analogous to modern histopathological changes.
- **Mala Vikruti:** Disturbance in the elimination of waste products like urine, feces, and sweat indicates functional impairment of excretory systems.

By analyzing these dimensions, *Vikrutividnyān* offers a comprehensive picture of disease progression, encompassing both systemic and local disturbances.

Vikruti and Disease Prognosis

Ayurveda emphasizes *Sadhya-Asadhyata Nirnaya*—the determination of prognosis—based on the intensity and duration of *Vikruti*. Acute or mild *Vikruti* can be corrected easily, while chronic or deep-seated *Vikruti* involving multiple *Dhatus* is difficult to cure. The knowledge of *Vikruti* also helps in selecting individualized therapies (*Vyakti-gata Chikitsa*), as the same disease may manifest differently in individuals of varying *Prakriti*.

For instance, a *Vata*-dominant person with arthritis may present with dryness and pain, requiring oleation and warmth, whereas a *Kapha*-dominant person may show swelling and stiffness, necessitating lightening and detoxifying therapies. Thus, *Vikrutividnyān* lays the foundation for **personalized medicine** in Ayurveda—long before it became a focus in modern genomics and pharmacology.

Correlation with Modern Pathophysiology

In contemporary medical science, pathology studies the structural, biochemical, and molecular mechanisms that underlie disease. Similarly, *Vikrutividnyān* examines the dynamic processes that transform equilibrium into imbalance.

While modern pathology often relies on laboratory findings, Ayurveda assesses *Vikruti* through observation (*Darshana*), touch (*Sparshana*), and questioning (*Prashna*). Both systems aim to identify the underlying mechanism rather than merely addressing symptoms. Recent integrative research has revealed correlations between *Dosha* imbalances and physiological markers—such as metabolic rate, hormonal activity, and immune response—suggesting that *Vikrutividnyān* provides a complementary framework to modern systems biology.

Clinical Significance of Vikrutividnyān

Understanding *Vikruti* is essential for effective diagnosis, prognosis, and treatment. It assists in:

- Determining the *Samprapti* (pathogenesis) of disease.
- Evaluating disease chronicity and severity.
- Planning individualized treatment strategies.
- Monitoring therapeutic response and recovery.

Moreover, *Vikruti Pariksha* serves as a preventive tool, allowing early identification of imbalances before disease manifests. Thus, it embodies Ayurveda's core philosophy—**“Swasthasya Swasthya Rakshanam, Aturasya Vikara Prashamanam”** (to maintain the health of the healthy and to cure the disease of the sick).

Integrative and Contemporary Relevance

In the present era, where chronic, lifestyle-related, and psychosomatic diseases are prevalent, *Vikrutividnyān* offers a multidimensional approach to diagnosis and management. Its principles can be integrated with modern diagnostic tools such as biomarkers, genomics, and imaging to develop a personalized and predictive healthcare model. Therefore, *Vikrutividnyān* is not merely a classical theory but a living science that continues to guide holistic, preventive, and curative healthcare systems globally.

Table 2: Common Dosha Imbalances and Their Clinical Manifestations

Dominant Dosha	Typical Pathological Features	Common Symptoms	Modern Pathological Parallel
Vata	Irregular movement, dryness, depletion of tissues	Constipation, anxiety, insomnia, tremors	Neurological and degenerative disorders
Pitta	Heat, inflammation, hypermetabolism	Acid reflux, skin rashes, anger, fever	Inflammatory and metabolic conditions
Kapha	Sluggishness, congestion, water retention	Obesity, lethargy, excessive sleep, sinusitis	Metabolic syndrome, fluid imbalance

DIAGNOSTIC APPROACH IN AYURVEDA: HOLISTIC FRAMEWORK

Trividha Pariksha (Threefold Examination):

Ayurvedic diagnosis traditionally begins with *Darshana* (inspection), *Sparshana* (palpation), and *Prashna* (interrogation). These methods help evaluate both physical and mental health.

Ashtavidha Pariksha (Eightfold Examination):

This includes the examination of *Nadi* (pulse), *Mutra* (urine), *Mala* (stool), *Jihva* (tongue), *Shabda* (speech), *Sparsha* (touch), *Drik* (appearance), and *Akruti* (physique). The *Nadi Pariksha* is especially significant for assessing *Dosha* predominance and imbalance.

Dashavidha Pariksha (Tenfold Assessment):

This comprehensive diagnostic framework includes analysis of *Prakriti*, *Vikruti*, *Sara*, *Samhanana*, *Pramana*, *Satmya*, *Ahara Shakti*, *Vyayama Shakti*, *Vaya*, and *Satva*. These parameters enable individualized diagnosis and treatment planning.

CHALLENGES IN CONTEMPORARY APPLICATION

1. Lack of Standardization:

The subjective nature of Ayurvedic diagnostic methods, such as *Nadi Pariksha*, poses challenges in reproducibility and standardization for scientific validation.

2. Integration with Modern Pathology:

There remains a conceptual gap between Ayurvedic and modern biomedical terminologies. Establishing a bridge through translational research is essential for integrative practice.

3. Educational Limitations:

Limited exposure to modern diagnostic tools within Ayurvedic education restricts interdisciplinary understanding and collaboration.

4. Research and Evidence Gaps:

Although clinical studies demonstrate the efficacy of Ayurvedic diagnostics, there is still a need for systematic documentation and quantitative validation using biomedical markers.

SCOPE AND FUTURE PROSPECTS

Integration with Modern Diagnostics:

The fusion of Ayurvedic diagnostic principles with modern laboratory and imaging technologies could enhance accuracy and personalization in healthcare. For instance, *Prakriti*-based genomic profiling could complement laboratory-based disease risk prediction.

Development of AI-Based Diagnostic Tools:

Artificial Intelligence and machine learning can help digitize *Nadi Pariksha* and other diagnostic methods, making Ayurvedic assessment more objective and reproducible.

Global Recognition and Research Expansion:

Collaborative research between Ayurvedic and biomedical institutions can promote evidence-based integration, enhancing global acceptance of Ayurvedic diagnostics

Preventive and Predictive Healthcare:

Since Ayurveda focuses on *Purvarupa* and *Nidāna*, it offers strong potential for preventive healthcare models aligned with modern predictive medicine.

CONCLUSION

The comprehensive study of *Rog Nidaan* and *Vikrutividnyan* reflects Ayurveda's unique ability to perceive disease as a dynamic process rather than a static state. While modern

medicine focuses on molecular and physiological alterations, Ayurveda recognizes the subtle energetic imbalances that precede physical symptoms. The diagnostic precision of *Rog Nidaan*—through analysis of causative factors (*Nidana*), early signs (*Purvarupa*), symptoms (*Rupa*), and disease progression (*Samprapti*)—enables practitioners to intervene at multiple levels. Simultaneously, *Vikrutividnyan* offers insights into how imbalances of *Doshas*, *Dhatus*, and *Malas* manifest in various organ systems, guiding both prognosis and treatment. Incorporating these diagnostic perspectives into modern clinical settings can enhance disease prediction, early intervention, and personalized therapy. For example, understanding *Vikruti* (deviation from normalcy) provides a framework for preventive measures long before structural changes occur. Integrating Ayurvedic diagnostic parameters with modern tools such as biochemical, imaging, and genetic analysis could revolutionize healthcare delivery. Therefore, the synergy between *Rog Nidaan* and *Vikrutividnyan* not only reinforces the philosophical essence of Ayurveda but also paves the way for evidence-based holistic medicine in the modern era. This integrative diagnostic paradigm has the potential to bridge ancient wisdom and contemporary science, ensuring a complete understanding of human health and disease.

REFERENCES

1. Acharya, Y. T. (Ed.). (2014). *Charaka Samhita of Agnivesha* (Reprint ed.). Chaukhambha Orientalia.
2. Shastri, A. D. (2018). *Sushruta Samhita with Ayurveda-Tattva-Sandipika Commentary*. Chaukhambha Sanskrit Sansthan.
3. Sharma, R. K., & Dash, B. (2017). *Charaka Samhita: Text with English Translation and Critical Notes* (Vol. 1–7). Chowkhamba Sanskrit Series Office.
4. Tripathi, B. N. (2019). *Ashtanga Hridayam of Vagbhata with Nirmala Hindi Commentary*. Chaukhambha Sanskrit Pratishthan.
5. Patwardhan, B., & Mashelkar, R. A. (2009). Traditional medicine-inspired approaches to drug discovery: Can Ayurveda show the way forward? *Drug Discovery Today*, 14(15–16), 804–811. <https://doi.org/10.1016/j.drudis.2009.05.009>
6. Rastogi, S. (2010). Building bridges between Ayurveda and modern science. *International Journal of Ayurveda Research*, 1(1), 41–46. <https://doi.org/10.4103/0974-7788.59943>
7. Kessler, C. S., & Michalsen, A. (2016). The role of Ayurveda in integrative medicine.

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- Alternative Therapies in Health and Medicine*, 22(2), 24–31.
8. Mukherjee, P. K., & Harwansh, R. K. (2014). *Traditional and Evidence-Based Ayurveda: Insights into Pharmacology and Therapeutics*. CRC Press.
 9. Patil, V. M., & Bhutani, K. K. (2020). Integrative understanding of Ayurveda diagnostics with modern pathology. *Journal of Ayurveda and Integrative Medicine*, 11(3), 215–224. <https://doi.org/10.1016/j.jaim.2019.07.006>
 10. Bhalerao, S., & Bolke, N. (2015). Concepts of Nidana and Samprapti: A review of disease causation in Ayurveda. *AYU*, 36(2), 121–128. <https://doi.org/10.4103/0974-8520.175539>
 11. Sharma, H., & Clark, C. (2012). *Contemporary Ayurveda: Medicine and Research in Maharishi AyurVeda*. CRC Press.
 12. Singh, R. H. (2010). Exploring issues in the development of Ayurvedic research methodology. *Journal of Ayurveda and Integrative Medicine*, 1(2), 91–95. <https://doi.org/10.4103/0975-9476.65079>
 13. Tiwari, P. V. (2016). *Ayurveda Ka Vaigyanik Itihas Evam Siddhant*. Chaukhambha Bharati Academy.
 14. Bhushan, P., Kalpana, J., & Arvind, C. (2005). Classification of human population based on HLA gene polymorphism and the concept of Prakriti in Ayurveda. *Journal of Alternative and Complementary Medicine*, 11(2), 349–353. <https://doi.org/10.1089/acm.2005.11.349>
 15. Joshi, K. S. (2017). *Ayurvedic Concepts of Health and Disease: A Modern Interpretation*. Motilal Banarsidass Publishers.