

Retrospective Study





Linking digestive fire (jatharagni) with gut health and its impact on mental well-being through pulse diagnosis using nadi tarangini: a pan-India observational study

Abstract

Rationale: Post-pandemic research has highlighted significant links between gut health and mental well-being, suggesting changes in the gut may contribute to mental health conditions. Ayurveda, the ancient system of medicine, connects digestive fire (jatharagni) with mind states (manas bhava), suggesting that an imbalance in agni affects both cognition and emotional health. Nadi Tarangini, an AI-powered diagnostic tool, integrates these ancient principles with modern technology, providing a non-invasive method of assessment through pulse diagnosis (nadi pariksha).

Objectives to study: To assess the variations in digestive fire (jatharagni) wrt gut health and mental well-being across different nadi vikruti patterns (imbalances) among a Pan-Indian population through Nadi/pulse analysis using Nadi Tarangini.

Study methods and materials: Our study design is a retrospective observational study with a focused subgroup analysis model. We analyzed secondary data from 600 subjects across India, collected through random sampling at Nadi Tarangini centers from a larger Pan-India dataset of 15,391 subjects. Pulse data was recorded using Nadi Tarangini, a digital pulse diagnosis device that captures pulse waveforms to compute 22 pulse attributes (nadi gunas), calibrated by Ayurvedic practitioners. These attributes such as agni, thoughts and stress were quantified on a scale from 0% to 100%, and classified as low/weak (0–40%), moderate/prone (41–70%), or high/excess (71–100%). AI algorithms were applied to identify correlations between digestive health, stress, and thought patterns across varying imbalance (nadi vikruti).

Results: The findings indicated a significant association between imbalances in jatharagni and adverse mind-state outcomes. Specifically, a diminished digestive fire (mandagni), characterized by low appetite, weak digestion, and reduced metabolic function, was correlated with moderate to high levels of overthinking (chinta), anxiety, and stress. In contrast, an excessive digestive fire (tikshnagni), marked by intense hunger and increased acidic secretions, was linked to heightened stress, anger, and aggressive tendencies, particularly among individuals with Pitta-dominant nadi patterns. Finally, the irregular digestive fire (vishamagni) leads to proneness to overthinking and anxiety, stress at all scales of digestive fire. These results suggest that both mandagni and tikshnagni states negatively influence cognitive function and emotional regulation, contributing to increased mind-state distress and instability.

Conclusion: These findings support the conclusion that imbalances in digestive fire (agni) significantly disrupt both gut functions and mental well-being. The results underscore the importance of maintaining a balanced agni to support cognitive stability and emotional health. Furthermore, the study highlights the potential of tools like Nadi Tarangini as effective diagnostic aids in promoting a holistic, integrative approach to health that considers both physiological and psychological dimensions.

Keywords: Gut health, mental wellbeing, nadi pariksha, digestive fire, nadi tarangini

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Introduction

"Samadoshah samagnishcha, samadhatu malakriyah, prasannatmendriya manah, svastha ity abhidyiyate." The one whose body humors (tridoshas) are balanced, whose digestive fire is balanced, whose tissues and eliminations are normal, and whose senses and mind are centered in the Self, is considered healthy and remains full of bliss. Ayurveda, the Science of Life, guides the well-being of both mind and body. The balanced and healthy state of mind and body keeps the body humors in harmony. To maintain

this harmony, all 3 body humors (*tridoshas- vata*, *pitta*, *kapha*) and 3 fundamental qualities of mind (manas gunas-*satva*, *rajas*, *tamas*) should be in a balanced state. Today's era of modern civilizations is affected by more and more stressful lifestyles. In the last few years, especially during and after the pandemic, everyone has been suffering from one or the other lifestyle disorders such as stress, anxiety, or depression. These adverse effects over mind and body cause an imbalance in body humors and gunas as well resulting in different physical, physiological, and psychological diseases. These patterns can be studied with one of the most efficient diagnostic methods of





Ayurveda, nadi pariksha. In this paper, we have observed and studied different patterns of nadi graphs which are manifestations of heart rate variability to find out and learn changes in stress (sahas) and thoughts (chinta) of a person.

Concept of digestive fire (Jatharagni)

Jatharagni, considered the primary digestive fire in Ayurveda, is the vital force responsible for gut health, digestion, and the transformation of food into energy and consciousness. It governs the metabolic processes and is central to maintaining overall health and vitality.2

Pitta which is hot or ushna in nature with sharp/ tikshna properties and vata which is mobile/ chala in nature and with light/ laghu properties enhance digestive fire. Digestive fire differs or can be predicted based on one's prakriti or body type. Vata dominant prakriti has irregular digestive fire or vishamagni. Pitta dominant prakriti has intense digestive fire or tikshnagni and kapha predominant prakriti has low digestive fire or mandagni.

In the science of Ayurveda, the root of all diseases is the vitiated digestive fire or Agni.3 And that is why Agni plays an important role in the diagnosis of any physical, physiological and psychological disorders. Agni is classified into 4 types:

- I. Samagni: Balanced digestive fire helps in proper hunger, digestion, nourishment of body tissues and mind.
- II. Vishamagni: Irregular digestive fire results in the irregularities in appetite pattern, weak metabolism, poor nourishment of tissues showing symptoms like bloating, irritable bowel syndrome, piles, hormonal imbalances, diabetes etc. On a mental state level, it results in restlessness, overthinking, anxiety, etc.
- III. Tikshnagni: Excess digestive fire provokes Agni with excess heat and sharpness which results in excess hunger, burning in the chest, hyperacidity, acid reflux, and headache. On a psychological level, it tends to stress, anger and aggressiveness.
- IV. Mandagni: Weak digestive fire results in indigestion, loss of appetite, laziness, weak metabolism, weakness, dullness, obesity, etc. Mind state tends to depression, anxiety and proneness to self-harm. Everyone should try to maintain their digestive fire in a balanced state i.e. samagni to gain health and a long life.

Therefore, analyzing and understanding the exact state of one's digestive fire is crucial for accurate diagnosis and effective treatment of any disease, as maintaining a balanced state of samagni is essential for sustaining good health and achieving longevity.4

Concept of manovaha srotas

The Manovaha Srotas is described in a systemic literature review of Srotas⁵ by Sroto-Viman Chapter elaborated in Charak Samhita Viman Sthan, It is said that vata, pitta and kapha travel the entire body through various organ systems (srotas) along with the manas gunas, which are beyond sense perception. Hence the entire sentient body is their vehicle and field of operation.6

Concept of mind in ayurveda

The physical mind (manas) is directly connected to Dhi⁷ (intellect), *Dhruti*⁸ (processing information), and *Smruti*⁹ (memory). The dhi refers to intelligence that helps to learn, focus, and understand. The vata dosha should be balanced for the optimal functioning of dhi. 10 Dhruti involves the chemical and electrical processing of information and is therefore related to pitta dosha. Smruti is the ability to remember and

kapha dosha should be balanced for its proper functioning. 11 When there is proper co-ordination between these three factors, mental health is perfect. However, lack of co-ordination leads to a condition called mental imbalance. The process of memory comes under the gradation of the physical mind or objective mind but there is another subjective part of mind called chinta. As stated in the commentary "Vishado Rogavardhananam Agrya:"12 mean stress and/or anxiety are the foremost factors to worsen the disease condition. This is the first principle of the mental health concept in Ayurveda. Irregular gut health can disturb the mind state, just as mental illness can lead to disruption of body functions.

Triguna of mind

The significance of the Triguna, 13 fundamental qualities of mind, Sattva, Rajas, and Tamas are extensively emphasized by Acharya Charaka in his classical writings. Rajas (passion and activity) and Tamas (inertia and ignorance) often take hold of the individual, binding them in the continuous cycle of birth and death, much like the unceasing motion of a wheel (chakra)" and moksa is described as the state devoid of rajas and tamas.14

The characteristic features of trigunas:

- I. The satva has the quality of intelligence, virtue and goodness and creates harmony, balance and stability. It provides happiness and contentment hence we can say that it is the principle of clarity, wideness and peace.
- II. The rajas has the quality of change, activity and turbulence and introduces the disequilibrium that upsets an existing balance. Rajas are stimulating and provide pleasure, owing to its unbalanced nature. It may quickly result in pain and suffering.
- III. The tamas guna is responsible for dullness, darkness, and inertia and is heavy or obstructing in its action. It has a depressed mood, lack of faith in god, lack of good conduct, intellectual lack, ignorance, not attending to duties and sleepiness.

Satva is considered pure and is not the cause of diseases. Rajas and tamas are the vitiators responsible for the manifestation of mental illness. Each individual has a different temperament and mental personality based on the predominance of these universal attributes, along with the body humors, vata, pitta, and kapha. Thus all these doshas can be regarded as factors having psychosomatic role to play.

Causes of imbalance mind states

When studied systematically, Ayurveda identifies numerous etiological factors responsible for mental illness. In the main three commentaries of Ayurveda called Brihatryee, Acharva Vagbhat has narrated that an individual should control his senses and negative thoughts in mind like greed, irritability, anger, competition and attachment, as explained in the verse below:

"Dharayaet tu sada vegan hitaishi pretya cheha cha Lobha irshya dvesha matsarya ragaadeenam jitendriya"15

It means that some conditions like social circumstances, hereditary factors, and traumatic incidents, personality of the person, biological reasons, improper diet, physical illnesses and overindulgence, severe mental or physical stress, unfavorable personal, familial and social environment are the external causes responsible for mental diseases. The 6 bhava of manas (Shad ripu) namely bhava (fear), chinta (worry/ overthinking), kama (desire/lust), krodha (anger), mada (ego/ arrogance) and matsar (jealousy)16 are the causes and also symptoms of manas vyadhi. Usually vata vikruti shows anxiety, hyperthinking, fear, substance abuse, and negative thoughts. *Pitta vikruti* shows aggression, anger and *kapha vikruti* shows anti socialism, depression, addictions and self-harm patterns.

Other manas vyadhi explained in ancient Ayurveda text are Unmada¹⁷ (psychosis), Apasmara¹⁸ (convulsive disorder), Bhrama¹⁹ (illusion), Atatvabhinivesham²⁰ (obsessive disorders), Prajnaparadha²¹ (lack of coordination between dhi, dhruti and smruti), Tandra²² (drowsiness), Klama²³ (neurasthenia), Mada²⁴ (loss of perception), Apatantrakam²⁵ (hysteria), Avasada²⁶ (Depression), Chitto Udvega (Anxiety neurosis), and Madatyaya²⁷ (Intoxication). Building on the theoretical understanding of mind states through the lens of trigunas and tridoshas, this study delves into the physiological and psychological manifestations of vata, pitta, and kapha vikruti. It further examines their correlations with specific mental patterns such as anxiety, stress, and behavioral tendencies, thus offering an integrated perspective on gut health and emotional well-being. ^{28,29}

Study method

This study employed a **retrospective observational design**, appropriate for analyzing previously collected, non-interventional data from 15,391 individuals who visited Nadi Tarangini-enabled Ayurvedic clinics across India over one year. The data included pulse recordings using the Nadi Tarangini device,³⁰ *prakriti* (body constitution) assessments via questionnaires, and basic demographic and symptom details. A focused subgroup of 600 subjects who self-reported stress-related symptoms (anxiety, hyperthinking, or depression) was analyzed in greater depth. All data were de-identified and collected with informed consent, adhering to ethical and privacy standards. As shown in Figure 1, Nadi Tarangini device records real-time pulse signals at the *vata*, *pitta*, and *kapha* wrist points using trisensor technology, with all data stored on a centralized server.



Figure 1 Manual nadi pariksha is done at *vata*, *pitta* and *kapha* locations on the wrist using index, middle and ring fingers respectively. Nadi Tarangini mimics the methodology using three pressure sensors which are used at the three locations to record the *nadi* data in real time.

From this dataset, 22 nadi attributes—such as agni (digestive fire), bala (strength), rukshata (dryness), mruduta (softness), tikshnata (sharpness), thought patterns, and proneness to stress, were computed algorithmically and calibrated in consultation with Ayurveda physicians. Each attribute was scored on a scale from 0% to 100%, and categorized as low/weak (0–40%), moderate/prone (41–70%), or high/excess (71–100%). Correlations were examined between nadi gati vikruti (pulse variability), agni (digestive strength), and manas bhava (mental states) using artificial intelligence (AI) and machine learning techniques to identify physiological patterns associated with psychological stress. This integrative approach demonstrates how traditional Ayurvedic diagnostics, when augmented with digital tools, can yield evidence-based insights into mental health. A representative nadi gati pattern is shown in Figure 2.

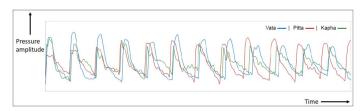


Figure 2 Sample *nadi* data of 10 seconds long (out of recorded 1 minute) using Nadi Tarangini. The three colors blue, red and green respectively represent data collected using pressure sensors at *vata*, *pitta* and *kapha* locations.

Results and discussion

This section presents the findings related to *agni* (digestive fire) in relation to gut health and mental states, based on observations from 600 subjects across various regions of India. A consistent association was identified between imbalances in *jatharagni* (digestive fire) and adverse mental states across different *nadi* patterns, indicating a strong gut—mind connection rooted in both physiological and psychological domains.

In *Pitta*-dominant *nadi* patterns/*vikruti*, low digestive fire (*mandagni*) is linked to increased overthinking (*chinta*), anxiety and emotional disturbances. As shown in Figure 3, *Tikshnagni*, in particular, correlated with stress, anger and aggression. This is aligned with classical Ayurveda's understanding of *Pitta vikruti*, where hyperthinking and gut imbalance are common, driven by *Rajas guna* and moderate *satva*.

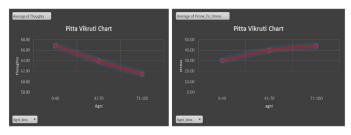


Figure 3 Correlation between digestive fire (agni) patterns and mental states (Thoughts & Stress) in *Pitta-dominant vikruti*.

Vata-dominant patterns showed consistently high levels of stress and overthinking across all agni types. As shown in Figure 4, Vata's inherent mobility (chala guna) and unstable digestion (vishamagni) appear to contribute to mental instability. Individuals with Vata vikruti exhibited low Satva, elevated Rajas and Tamas, and the highest overall stress levels.

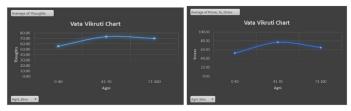


Figure 4 Correlation between digestive fire (agni) patterns and mental states (Thoughts & Stress) in *Vata-dominant vikruti*.

As shown in Figure 5, individuals with *Kapha*-dominant *nadi* patterns consistently exhibited *mandagni*, indicating a general tendency toward moderate levels of stress and cognitive disturbance. While some overthinking was observed under *mandagni* conditions, *Kapha*'s inherently stable nature and higher levels of *satva* appear to offer a protective effect against significant emotional distress.

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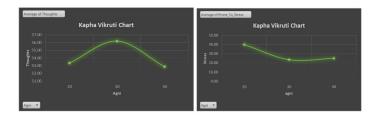


Figure 5 Correlation between digestive fire (agni) patterns and mental states (Thoughts & Stress) in Kapha-dominant vikruti.

In summary, *tikshnagni*, *mandagni* and *vishamagni* were associated with increased psychological distress, especially in *Pitta* and *Vata* patterns. *Kapha nadi vikruti*, while predominantly exhibiting *mandagni*, showed only moderate psychological disturbance. These findings support the Ayurveda view that balanced *agni* is crucial for both gut and mental well-being. The study also highlights the utility of Nadi Tarangini as a digital pulse diagnosis tool for assessing gut-mind imbalances methodically and accurately.

Conclusion

The present study provides evidence supporting the Ayurveda concept that imbalances in *jatharagni* (digestive fire) are closely linked to disruptions in both gut functions and mental well-being. Specifically, both excessive (*tikshnagni*) and irregular (*vishamagni*) digestive states were associated with elevated levels of stress, overthinking, and emotional instability, particularly among individuals with *Pitta* and *Vata* dominant *vikruti* patterns. These findings suggest that digestive fire plays a central role in regulating cognitive and emotional health.

Furthermore, the study highlights the potential utility of Nadi Tarangini, an AI-based pulse diagnostic tool, in identifying patterns of *agni* imbalance and associated mind health states. By combining traditional Ayurveda diagnostics with modern technology, Nadi Tarangini offers a promising non-invasive approach for personalized health assessments. Maintaining balanced *agni* is essential for supporting both physiological and psychological health. The integration of tools like Nadi Tarangini may contribute to making evidence-based holistic and preventive strategies in healthcare, particularly in understanding and managing the gut—mind connection.

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Conflicts of interest

The authors declare that there are no conflicts of interest.

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