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Integrating Siddha Pathology in Public Health – A Review Article

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***Abstract*—Background: Siddha medicine, an ancient Dravidian system, views health as an equilibrium of the five elements and three humors (Mukkutram). Amid the rise of non-communicable diseases and recent pandemic challenges, Siddha's holistic pathological framework (Noi Naadal) offers significant potential for integrated, proactive public health strategies. Objective: This review analyzes Siddha diagnostic methodologies—specifically Envagai Thervu (eight-fold assessment), Manikadai Nool (wrist circummetric sign), and Maruthuva Jothidam (medical astrology)—and evaluates their integration into modern healthcare systems and policy frameworks. Methods: Classical literature, government reports, and peer-reviewed studies (2014–2025) were synthesized from databases like PubMed and the Ayush Research Portal. The review follows National Health Policy 2017 principles, evaluating traditional epistemology alongside modern clinical data and policy documents. Results: Siddha diagnostics provide non-invasive screening tools; studies link specific Manikadai Nool measurements (10–10.75 finger breadths) to cardiac and uterine conditions, while Neikkuri (oil drop test) correlates significantly with metabolic derangements. Although Siddha services are co-located in 13,000+ Indian facilities, challenges remain regarding standardization and professional resistance, despite high utilization (88.2%) among practitioners.**
Conclusion: Siddha pathology offers a robust, cost-effective framework for community-level chronic disease management. Global sustainability depends on rigorous standardization, digital integration via the Ayush Grid, and translating humeral theories into biophysical evidence to bridge the gap between traditional wisdom and modern clinical practice.

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***Index Terms*—Siddha Pathology; Envagai Thervu; Manikadai Nool; Public Health Integration; Naadi; Neikkuri; Mukkutram; Chronomedicine; Ayush Policy; Preventive Healthcare.**

I. INTRODUCTION

The evolution of global healthcare is increasingly defined by a shift toward integrative medicine, where the wisdom of traditional systems is synthesized with the precision of modern biomedicine. In this landscape, the Siddha system of medicine, originating in the southern part of the Indian subcontinent, offers a sophisticated understanding of health and disease that predates modern epidemiology by millennia. Siddha pathology, or Noi Naadal, is built upon the foundational belief that the universe and the human body are intertwined through the five primary elements (Aim boodham) and the three governing humors (Uyir Thathukkal). This systemic view allows Siddha to address not just the symptoms of a disease, but the fundamental imbalance of life forces that leads to pathological states.

As India faces a "quadruple burden" of disease—comprising non-communicable diseases, persisting communicable diseases, maternal and child health challenges, and an aging population—the existing biomedical infrastructure is often stretched to its limits. Siddha's focus on primordial prevention through Kayakarpam (rejuvenation) and its emphasis on individualized diet and lifestyle regimens (Pathiyam) provide a vital resource for community-level health promotion. The diagnostic methodology of Siddha, characterized by the "Eight-fold Assessment" (Envagai Thervu), allows for rapid, bedside evaluation of a patient's health status, which is particularly beneficial in rural and underserved areas.

The integration process, championed by the Ministry of Ayush since 2014, has moved traditional medicine from the periphery to the core of India's National Health Mission. This involves the co-location of Siddha practitioners in primary and community health centers and the establishment of Ayushman Arogya Mandirs.

However, the path to full integration is fraught with challenges, ranging from legal and ethical debates over "mixopathy" to the technical difficulties of standardizing ancient diagnostic techniques. This review serves to bridge the gap between tradition and science, exploring how the unique parameters of Siddha pathology can be validated and utilized to improve the quality of life and health outcomes for the public.

Envagai Thervu: The Eight-fold Assessment of Siddha Pathology

The fundamental diagnostic protocol in Siddha medicine is the Envagai Thervu, a systematic eight-fold examination that allows the physician to ascertain the nature, site, and prognosis of a disease. Sage Theraiyar defined these eight parameters as Naadi (Pulse), Sparisam (Touch), Naa (Tongue), Niram (Color), Mozhi (Speech), Vizhi (Eye), Malam (Stools), and Moothiram (Urine).

ISSN: 3139-8464 (p)

Naadi (Pulse Diagnosis)

Naadi is considered the most significant of the eight examinations, serving as the "pathfinder" for all ailments. It reflects the status of the three humors Vali, Azhal, and Iyyam at the radial artery. In the clinical setting, the physician uses three fingers (index, middle, and ring) to palpate the radial pulse, usually on the right hand for males and the left hand for females.

Finger	Humor Representation	Clinical Significance
Index	Vali (Vatham)	Reflects nervous system and musculoskeletal status
Middle	Azhal (Pitham)	Reflects metabolic, digestive, and inflammatory status
Ring	Iyyam (Kapham)	Reflects respiratory, structural, and fluid balance

Traditional texts describe the movements of these humors using animal analogies: Vatha moves like a swan or hen, Pitha like a frog or bird, and Kapha like a snake or peacock. Modern research has begun to correlate these qualitative gati with quantitative parameters such as Pulse Wave Velocity (PWV) and Heart Rate Variability (HRV). While pulse rate is a quantitative measure, Naadi is a qualitative assessment of the pulse's stability (sthiratva), speed (vega), and hardness (kathinya). Digital tools like Nadi Tarangini are currently being used to capture these subtle wave variations, providing a bridge between traditional palpation and modern physiological monitoring.

Naa (Tongue Examination)

The examination of the tongue is a vital diagnostic marker in Siddha, particularly for gastrointestinal disorders (Gunmam) and metabolic status. The physician observes the color, surface coating, moisture levels, movement, and taste sensation.

- Vatha diseases: The tongue may appear black or blue, often with dryness or a rough surface.
- Pitha diseases: The tongue typically appears red or yellowish, sometimes with a greenish tinge or inflammatory signs.
- Kapha diseases: The tongue is often pale, white, or covered with a thick, frothy coating.

In conditions such as Sirakkamba vatham (cerebrovascular accident), deviations in tongue movement and speech can help in identifying the posterior circulation involvement. Tongue examination also provides clues to systemic toxicity; for instance, a bitter taste sensation may be used to identify specific snake bites in traditional toxicological management.

Niram (Body Color and Complexion)

Examination of Niram involves observing the color of the skin, nails, hair, conjunctiva, and mucous membranes. This parameter provides a macro-level view of the patient’s constitutional type and current pathological state.

Observation Site	Pathological Indicator	Humor Association
Skin	Blackish/Dark discoloration	Vatha derangement
Face/Oral Cavity	Yellowish tint	Pitha derangement (e.g., jaundice)

ISSN: 3139-8464 (p)

Observation Site	Pathological Indicator	Humor Association
Face	Pallor/White tint	Kapha derangement (e.g., anemia)
Conjunctiva	Muddy/Watery/Painful	Vatha involvement
Conjunctiva	Greenish-red/Effusion	Pitha involvement (e.g., hemorrhagic)

Siddha texts also link complexion to planetary influences, suggesting that the body's radiance can change in the months leading up to death, a concept used in terminal care prognosis.

Mozhi (Speech and Voice)

The quality of speech (Mozhi) is assessed for tone, clarity, and articulation. Changes in voice provide direct evidence of humeral vitiation in the vocal cords and the respiratory tract.

- Vatha diseases: Characterized by a "samana saptam" (normal but potentially slurred or inarticulate) voice.
- Pitha diseases: Often results in a high-pitched, shrill, or aggressive voice.
- Kapha diseases: Results in a low-pitched, resonant, or hoarse voice, often due to phlegm accumulation.

Mozhi is also critical in neurological assessments, where aphasia (expressive or comprehensive) or dysphonia can indicate specific brain lesions or strokes.

Vizhi (Eye Examination)

The eyes are considered a mirror to the body's internal health. Practitioners examine the color of the sclera, the clarity of the cornea, pupillary response, and the condition of the eyelids.

- Vatha signs: Dryness (exophthalmos), Bitot’s spots, and increased lacrimation.
- Pitha signs: yellowish sclera (Kamalai/Jaundice), burning sensations, and redness.
- Kapha signs: Pale conjunctiva, opacity (cataracts), and thick eye discharges.

In modern Siddha practice, eye examination is being integrated into public health screening for conditions like diabetic retinopathy, where traditional indicators are paired with AI-enabled screening tools.

Sparisam (Touch and Palpation)

Through Sparisam, the physician assesses skin temperature, texture, and sensitivity. Palpation is used to identify tenderness, abnormal growths, macules, papules, or ulcers. In critical care, Sparisam is used to assess peripheral nervous function; for instance, cold extremities in a patient with hyperpyrexia may indicate a terminal collapse of the vital humors.

- Vatha skin: Cold, dry, and rough.
- Pitha skin: Warm, moist, and potentially inflamed.
- Kapha skin: Smooth, oily, and thick.

Malam (Stool Examination)

The nature of stools (Malam)—whether solid, liquid, or semi-solid—as well as its color and odor, provides essential information on the patient’s digestive fire (Agni) and the presence of undigested matter.

ISSN: 3139-8464 (p)

Stool Characteristic	Pathological Inference
Constipated/Hard	Vatha derangement; dehydration
Yellow/Greenish	Pitha derangement; bile involvement
White/Frothy/Mucoid	Kapha derangement; intestinal malabsorption
Presence of occult blood	Inflammatory bowel conditions or hemorrhoids

In Gunmam (peptic ulcer) patients, stool examination is critical for identifying bleeding and digestive efficiency, with studies showing a high prevalence of specific dietary patterns contributing to these pathologies.

Moothiram (Urine Analysis: Neerkuri and Neikkuri)

Urine examination is perhaps the most scientifically validated aspect of Envagai Thervu. It is divided into two parts: Neerkuri (observation of physical properties) and Neikkuri (the oil-drop test).

Neerkuri (Physical Parameters):

The physician observes the color, smell, density, and quantity of urine collected early in the morning.

- Vatha urine: Clear white, sometimes with a slight blue tinge.
- Pitha urine: Reddish or yellowish, with high density and strong odor.
- Kapha urine: Pale white, frothy, and slow-moving.

Neikkuri (Oil Drop Test):

A drop of gingelly oil is placed on the surface of the urine using a standard dropper. The way the oil spreads determines the prognosis.

Spread Pattern	Humor Association	Prognosis
Snake-like	Vatham	Curable, but requires specific management
Ring-like	Pitham	Curable; indicates metabolic heat
Pearl-like	Kapham	Curable; indicates structural/fluid issues
Sieve-like	Kapham (severe)	Requires immediate, intensive treatment
Sinking/Mixing	Thirithodam (Mixed)	Bad prognosis; potentially incurable

Biophysical analysis suggests that the spread pattern is influenced by surface-active molecules and metabolites in the urine.

The direction of oil spreading may even be explained by paramagnetic molecules aligning with the earth's electromagnetic field. Clinical trials in PCOS patients have shown significant correlations between these patterns and the patient's hormonal status, validating the test's utility as a non-invasive screening tool.

ISSN: 3139-8464 (p)

Manikadai Nool: The Wrist Circummetric Sign

Manikadai Nool is a specialized diagnostic and prognostic tool unique to the Siddha system, explained in classical texts like *Agasthiyar Soodamani Kajiru Soothiram*.

It involves measuring the circumference of the patient's distal forearm (wrist) using an inelastic thread and then dividing that length by the patient's own finger breadth (Viralkadai or finger breadths).

II. METHODOLOGY OF MEASUREMENT

The procedure is highly standardized:

1. Marking: A point four finger breadths away from the wrist crease is identified.
2. Circumference: An inelastic cotton thread is wrapped around the forearm at this marked level to measure the girth.
3. Calculation: The length of the thread is measured against the width of the patient's four fingers (excluding the thumb). This is then converted into units of finger breadths.
4. Inference: The resulting value (ranging from 4 to 11 fbs) is mapped to specific disease conditions and prognostic outcomes.

Clinical and Prognostic Values

The Manikadai Nool value acts as a vital indicator of the body's internal state, reflecting both physical tissues (Udal Thathukkal) and vital humors.

Measurement (fbs)	Clinical Condition and Symptoms	Prognosis
11.0	Healthy individual; good body build; long life expectancy	Excellent
10.0	Pricking pain in chest and limbs; gastritis and ulcers	Good
9.5	Edema; increased body heat; burning sensation in eyes; fever; anorexia	Fair
9.0	Impaired hearing; pain around the waist and thighs; inability to walk	Guarded
8.5	Leucorrhoea; venereal disorders; primary infertility	Guarded
8.0	Gas collection in abdomen; indigestion; weakness; pain in throat	Guarded
7.5	Osteoporosis; burning eyes; joint pain; increased temperature	Poor
6.0	Tuberculosis; severe phlegm in the chest	Bad (Death sign)
5.75	Sanni (delirium); giddiness; breathlessness; death occurs within days	Terminal
4.5	Edema; shrunken eyes; death occurs within 9 days	Terminal
4.0	Pedal edema; dark face; weakness; death occurs within 5 days	Terminal

Recent studies have validated the diagnostic significance of Manikadai Nool in specific populations. For instance, in patients with polycystic ovarian syndrome (PCOS/Soodhagavaayu), values typically fell within the 9 to 9.75 fbs range, correlating significantly with clinical symptoms like obesity and menstrual abnormalities. Another study found that values in the 10 to 10.75 fbs range were indicative of cardiac diseases and uterine fibroids.

The advancement of IoT has led to the creation of handheld, portable Manikadai measurement tools that use encoders and sensors to transmit data to mobile applications. This modernization allows for seamless data logging and historical analysis of a patient's health.

Maruthuva Jothidam: The Role of Medical Astrology and Chronobiology

Siddha medicine incorporates the concept of chronobiology the study of biological rhythms into its core pathological framework. Maruthuva Jothidam (Medical Astrology) and Kaala Ozhukam (Seasonal Regimen) are used to understand how temporal and cosmic factors influence humoral balance.

Chronobiology and Seasonal Variation (Kaala Ozhukam)

Siddha practitioners categorize the year into six seasons (Perumpozhuthu) and the day into six parts (Sirupozhuthu). The humors Vatha, Pitha, and Kapha undergo natural cycles of accumulation (Chaya), aggravation (Prakopa), and pacification (Prasama) according to these timeframes.

Season	Time Period	Humor State	Public Health Implication
Kaar (Monsoon)	Mid-Aug to Mid-Oct	Vatha vitiates; Pitha increases	Increased risk of inflammatory and skin disorders
Koothir (Autumn)	Mid-Oct to Mid-Dec	Pitha aggravates	Prevalence of digestive and bile-related disorders
Munpani (Early Winter)	Mid-Dec to Mid-Feb	Humors stabilize	Period of optimal health; good for rejuvenation
Pinpani (Late Winter)	Mid-Feb to Mid-Apr	Iyyam starts to liquefy	Onset of respiratory ailments
Illavenil (Spring)	Mid-Apr to Mid-Jun	Iyyam aggravates	High incidence of phlegmatic and allergic conditions
Muthuvenil (Summer)	Mid-Jun to Mid-Aug	Pitha increases	Risk of dehydration and heat-related stress

The system advises specific seasonal regimens (Ruthu Sariyai) to mitigate these risks. For example, during the Kaar season, it is recommended to consume sweet and sour foods mixed with honey and to avoid daytime naps to prevent Vatha vitiation.

This chronotherapeutic approach aligns with modern medicine’s understanding that cardiac events and asthma attacks often follow predictable temporal patterns.

Medical Astrology (Maruthuva Sothidaviyal)

Medical astrology is an integral branch of Siddha pathology used to ascertain a patient's physiological and psychological weaknesses based on their birth chart (natal horoscope).

Raasi and Anatomical Correlations: Each of the 12 zodiac signs (Raasis) is associated with specific anatomical locations and disease predilections.

- Mesham (Aries): Head and eyes.
- Katagam (Cancer): Stomach, breasts, and diaphragm.
- Simmam (Leo): Heart and spinal column.
- Thulam (Libra): Kidneys, lumbar vertebrae, and skin.
- Magaram (Capricorn): Knees, body joints, and hair.

The 6th house in a natal chart is considered the "house of diseases." If the 6th house falls in a particular Raasi, the individual is predicted to be vulnerable to diseases associated with that sign's body parts. Furthermore, male Raasis are linked to fast-spreading, acute diseases, while female Raasis relate to silent, aggressive, and chronic conditions. The movement nature of Raasis (Sara/Movable, Sthira/Fixed, Ubaya/Dual) also determines whether a disease will be acute, chronic, or recurrent.

Clinical trials at the National Institute of Siddha have used the Pancha Patchi Sasthiram (Five Bird Theory) retrospectively to identify and rule out conditions such as primary infertility (Maladu) and diabetes mellitus (Madhumegam) based on the time of consultation.

Integrating Siddha Pathology into Public Health

The integration of Siddha medicine into the public health system in India is a strategic effort to enhance primary healthcare (PHC) and address the rising burden of non-communicable diseases (NCDs). The National Ayush Mission (NAM), launched in 2014, serves as the primary vehicle for this integration.

Clinical Integration Models and Public Health Role

There are four primary models through which Siddha is integrated into the national health framework:

1. Co-location Model: Siddha practitioners work within conventional PHCs and District Hospitals, offering patients a choice of systems under one roof. Over 13,000 such facilities exist currently.
2. Referral-Based Model: Modern biomedical practitioners refer patients to Siddha specialists for chronic disease management or palliation.
3. Fully Integrated Services: Centers of excellence, like the National Institute of Siddha (NIS), collaborate with modern research institutes (e.g., ICMR) for clinical trials and joint health programs.
4. Parallel Model: Community-based healers and private Siddha enterprises provide care independently but are increasingly being brought under regulatory oversight.

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III. KEY AREAS OF IMPACT:

- NCD Management:

Siddha's focus on metabolic equilibrium makes it highly effective for chronic conditions like diabetes, hypertension, and arthritis. Integrated NCD clinics are already operational in several government hospitals.

- Geriatric Care:

Rejuvenation practices (Kayakarpam) are utilized to manage age-related degenerative conditions like osteoporosis and Alzheimer's disease.

- Oral Health:

Siddha interventions such as oil pulling and herbal mouthwashes are being explored for integration into national oral health strategies and school programs.

- Epidemic Response:

During the COVID-19 pandemic, 46 Siddha COVID Care Centers (SCCCs) were established in Tamil Nadu, treating over 15,000 patients with a holistic approach that included Siddha medicine, dietary interventions, and psychological support.

IV. POLICY AND REGULATORY FRAMEWORK

The integration of Siddha is guided by the National Health Policy 2017, which promotes "medical pluralism"—the coexistence and integration of multiple healthcare systems. Recent advances include:

- ICD-11 Inclusion: Ayush systems are being integrated into global medical classifications.
- Insurance Coverage: Siddha treatments are increasingly covered under national insurance schemes like PM-JAY and various private insurers.
- Standardization: The Central Council for Research in Siddha (CCRS) is working to obtain NABH and NABL certifications for research institutes to ensure quality and credibility.

In Tamil Nadu, a landmark Memorandum of Understanding (MoU) was signed on July 16, 2025, between the Directorate of Public Health (DPHPM), the Commissionerate of Indian Medicine (CIM&H), and the NIS. This partnership aims to bridge the strengths of modern and traditional systems through scientific evidence generation, joint implementation of health programs, and enhanced public health research.

Policy Gaps and Regulatory Hurdles

Despite significant progress, the integration of Siddha into public health faces persistent barriers that hinder its full potential.

1.Professional Resistance and the "Mixopathy" Debate:
Many modern medical associations oppose integration, labeling it as a regressive step toward "pseudo-scientific" practices.
Concerns center on the lack of a scientific basis for integrated medicine and the fear of patient confusion in mixed settings.

2.Standardization and Evidence Gaps:
While ancient texts provide detailed diagnostic frameworks, there is a lack of large-scale scientific validation for many Siddha modalities. Standardization of formulations and diagnostic tools like Neikkuri is crucial for reproducibility and global acceptance.

3.Legal and Ethical Issues:
Conflicts exist over the legal scope of practice. While some states allow traditional practitioners to prescribe modern medicine under specific rules (e.g., Rule 2(ee)), this is frequently challenged in courts, creating a climate of legal ambiguity.

4.Educational and Infrastructure Gaps:
Ayush curricula often lack the systematic, evidence-based clinical training found in modern medicine, leading to skill gaps in emergency management. Furthermore, many traditional colleges suffer from faculty shortages and inadequate facilities.

5.Intellectual Property and Biopiracy:
The protection of indigenous Siddha knowledge from commercial exploitation is a significant concern. Lacunae in IP protection and the loss of knowledge due to the lack of documentation are persistent issues.

V. FUTURE PERSPECTIVE

The transformation of Siddha pathology from a traditional art to a modern public health tool requires a focus on innovation and global collaboration.

- Digital Health and AI:

The deployment of AI-enabled tools can help non-specialists perform high-level screenings using Siddha parameters. The Ayush Grid project will facilitate personalized teleconsultations and digital health records, making Siddha more accessible to rural populations.

- Global Integration:

Following the Gujarat Declaration, India is leading the global effort to integrate traditional medicine into primary healthcare systems. Establishing Ayush chairs and collaborations across 42 countries is a step toward this goal.

- Modernizing Diagnostics:

The shift from manual to sensor-based diagnostics, as seen in digital Naadi and IoT-based Manikadai Nool, will improve the accuracy and credibility of Siddha pathology.

- Standardizing Manufacturing:

Moving from fragmented, small-scale production to enterprise-level, GMP-certified manufacturing will enable Indian Siddha products to meet the compliance expectations of developed markets, particularly in stress management and metabolic health.

VI. CONCLUSION

The Siddha system of medicine offers an exhaustive and insightful approach to pathology through its unique diagnostic parameters. By integrating Envagai Thervu, Manikadai Nool, and Maruthuva Jothidam into public health frameworks, healthcare systems can move toward a more holistic, person-centered model. While significant policy gaps and professional resistance remain, the commitment to medical pluralism and the advancement of digital health tools suggest a promising future. Strengthening scientific validation and standardization will be the key to ensuring that Siddha remains not just a heritage-driven system but a vital, modern healthcare asset.

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