



Abstract Type : Oral presentation

Abstract Submission No.: A-0502

Abstract Topic : Non-dialysis CKD

Association of Serum Albumin with Chronic Kidney Disease Stage in Elderly Population: Analyses of the 2017-2020 National Health and Nutrition Examination Survey

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Objectives : Serum albumin level (Alb) is associated with an increased risk and progression of CKD. However, the magnitude of association is unclear, especially in the elderly. We aim to examine whether Alb is associated with kidney function in U.S. representative adults aged ≥ 65 years old.

Methods : A retrospective cross-sectional study using the 2017 - 2020 NHANES database included participants with ≥ 1 Alb measurement. The association of the quartile of Alb with CKD stages (stages 1, 2, 3a, 3b, 4 and 5) was examined by ordinal logistic regression and the relationship between Alb and eGFR was evaluated by multiple linear regression.

Results : Of 1,919 participants aged ≥ 65 years, median age (IQR) was 73 (68, 80) years and 48% were female. Median Alb (IQR) was 4.0 (3.8, 4.2) g/dL. Median eGFR (IQR) was 74 (60, 88) mL/min/1.73 m². Median UACR (IQR) was 11.92 (6.67, 26.83) mg/g. Distribution of Alb stratified by CKD stages was shown in Figure 1. Compared to participants with Alb in Q1, there was negatively graded association of the odds of higher CKD stages versus the combined lower CKD stages in participants with Q3 and Q4 (OR_{Alb-Q2} 0.70, 95%CI 0.48, 1.03, P 0.071; OR_{Alb-Q3} 0.64, 95%CI 0.49, 0.84, P 0.001; OR_{Alb-Q4} 0.65, 95%CI 0.47, 0.88, P 0.006). 1 g/dL decrease in Alb was associated with 68% higher odds of being in a worse CKD stage (OR 1.68, 95%CI 1.10–2.56, P 0.015; Figure 2). After adjusting for age, gender, race/ethnicity, BMI, diabetes, hypertension, smoking status, and ratio of family income to poverty, the association remain (aOR 1.64, 95%CI 1.00–2.69, P 0.049). Adjusted quartile CKD stage association remained significant in Q3 and Q4 (aOR_{Alb-Q2} 0.74, 95%CI 0.51, 1.09, P 0.130; aOR_{Alb-Q3} 0.65, 95%CI 0.49, 0.87, P 0.003; aOR_{Alb-Q4} 0.66, 95%CI 0.45, 0.97, P 0.034). RCS showed no significant non-linearity (P_{non-linearity} = 0.382).

Conclusions : Lower serum albumin independently associated with worse CKD staging in elderly US adults with linear dose-response.

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KSN SEOUL, KOREA
2026

The 46th Annual Meeting of the Korean Society of Nephrology

THE KOREAN SOCIETY
OF NEPHROLOGY

Jun 11 (Thu) – 14 (Sun), 2026

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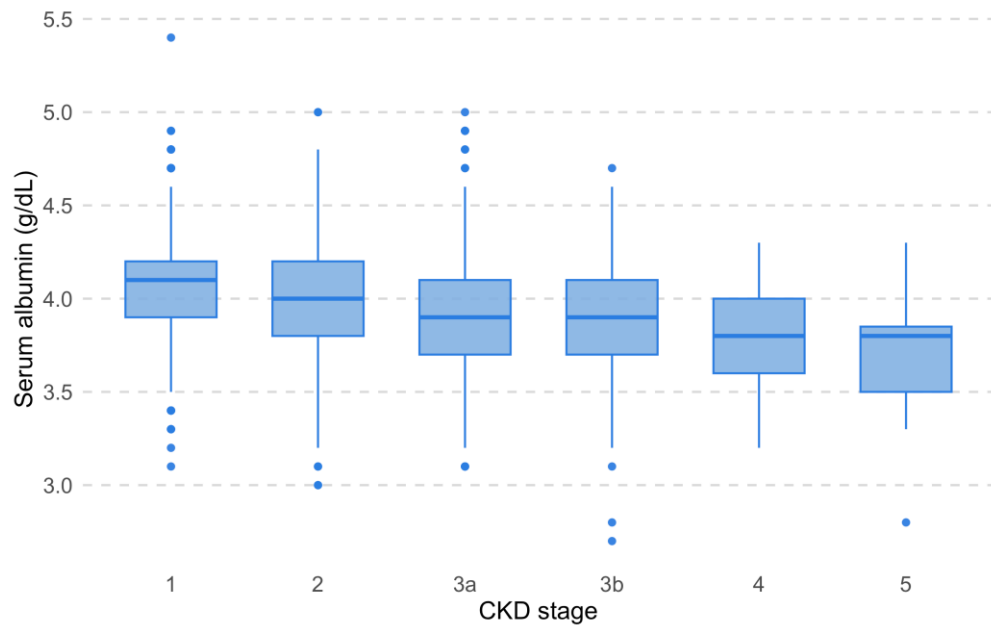


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