

EPIDEMIOLOGY

The impact of chronic kidney disease on global health

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The Global Burden of Disease (GBD) study 2017 quantified the contribution of 354 diseases and injuries and 84 risk factors to morbidity and mortality in 195 countries and territories between 1990 and 2017. A new analysis based on this study estimates morbidity and mortality owing to chronic kidney disease (CKD) and impaired kidney function at the global, regional and national levels.

“The main aim of the GBD study is to provide policy makers worldwide with up-to-date information on health outcomes that are comparable between diseases, combining information on deaths and non-fatal disease,” explains Boris Bikbov, co-corresponding author on the new analysis. “The United Nations sustainable development goals aim to reduce premature mortality from non-communicable diseases by one-third by 2030, and our estimates suggest that targeting CKD will be an important consideration for reaching these goals.”

“The first GBD study in 2012 only estimated the burden of low glomerular filtration rate but with each GBD revision cycle new kidney disease indicators were introduced,” adds co-corresponding author Theo Vos. “Our analysis considers all patients with CKD (using appropriate references to the KDIGO classification) and also considers the burden of cardiovascular disease (CVD) and gout related to impaired kidney function.”

The new analysis suggests that in 2017, the global prevalence of CKD was 9.1% (697.5 million cases). The age-standardized global prevalence of CKD was higher in women and girls (9.5%) than in men and boys (7.3%). Nearly one-third of all cases of CKD were in China (132.3 million) or India (115.1 million), 10 countries had >10 million cases and 79 countries had >1 million cases. Although the all-age global prevalence of CKD increased by 29.3% between 1990 and 2017, the age-standardized global prevalence did not change significantly. “The increase in all-age prevalence is due to ageing of the world’s population,” says Vos. The all-age and age-standardized global incidence of dialysis and kidney transplantation also increased between 1990 and 2017 (by 43.1% and 10.7%, respectively, for dialysis and 34.4% and 12.8%, respectively, for transplantation), reflecting increasing availability of these therapies.

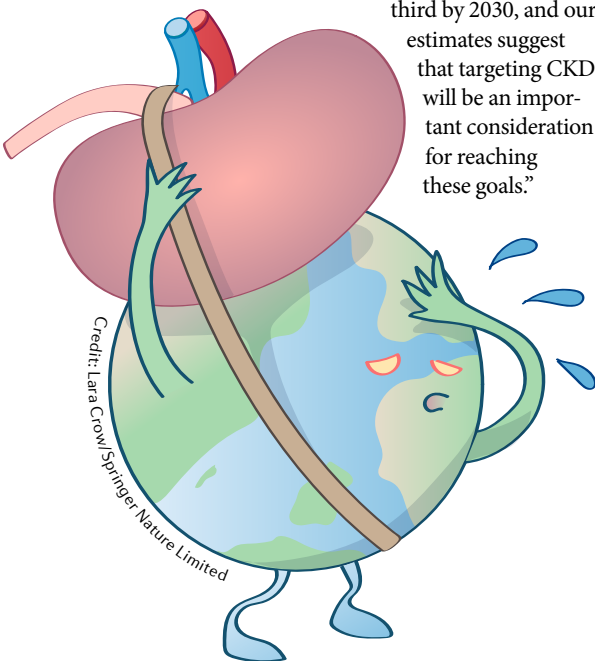
In 2017, CKD resulted in 1.2 million deaths and was the 12th leading cause of death worldwide. In addition, 7.6% of all CVD deaths (1.4 million) could be attributed to impaired kidney function. Together, deaths due to CKD or to

CKD-attributable CVD accounted for 4.6% of all-cause mortality. Global all-age CKD mortality increased by 41.5% between 1990 and 2017, whereas age-standardized CKD mortality remained stable. “From 1990 to 2017, global age-standardized mortality declined by 30.4% for CVD, 14.9% for cancer and 41.3% for chronic obstructive pulmonary disease, but a similar decline was not seen for CKD,” notes Vos.

The authors also estimate that in 2017, CKD resulted in 35.8 million disability-adjusted life years (DALYs), whereas 25.3 million CVD DALYs could be attributed to impaired kidney function. Diabetic kidney disease was the leading cause of CKD DALYs, accounting for 30.7% of the total. “The DALY rate for impaired kidney function was higher than that for drug use, unsafe sanitation, low physical activity, second-hand smoke and several dietary risk factors,” says Bikbov. Differences in CKD burden between countries were particularly apparent when comparing age-standardized CKD DALYs, which were particularly high in Oceania, sub-Saharan Africa and Latin America.

“We hope that our analysis will lead to greater attention to kidney disease in the public health agenda, and inspire the development of National Strategic Action Plans for kidney disease in all countries,” says Bikbov. “Importantly, such action plans should be much wider than the provision of dialysis and kidney transplantation — they should also include early CKD detection and prevention in high-risk groups as well as the provision of essential medicines for patients with CKD in the poorest countries and for disadvantaged social groups.”

Ellen F. Carney



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