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## **Cumulative exposure of metabolic syndrome components and the risk of end-stage renal disease in the general population: a nationwide cohort study**

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**Objectives:** Status of metabolic syndrome (MetS) and its components can changes over time. However, few studies have investigated the cumulative burden of MetS and its components on clinical renal outcomes in the general population.

### **Methods:**

Using nationally representative data from the Korean National Health Insurance System, 2,664,270 subjects who underwent health examinations for four consecutive years and were free from end-stage renal disease (ESRD) from 2009 to 2013. We used exposure-weighted scores in two ways: (1) cumulative number of MetS diagnosis at each health examination (MetS exposure score, range: 0 to 4); (2) the composite of its five components (MetS component exposure score, 0 to a maximum of 20). Hazard ratio and 95% confidence interval (CI) values for ESRD were analysed using the Cox proportional-hazard model.

**Results:** Overall, 63.4%, 14.0%, 8.2%, 6.2% and 8.0% met the MetS diagnostic criteria 0 to 4, respectively. After a median follow up of 5.3 years, 2,303 incident ESRD cases were identified. In the multivariate adjusted model, the hazard ratio (HR) and 95% confidence interval (CI) for the development of ESRD showed a gradual increase with increasing exposure score of MetS and its components, which was independent of age, sex, and baseline estimated glomerular filtration rate (each  $p$  for trend < 0.0001). The HR of ESRD was 6.48 (95% CI, 4.12 to 10.20) in subjects with a MetS component exposure score of 20 compared with those with a score of 0.

### **Conclusions:**

This provides evidence supporting the strategy of reducing MetS exposure to prevent the development of ESRD in the general population.