

Do the Associations of eGFR and Albuminuria with Mortality and Renal Failure Differ by Gender? A Meta-Analysis from a Global Consortium (for the CKD-PC Collaborators)

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BACKGROUND: There is substantial clinical uncertainty whether the associations of chronic kidney disease (CKD) with mortality and end-stage renal disease (ESRD) differ between men and women.

METHODS: We assessed the presence of a gender interaction in the associations of estimated glomerular filtration rate (eGFR) and albuminuria with all-cause mortality, cardiovascular mortality and ESRD in 2,051,158 participants (54% women) from general population (n=1,861,052), cardiovascular high-risk (n=151,494), and CKD (n=38,612) cohorts. We used random-effects meta-analysis using pooled individual participant data.

RESULTS: All-cause and cardiovascular mortality risk was higher in men at all levels of eGFR and ACR. While higher risk was associated with lower eGFR and higher ACR in both genders, the risk relationship for all-cause and cardiovascular mortality was steeper in women than in men. Compared with eGFR 95, the adjusted hazard ratio (HR) for all-cause mortality at eGFR 45 was 1.32 (95% CI, 1.08 to 1.61) in women and 1.22 (CI, 1.00 to 1.48) in men (p for interaction<0.001). Compared with ACR 5, the HR for all-cause mortality at ACR 30 was 1.69 (CI, 1.54 to 1.84) in women and 1.43 (CI, 1.31 to 1.57) in men (p for interaction=0.005). Conversely, there was no evidence of a gender difference in associations of eGFR and ACR with ESRD risk.

CONCLUSIONS: While both genders face increased risk of all-cause and cardiovascular mortality and ESRD with lower eGFR and higher albuminuria, the relative mortality risk in women increases more steeply with diminished kidney function. These findings were robust across a large global consortium.