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**Different effects of dietary selenium on all-cause mortality according to the baseline characteristics based on the nation-wide population study: Results from the National Health and Nutrition Examination, 1999-2017**

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**Objectives:** As an antioxidant, selenium has a beneficial role in human health including metabolism and thyroid function. Based on the metabolism process, kidney function status has a potential role in the bioavailability of dietary selenium. Herein, we aimed to evaluate the impact of dietary selenium on all-cause mortality in different baseline characteristics including kidney function status.

**Methods:** We used data from the US National Health and Nutrition Examination Survey 1999-2015. Based on a 1-day 24-hr dietary recall, the intake of selenium was divided by quintile; the third quintile was regarded as a reference. Baseline characteristics included kidney function, body mass index, and alcohol consumption status. We used a multivariate Cox proportional hazard model to identify the impact of selenium on all-cause mortality.

**Results:** A total of 41,423 subjects were included in the study. The risk for all-cause mortality was significantly increased in subjects included in the 1<sup>st</sup> quintile (adjusted hazard ratio [aHR] 1.12, 95% confidence interval [CI] 1.03-1.21) after adjustment with age, gender, ethnicity, education, income, comorbidities (hypertension, diabetes), BMI, total calorie intake, laboratory results (hemoglobin, serum albumin, total cholesterol, serum glucose, and estimated glomerular filtration rate). In subgroup analysis, lower intake of selenium increased mortality in subjects with eGFR  $\geq 60$  mL/min/1.73 m<sup>2</sup> (aHR 1.14, 95% CI 1.03-1.27), BMI 25-30 kg/m<sup>2</sup> (aHR 1.24, 95% CI 1.08-1.43), and moderate to heavy drinker (aHR 1.27, 95% CI 1.11-1.44). Selenium intake and blood level of selenium showed a positive correlation, and it was prominent in subjects with eGFR <60, BMI 25-30, and non-drinkers. The impact of the blood level of selenium on all-cause mortality was the same as the results in selenium intake.

**Conclusions:** Deficiency in selenium intake and lower levels of blood selenium significantly increased all-cause mortality, especially in subjects with preserved kidney function, overweight, and moderate to heavy drinkers.