IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

"Understanding Chronic Kidney Disease Through The Lens Of Ayurveda: Concepts, Pathogenesis, And Therapeutics"

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Abstract:

Chronic Kidney Disease (CKD) is a growing public health crisis worldwide. In 2021 alone, approximately 673.7 million people were living with CKD, accounting for about 8.5% of the global population—a sharp increase compared to 1990.[1] Population aging and growth are key drivers of this increasing burden. CKD has even emerged as the third fastest-growing cause of death globally among non-communicable diseases. Notably, CKD disproportionately affects low- and middle-income countries (LMICs), where healthcare infrastructure is often insufficient to meet rising demand. Despite advances in dialysis and renal transplantation, the management of CKD remains largely supportive, with limited options to halt disease progression. High treatment costs and poor accessibility in low- and middle-income countries further add to the burden. Ayurveda, with its holistic principles, *Rasayana* therapy, and nephroprotective herbs, offers potential complementary strategies. Thus, an integrative approach combining modern nephrology with Ayurvedic interventions may improve patient outcomes and quality of life. n Ayurveda, CKD can be understood in relation to *Mutravaha Srotas dushti* involving *Vata*, *Pitta*, and *Kapha*, leading to progressive *Dhatukshaya* and *Ojakshaya*. The *Samprapti* is mainly due to *Avarana of Vata* by Kapha and Meda, resulting in deranged urine formation and systemic complications. Ayurvedic therapeutics emphasize *Nidana Parivarjana*, *Shodhana* (*Basti*, Virechana), and *Shamana* with nephroprotective herbs like *Punarnava*, *Gokshura*, *Varuna*, and *Rasayana* formulations to slow progression and improve quality of life.

Keywords: Chronic Kidney Disease, Ayurveda, *Mutravaha Srotas*, *Rasayana*, *Shodhana*, Nephroprotective herbs, Integrative medicine

Introduction:

Chronic kidney disease (CKD) is characterized by the presence of kidney damage or an estimated glomerular filtration rate (eGFR) of less than 60 mL/min/1.73 m², persisting for 3 months or more. CKD involves a progressive loss of kidney function, often leading to the need for renal replacement therapy, such as dialysis or transplantation.[2] Globally, CKD is a major and escalating public health issue About 673.7 million people had chronic kidney disease (CKD) in 2021, along with 19.9 million new incident cases, 1.5 million fatalities, and more than 44 million disability-adjusted life years (DALYs) lost. Over the past three decades, there have been notable increases in incidence, mortality, and DALYs, despite a minor drop in age-standardized prevalence. Specifically, within India, CKD prevalence is notably high. A systematic review and meta-analysis of community-based studies from 2011 to 2023 found a pooled CKD prevalence of 13.24% among Indians aged 15 and above. This trend has surged—from 11.12% during 2011–2017 to 16.38% between 2018–2023—highlighting a worrying rise. Higher prevalence was observed in rural areas (15.34%) than in urban regions (10.65%), with a slight male predominance (14.80% vs. 13.51%).[3]

The management of CKD in modern medicine is largely limited to controlling risk factors, slowing disease progression, and addressing complications. Pharmacological interventions such as antihypertensives, antidiabetic drugs, and renin–angiotensin system blockers provide symptomatic relief but are insufficient to prevent progressive nephron loss. Once advanced stages are reached, renal replacement therapies such as dialysis and renal transplantation become the mainstay.

Despite being lifesaving, dialysis has several negative effects, such as frequent infections, hemodynamic instability, malnourishment, a lower quality of life, and a significant financial burden. Better survival and rehabilitation are provided by renal transplantation; nevertheless, its effectiveness is limited by the scarcity of donors, high expenses, the risks associated with surgery, and the requirement for immunosuppressive medication for the remainder of one's life, which increases the risk of infections and cancer. As a result, the present strategy is more supportive than curative, and despite these medical advances, the prevalence of CKD is still rising worldwide.

These limitations emphasize the importance of exploring complementary systems of medicine. Ayurveda, with its holistic understanding of disease, focuses on correcting the underlying *Dosha–Dushya–Srotas* imbalance. Concepts such as *Mutravaha Srotas dushti*, *Avarana of Vata*, and *Dhatukshaya* provide an alternative framework to understand the chronic and progressive nature of CKD. Therapeutic modalities including *Nidana Parivarjana*, *Shodhana* (detoxification), *Shamana* (conservative management), *Rasayana* therapy, and nephroprotective herbs like *Punarnava*, *Gokshura*, *Varuna*, and *Guduchi* hold potential in slowing progression, managing complications, and improving quality of life. Thus, an integrative approach combining evidence-based modern nephrology with *Ayurvedic* principles may provide a more sustainable and patient-centred management strategy for CKD.

Aim:

To explore the Ayurvedic understanding and management of Chronic kidney disease (CKD) as described in classical texts, with a focus on its conceptual basis, pathogenesis, and therapeutic principles.

Objective:

- To review and analyze chronic kidney disease (CKD) through Ayurvedic principles, with emphasis on classical concepts, pathogenesis (*Samprapti*), and therapeutic approaches.
- To summarize Ayurvedic therapeutic modalities, including *Shodhana*, *Shamana*, *Rasayana*, and nephroprotective herbs, relevant to CKD management.
- To highlight the potential role of integrative approaches combining Ayurveda and modern nephrology in improving patient outcomes and quality of life.

Material and Methods:

This review draws upon classical Ayurvedic texts to analyse kidney-related concepts and therapeutic approaches. Contemporary literature was searched through databases such as PubMed, Google Scholar, and AYUSH Research Portal to identify studies and reviews on Ayurvedic management of Chronic Kidney Disease (CKD). The findings from classical sources and modern research were synthesized to provide an integrative understanding of CKD in the context of Ayurveda and its possible relevance in current clinical practice.

Understanding CKD through Ayurveda:

There is no direct connection between Chronic Kidney Disease (CKD)and any of the clinical entities found in the old Ayurvedic texts. According to *Sutrasthana Trisothiyadhyaya* and the *Charaka Samhita*, a foundational work for Ayurvedic medicine, not all illnesses can be given names. If the physician does not know the name of the ailment, they should never feel ashamed. After the location of the ailment and its causes are identified, the treatment should focus on treating the disease because the same *Dosha* frequently circulates to other parts of the body, creating other disorders. The ailments can be examined in terms of their locales, particular causes, and triggered *Doshas*.[4]

In Ayurveda, Chronic Kidney Disease (CKD) is understood within the framework of *Mutravaha Srotas* (urinary channels). The root involvement lies in *dosha* vitiation where obstruction (*Avarana*) and depletion (*Dhatukshaya*) occur simultaneously, the *Avarana* of *Vata* by *Kapha* and *Meda* impedes normal urine formation and excretion, gradually resulting in *Shotha* (edema), *Ojakshaya* (loss of vitality), and systemic deterioration, which parallel the progressive renal dysfunction observed in modern CKD.

Although chronic kidney disease (CKD) is not specifically addressed in Ayurveda, *Nidanapanchaka*, or the five-fold diagnostic approach, can apply Ayurvedic notions to it. An imbalance in the *Vata* and *Kapha Doshas*, as well as disruptions in other *Doshas*, are the main indicator of chronic kidney disease (CKD).

All Dhatus and *Upadhatus* (tissues and sub-tissues) are involved after the initial vitiation of *Rasa* (plasma), *Rakta* (blood), *Mutra* (urine), and *Udaka* (water). *Mutravahasrotasa* (urinary channels) are impacted by the exacerbated Doshas and Dhatus as they circulate through the *Rasa* with *Vyana Vayu*, leading to *Kahavaigunya* (dysfunction). The main indicators of chronic kidney disease are thought to be the clinical manifestations of *Dosha* disruption.

Classical Ayurvedic compendia describe several conditions resembling CKD manifestations. *Charaka Samhita* explains disorders such as *Mutrakriccha* (dysuria), *Mutraghata* (urinary obstruction), and *Prameha* (metabolic disorders), which contribute to Mutravaha Srotas dushti. Similarly, Sushruta Samhita details *Ashmari* (urinary calculi), *Mutravruddhi*, and *Shotha*, emphasizing their chronic progression when untreated. Later commentaries like Chakrapani's *Ayurveda Dipika* (on *Charaka*) and *Dalhana's Nibandhasangraha* (on Sushruta) elaborate that long-standing vitiation of *Dosha* in *Mutravaha Srotas* leads to irreversible tissue damage.

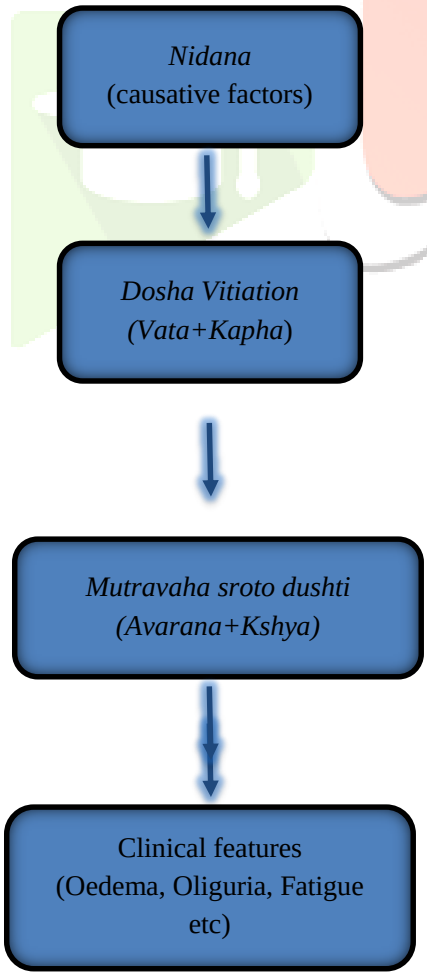
Furthermore, *Astanga Hridaya* of *Vagbhata* explains that when *Mutravaha Srotas* are blocked or weakened, urine becomes altered in both quantity and quality, causing symptoms like reduced urine output, body swelling, and fatigue. These descriptions can be correlated with clinical CKD features such as oliguria, oedema, anaemia, and uremic symptoms, as highlighted in modern nephrology.

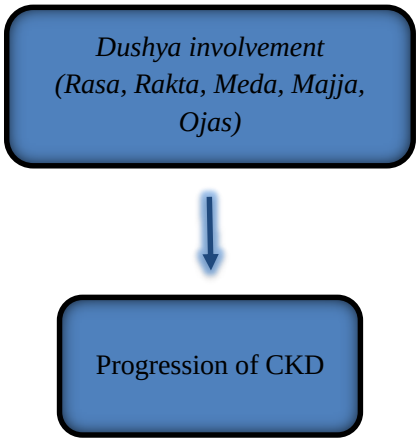
Table no 1.

Clinical Features (Modern Medicine)	**Ayurvedic Correlation**	***Dosha* Involvement**
Fatigue, weakness	*Daurbalya* (weakness), *Dhatu Kshaya*	*Vata* ↑
Swelling (edema)	*Shotha* (fluid retention)	*Kapha* ↑
Oliguria (reduced urine output)	*MutraAlpata*	*Vata* ↑
Difficulty in urination	*Mutrakriccha*	*Vata* ↑
Loss of appetite, nausea, vomiting	*Aruchi, Chardi, Agnimandya*	*Kapha* ↑
Bone pain, muscle cramps	*Asthi-Majja Dhatu Kshaya*	*Vata* ↑
Breathlessness	*Pranavaha Sroto Dushti*	*Vata + Kapha*

Samprapti:

In Ayurveda, the *samprapti* (pathogenesis) of chronic kidney disease (CKD) mainly involves *Vata dosha* imbalance affecting the *Mutra vaha srotas* (urinary channels), leading to impaired urine formation and obstruction, a condition known as *Mutraghata*. This is often secondary to vitiation of other tissues like *meda* (fat tissue) and *rakta* (blood) due to factors like unhealthy eating habits and an inactive lifestyle. The pathogenesis also involves dhatu *kshya* (tissue wasting) and *margvarana* (blockage of channels). While *Vata dosha* is the prime factor, *Pitta* and *Kapha* also play a role in the vitiation of doshas that contribute to kidney damage.





Chronic kidney disease shows the closest resemblance to *Mutraghata* described in Ayurveda; hence, insights from *Mutraghata* can be considered relevant.

Mutraghata:

Mutraghata is the term for mild dysuria and urine retention brought on by a urinary tract obstruction. This illness causes either minimal, difficulty in urination or a total lack of Micturition. It results from circulating aggravated *Doshas* vitiating *Basti*.[5] According to ***Charaka Samhita***, *Mutraghata* is primarily caused due to vitiation of ***Vata Dosha***, particularly *Apana Vata*, which controls the functions of micturition. When aggravated, *Vata* produces either obstruction (*Avarana*) or suppression (*Vega Dharana*), leading to retention and difficulty in voiding urine. *Kapha* may also contribute by causing *srotorodha* (blockage of urinary channels).[6] These causes of persistent urine retention result in urinary stasis, which raises the risk of infections and the development of urinary calculi, both of which progressively damage the kidneys.

Prognosis of CKD:

The prognosis of Chronic kidney disease (CKD) largely depends on the level of kidney function (estimated Glomerular Filtration Rate, eGFR), degree of albuminuria, rate of disease progression, and associated comorbidities. Lower eGFR and higher urinary albumin excretion are independently associated with increased risks of all-cause mortality, cardiovascular events, and progression to kidney failure, with no apparent safe thresholds.[7]

To standardize prognostication, KDIGO introduced the “heat map” approach combining GFR stages (G1–G5) with albuminuria categories (A1–A3), which stratifies patients into low, moderate, high, and very high risk groups for adverse outcomes.[8] Patients with advanced stages and higher albuminuria require closer monitoring and earlier preparation for kidney replacement therapy.

Prognostic models such as the Kidney Failure Risk Equation (KFRE), using variables like age, sex, eGFR, and albuminuria, accurately predict 2- and 5-year risks of kidney failure and have been validated across multiple international cohorts.[9] These models help guide referral to nephrology, timing of vascular access creation, and patient education.

Other important modifiers of prognosis include the underlying etiology of CKD, blood pressure control, diabetes status, recurrent episodes of acute kidney injury, smoking, and presence of cardiovascular disease.[10] Management strategies that reduce proteinuria and stabilize eGFR, such as renin–angiotensin system blockade and SGLT2 inhibitors, are associated with improved long-term outcomes.[11]

For a doctor to be effective in Ayurveda, they must be able to distinguish between diseases that are treatable and those that are incurable.

As an advanced condition affecting a vital organ, chronic kidney disease (CKD) is categorized according to its phases. Early on (stages 1 and 2), it is referred to as *Krucchrasadhya*, which means "difficult to treat." Because of the severe kidney cell destruction and biochemical abnormalities that develop, stages three and four are considered *Yapya* (manageable with palliation). To stop advancement at this stage, stringent regimen adherence is essential. When end-stage renal disease, or stage 5, manifests as uremic symptoms, it is considered incurable and unavoidable. as it affects all organ systems, leads to widespread destructive effects, and is associated with a poor prognosis and fatal outcomes.[12]

Management:

The modern management of CKD focuses on slowing disease progression, preventing complications, and improving quality of life. The key strategies include:

1. Lifestyle Modifications
2. Control of Underlying Risk Factors
3. Pharmacological Therapy
4. Monitoring and Early Detection of Complications
5. Renal Replacement Therapy (RRT)
6. Patient Education and Psychosocial Support

It emphasizes dietary strategies such as moderation of protein (≈ 0.8 g/kg/day), sodium restriction (< 2 g/day), alongside fluid balance, regular exercise, smoking cessation, and weight control. Pharmacologic approaches prioritize ACE inhibitors or ARBs for blood pressure and proteinuria management; SGLT-2 inhibitors and GLP-1 receptor agonists (e.g., semaglutide/Ozempic) for renal and cardiovascular protection; statins for dyslipidemia; diuretics to manage volume overload; ESAs (and HIF-PHIs where appropriate) along with iron supplementation for anemia; phosphate binders, vitamin D analogs for mineral-bone disorders; and bicarbonate to correct metabolic acidosis. Continuous monitoring of eGFR, proteinuria, hemoglobin, electrolytes, and mineral status guides early detection and intervention. In advanced or symptomatic CKD, renal replacement therapy—hemodialysis, peritoneal dialysis, or transplantation—is initiated. Equally critical are structured patient education, dietary counseling, and psychosocial support to improve treatment adherence and outcomes.[13,14,15]

Ayurvedic Management:

Management is directed towards *Dosha-Dushti* correction, *Dhatu-poshana*, and *Srotoshodhana*, with the aim to restore kidney function, slow disease progression, and alleviate complications. The Ayurvedic management of CKD can be systematically approached through the following therapeutic strategies

1. ***Nidana Parivarjana*** (Avoidance of causative factors)
2. ***Shodhana Chikitsa*** (Purification therapy)
3. ***Shamana Chikitsa*** (Pacification therapy)
4. ***Rasayana* Therapy** (Rejuvenation therapy)
5. ***Pathya-Apathya*** (Diet & Lifestyle)

Rakta and *Meda Dhatus* are the foundations of the *Vrukka* (kidneys), according to *Acharya Sushruta*. In order to improve *Dhatvagni* activity, therapeutic treatments should mainly focus on rectifying *Jatharagni*, as *Ahara* (dietary intake) is first converted into *Rasa Dhatu* and then feeds the other *Dhatus*, including *Rakta*. This ensures the production of *Rasadi Dhatus* that are properly nourished. In this regard, herbal remedies that specifically target *Rakta* and *Meda* Dhatus are thought to be beneficial for renal support. Mild purgation (Mridu Virechana) and *Basti Chikitsa* (medicated enemas) may be added as supportive measures

after *Shamana Chikitsa* (palliative therapy) has helped to relieve weakness (*Daurbalya*) and tissue depletion (*Dhatu Kshaya*).

***Shodhana chikitsa*:**

Shodhana Chikitsa (purification therapy) is employed alongside *Shamana* measures to eliminate aggravated *Doshas* and restore balance in *Mutravaha Srotas*. *Mridu Virechana* (mild purgation) with gentle laxatives like *Trivrit*, *Haritaki*, or *Eranda Taila* helps in clearing *Pitta-Kapha Dushti* and reducing fluid overload, while *Basti Chikitsa* (medicated enemas) is considered the most effective for *Vata Dushti*, using decoction-based *Niruha Basti* or oil-based *Anuvasana Basti* for detoxification, diuresis, and nourishment. In selected cases, *Raktamokshana* may be useful for uremic or *Pitta-dominant* symptoms, and light *Upavasa* (therapeutic fasting) can support *Agni* and reduce metabolic load. By correcting *Agni* and *Dosha Dushti*, Shodhana not only alleviates symptoms such as edema, oliguria, and fatigue but also prepares the body for effective *Rasayana Chikitsa*, thereby supporting renal function and long-term tissue rejuvenation.

Shamana Chikitsa:

Shamana Chikitsa (palliative therapy) is the primary approach in CKD management when patients are weak, depleted, or unsuitable for *Shodhana*. It focuses on pacifying aggravated *Doshas*, supporting *Agni*, nourishing depleted *Dhatus*, and providing symptomatic relief.

Key Principles

- **Agni Deepana and Ama Pachana:** Strengthening digestive and metabolic fire with mild *Deepana-Pachana* drugs like *Trikatu*, *Pippali*, and *Jeeraka* to improve assimilation.
- **Mutrala and Shothahara Herbs:** Use of *Punarnava* (Boerhavia diffusa), *Gokshura* (Tribulus terrestris), and *Varuna* (Crataeva nurvala) for diuretic and anti-inflammatory action.
- **Rasayana Therapy:** *Guduchi*, *Amalaki Rasayana*, and *Shilajit* to enhance immunity, reduce oxidative stress, and slow tissue degeneration.
- **Classical Formulations:** *Chandraprabha Vati*, *Punarnavadi Mandoor*, *Gokshuradi Guggulu*, and *Nephroprotective Rasayanas* for Mutravaha Srotas balance and renal support.
- **Symptom Management:** Correcting anemia with *Lauh preparations*; managing edema with *Shothahara* herbs; relieving fatigue with *Balya* and *Rasayana* drugs.
- **Pathya-Apathya:** Light, easily digestible diet (*Yusha*, *Mudga*, *Lauki*), restriction of heavy, oily, and salty foods; lifestyle modifications including yoga (*Bhujangasana*, *Pavanmuktasana*) and pranayama for circulation and stress reduction.

Conclusion:

Chronic Kidney Disease (CKD) is a progressive condition with significant global health implications, requiring a comprehensive and multidisciplinary approach. Modern medicine emphasizes early detection, risk factor modification, pharmacological interventions, and renal replacement therapies, which are essential to prolong survival and improve quality of life. Ayurveda, on the other hand, provides a holistic framework through the concepts of *Dosha*, *Dhatu*, and *Srotas Dushti*, offering individualized management strategies. Approaches such as *Shamana Chikitsa* help stabilize the disease and improve strength, while *Shodhana Chikitsa* aims to eliminate accumulated *Doshas* and enhance long-term tissue rejuvenation. When integrated judiciously, Ayurvedic principles of *Agni Deepana*, *Rasayana*, and *Pathya-Apathya* can complement modern therapies by improving metabolism, immunity, and overall well-being. Thus, a combined understanding of both systems not only enriches our

perspective on CKD pathogenesis but also opens avenues for integrative strategies that may provide better disease control, patient comfort, and long-term health outcomes.

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