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LETTER TO EDITOR CODEN: AAJMBG

Chronic kidney disease: The emerging challenge and the way forward

Dear Editor:

Chronic kidney disease (CKD) is defined as either kidney damage or glomerular filtration rate (GFR) < 60 ml/minute/1.73m^2 for 3 or more months, where kidney damage is defined as pathologic abnormalities or markers of damage, including abnormalities in blood or urine tests or imaging studies [1-2]. CKD spectrum extends from microalbuminuria to End-stage renal disease (ESRD) or kidney failure necessitating renal replacement therapies (RRT) [3]. CKD in its various stages classified based on GFR can cause complications such as hypertension, anaemia of CKD, abnormalities of bone metabolism (characterised by hyperphosphatemia, hypocalcemia, secondary hyperparathyroidism and vitamin D deficiency), metabolic acidosis, malnutrition, lipid abnormalities and risk of cardiovascular disease [2,4].

According to World Health Organization (WHO) estimates, 2012, as part of Global Burden of Disease (GBD) project, diseases of kidney and urinary tract account for 2.1% Disability-adjusted-life-years (DALY) globally, a 0.5% increase from 2000 estimates [5]. Kidney diseases rank as 14th leading cause of death contributing to 1.6% of total global deaths and are projected to move up the ranks to 13th place by 2030 [5]. Data from nation-wide surveys in developed countries with robust surveillance systems such as United States, China and Australia report prevalence more than 10% [6]. Studies from India reveal prevalence between 0.78% and 17% for kidney diseases including CKD [7-8]. Paucity of population-based studies and lack of national surveillance projects limits our knowledge on CKD estimates in the general population [7-8].

Available literature reveals that every year nearly one lakh people undergo RRT, and these figures constitute only 10% of those who require RRT [8]. RRT choices for ESRD- both dialysis on a continuous basis or a renal transplant are expensive options which often reduce treatment seeking among CKD patients making CKD an essential public health priority [9].

National Kidney Foundation (NKF) has identified the following chief risk factors, long-standing diabetes and hypertension, age more than 60 years, racial or ethnic minorities, exposure to known nephrotoxins, low income or education level, autoimmune diseases, systemic infections, urinary tract infections, nephrolithiasis, neoplasia, family history of kidney disease, recovery from acute renal failure, reduction in kidney mass and low birth weight, the most significant among these being diabetes, hypertension, age above 60 years, racial and ethnic minorities and family history of kidney disease [2]. The other possible contributing causes include congestive heart failure, genetic syndromes, hepatorenal syndrome and benign prostatic hypertrophy [2]. Diabetes mellitus is the major contributor accounting for 30 to 50% of CKD burden worldwide, closely followed by primary hypertension (20-40%) [2, 6].

Glomerulonephritides (10-30%) ranked next in most studies [2, 6]. Thus close to 50% of the CKD burden is potentially preventable. There are other risk factors that promote progression of CKD and are potentially modifiable: proteinuria, obesity, metabolic acidosis, anaemia, altered calcium-phosphate homeostasis, chronic inflammation, metabolic factors other than diabetes such as hyperuricemia, dyslipidemia and smoking [2-3, 6-7]. The Screening and Early Evaluation of Kidney disease (SEEK) study conducted across 12 cities throughout India identified CKD prevalence of 17% among urban Indians

[8]. Six percent had stage III disease, requiring expensive medical treatment [8]. Majority of them had not undergone prior screening for kidney function though a considerable proportion of them suffered from preventable and controllable risk factors such as hypertension (64.5%), anaemia (4.7%) and diabetes (31.6%) [8]. The GBD estimates point to increasing trends in the prevalence of CKD and its risk factors. Most developing countries lack data on real estimates, so the available figures might represent only the tip of the iceberg predicting an impending crisis. Therefore the war against this silent epidemic of CKD requires an efficient, coordinated public health action. Table 1 enlists the challenges in the control measures against CKD and the possible solutions.

Table-1: Challenges in CKD control efforts and possible solutions

Challenges	Solutions
Increasing burden of CKD, predicted to increase further in future [4,5] Increasing prevalence of major risk factors such as diabetes and hypertension [5]	Lifestyle modification [2,6] Early diagnosis and treatment [2,4,6] Outreach programmes to improve screening services and coverage of CKD affected [4] Improving availability and affordability of simple easy-to-use, reliable, point-of-care tests for screening high risk population [4]
Paucity of data on real burden of CKD [7,8]	Setting up comprehensive regional and national registries for CKD [10] and strengthening data collection systems [4] Initiating surveillance for CKD and its risk factors similar to surveillance programs in developed countries with appropriate regional modifications in the programs [4] High quality epidemiological studies to identify the real statistics
Heterogeneity of available studies due to difference in operational definitions and GFR estimations [10]	Standardising GFR estimations with reference to regional population [10] Validation studies for GFR estimation equations in reference population [10] Quality control of laboratories
Failure to identify most CKD patients in early stages of disease [8]	Integration of nephrology care with primary health care [2,6] Standardised training programmes for health workers to equip them in providing screening and education services [2,6] Streamlined screening recommendations
Lack of awareness among general public [8]	Education of general public [2,6]
Less than adequate awareness among primary care physicians and family physicians	Continuing medical education for primary care physicians and family physicians equipping them to provide basic kidney care services and for timely referral to nephrologists [2,6]
Huge economic costs of treatment both direct and indirect, for individuals [4,6]	Strengthening health insurance services [7] Rehabilitation of patients for a socially and economically inclusive life
Insufficient nephrologist services [7]	Efficient coordination between the levels of health care [9] Appropriate use Telemedicine for specialist care in remote areas
Lack of organized programs and coordinated efforts for CKD prevention and control [6]	National programmes and policies aimed towards prevention and progression of CKD among population [4] Co-ordination with professional and non-governmental organizations [4]
Very high costs of renal replacement therapies and immunosuppressive medications following transplantation [10] Heavy burden on national health budget [6]	Periodic review and update of standard treatment guidelines Encouraging research in diagnostic and therapeutic innovations for application in low-resource settings Studies to assess economic burden of CKD [6] Empowering evidence-based decision-making among patients and caregivers

Concluding, the global burden of CKD in terms of population affected and the economic costs is continually increasing making it a public health challenge of 21st century. Considering the high costs and human suffering involved, protection against the risk factors, prevention of the onset and progression of CKD and its complications is the most effective strategy to conquer the epidemic of CKD. Surveillance and screening activities has to be strengthened and kidney care should be integrated with community health care systems to expertly challenge the growing burden of CKD.

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