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Temporal trends in acute kidney injury-related mortality across 43 countries, 1996-2021, with projections up to 2050: a global time series analysis and modelling study

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Objectives : Acute kidney injury (AKI) is a major global public health concern. However, a major challenge in addressing the AKI burden is the lack of global data on AKI-related mortality and its predictions, leaving significant limitations in understanding its trends over time. Therefore, we aimed to estimate AKI-related mortality rate trends and forecast future deaths.
Methods : We evaluated the temporal trends in age-standardized AKI-related mortality from 1996 to 2021 across 43 countries using the World Health Organization Mortality Database. Temporal trends were assessed using locally weighted scatter plot smoother curves, and future projections up to 2050 were calculated using a predictive model that considered attributable risk factors from the Global Burden of Disease Study. This study analyzed patterns of variation in AKI-related mortality rates.
Results : Age-standardized AKI-related mortality rate per 1,000,000 people remained stable from 1996 to 2021 (10.47 [95% confidence interval, 8.84–12.11] to 9.94 [8.32–11.57]). The overall mortality rate is lower in high-income countries (HICs) than in low-to-middle income countries (LMICs). However, HICs revealed an upward trend in mortality (5.83 [4.21–7.46] to 7.3 [5.66–8.95]), while LMICs demonstrated a decline (19.66 [16.78–22.53] to 15.33 [12.37–18.29]). Similar trends were observed when countries were compared based on the Human Development Index (HDI). Increasing trends in age-standardized AKI-related mortality rates among older populations were found in females, HICs, and countries with very high HDI, whereas rates declined in the young population. Future age-standardized AKI-related mortality was predicted to increase gradually (9.94 per 1,000,000 people [8.32–11.57] in 2021 to 11.36 [10.65–12.07] in 2050), and the primary contributor was population aging.
Conclusions : This global time-series and modelling study found that countries with higher socioeconomic status and older populations have increasing trends in age-standardized AKI-related mortality, a trend projected to continue through 2050. This study provides valuable information for developing strategies to reduce the global burden of AKI-related mortality.