Chronic Kidney Disease Epidemiology

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Chronic kidney disease (CKD) is a worldwide public health problem.[1-3] Its incidence globally continues to grow at an unexpected rate, as obesity, poor nutrition, and lack of exercise increase the incidence of diabetes mellitus and hypertension as the main causes of CKD.[1-4] Chronic kidney disease is known to be associated with other diseases. Importantly, the associated costs and related adverse outcomes of this disease put a high cost burden on healthcare system.[4,5]

Several studies have reported that kidney dysfunction, even at early stages, is an important independent risk factor for cardiovascular disease and death, and results of many researches confirmed that early detection of CKD reduces cardiovascular disease morbidity and mortality.[5-7] Therefore, integration of screening strategies for early diagnosis of kidney diseases in the health programs, particularly in the high risk groups may be associated with better outcome. CKD development is usually silent and remains unrecognized until late stages. Detection of CKD at earlier stages provide more time for initiation of prevention and interventions programs in order to retard the progression of CKD to end-stage renal disease.[5-9] Glomerular filtration rate (GFR) measurement is the best way for detection of kidney dysfunction. However, persistently increased proteinuria is also a marker of kidney damage. The ratio of protein or albumin to creatinine in an untimed urine sample accurately detects protein or albumin excretion rate.[3] Typically, the modification of diet in renal disease (MDRD) and Cockroft-Gault equations are used for GFR estimation in the screening programs; however, a new equation, called the CKD Epidemiology Collaboration (CKD-EPI), seems to be more accurate than MDRD in estimation of GFR, especially at higher levels of GFR. This new method

has been used in some recent studies for estimation of CKD prevalence.[10,11] Screening programs for measuring GFR offer a great opportunity to understand the real problem and to have plan for future. Nevertheless, the data regarding CKD epidemiology in developing countries is limited and it is advisable to design screening programs to determine the prevalence and associated risk factors for CKD and cardiovascular disease in these countries. However, these programs would be considered cost-effective if they are followed by regular visits and treatment of CKD patients to prevent progression to end-stage renal disease and related complications.

Among studies performed in developing countries is a study done by Najafi, and colleagues in Iran, in which the prevalence of CKD in Kalaleh city, Golestan province in a sample of 1557 people (mean age, 56.76 ± 12.04 years) was evaluated.[12] In their study, CKD was determined according to estimated GFR and microalbuminuria. Based on the MDRD equation, 137 participants (8.89%) were categorized as having CKD stages III to V. Regarding the urine abnormalities, the prevalence of combined CKD stages I and II was 10.63%, and based on macroalbuminuria and microalbuminuria, it was 14.53%. Multivariable analysis showed that gender, age, hypertension, diabetes mellitus, and ischemic heart disease had significant associations with CKD.[12] In another study form Iran, Hosseinpanah and colleagues assessed the prevalence of CKD on 10 063 participants from Tehran Lipid and Glucose Study, which is an ongoing population-based cohort study.[13] The prevalence of CKD estimated by having a GFR less than 60 mL/min (using the MDRD equation) was 18.9%. The risk factors associated with CKD were age, gender, body mass index, waist circumference, hypertension, and dyslipidemia.[13]

Commentary

In this issue of the *Iranian Journal of Kidney Diseases*, there is a report about a cross-sectional population-based survey which has been done in northern Senegal (Saint-Louis).[14] In this study, CKD prevalence and its associated risk factors were evaluated on 1037 adults aged 18 years and over. Senegal is geographically located in West Africa and Saint-Louis is one of its regions. In this study, CKD was defined by an estimated GFR less than 60 mL/min/1.73 m^2 (using the MDRD) or urine albumin excretion greater than 1gr/L. Based on their report, the prevalence of CKD was 4.9% (95% confidence interval, 3.5% to 6.2%) and 0.9% had an estimated GFR less than 30 mL/min/1.73 m^2. Albuminuria was detected in 3.5% of the subjects. However, the authors did not explain why they considered albuminuria over 1 g/L in the 24-hour urine collection as an abnormal finding. According to the literature, microalbuminuria more than 300 mg/g (albumin-creatinine ratio in spot urine sample) is defined as early marker of kidney dysfunction.[3] Multivariable regression analysis showed that CKD presence was significantly associated with hypertension and aging. This survey revealed that 83% of the people with CKD were in rural areas and 62.7% in urban areas were not aware of their disease, which emphasizes the role of screening programs and educating people about their illness and outcome.

In conclusion, it is evident that the prevalence of CKD is increasing in the developing countries and cardiovascular disease morbidity and mortality increases proportionally as GFR declines. A multidisciplinary approach is needed to educate people about the risk factors of CKD and increase their awareness about the importance of changing lifestyles, dietary habits and also hypertension and diabetes control.[2,4,8,9] As a result, screening programs for early detection of CKD, especially in high-risk groups as well as a cost-effective management protocol to delay progression to end-stage renal disease seem to be crucial tasks.

CONFLICT OF INTEREST

None declared.

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