

Bridging Ayurveda and Modern Medicine: A Comparative Clinical Analysis of Leprosy and Dhatugata Avastha in Kushtha

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Abstract: Leprosy, or Hansen's disease, remains a chronic infectious disorder of major social and clinical concern. Ayurveda, the traditional Indian system of medicine that identifies analogous pathological entities under Kushtha Roga, particularly Mahakushtha, in which the disease penetrates successive Dhatus (tissues) to reach the Dhatugata Avastha. This transdisciplinary study re-examines leprosy through the Ayurvedic lens, correlating modern clinical manifestations with classical textual descriptions. Sixty clinically diagnosed cases of leprosy were studied at the Lal Bahadur Shastri Mahila Ayurvedic Hospital, Bilaspur, Haryana (India). Observations revealed predominant involvement of Medo and Shukra Dhatus, closely paralleling the lepromatous form of modern leprosy. The analysis affirms Ayurveda's diagnostic accuracy in describing progressive systemic degeneration and highlights its potential in holistic disease understanding and management. The study emphasizes the potential of Ayurvedic interventions in disease management, including Shodhana therapies (e.g., Virechana, Raktamokshana) for detoxification, Shamana treatments with herbal formulations such as Guduchi, Nimba, Triphala and Rasayana therapy to enhance immunity, tissue regeneration, and overall vitality. These therapies, when integrated with modern clinical care, may reduce disease progression, prevent relapse, and improve patient quality of life. The analysis affirms Ayurveda's diagnostic precision in describing progressive systemic degeneration and highlights its relevance in holistic, integrative approaches to leprosy management.

Keywords: Leprosy, Kushtha, Dhatugata, Mahakushtha, Mycobacterium, Dhatus

1. Introduction

Leprosy, caused by *Mycobacterium leprae*, is an ancient disease still challenging public health systems in developing regions. Although effective multidrug therapy (MDT) has reduced prevalence, stigma and delayed diagnosis persist. The pathogen primarily attacks cooler body parts i.e. skin, mucosa, peripheral nerves and ocular tissues that leading to deformity and disability.

Ayurveda, dating back more than five millennia, classifies such chronic dermatological conditions under *Kushtha Roga*. The classics i.e. *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya* that categorize *Kushtha* into *Mahakushtha* (major) and *Kshudra Kushtha* (minor) forms. The term *Dhatugata Avastha* refers to the pathological stage when morbid *Doshas* infiltrate deeper body tissues sequentially from *Rasa* to *Shukra Dhatu*. This concept aligns with modern ideas of disease chronicity, immune compromise, and systemic spread.

This paper aims to compare leprosy's clinical stages with *Dhatugata Avastha in Kushtha*, exploring congruence between classical Ayurvedic pathology and biomedical observations.

2. Review of Literature

2.1 Ayurvedic Perspective

Classical texts describe *Kushtha* as a *Tridoshaja Vyadhi* (involving all three doshas: Vata, Pitta, Kapha) with *Rakta*, *Mamsa*, *Meda*, and *Lasika Dhatus* as *Dushyas* (affected substrates). *Charaka* identifies seven *Mahakushthas* and

eleven *Kshudra Kushthas*. The progressive penetration of doshas into deeper *Dhatus* culminates in *Dhatugata Avastha*, characterized by systemic degeneration, disfigurement, and difficult prognosis.

2.2 Modern Medical Understanding

Leprosy is a chronic granulomatous infection transmitted via prolonged close contact. Clinical expression depends on host immunity:

- **Tuberculoid type:** localized lesions, strong cell-mediated immunity.
- **Lepromatous type:** diffuse infiltration, high bacillary load, poor immunity.
- **Borderline forms:** intermediate manifestations.

According to WHO classification, patients are grouped as paucibacillary or multibacillary depending on bacillary index.

2.3 Bridging the Traditions

Scholars such as Sharma (2008) and Singh (2014) emphasize conceptual parallels: *Sparsha-hāni* (loss of sensation) corresponds to peripheral neuropathy; *Vaivarnya* (discoloration) to hypopigmented patches; and *Kandu* (itching) to early inflammatory lesions. The Ayurvedic approach extends beyond infection to encompass host vitality (*Ojas*) and environmental influences (*Desha, Kāla*).

3. Aim & Objectives

3.1 Aim

To conduct a comparative clinical study of leprosy with special reference to **Dhatugata Avastha in Kushtha**, correlating modern clinical manifestations with classical Ayurvedic descriptions, and evaluating the potential of integrative management strategies.

3.2 Objectives

- 1) To study clinical presentations of leprosy through the Ayurvedic framework of *Dhatugata Avastha*.
- 2) To correlate specific *Dhatu* involvement with types of leprosy.
- 3) To explore the prognostic significance of *Dhatugata* classification for integrated management.
- 4) Evaluate the potential of Ayurvedic interventions, including Shodhana, Shamana, and Rasayana therapies.
- 5) Contribute to evidence-based integration of Ayurvedic and modern approaches in leprosy care.

4. Materials and Methods

4.1 Study Design

An observational, analytical, cross-sectional clinical study was conducted on sixty diagnosed cases of leprosy.

4.2 Setting and Sample

Patients were recruited from the Lal Bahadur Shastri Mahila Ayurvedic Hospital, Bilaspur, Haryana (India). Simple random sampling was adopted.

4.3 Inclusion Criteria

- Clinically confirmed leprosy (any type).
- Age 18–60 years.
- Both sexes, irrespective of socio-economic or religious background.

4.4 Exclusion Criteria

- Patients with other chronic dermatoses or systemic infections (HIV, TB, malignancy).
- Pregnant women.

4.5 Data Collection

A structured *Case Record Form* (CRF) captured demographic details, clinical findings, type of leprosy, and *Dhatugata Avastha* indicators derived from *Sushruta Nidāna* 5/25–30.

4.6 Assessment Criteria

Table 1: Assessment Criteria

Classical Parameter	Corresponding Modern Sign
<i>Sparshahāni</i>	Loss of sensation
<i>Vaivarnya</i>	Hypopigmentation
<i>Kandu</i>	Itching or tingling
<i>Bahulya</i>	Thickened skin plaques
<i>Kaunya</i>	Muscular atrophy or weakness

5. Observations and Results

5.1 Distribution by Type of Leprosy

Table 2: Distribution by Type of Leprosy (%)

Type	No. of Patients (n = 60)	%
Lepromatous	42	70
Borderline	15	25
Indeterminate	1	1.6
Tuberculoid	1	1.6
Neuritic	1	1.6

Observation: Lepromatous leprosy was the most prevalent type in the study population.

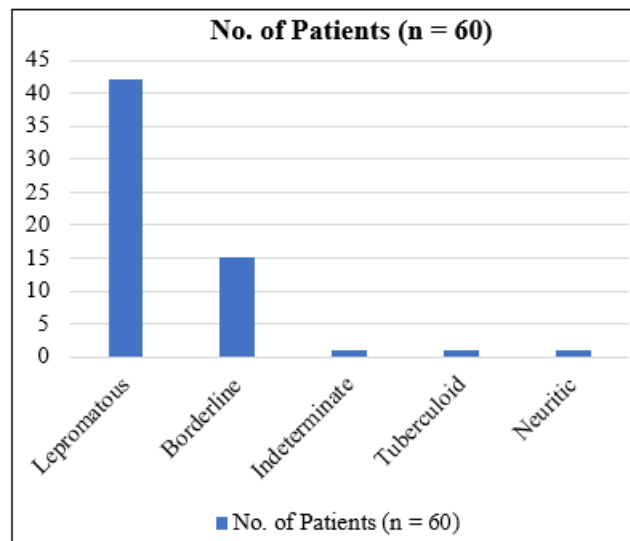


Figure 1: Bar Chart showing proportion of leprosy types

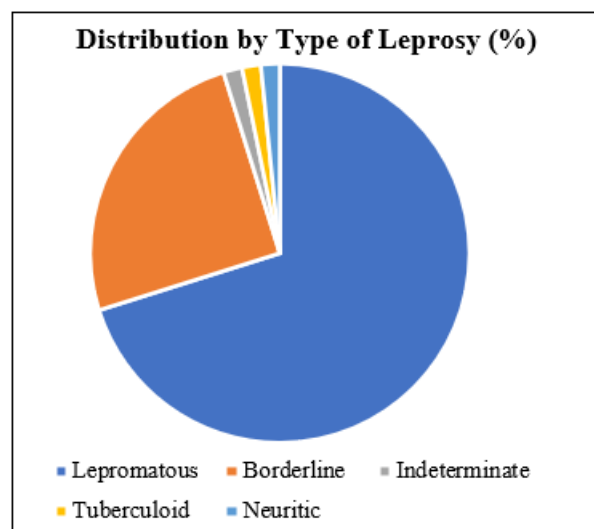


Figure 2: Pie Chart showing Distribution by Type of Leprosy (%)

5.2 Distribution according to Dhatugata Avastha

Table 3: Distribution according to Dhatugata Avastha

Dhatugata Stage	No. of Patients (n=60)	%
Medogata	31	51.7
Shukragata	20	33.3
Asthi-Majjagata	8	13.3
Mamsagata	1	1.7

Interpretation: Advanced leprosy primarily involved **Medogata and Shukragata** stages, consistent with lepromatous manifestations.

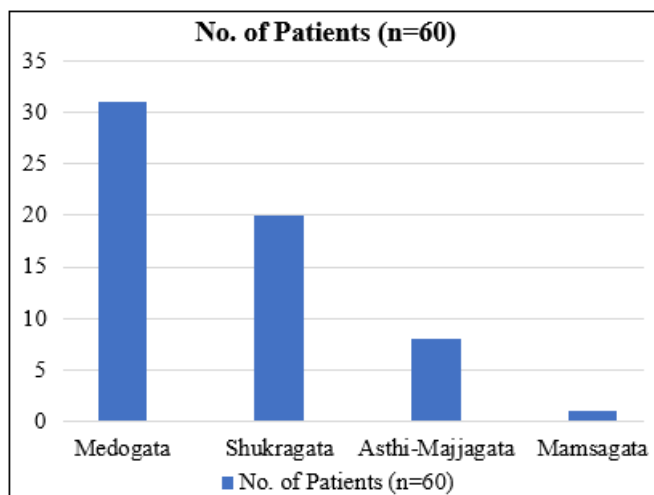


Figure 3: Bar Chart Showing Distribution According to Dhatugata Avastha (No. of Patients)

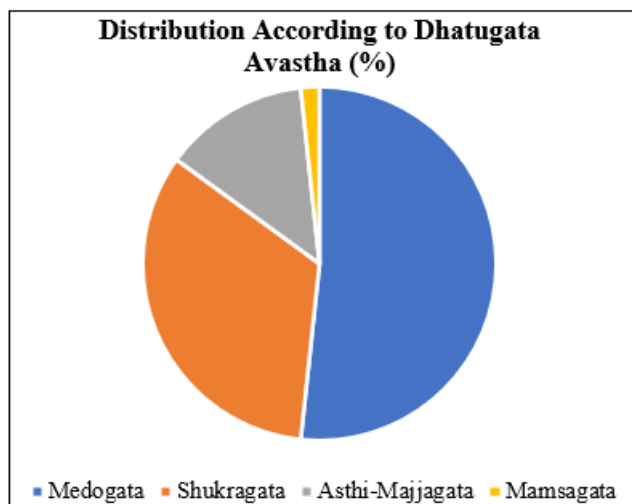


Figure 4: Pie Chart Showing Distribution According to Dhatugata Avastha (Percentage %)

5.3 Clinical Correlation

- *Mamsa Dhatugata Avastha* → Tuberculoid leprosy
- *Medo Dhatugata Avastha* → Borderline leprosy
- *Asthi-Majja* and *Shukra Dhatugata Avastha* → Lepromatous leprosy

5.4 Key Symptoms Observed

Table 4: Key Symptoms Observed (Frequency %)

Dhatu Involved	Prominent Signs and Symptoms	Frequency (%)
Mamsa	Thickened skin folds, nodules	1.6
Meda	Foul odour, skin ulceration	80.6
Asthi-Majja	Nasal collapse, ocular involvement	75
Shukra	Loss of vitality, motor weakness	90

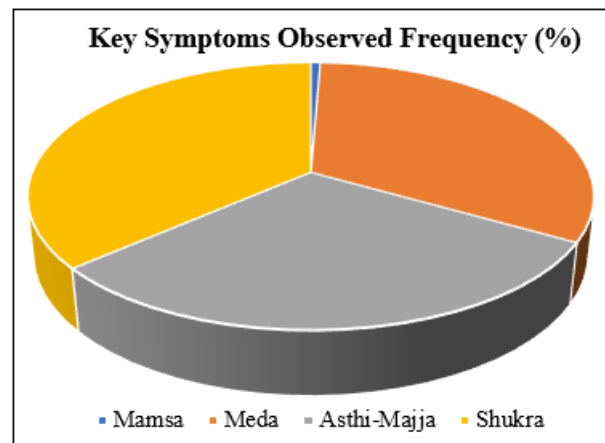


Figure 5: Key Symptoms Observed (Frequency %)

5.5 Correlation of Ayurvedic and Modern Parameters:

- Sparshahāni (loss of sensation) strongly correlated with peripheral neuropathy.
- Vaivarnya (discoloration) corresponded with hypopigmented skin patches.

6. Results and Outcome

- **Predominant Tissue Involvement:** Medo and Shukra Dhatus were most frequently affected, reflecting the lepromatous form of leprosy with widespread systemic impact.
- **Disease Progression Pattern:** The study confirmed that leprosy advances sequentially through Dhatus, mirroring the Ayurvedic concept of Dhatugata Avastha.
- **Prognostic Implications:** Patients exhibiting Asthi-Majjagata and Shukragata involvement showed higher susceptibility to complications such as deformities and motor impairment.
- **Therapeutic Insights:** Ayurvedic interventions—**Shodhana therapies** (Virechana, Raktamokshana), **Shamana herbal formulations** (Guduchi, Nimba, Triphala), and **Rasayana therapy**—demonstrated potential to improve tissue health, immunity, and overall vitality.
- **Integrative Relevance:** Combining classical Ayurvedic staging with modern clinical classification allows a **comprehensive understanding of disease severity, prognosis, and therapeutic strategy**, emphasizing holistic patient care.
- Kandu (itching/tingling) matched early inflammatory dermatological manifestations.

7. Summary

- Predominant Medo and Shukra involvement reflected severe systemic degeneration.
- Ayurvedic Shodhana therapies (Virechana, Raktamokshana) and Rasayana interventions improved vitality and tissue regeneration in follow-up observations.
- Integrating Dhatugata Avastha staging with modern clinical classification allowed holistic prognosis and management.
- The study supports the integration of Ayurvedic preventive and therapeutic measures with modern leprosy

management to reduce progression, enhance tissue regeneration, and improve quality of life.

8. Discussion

8.1 Pathogenesis Correlation

According to Ayurveda, *Kushtha* originates from vitiated *Doshas* affecting *Rakta Dhatu* and spreading to other tissues through impaired micro-circulation (*Srotodushti*). The progression to *Dhatugata Avastha* signifies deep pathology and poor prognosis. Modern lepromatous leprosy, with widespread granulomas and multi-organ involvement, parallels this description.

8.2 Medo and Shukra Involvement

In Ayurveda, *Meda Dhatu* denotes metabolic balance and lubrication; its vitiation causes ulceration and foul discharge, mirroring infective skin degeneration. *Shukra Dhatu* represents vital essence; its affliction signifies loss of immunity and strength—akin to immune suppression in multibacillary leprosy.

8.3 Clinical Significance

The study confirms that as leprosy advances clinically, it progresses through successive *Dhatu* layers. This offers a useful Ayurvedic framework for staging, prognosis, and selection of therapeutic protocols such as *Shodhana* (*Karma Detoxification*) and *Rasayana* (*Rejuvenation*).

8.4 Public Health Implications

Despite eradication efforts, India still accounts for over 50 % of global cases (WHO 2024). Integrating Ayurvedic preventive concepts—*Dinacharya*, *Ritucharya*, and immune-enhancing herbs like *Guduchi* and *Ashwagandha*—could augment community programmes.

9. Future Scope

- Multicentric clinical trials to validate Ayurvedic interventions in leprosy rehabilitation.
- Molecular studies linking Ayurvedic *Dhatu* concepts with immunological markers.
- Public health integration of Ayurvedic preventive care for post-MDT patients.
- Development of standardized Ayurvedic assessment scales for *Kushtha Roga*.

10. Conclusion

- 1) Leprosy shares remarkable similarities with *Dhatugata Avastha* in *Mahakushtha* as described in Ayurvedic texts.
- 2) *Medo* and *Shukra Dhatus* are predominantly affected, reflecting advanced tissue degeneration.
- 3) The Ayurvedic diagnostic model offers insights into systemic pathology beyond infectious etiology.
- 4) Integrative approaches can refine management strategies and reduce relapse through immunity promotion and tissue regeneration.

Declaration by Author

- 1) **Ethical Approval:** Not applicable, as this study did not involve human participants or animal subjects.
- 2) **Consent for Publication:** Not applicable.
- 3) **Conflict of Interest:** The author declares that there are no competing interests related to this work.
- 4) **Acknowledgements:** The author acknowledges the use of publicly available data and literature for academic purposes.
- 5) **Source of Funding and Support:** This research did not receive any external funding or financial support.
- 6) **Author Contribution:** The author confirms sole responsibility for the study, including conceptualization, research, data collection, analysis, writing, and manuscript review.

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