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Original Research Article

Bridging gaps in chronic kidney disease management: insights from clinicians on real-world practices

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ABSTRACT

Background: Chronic kidney disease (CKD) is frequently underdiagnosed in early stages, especially in India, due to its asymptomatic onset, limited diagnostics, and delayed referrals. This study aimed to assess real-world CKD management practices and gaps among Indian clinicians.
Methods: A structured survey of 40 clinicians across 11 cities in India captured data on CKD staging, treatment preferences, and complication(s) management.
Results: Early-stage CKD (3a/3b) was most commonly diagnosed stage of CKD. Moreover, diabetic nephropathy was prevalent in 55% cases, followed by hypertensive nephropathy in 35% cases and other risk factors in 10% cases. Sodium-glucose cotransporter 2 inhibitors, nonsteroidal mineralocorticoid receptor antagonists (finerenone), and glucagon-like peptide-1 receptor agonists were preferred in diabetic CKD. Metformin was often de-escalated at Stage 3b. For complications, sodium polystyrene sulfonate and darbepoetin alfa were commonly used for hyperkalaemia and anaemia, respectively. Budesonide emerged as a key choice in IgA nephropathy.
Conclusions: Despite increasing use of evidence-based therapies, significant gaps remain in early diagnosis and uniform management, highlighting the need for improved awareness and access to newer agents to optimize CKD care.

Keywords: Diabetic nephropathy, CKD management, SGLT2 Inhibitors, Finerenone, GLP-1 RA

INTRODUCTION

Chronic kidney disease (CKD) is a growing global health challenge, affecting more than 850 million individuals worldwide. It is now projected to become the fifth leading cause of death by 2040.[1] CKD is classified into stages based on estimated glomerular filtration rate (eGFR) as: stage 1 with eGFR ≥90 ml/min/1.73 m^2 (normal or high kidney function); stage 2 with eGFR of 60–89 (mildly decreased kidney function); stage 3a with eGFR of 45–59 (mildly to moderately decreased kidney function); stage 3b with eGFR of 30–44 (moderately to severely decreased kidney function); stage 4 with eGFR of 15–29 (severely decreased kidney function) and finally, stage 5 with eGFR of <15 (kidney failure).[2] In India, its prevalence is estimated at 13.51% in women with slightly higher in men at 14.80% in 2025.[3] Despite its high prevalence, CKD is often underdiagnosed, primarily due to its asymptomatic onset and the lack of consistent clinical focus during routine care. Early identification is crucial, yet gaps persist in timely diagnosis, intervention, and consistent risk stratification in both primary and specialist settings.[4,5] Global, guidelines such as those from Kidney Disease: Improving Global Outcomes (KDIGO) recommend risk-based approaches using estimated glomerular filtration rate and albuminuria for early detection and staging.[6] However, real-world practices often diverge, particularly in low- and middle-income countries like India. In contrast to high-income countries where newer therapies and

structured referral systems are widely implemented, Indian clinicians frequently encounter barriers such as limited diagnostic access, treatment cost constraints, and delayed clinician's referral. These systemic issues lead to under-recognition of early-stage CKD, fragmented management, and a significant treatment gap between specialists and general clinicians.[7] Early-stage CKD is much more prevalent than its advanced stages, yet it remains underdiagnosed despite its strong association with cardiovascular disease (CVD), progressive renal decline, reduced quality of life and premature mortality.[8,9]

Diabetic and hypertensive nephropathies are the leading causes of CKD, with management guided by etiology. Diabetic nephropathy typically involves sodium-glucose cotransporter-2 (SGLT2) inhibitors, non-steroidal mineralocorticoid receptors antagonist (ns-MRA) (finerenone), glucagon-like peptide-1 (GLP-1) receptor agonists, metformin, and dipeptidyl peptidase-4 (DPP-4) inhibitors, while hypertensive nephropathy is managed with angiotensin converting enzyme (ACE) inhibitors, angiotensin receptor blockers (ARBs), angiotensin receptor–neprilysin inhibitors (ARNIs), SGLT2 inhibitors, MRAs, calcium channel blockers (CCBs), and loop diuretics.[10-12] The KDIGO guidelines recommend eGFR-based staging and monitoring, particularly for patients with eGFR <30 mL/min/1.73 m² or albuminuria ≥300 mg/day, who require early clinicians referral.[5] In elderly populations, CKD often reflects age-related decline and presents histologically with glomerulosclerosis and tubulointerstitial fibrosis. Moreover, being a systemic disease, it is commonly associated with complications like anaemia, mineral-bone disorder, metabolic acidosis, and hyperkalaemia.[13] Hyperkalaemia in CKD can be managed with agents such as sodium polystyrene sulfonate, patiromer, or sodium zirconium cyclosilicate.[6] Meanwhile, anaemia which is largely due to reduced erythropoietin and iron deficiency, is treated with iron supplementation. While oral forms of iron are an option, intravenous formulations like ferric carboxymaltose and ferric derisomaltose are preferred choice due to well tolerability and rapid repletion of iron stores.[14] Although, renin-angiotensin system (RAS) blockade using ACE inhibitors or ARBs remains a foundational therapy to delay CKD progression, newer agents including SGLT2 inhibitors and ns-MRAs (finerenone) are increasingly favoured for their renoprotective and cardioprotective benefits in both diabetic and non-diabetic populations. Despite these advancements, real-world adoption remains limited, particularly in resource-constrained regions like India, due to therapeutic inertia, cost limitations, and access disparities. These gaps in timely diagnosis, pharmacological optimization, and interdisciplinary coordination continue to accelerate CKD progression and negatively impact patient outcomes.[15]

To further understand these practice gaps and treatment patterns in real-world clinical settings, we conducted a structured survey among clinicians, capturing insights into their diagnostic approaches, therapeutic preferences, and perceptions of unmet needs in CKD management.

METHODS

Study design

A structured questionnaire survey was conducted to evaluate prescribing patterns and treatment preferences for CKD patients, with a focus on diabetic and hypertensive nephropathy and anaemia patients. The survey aimed to gather insights from clinicians involved in CKD diagnosis and management. The survey response was recorded from 40 clinicians from the following Indian cities: Mumbai, Pune, Vasai, Kolhapur, Panjim, Solapur, Miraj, Sambhajinagar, Amravati, Ahmednagar, and Bilaspur.

Inclusion and exclusion criteria

Since, this study did not include direct patient participation; therefore, inclusion and exclusion criteria were applied to clinicians/respondents rather than to patients. Inclusion criteria included clinicians who were involved in the diagnosis and management of patients with CKD and willing to provide responses to the structured questionnaire, either through one-to-one interaction or via the electronic form. Clinicians were excluded if they were not directly involved in CKD management, if they were residents, or clinicians in training without independent patient care responsibility, or if they provided incomplete, duplicate, or inconsistent responses. Those unwilling to participate or provide consent were also excluded.

Survey administration and duration

The survey was conducted based on one to one discussion with the doctors with data being transcribed in paper CRF. Moreover, responses were also gathered using Google forms which were distributed through social media including email and other popular platforms. The responses were collected over a period of 30 days (May 2025 to June 2025). The study was conducted using the questionnaire provided (Table 1).

Data handling and analysis

Responses were recorded via Google Forms and exported into Microsoft Excel 2019 (version: 1808) for analysis. Moreover, data recorded from CRF were also entered in the same response file. The responses were presented using descriptive statistics (frequencies and percentages). Open-ended responses were thematically categorized for qualitative insights.

Ethical considerations

The study was conducted in accordance with ethical standards for healthcare surveys. As patients' data were

collected, and participation was anonymous, formal ethical approval was not required.

Table 1: Questionnaire design.

1.	On average, how many patients with the CKD stages 3a/3b/ 4 do you see per month?
2.	What percentage of patient report for diabetic nephropathy and hypertensive nephropathy?
3.	Which drug is preferred in diabetic nephropathy and hypertensive nephropathy patients?
4.	In stage3b which antidiabetic drug is mostly de-escalated, stop and continue?
5.	In patients with hyperkalaemia, which potassium binders do you prefer?
6.	How do you manage anaemia pharmacologically – which ESA do you prefer?
7.	How do you manage iron deficiency anaemia pharmacologically – which oral iron do you prefer in early stage CKD Patients?
8.	For patients with IgA nephropathy which therapies are considered?
9.	What are the emerging therapies or pipeline drug in nephrology?

RESULTS

Questionnaire-based survey analysis among clinicians on the management of CKD and associated complications

A structured survey was conducted among clinicians to understand real-world practices and gaps identification in the management of CKD. When asked, *"On average, how many patients do you see with CKD stages 3a, 3b, and 4 per month?"*, most respondents reported seeing mean no of patients as 125 patients/month with Stage 3a (eGFR 45–59), 90 patients/month with Stage 3b (eGFR 30–44), and 55 patients/month with Stage 4 (eGFR 15–29), indicating early-stage dominance and increased referral rates with disease progression as mentioned in (Figure 1). In response to *"What percentage of patients report diabetic or hypertensive nephropathy?"*, diabetic nephropathy was contributed to 55%, hypertensive nephropathy to 35% of cases, with other risk factors contributing to remaining 10%, reflecting a multifactorial etiology mentioned in (Figure 2). When asked, *"Which drugs are preferred in diabetic and hypertensive nephropathy across CKD stages?"*, clinicians indicated that SGLT2 inhibitors, finerenone, and GLP-1 receptor agonists were the most frequently prescribed for diabetic nephropathy, while calcium channel blockers, SGLT2 inhibitors, and finerenone were preferred in hypertensive nephropathy. To the question, *"Which antidiabetic drug is de-escalated at Stage 3b?"*, the majority noted that metformin is commonly de-escalated or stopped due to renal clearance concerns, whereas dapagliflozin is used cautiously and empagliflozin is largely continued due to better safety and outcome data. In addressing *"Which potassium binders are preferred for hyperkalemia management?"*, sodium polystyrene sulfonate over patiromer, and sodium zirconium cyclosilicate emerged as top choices, balancing efficacy and tolerability. In terms of anaemia therapy, the response to *"Which ESA is preferred pharmacologically?"* highlighted darbepoetin alfa as the most commonly and preferred used agents over epoetin alfa.For the question, *"Which oral iron preparation is preferred for iron deficiency anemia in early-stage CKD?"*, ferrous sulfate was most frequently selected (40%), followed by non-conventional iron salts (27.5%) and ferrous fumarate (22.5%). In response to *"What therapies are considered for IgA nephropathy?"*, budesonide was favoured, reflecting a growing preference for targeted-release corticosteroids over traditional agents like MMF and ARBs. Finally, to *"What are the key emerging or pipeline therapies in nephrology?"*, clinicians identified finerenone as the most promising, followed by sparsentan, GLP-1 receptor agonists, and targeted immunosuppressants, marking a shift toward mechanism-specific and reno-protective therapies. Collectively, the survey illustrates a dynamic treatment landscape, with increasing reliance on novel agents and individualized approaches in CKD management across stages and comorbidities. Survey findings reveal that while clinicians are increasingly adopting evidence-based therapies such as SGLT2 inhibitors and finerenone, notable gaps remain in the uniform application of treatment protocols across CKD stages. This highlights the ongoing need for early intervention, standardized care, and greater alignment with clinical guidelines to improve patient outcomes and reduce disease burden.

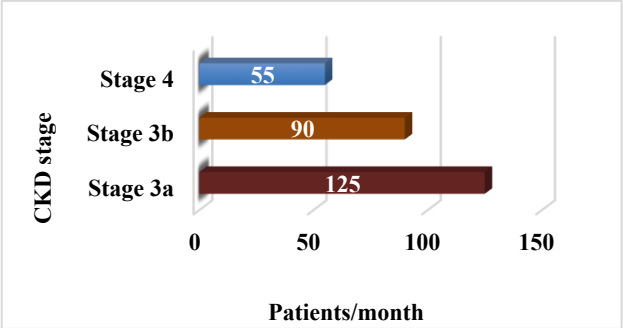

Figure 1: Stage wise distribution of CKD patients per month.

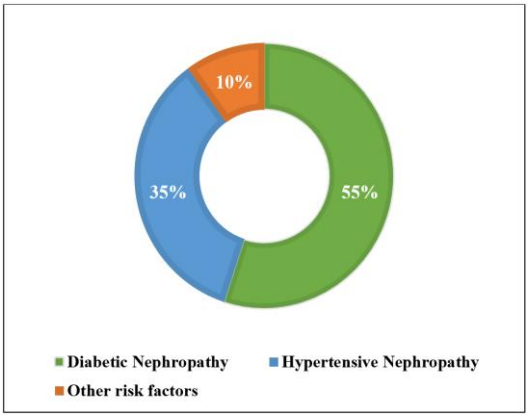

Figure 2: Etiology of CKD.

DISCUSSION

This study highlights the evolving trends and persisting gaps in the real-world management of CKD among clinicians. While the reported volume of early-stage CKD cases (Stages 3a and 3b) is consistent with epidemiological patterns, early identification remains a major clinical challenge.[16] The asymptomatic nature of CKD, limited primary care awareness, and delayed referrals contribute to underdiagnosis during initial stages, reinforcing the need for integrated risk-based screening strategies.

The high prevalence of diabetic (50–60%) and hypertensive nephropathy (30–40%) is consistent with global data, particularly in low- and middle-income countries.[17] The survey revealed a positive shift toward evidence-based therapies—SGLT2 inhibitors, finerenone, and GLP-1 receptor agonists were frequently selected for diabetic nephropathy, while calcium channel blockers and MRAs were widely used in hypertensive nephropathy. These choices align with outcomes from landmark trials such as DAPA-CKD, EMPA-KIDNEY, FIDELIO-DKD and ACCOMPLISH trial, suggesting improved awareness and application of cardio-renal protective agents.[18,19] A notable pattern in stage-wise pharmacotherapy was the de-escalation of metformin at Stage 3b, consistent with renal safety concerns, and the cautious continuation of SGLT2 inhibitors based on newer safety profiles.[17] This stage-based decision-making reflects a maturing understanding of renal risk stratification. In hyperkalemia management, although sodium polystyrene sulfonate remains the mainstay, there is increasing use of better-tolerated agents such as patiromer and sodium zirconium cyclosilicate. Similarly, anemia therapy preferences—favoring darbepoetin alfa for its longer half-life and convenience—demonstrate practical adaptation of pharmacologic advantages. Oral iron remains a first-line option in early stages, but IV formulations are more common in advanced CKD, consistent with treatment recommendations.[18] The preference for budesonide in IgA nephropathy marks a shift toward targeted-release corticosteroids with favorable safety profiles.[20] Moreover, emerging therapies like ns-MRAs (finerenone), sparsentan, and GLP-1 RAs signal growing interest in individualized, mechanism-specific care.

Despite these positive developments, several limitations should be acknowledged. The present study was based on self-reported clinicians' insights, which may introduce a recall bias. The sample size was relatively small, and clinical outcome data were not captured. Additionally, regional variations in CKD practice patterns across different healthcare settings were not explored, which may limit generalizability.

CONCLUSION

This study reflects encouraging progress in CKD management in India, with increasing adoption of guideline-based therapies and evidence-driven pharmacological choices. However, critical gaps persist in early diagnosis, uniform treatment approaches, and coordination between clinicians. Addressing these gaps will require structured educational efforts, wider dissemination of clinical guidance (e.g., KDIGO), and enhanced access to innovative therapies. A multidisciplinary approach that includes earlier risk stratification, timely referral, and individualized care will be essential in slowing disease progression and improving quality of life of CKD patients.

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