# BEST RESEARCH PAPER AWARD

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## Is chronic kidney disease equally important as cardiovascular disease in 3 million adults? A 10-year retrospective cohort study

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**Background:** Chronic kidney disease (CKD) and cardiovascular disease (CVD) often co-exist and promote the progression of each other. This study aims to identify the excess risks of deaths associated with comorbid CVD in patients with CKD.

**Methods:** The mortality risks of combined CKD and CVD were assessed from a retrospective cohort of 3,177,467 adults in Hong Kong between 2007-2018. The association between all-cause mortality and a combination of moderate or severe CKD (defined by eGFR 30-59 or 15-29 ml/min/1.73m2), heart diseases and/or stroke was examined using multivariable Cox regression.

**Results:** Approximately 17% of total deaths were attributed to CKD. Increase in all-cause mortality was comparable among patients with moderate CKD (HR 1.7 (95% CI 1.7 – 1.8)), heart diseases (HR 1.5 (95% CI 1.5 to 1.5)) or stroke (HR 1.8 (95% CI 1.8 to 1.8)). Reduction in life expectancy due to CKD at 30 years was around 13 and 21 years respectively in men and women, approximately equivalent to that of stroke and heart diseases. Patients with CKD had 2 to 4 times greater health care costs per person, with a graded association between severity of CKD and the number of comorbid cardiovascular conditions. Risks conferred by individual diseases were comparable and shown addictive effects on all outcomes. The presence of stroke, heart disease and CKD exemplified excess risk of death by up to 7 times, and reduce the life expectancy of 27 and 37 years at 30-year-old men and women, respectively.

**Conclusion:** CKD and CVD are independent and almost equal risk factors for mortality. The magnitude of increases in mortality risk, reduction in life expectancy, and direct medical costs in individuals with CKD and CVD was particularly marked. Early prevention and treatment of CVD and CKD may mitigate the disease burden associated with excess cardiovascular risk.