

## Chronic Kidney Disease (CKD): A Growing Medical Issue

Shahid Kamal\*

*Department of Nuclear Medicine and Molecular Imaging, Neurospinal & Medical Institute, Karachi, Pakistan.*

With an annual growth rate of more than 2.08%, the 231 million population of Pakistan is set to surpass 330 million by 2030 [1]. The country's health system continues to be plagued by a paucity of resources, poor governance, a poor health information management system, corruption in the healthcare industry, and a dearth of skilled workers. The sector suffers from meager health budget allocations [2]. Kidney diseases, one of the leading causes of death and disability, get further impetus due to an increasingly high prevalence of Diabetes Mellitus that further accentuates CKD [3]. The frequency of DM is set to increase by over 150% between 2000 and 2030 in South Asia [4]. Moreover, CKD of unknown etiology (CKDu) is increasingly being seen in the agricultural communities of Sri Lanka and India [5, 6]. CKD leads to a variety of serious conditions and is a major trigger for the development of cardiovascular diseases [7]. It causes loss of productivity along with negatively impacting the social life of the sufferers [8]. CKD is a progressive disease leading to end-stage renal disease (ESRD) that requires costly management like hemodialysis, peritoneal dialysis, and renal transplantation.

Though precise data on CKD in Pakistan is not established, but different national studies and analysis of data from other countries in the region, the estimates of CKD are as high as 17% [9]. Renal registries seem to be restricted to systematic data collection of hemodialysis patients [10].

Some studies have been conducted in the local population [11-14]. The most common cause of CKD is Diabetic nephropathy (27.1%), followed by CKD of unknown etiology (CKDu) (16.6%). CKDu is now recognized as one of the important preventable causes of CKD in agricultural countries like Pakistan. Chronic Glomerulonephritis (14.4%) and hypertensive nephropathy (15.2%) also turn out to be important causes of CKD. Kidney stones are prevalent in this region, and it is known as the "stone belt" due to the high incidence of kidney stones and their complications. The causation of CKD by kidney stones maybe as high as 31.1% in areas like Badin located in the stone belt region. Infections are another important cause. Another etiological factor in the development of CKD is acute kidney injury due to malaria, snake bite, dengue fever, and diarrhea [15].

If we look at the country-specific prevalence in Nepal, Bangladesh, and India, the global prevalence of CKD (13.4%) appears high [16]. Despite urbanization, the majority of population still resides in rural areas [17]. The large cities are somewhat modern,

where lifestyles are changing with people opting for western ways of life. Hence we see diseases of the modern era like DM, Hypertension, etc. along with diseases of developing countries both prevalent in Pakistan.

CKD of unknown etiology is also an important cause of renal failure in our population. It is well recognized in agricultural communities like Pakistan [18, 19]. The disease characteristically involves men who have worked for two or more seasons, are between 20 and 50 years old, are asymptomatic, and have normal or only slightly elevated blood pressure and normal blood glucose levels. The urinalysis shows no or minimal proteinuria. There is debate about its etiology as it is caused by heat stress and water depletion leads to acute tubular injury or overhydration of contaminated water with heavy metals or pesticides causing tubulointerstitial disease. In a review of water content in different areas of Pakistan, a high level of arsenic, ochratoxin, and Zearalenone was found in areas related to the chicken industry [20]. A high prevalence of tubulointerstitial disease was also noted in these areas.

Renal stones are prevalent in this area for this it is recognized as "stone belt". The exact cause of this high incidence is not known whether it is due to genetic predisposition, dietary habits, water content, or extremely hot climate causing dehydration. Kidney damage due to stones leading to CKD is less common in other parts of the world due to early diagnosis and prompt management and prompt preventive steps to ward off recurrence [21]. The prevalence of both CKDu and stone disease is high, comprising about 30 to 35% of the CKD population, and both are preventable. Hypertensive nephropathy and chronic glomerulonephritis also cause significant morbidity.

The overall prevalence of CKD turns out to be 16.7% with a range of 29.9% to 12.5%. Diabetic kidney disease and CKDu followed by renal stone diseases are the common cause of CKD in Pakistan. Older age is another risk factor for CKD. Infections, low birth weight, and water contamination are also have etiological weightage. Larger community-based studies, awareness to the medical and general population, and emphasis on early diagnosis and treatment cannot be under-emphasized.

### CONFLICT OF INTEREST

Declared none.

\*Address correspondence to this author at the Department of Nuclear Medicine and Molecular Imaging, Neurospinal & Medical Institute, Karachi, Pakistan. Email: skamal77@hotmail.com

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