



Progress and opportunities in measuring the burden of Chronic Kidney Disease

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Commentary

Chronic Kidney Disease (CKD) is considered one of the most neglected common chronic diseases.¹ Measurement of the incidence, prevalence and complications of CKD is a critical step in improving awareness. To this end, the study by Sundstrom et al. presents important data on CKD prevalence, key clinical adverse outcomes, and associated costs across 11 countries.² This study underscores the enormous burden of CKD whereby one in ten individuals possibly has CKD and 6–9% of those with CKD die every year. Importantly, the study estimated that two out of three patients with CKD remain undiagnosed, and among those diagnosed only about 60% are treated with renin-angiotensin-aldosterone system inhibitors.

Presented findings can have important implications for the prevention, detection, and treatment of CKD. The reported estimates for CKD prevalence suggest that the number of people with CKD is much more than those with diabetes, chronic obstructive pulmonary disease, osteoarthritis, or depressive disorders.³ The high prevalence reported in this study is probably even an underestimation because a majority of CKD patients remain undiagnosed. Moreover, those who are diagnosed do not receive adequate treatment. This is in part due to unacceptably low awareness of CKD among patients and care providers which is unfortunate because in recent years novel treatments for CKD have been identified that can substantially reduce the overall CKD burden.^{4,5} Results presented in this study can improve awareness of CKD among policymakers, researchers, physicians, and the general population, and ultimately can help accelerate efforts aimed at

timely detection of CKD cases (e.g. assessing feasibility and diagnostic yield of screening for CKD among high-risk populations) and effective management of CKD and risk factors of CKD (e.g. interventions targeting physicians to improve prescription of nephroprotective medications).

The study by Sundstrom et al improves understating of CKD prevalence by presenting contemporary data from the general population. In future studies estimation of CKD prevalence can be further improved. An accurate assessment of CKD prevalence requires two measurements of glomerular filtration rate (GFR) and albuminuria at least 90 days apart.⁶ Unfortunately, data on both these measures at least 90 days apart is often not available for the general population. Consequently, CKD prevalence estimates for the general population largely come from one-time measurement of estimated GFR and albuminuria, and when estimates are available based on formal CKD definition that often comes from high-risk populations such as those recorded in health systems database. Remarkably, the estimate for CKD prevalence in the present study which used a health systems database was similar to the estimate for CKD prevalence in the Global Burden of Disease (GBD) study⁷ which relied mainly on population-based cohort studies (that are often over-represented with healthy individuals). Similar estimates in the two studies could be due to the sampling of high-risk individuals from a low-risk population in the present study and the sampling of low-risk individuals from a comparatively high-risk population in the GBD study. Integration of CKD into national screening programs for other chronic diseases and the development of methods that can correct prevalence estimates based on a one-time assessment of CKD markers may help to improve the accuracy of CKD prevalence estimates for the general population.

The present study comprehensively describes kidney and cardiovascular outcomes in patients with CKD. Unfortunately, CKD patients also suffer from other consequences including social, psychological, and financial which remain severely underreported. Stress from chronic symptoms and treatment of the disease, and changes in family dynamics can have severe negative

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consequences on the psychosocial health of CKD patients and their caregivers.^{8,9} Moreover, during the course of CKD patients experience diminished functional capacity and endurance which often results in reduced workability and consequently, work absence due to sickness, and work disability.¹⁰ Involving experts from social and occupational science and developing a methodological framework for measuring social, psychological, and work-related outcomes in patients with CKD can improve assessment of CKD consequences.

A multinational assessment of the CKD prevalence, outcomes, and costs, as presented in this study, is certainly relevant in highlighting the significance of CKD globally and enabling learnings from different public health policies and health care systems for handling CKD. However, these results should also be used to encourage a detailed assessment of the CKD burden in each region/country since public health policies are also driven by regional needs. Such regional effort should take into account regional demographics and social factors, health behaviors, and healthcare structure. This information can not only be instrumental in generating actionable information for local policymakers but can also better inform the assessment of the global burden of CKD.

Contributors

PV wrote the draft. HLH critically reviewed the contents.

Declaration of interests

No relevant disclosures to make.

References

- 1 Luyckx VA, Tonelli M, Stanifer JW. The global burden of kidney disease and the sustainable development goals. *Bull World Health Organ*. 2018;96(6):414–422D.
- 2 Sundström J, Bodegard J, Bollmann A, et al. Prevalence, outcomes, and cost of CKD in a contemporary population of 2.4 million patients from 11 countries: the CaReMe CKD Study. *Lancet Reg Health Eur*. 2022. <https://doi.org/10.1016/j.lanepe.2022.100438>.
- 3 GBD 2017 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet*. 2018;392:1789–1858.
- 4 Heerspink HJL, Stefánsson BV, Correa-Rotter R, et al. Dapagliflozin in patients with chronic kidney disease. *N Engl J Med*. 2020;383(15):1436–1446.
- 5 Bakris GL, Agarwal R, Anker SD, et al. Effect of finerenone on chronic kidney disease outcomes in type 2 diabetes. *N Engl J Med*. 2020;383(23):2219–2229.
- 6 Levey AS, de Jong PE, Coresh J, et al. The definition, classification, and prognosis of chronic kidney disease: a KDIGO Controversies Conference report. *Kidney Int*. 2011;80(1):17–28.
- 7 GBD Chronic Kidney Disease Collaboration. Global, regional, and national burden of chronic kidney disease, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet*. 2020;395(10225):709–733.
- 8 Cukor D, Cohen SD, Kimmel PL. Psychosocial aspects of chronic kidney disease: exploring the impact of CKD, dialysis, and transplantation on patients. Amsterdam: Academic Press. 2020:91–116 [chapter 5].
- 9 Gayomali C, Sutherland S, Finkelstein FO. The challenge for the caregiver of the patient with chronic kidney disease. *Nephrol Dial Transplant*. 2008;23(12):3749–3751.
- 10 van der Mei SF, Alma MA, de Rijk AE, et al. Barriers to and facilitators of sustained employment: a qualitative study of experiences in Dutch patients with CKD. *Am J Kidney Dis*. 2021;78(6):780–792.