



AYURVEDIC ASSESSMENT OF PANDUTA AND ITS CORRELATION WITH HEMOGLOBIN LEVELS: A COMPREHENSIVE REVIEW.

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ABSTRACT

Panduta is a classical clinical manifestation described in Ayurveda, predominantly associated with Pandu Roga, characterized by pallor of the skin and mucous membranes. It reflects underlying derangement of Rasa and Rakta Dhatu due to Agnimandya. In modern medicine, pallor is a hallmark of anemia and correlates directly with reduced hemoglobin levels. This review explores the Ayurvedic concept of Panduta, its clinical assessment methods, and its correlation with hemoglobin levels. Evidence from classical texts and modern clinical studies is analyzed to establish an integrative diagnostic approach. The review highlights that Panduta is not merely a visual sign but a reflection of systemic pathology, and when correlated with hemoglobin estimation, it enhances early diagnosis and management.

KEYWORDS : Panduta, Pandu Roga, Hemoglobin, Pallor, Rakta Kshaya, Anemia**1. INTRODUCTION**

Ayurveda gives prime importance to clinical examination through Darshana, Sparshana, and Prashna. Among these, Darshana Pariksha includes the evaluation of skin color and complexion, where Panduta serves as a critical diagnostic sign. It is one of the earliest observable manifestations of Pandu Roga and indicates Rakta Dhatu Kshaya [1].

In modern clinical practice, pallor is a reliable indicator of anemia, particularly when hemoglobin levels decline below physiological limits. According to WHO criteria, anemia is defined as hemoglobin <13 g/dL in males and <12 g/dL in females [2]. This conceptual overlap provides a strong basis for correlating Panduta with hemoglobin levels.

2. Concept of Panduta in Ayurveda**2.1 Classical Description**

Panduta is described as a Vaivarnya (abnormal discoloration) characterized by pale, yellowish-white (Harita-Peeta) appearance of the skin. Classical references emphasize:

- Loss of normal Varna (complexion)
- Dominance of Pitta and Vata Dosha
- Association with Rakta and Ojas depletion

It is not merely a cosmetic change but a reflection of internal metabolic dysfunction [1,3].

2.2 Samprapti

The development of Panduta follows a well-defined Ayurvedic sequence:

Nidana Sevana → Agnimandya → Apakwa Rasa Dhatu formation → Impaired action of Ranjaka Pitta → Rakta Dhatu Alpata → Manifestation of Panduta

This pathway closely parallels modern concepts of impaired hematopoiesis and nutrient deficiency [3].

3. Ayurvedic Assessment of Panduta**3.1 Clinical Examination (Darshana Pariksha)**

Panduta is assessed through visual inspection at specific anatomical sites:

- Twak (Skin): generalized pallor or yellowish discoloration
- Netra (Conjunctiva): early and reliable indicator
- Nakha (Nails): pale nail beds
- Jihva (Tongue): smooth, pale tongue
- Mukha (Face): loss of facial glow

Among these, conjunctival pallor is considered most sensitive clinically.

3.2 Functional Assessment (Lakshana-based Evaluation)

Panduta is rarely isolated and is accompanied by systemic features:

- Daurbalya – generalized weakness
- Shrama – easy fatigability
- Bhrama – dizziness

- Hridspandana – palpitations
- Aruchi – anorexia

These features indicate systemic involvement and correlate with tissue hypoxia seen in anemia [4].

3.3 Proposed Grading of Panduta

Grade	Ayurvedic Features	Approx. Hb Correlation
Mild	Slight pallor, minimal symptoms	10–12 g/dL
Moderate	Clear pallor + fatigue	7–10 g/dL
Severe	Marked pallor + systemic signs	<7 g/dL

This grading improves clinical applicability in integrative settings.

4. Hemoglobin and Pallor: Modern Perspective

Hemoglobin is essential for oxygen transport. Its reduction leads to decreased tissue oxygenation and visible pallor.

4.1 Mechanism of Pallor

- Reduced oxyhemoglobin → decreased red coloration
- Peripheral vasoconstriction → accentuates pallor
- Reduced capillary perfusion

Pallor becomes clinically detectable when Hb falls below 8–10 g/dL [5].

4.2 Etiological Factors of Anemia

- Iron deficiency
- Vitamin B12 / folate deficiency
- Chronic disease
- Blood loss
- Bone marrow disorders

These causes align with Ayurvedic concepts of Rakta Kshaya and Dhatukshaya.

5. Correlation Between Panduta and Hemoglobin Levels**5.1 Conceptual Integration**

Ayurveda and modern medicine converge on the same pathological endpoint:

- Rakta Dhatu Kshaya ≈ decreased hemoglobin
- Agnimandya ≈ impaired metabolism
- Daurbalya ≈ fatigue due to hypoxia

Thus, Panduta serves as a clinical surrogate marker for anemia [6].

5.2 Clinical Correlation and Diagnostic Value

Clinical Studies Suggest:

- Conjunctival pallor has high specificity for Hb <9 g/dL
- Nail bed pallor correlates with moderate anemia
- Combined signs increase diagnostic accuracy

Sensitivity improves when multiple sites are assessed simultaneously [7].

5.3 Integrative Diagnostic Model

A practical model for clinicians:

1. Ayurvedic Assessment:
 - o Observe Panduta
 - o Evaluate associated Lakshanas
2. Modern Confirmation:
 - o Hemoglobin estimation
 - o CBC evaluation
3. Integrated Diagnosis:
 - o Stage disease
 - o Plan individualized treatment

6. Evidence from Clinical Studies

- Chalco et al. demonstrated that clinical pallor is a reasonably accurate predictor of anemia in children [7].
- Ayurvedic observational studies show significant correlation between Panduta grading and hemoglobin levels [8].
- Integrative models improve early detection, especially in rural settings [9].

7. Clinical Significance for Vaidya

Panduta assessment is particularly valuable in:

- Primary care & OPD screening
- Low-resource settings
- Follow-up monitoring during treatment It helps guide:
- Raktavardhaka Chikitsa
- Deepana-Pachana therapy
- Rasayana interventions

8. Limitations

- Subjectivity in visual assessment
- Skin pigmentation variations
- Early anemia may not show visible Panduta

Thus, reliance solely on Panduta without Hb estimation may lead to underdiagnosis.

9. Future Perspectives

- Standardized Panduta grading scale
- Digital image-based pallor detection
- Large-scale RCTs correlating Ayurvedic signs with hematological indices

10. CONCLUSION

Panduta is a clinically significant and early indicator of Rakta Dhatu Kshaya that shows strong correlation with reduced hemoglobin levels. While Ayurveda provides a qualitative and systemic understanding, modern hematology offers quantitative validation. An integrative approach combining both enhances diagnostic accuracy, facilitates early intervention, and improves patient outcomes. Thus, Panduta remains a valuable clinical bridge between traditional Ayurvedic diagnostics and modern laboratory medicine.

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