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Association of Time-updated Body Mass Index with the Initiation of Kidney Replacement Therapy in Patients with Chronic Kidney Disease: Results from the KNOW-CKD Study

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Objectives : The association between body mass index (BMI) and the risk of kidney replacement therapy (KRT) initiation in patients with non-dialysis-dependent chronic kidney disease (NDD-CKD) remains uncertain. Given the controversies around using baseline BMI as the only exposure in analysis, we aimed to investigate the association between time-updated BMI and the risk of KRT initiation in NDD-CKD patients, employing a marginal structural Cox model (Cox-MSM).
Methods : A total of 2136 patients enrolled in the KoreaN Cohort Study for Outcome in Patients With CKD were included in this study. The exposure was baseline and time-updated BMI. The outcome was the initiation of KRT including dialysis or kidney transplantation during follow-up period. A multivariable Cox proportional hazards (Cox-PH) model, a time-dependent Cox model without inverse probability weights, and a Cox-MSM were fitted, adjusting for both time-fixed covariates, including age, sex, smoking, and comorbidities, and time-varying covariates including estimated glomerular filtration rate, hemoglobin, and systolic blood pressure
Results : During the median follow-up of 8.3 years, the KRT initiation occurred in 723 patients (34%). In patients with a BMI ≥25kg/m^2, a higher time-updated BMI was significantly associated with a lower risk of KRT initiation compared to the reference group with BMI 23–24.9 kg/m^2 and a gradual decrease in the risk of KRT initiation with increasing BMI was observed. The groups with BMI 25–27.4 kg/m^2 (hazard ratio [HR], 0.80; 95% confidence interval [CI], 0.64–1.00), BMI 27.5–29.9 kg/m^2 (HR, 0.76; 95% CI, 0.59–0.98), and BMI ≥30 kg/m^2 (HR, 0.75; 95% CI, 0.58–0.97) exhibited a significantly lower risk of KRT initiation.
Conclusions : A higher time-updated BMI has a lower risk of KRT initiation in obese patients with NDD-CKD in Korea. Therefore, clinicians should carefully monitor the weight fluctuations and maintain appropriate weight range through regular weight measurements.

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