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A Diet Rich in Vegetables and Fruits and Incident Chronic Kidney Disease:  
Community-based prospective cohort study

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Objectives: A diet rich in vegetables and fruits can lower blood pressure (BP) and reduce cardiovascular risk. However, it is unknown on the association between this diet and incident chronic kidney disease (CKD) in general population.

Methods: Using the database from the Korean Genome and Epidemiology Study, we analyzed 9487 subjects with normal renal function. Habitual diet survey was performed using a validated food frequency questionnaire at baseline. The study subjects were classified into tertiles according to the consumption of raw and fermented vegetables, and fruits. The primary outcome was incident CKD defined as an estimated glomerular filtration rate (eGFR) <60 mL/min/1.73 m^2. The secondary endpoint was incident proteinuria determined by dipstick test ≥ 1+.

Results: At baseline, BP, C-reactive protein levels and estimated net endogenous acid production were significantly lower in the highest tertile of raw vegetable intake. During a mean follow-up of 8.2 years, 1741 (18.4%) subjects had incident CKD. Compared to the lowest tertile of raw vegetable intake (19.3%), CKD occurred less in the middle (18.8%) and the highest (16.9%) tertile groups (P<0.001). Incidence rate of proteinuria was also lower in the latter two groups. In multivariable Cox analysis, the highest tertile of raw vegetable intake was associated with a 14% lower risk of CKD development compared to the lowest tertile (P < 0.001). The highest tertile also conferred a 28% lower risk of proteinuria development than the lowest tertile (P < 0.001). There were no associations between fermented vegetable and fruit intake and CKD development. However, both highest tertiles of fermented vegetable and fruit intake were associated with 14% and 45% lower risk of incident proteinuria compared to the lowest tertiles, respectively (P < 0.001 for both).

Conclusions: This study suggests that a diet rich in vegetables and fruits may have beneficial effects on the prevention of kidney disease.