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Review Article

**CHRONIC KIDNEY DISEASE AND ITS MANAGEMENT:  
A REVIEW****Mehvish Adil \*and Mariam Zaka**

Lahore College for Women University, Jail Road Lahore, Pakistan

**Abstract:**

*Chronic kidney disease (CKD) is a major public health problem worldwide and its prevalence is increasing day by day. CKD defines as kidney damage or a decreased glomerular filtration rate of less than 60 mL/min/1.73 m<sup>2</sup> for 3 or more months irrespective of cause. It has deeper effects on morbidity, mortality, health care costs, as well as on patient quality of life and on important social implications. CKD patients have several other co-morbidities such as hypertension, diabetes mellitus, coronary artery disease and anemia, and due to these co-morbidities, patients are on multiple medications, and are higher risk of developing drug-related problems. Hypertension is a major promoter of the decline in glomerular filtration rate (GFR) and a strong independent risk factor along with Diabetes mellitus for CKD. Treatment of high blood pressure is recommended for all individuals with, or at risk of, chronic kidney disease. Glycemic control can help to prevent the onset of early stages of chronic kidney disease in individuals with diabetes. Better management of CKD can slow the progression of CKD, prevent complications, and reduce cardiovascular-related outcomes and improve patient's quality of life.*

**Key words:** *chronic kidney disease, Glomerular filtration rate, Hypertension, Diabetes mellitus, Drug related problem, Angiotensin converting enzyme inhibitor, end stage renal disease, National Kidney Foundation, quality of life,*

**Corresponding author:****Mehvish Adil,**Lahore College for Women University,  
Jail Road Lahore,  
PakistanEmail Id: [mehvish.adil777@gmail.com](mailto:mehvish.adil777@gmail.com)

Contact no: 0302-4684319



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**INTRODUCTION:**

Chronic kidney disease (CKD) is a worldwide public health problem. Chronic kidney disease is a global threat to health for developing and under developing countries because of an increasing incidence, poor outcome, and high cost of treatment. It is a general term for heterogeneous disorders affecting kidney structure and function. The Kidney Disease Outcomes Quality Initiative (K/DOQI) of the National Kidney Foundation (NKF) defines CKD as “kidney damage or a decreased glomerular filtration rate of less than 60 mL/min/1.73 m<sup>2</sup> for 3 or more months, irrespective of the cause”. [1]

Chronic kidney disease is a common disorder and its prevalence is increasing worldwide day by day.[2] According to the World Health Report 2002 and Global Burden of Disease (GBD) project, diseases of the kidney and urinary tract contribute to the global burden of diseases, with approximately 850,000 deaths every year and 15,010,167 disability-adjusted life years. They are the 12th cause of death and the 17th cause of disability, in the world. [3]

Chronic kidney disease has profound effects on morbidity, mortality, and health care costs, as well as on important social implications. Pakistan reveals an alarmingly high burden. Approximately 15 to 20 percent of persons 40 years of age or older have a reduced estimated GFR. Evidence indicates that chronic kidney disease develops in about a third of patients with diabetes. The burden of hypertension is even higher — affecting about one third of 45 years of age or older. Although the average Pakistani adult visits a primary care physician four to five times each year, 64 percent of adults have never had their blood pressure measured, and 70 percent of patients with hypertension and 50 percent of patients with diabetes are unaware of their condition. Compounding the problem of under detection are gaps in the knowledge of some Pakistani physicians about the management of hypertension and diabetes, which lead to under treatment and a lack of preventive measures against chronic kidney disease. Against this backdrop of poor medical practices, patients with kidney failure are faced with the high cost of renal-replacement therapy.[4]

Disease and management are classified according to stages of disease severity, which are assessed from glomerular filtration rate (GFR) and albuminuria, and clinical diagnosis (cause and pathology). Chronic kidney disease can be detected with routine laboratory tests, and some treatments can prevent development and slow disease progression, reduce complications of decreased GFR and risk of cardiovascular disease, and improve survival and quality of life.[5]

The major part of this increase is caused by such lifestyle-related factors as hypertension and diabetic nephropathy. The association between obesity, smoking, and physical activity and chronic kidney disease (CKD) are important. It is known that obesity leads to ESRD through diabetes mellitus and hypertension, but obesity also can contribute directly to kidney damage through obesity-related glomerulopathy, mechanical compression, and a cascade of other hemodynamic and metabolic mechanisms. [6]

It is recommended that both diabetic and non-diabetic adults with CKD and urine albumin excretion <30 mg/24 hours (or equivalent) whose BP is consistently >140 mm Hg systolic or >90 mm Hg diastolic should be treated with BP-lowering drugs to maintain a BP that is consistently ≤140 mm Hg systolic and ≤90 mm Hg diastolic and also recommended that an ARB [angiotensin-receptor blocker] or ACE-I [angiotensin-converting enzyme inhibitor] be used in both diabetic and non-diabetic adults with CKD and urine albumin excretion >300 mg/24 hours.

Control of blood pressure and reduction of proteinuria are critical in preventing CKD progression. The reduction of proteinuria using renin-angiotensin-aldosterone system (RAAS) interruption slows progression of both diabetic and nondiabetic nephropathy. Lowering blood pressure also slows CKD progression, breaking a potentially vicious cycle associating hypertension and CKD. Evidence is insufficient to recommend combining an angiotensin-converting enzyme inhibitor with angiotensin-receptor blockers to prevent CKD progression. Although JNC 8 recommends a RAAS blocker for all patients with chronic kidney disease, Some chronic kidney disease patients can develop hyperkalemia or a decreased estimated glomerular filtration rate after starting an ACE-I or an ARB. Monitoring should include assessment of serum potassium and estimated glomerular filtration rate approximately within several weeks after initiation or dose escalation. When hyperkalemia develops, outpatient management strategies include identification and restriction of dietary potassium, treatment of metabolic acidosis if appropriate, consideration of thiazide or loop diuretic use to increase potassium excretion, and treatment with a potassium-binding exchange resin. Discontinuation of the RAAS blocker should be considered only if these interventions fail.[7]

Vitamin D deficiency may also be associated with the progression of renal function in CKD. Vitamin D and derivatives have been widely used in the management of CKD, for example, the control of hyperparathyroidism. The different Vitamin D

analogs have differential effects on physiological function, which could be classified by the activity. Nutritional Vitamin D25 can be supplemented by oral intake of vitamin D rich or fortified diets is non biological active form such as ergo calciferol, cholecalciferol and traditionally the active forms, 1,25(OH)2D, known as hormone are calcitriol and alfalcidol. More recently, four Vitamin D analogs have been introduced in the nephrology area and play an increasingly important role in CKD treatment which is doxercalciferol, paricalcitol, oxacalcitriol and falecalcitriol. [8]

Better management of CKD can slow the progression of CKD, prevent complications, and reduce cardiovascular-related outcomes. Early referral to a nephrologist has been shown to improve outcomes for those who progress to end-stage renal disease. [9] Aerobic exercise in hemodialysis patients has been reported to enhance insulin sensitivity, improve lipid profile, increase hemoglobin, increase strength, decrease blood pressure, and improve quality of life. [10]

#### CONCLUSION:

This study revealed that that most commonly observed stage of chronic kidney disease was end stage renal disease. Calcium channel blockers and insulin was most commonly prescribed drugs for hypertensive and diabetic patients with chronic kidney disease. CKD leads to complications such as anemia, bone disorders & hyperphosphatemia, to manage these complications vitamin D supplements, erythropoietin therapy & phosphate binders were most commonly prescribed.

#### REFERENCES:

- 1.Chaitali S Bajait, Sonali A Pimpalkhute, Smita D Sontakke, Kavita M Jaiswal, and Amruta V Dawri. Prescribing pattern of medicines in chronic kidney disease with emphasis on phosphate binders *Indian Journal of Pharmacology*, 2014; 46(1):35-39.
- 2.Matthew T James, Brenda R Hemmelgarn, Dr Marcello Tonelli. Early recognition and prevention of chronic kidney disease *The Lancet*,2010; 375(972):1296–1309.
- 3.Arrigo Schieppati , Giuseppe Remuzzi. Chronic renal diseases as a public health problem: Epidemiology, social, and economic implications *Kidney International*, 2005; 68( 98):7-10
- 4.Tazeen H. Jafar. The Growing Burden of Chronic Kidney Disease in Pakistan *The New England Journal of Medicine*, 2006; 354(10): 995.
- 5.Dr Andrew S Levey and Josef Coresh. Chronic kidney disease *The Lancet*, 2012; 379(9811): 165-180.

6.Stein Hallan, Renée de Mutsert, Sven Carlsen, Friedo W. Dekker, Knut Aasarød, and Jostein Holmen. Obesity, Smoking, and Physical Inactivity as Risk Factors for CKD: Are Men More Vulnerable? *American Journal of Kidney Diseases*, 2006; 47(3) : 396-405.

7.Paul E. Stevens, Adeera Levi. Evaluation and Management of Chronic Kidney Disease: Synopsis of the Kidney Disease: Improving Global Outcomes 2012 Clinical Practice Guideline *Annals of Internal Medicine*, 2013; 158(11):825-830.

8.Nan Zhu, Jialin Wang, Lijie Gu, Ling Wang & Weijie Yuan. Vitamin D supplements in chronic kidney disease *Renal Failure*, 2015; 37(6): 917-924.

9.Laura C. Plantinga, ScM; L. Ebony Boulware, Josef Coresh,Lesley A. Stevens, Edgar R. Miller III, Rajiv Saran, Kassandra L. Messer, Andrew S. Levey, Neil R. Powe. Patient Awareness of Chronic Kidney Disease *Arch Intern Med*. 2008; 168(20): 2268-2275.

10.Irfan Moinuddin, David J. Leehey. A Comparison of Aerobic Exercise and Resistance Training in Patients With and Without Chronic Kidney Disease *Advances in Chronic Kidney Disease*, 2008; 15(1):83-96.