

Estimated Glomerular Filtration Rate Using Creatinine-Based Chronic Kidney Disease Epidemiology Collaboration Equation

Sir,

Recently, we have been reading articles on estimating glomerular filtration rate (eGFR) in Indian population with great interest. With the understanding that there is a rising epidemic of type 2 diabetes mellitus and the subsequent increase in its associated complications, it poses a nationwide threat. Diabetic nephropathy is the significant cause of chronic kidney disease (CKD). An Indian study showed that patients with CKD spend more toward their hospital admission than those without diabetic complications.^[1] Hence, glomerular filtration rate (GFR) assessment is important for the clinicians to assess the kidney function, detect and estimate the progression of CKD. eGFR using CKD epidemiology collaboration (CKD-EPI) equation^[2] is a major indicator of kidney function, and it plays an important role in detecting, evaluating, and also in managing CKD. Serum creatinine (Scr) or serum cystatin (Scys) is used to estimate GFR. A population-based Indian study emphasized that Cystatin C identifies more patients in early CKD and also in patients with normoalbuminuric CKD when compared to creatinine.^[3] This study focused on the creatinine-based equations, such as Cockcroft-Gault and modification of diet in renal disease (MDRD), by comparing it with CKD-EPI equation using Cystatin C. An earlier study by Viswanathan *et al.*^[4] suggested that Cystatin C was a better marker for moderately impaired renal function when compared to creatinine using

Cockcroft-Gault. In developing countries like India, use of Cystatin C in clinical practice is limited due to its cost. At present, Cystatin C has an advantage in detecting the early CKD, but it is not a cost-effective test and cannot be recommended for routine clinical practice.

To overcome this limitation, creatinine can be used for eGFR. A recent study in 2017^[5] compared the estimation of GFR using gamma camera-based Gates protocol and Scr-based predicting equations with GFR measured by plasma clearance of Tc-99m DTPA in North Indian population. The finding highlighted that CKD-EPI correlated with Tc-99m DTPA and showed least bias and highest precision when compared to GFR estimate using Cockcroft-Gault, MDRD, and Gates protocol. Kumpatla *et al.*^[6] compared MDRD equation versus CKD-EPI using Scr and MDRD equation versus CKD-EPI using Scys to estimate eGFR in a clinical setting in South Indian population. The mean bias, mean absolute bias and precision were lesser in MDRD versus CKD-EPI using Scr when compared to that of MDRD versus CKD-EPI using Scys. Likewise, Scr showed highest accuracy when compared with Scys. This showed that creatinine-based CKD-EPI can identify CKD at an early stage. Thus, for an Indian population, CKD-EPI equation using creatinine predicts GFR best than other equations. This underlines the importance of standardization of eGFR calculation among Indian population. Further research is needed in large sample to determine the best methods by comparing eGFR

equations with the gold standard methods. In conclusion, CKD-EPI equation using Scr was found to be superior in terms of estimating kidney function and is cost-effective; hence, it can be implemented in the routine clinical practice.

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Conflicts of interest

There are no conflicts of interest.

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