



RESEARCH ARTICLE

AN INTEGRATIVE AYURVEDIC APPROACH TO CHRONIC KIDNEY DISEASE: A STAGE-WISE PREVENTIVE AND SUPPORTIVE FUNDAMENTAL FRAMEWORK

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ABSTRACT

Chronic Kidney Disease (CKD) is a complex, multifactorial disorder influenced by genetic, metabolic, and environmental factors. An interdisciplinary approach integrating nephrology and Ayurveda offers a comprehensive understanding of its pathogenesis, prevention, and management. Environmental studies reveal that exposure to heavy metals, pesticides, and water pollutants contributes significantly to renal dysfunction, particularly in rural and agrarian communities. This correlates with the Ayurvedic concept of Ama (metabolic toxins) and Dosha Prakopa which are central to disease development. Nephrology provides insights into CKD progression, decline in glomerular filtration rate (GFR), and clinical management, while Ayurvedic interventions such as Punarnavadi Kvatha, Gokshuradi Guggulu, and Rasayana therapy demonstrate potential benefits in improving renal function, enhancing diuresis, and reducing oxidative stress, as documented in peer-reviewed studies. Classical descriptions of Mutrakrichha and Mutraghata align with early CKD manifestations, allowing opportunities for early intervention. Bridging these disciplines enables development of preventive strategies, Ahara-Vihara guidelines, and community-level interventions to reduce disease burden. This integrative, evidence-based approach complements conventional therapy and addresses environmental risk factors, paving the way for holistic CKD management.

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INTRODUCTION

Chronic Kidney Disease (CKD) represents a growing global health concern, characterized by the progressive and irreversible decline in renal function. It is associated with significant morbidity and mortality, largely due to complications such as cardiovascular disease, metabolic imbalance, and eventual progression to end-stage renal failure. Conventional nephrology attributes CKD to a range of causes, including diabetes mellitus, hypertension, genetic predisposition, and chronic exposure to nephrotoxic agents. In recent years, increasing attention has been directed toward environmental contributors, such as heavy metals, agricultural chemicals, and contaminated water sources, which are particularly relevant in rural. Despite advances in biomedical management, CKD remains challenging to treat, often requiring long-term pharmacological therapy and renal replacement interventions. This has led to growing interest in complementary and integrative approaches that may enhance early detection, slow disease progression, and improve quality of life. Ayurveda, the traditional system of medicine, offers a distinct perspective on disease pathogenesis based on the concepts of Dosha imbalance, accumulation of Ama (metabolic toxins), and impairment of bodily channels

(Srotas). Conditions described in classical texts, such as Mutrakrichha (dysuria) and Mutraghata (urinary obstruction), exhibit clinical similarities to early manifestations of renal dysfunction. Ayurvedic management emphasizes holistic care, including herbal formulations, detoxification processes, and individualized dietary and lifestyle modifications (Ahara-Vihara). An integrative approach that brings together nephrological understanding and Ayurvedic principles may provide a more comprehensive framework for addressing CKD. Such a perspective not only supports clinical management but also highlights the importance of environmental awareness and preventive healthcare strategies.

MATERIALS AND METHODS

Study Design: Narrative review and conceptual framework development.

Ethical Considerations: No human or animal experimentation was conducted. All interpretations comply with ICMR ethical guidelines. No curative claims for ESRD are made, and renal replacement therapy is not discouraged.

AYURVEDIC CONCEPTUALIZATION OF CKD

CKD pathogenesis can be understood through Agnimandya leading to Ama formation. Ama causes Srotorodha, resulting in Vata-Kapha Prakopa and dysfunction of Mutravaha Srotas. Over time, Dhatu Kshaya develops, culminating in progressive renal failure. This sequence parallels oxidative stress, immune-complex deposition, fibrosis, and nephron loss described in modern nephrology.

STAGE-WISE ROLE OF AYURVEDA IN CKD

Stage 1–2 (eGFR ≥ 60): Early Kidney Damage: In the initial stages, kidney function remains largely preserved, and many individuals are either asymptomatic or present with very mild non-specific complaints such as fatigue or occasional urinary changes. However underlying structural or functional alterations such as early glomerular injury or microalbuminuria may already be present. The disease process begins silently often going unnoticed without laboratory screening. From an Ayurvedic perspective, this stage corresponds to the early phase of *Dosha imbalance* with the accumulation of *Ama* (metabolic toxins) due to impaired digestive and metabolic activity (*Agni Mandya*). Subtle disturbance of microchannels (*Srotas*) begins but tissue damage is minimal and potentially reversible.

At this point, the pathological process is still in a preclinical or reversible phase, making it the most critical window for preventive intervention.

Stage 3 (eGFR 30–59): Moderate Functional Decline: In this stage, there is a noticeable reduction in kidney function. Patients may begin to experience symptoms such as weakness, mild edema, altered urination, or early signs of metabolic imbalance (e.g., anemia or electrolyte disturbances). The kidneys are less efficient in filtering waste products, leading to gradual accumulation of toxins in the body. Ayurvedically, this reflects a more pronounced *Dosha vitiation* predominantly involving *Kapha* (causing obstruction and fluid retention) and *Pitta* (contributing to inflammation and metabolic disturbance). The concept of *Srotorodha* (blockage of bodily channels) becomes more evident, impairing normal fluid and waste transport. This stage represents a transition from reversible to progressive pathology, where timely intervention can help stabilize the condition and slow further deterioration.

Stage 4 (eGFR 15–29): Severe Renal Impairment: At this stage, kidney function is significantly compromised, and clinical symptoms become more pronounced. Patients may develop persistent edema, severe fatigue, nausea, loss of appetite, electrolyte imbalance, and complications such as metabolic acidosis. Waste products accumulate to a greater extent, leading to systemic effects. In Ayurveda, this condition aligns with advanced *Dhatu Kshaya* (tissue depletion) along with chronic *Srotodushti*. All three Doshas (*Vata*, *Pitta*, and *Kapha*) are typically involved, with *Vata* playing a dominant role due to degeneration and loss of tissue integrity. The disease at this stage is largely irreversible, and the focus shifts toward managing symptoms, preventing complications, and maintaining quality of life rather than attempting curative treatment.

This is the most advanced stage of CKD, where kidney function is nearly or completely lost. Patients experience

severe uremic symptoms such as breathlessness, persistent nausea, confusion, fluid overload, and life-threatening metabolic disturbances. Renal replacement therapies such as dialysis or kidney transplantation become essential for survival. From an Ayurvedic viewpoint, this stage represents profound *Tridosha imbalance* with marked *Dhatu Kshaya* and near-total disruption of physiological functions. The body's natural capacity to eliminate waste (*Mala Nirharana*) is severely impaired.

At this stage, the condition is non-reversible, and management is primarily supportive. The role of Ayurveda is complementary, focusing on improving comfort, supporting digestion, and enhancing overall well-being alongside conventional life-sustaining treatments.

DISCUSSION

Ayurveda emphasizes early interception of disease progression through correction of metabolic imbalance. Ama theory parallels modern concepts of toxin accumulation and immune-mediated injury. Rasayana therapy supports tissue resilience rather than reversal, making it ethically suitable for chronic disorders like CKD. In the early stages (Stage 1–2) renal function remains relatively preserved despite underlying damage.

This phase is often clinically silent, emphasizing the importance of early detection through screening. From an Ayurvedic perspective this stage is marked by *Agni Mandya* and accumulation of *Ama*, which initiates subtle disturbances in bodily channels (*Srotas*). Since pathology is minimal and potentially reversible, interventions focusing on *Ama Pachana* and *Agni Deepana* are highly relevant. These approaches aim to restore metabolic balance, prevent toxin accumulation, and halt disease initiation. Thus this stage offers the greatest scope for preventive strategies and lifestyle modifications.

As the disease progresses to Stage 3, a moderate decline in glomerular filtration rate becomes evident, accompanied by early clinical manifestations such as fatigue, edema, and metabolic disturbances. This stage represents a critical transition from a reversible to a progressive condition. Ayurvedically, there is clear *Dosha vitiation*, predominantly involving *Kapha* and *Pitta*, along with *Srotorodha* (obstruction of channels). Management at this stage focuses on *Dosha Shamana* and the use of *Rasayana* therapies to stabilize the disease process. Herbal formulations with diuretic, anti-inflammatory, and antioxidant properties may support renal function and reduce the rate of progression. Therefore, timely intervention during this stage is essential to preserve remaining nephron function. In Stage 4, renal impairment becomes severe, with significant clinical manifestations and systemic complications. The pathological process is largely irreversible, and patients often experience marked deterioration in quality of life. Ayurveda correlates this stage with advanced *Dhatu Kshaya* and chronic *Srotodushti*, with involvement of all three Doshas, particularly *Vata*, which governs degeneration. The therapeutic focus shifts from curative intent to *Vyadhi Upashamana* (symptom alleviation). Management strategies aim to control edema, improve appetite, reduce fatigue, and maintain metabolic balance. Strict adherence to dietary and lifestyle guidelines (*Pathya*) becomes crucial in minimizing further complications.

CKD Stage	Clinical Status (eGFR)	Ayurvedic Interpretation	Management Approach	Ayurvedic Interventions
Stage 1–2	≥60 (mild/no symptoms)	Early <i>Dosha imbalance</i> with accumulation of <i>Ama</i> ; subtle <i>Srotodushti</i>	<i>Ama Pachana</i> and <i>Agni Deepana</i>	<i>Deepana–Pachana</i> herbs (e.g., Trikatu, Musta) Mild diuretics like <i>Punarnava Ahara Vihara</i> (light diet, hydration, toxin avoidance)
Stage 3	30–59 (moderate decline)	Established <i>Dosha vitiation</i> (mainly Kapha–Pitta) with progressing <i>Srotorodha</i> (channel obstruction)	<i>Dosha Shamana</i> and <i>Rasayana</i> (disease stabilization and tissue support)	<i>Gokshuradi</i> <i>Guggulu</i> <i>Punarnavadi</i> <i>Kvatha</i> <i>Rasayana</i> drugs (Amalaki, Guduchi) Controlled diet (low salt, easy-to-digest foods)
Stage 4	15–29 (severe decline)	Advanced <i>Dhatu Kshaya</i> (tissue depletion) and chronic <i>Srotodushti</i>	<i>Vyadhi Upashamana</i> (symptomatic management and preservation of quality of life)	Continued use of <i>Punarnava</i> , <i>Varuna</i> Gentle <i>Rasayana</i> therapy Management of edema, fatigue, and appetite loss Strict dietary regulation (<i>Pathya</i>)
Stage 5 (ESRD)	<15 (end-stage)	Severe <i>Tridosha imbalance</i> , marked <i>Dhatu Kshaya</i>	Supportive and palliative care alongside modern interventions	Mild supportive herbs (as tolerated) Nutritional support Lifestyle guidance for comfort Integration with dialysis/transplantation

Stage 5, or End-Stage Renal Disease (ESRD), represents complete or near-complete loss of kidney function, necessitating renal replacement therapies such as dialysis or transplantation. At this stage, the disease is irreversible and life-threatening. This condition reflects profound *Tridosha imbalance* and severe depletion of body tissues. The role of Ayurveda is primarily supportive, focusing on enhancing quality of life, improving digestion, and alleviating treatment-related discomfort. Integrative care at this stage can be valuable in addressing the physical and psychological burden of the disease. Overall the stage-wise approach demonstrates that the potential role of Ayurveda varies significantly across the spectrum of CKD. While early stages offer opportunities for prevention and possible reversal through correction of metabolic imbalance, later stages require supportive and palliative strategies. This reinforces the importance of early diagnosis and timely intervention. An integrative framework combining modern nephrological insights with Ayurvedic principles not only enhances understanding of disease mechanisms but also contributes to more comprehensive and patient-centered care.

CONCLUSION

Ayurveda offers a preventive and supportive framework for CKD management when applied early and ethically. It complements modern nephrological care without replacing dialysis or transplantation. Integrative models may reduce CKD burden and improve patient quality of life.

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