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Gender-specific obesity paradox in critically ill patients with severe acute kidney injury

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Objectives : While obesity typically correlated with adverse outcomes in numerous diseases, acute critical illnesses exhibit a phenomenon known as the obesity paradox. This study evaluated the gender-based disparities in the prognostic implications of body mass index (BMI) among patients with severe acute kidney injury (AKI) requiring continuous renal replacement therapy (CRRT).
Methods : Retrospective analysis of CRRT cohort data from eight tertiary hospitals in Korea was conducted. Patients were categorized into four BMI groups: underweight, normal weight, overweight, and obese. Multivariable Cox regression analysis was utilized to explore the relationship between BMI and the risk of mortality, with the obese group serving as the reference.
Results : Among 3805 patients, 2308 were male and 1497 were female, with mean age of 65.7 ± 14.6 years for men and 67.3 ± 15.3 for women. The 90-day mortality significantly differ among BMI groups in all patients and specifically in males, but not in female patients. The underweight group consistently exhibited increased 90-day mortality risk than the obese group (hazard ratio[HR], 1.20, 95% confidence interval [CI], 1.05–1.36, P = 0.006). In males, both underweight and normal weight groups displayed increased 90-day mortality compared to the obese group (underweight: HR, 1.30, 95% CI, 1.10–1.53, P = 0.002; normal weight: HR, 1.18, 95% CI, 1.04–1.35, P = 0.010), while no such association was observed in females. Subgroup analysis revealed the obesity paradox was observed in male patients with younger, septic AKI, or low albumin levels.
Conclusions : In critically ill patients with severe AKI, the association between BMI and mortality showed gender differences. Men with an elevated BMI had a more favorable prognosis than those with a lower or normal BMI, a distinction that was not evident in women. These findings highlight the importance of considering gender-specific factors in understanding the complex relationship between obesity and mortality in critically ill AKI patients.

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Supplementary Figure S1. Flow diagram of the study

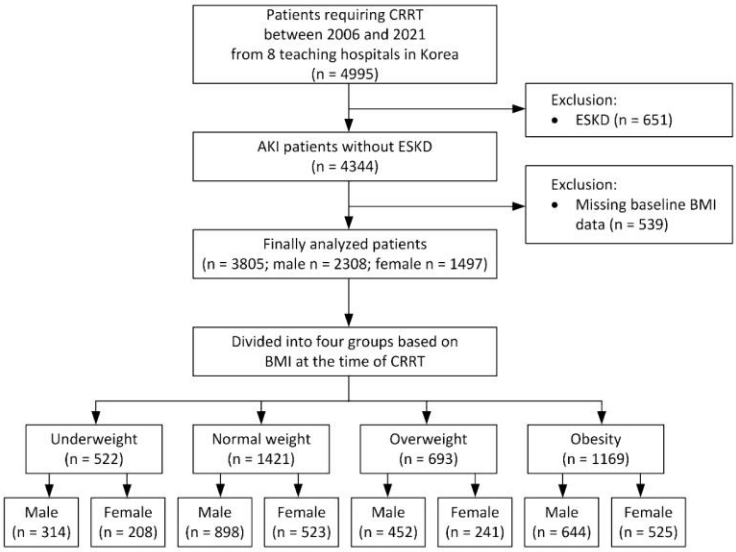

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Figure 1. Kaplan-Meier curves for 90-day mortality. (A) all patients. (B) male patients. (C) female patients.