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Identification of Regional, Environmental, and Ethnic Factors Related to Renal Function Decline Using the Korean Genome and Epidemiology Study Database

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Previous studies have reported differences in the prevalence of chronic kidney disease in rural and urban areas. In this study, we assessed the deterioration rate of renal function in the general population residing in rural and urban areas in Korea.
From the urban cohort and rural cohort of the Korean Genome and Epidemiology Study (KoGES), participants whose renal function was measured in both baseline and more than one follow-up study were selected. After matching age, sex and baseline eGFR in urban and rural cohort, the factors associated with rapid progression, defined as a decrease of eGFR > 5 ml/min/1.73m^2 per year, were identified.
Only 16769 out of 28337 in the rural cohort and 65595 out of 173195 in the urban cohort had both baseline and follow-up eGFR data. When these participants matched for age, sex, and baseline eGFR, 15372 from each group were included in the study. Of a total of 30744 participants, mean age was 57.4±8.3 years, and 38.9% were male. Baseline eGFR was 81.2±11.8 ml/min/1.73 m^2. Among the total population, rapid progressors were 1692 (5.5%). Multivariable logistic regression found risk factors for rapid progressors: older age, female sex, hypertension, diabetes, elevated fasting glucose, high triglyceride levels and low hemoglobin, albumin, and HDL levels. In addition, living in rural areas increased the risk of rapid progression 4.8-fold (95% CI 4.2-5.5, p<0.001). Rural residents accounted for 79.7% of rapid progressors.
Rural residents exhibited more rapid renal function decline than urban residents under conditions with similar age, sex, and baseline eGFR, so it is important to identify socioeconomic or environmental factors associated with this phenomenon.