

Urinary sodium excretion and the risk of prevalent anemia: a cross-sectional analysis from KNHANES

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Background/Aims: The association between inadequate intake of vegetables and the risk of anemia has been previously suggested. Here we conversely hypothesized that high dietary sodium intake may be associated with increased risk of prevalent anemia in the general population.

Methods: A total of 33,021 subjects from Korea National Health and Nutrition Examination Survey from 2014 to 2019 were analyzed. The primary exposure was spot urine sodium-to-creatinine ratio (Na⁺/Cr), an indicator of dietary sodium intake, by which the subjects were categorized into the quartile (Q1, Q2, Q3, and Q4). The outcome of our study was the presence of anemia, which was defined as hemoglobin (Hb) levels < 12.0 g/dL in women and < 13.0 g/dL in men.

Results: The baseline characteristics by spot urine Na⁺/Cr revealed a substantial distinction in the health status, suggesting that high sodium intake is generally associated with poor medical conditions. Scatter plot between log spot urine Na⁺/Cr and Hb showed a significant, negative correlation (Pearson's correlation coefficient = -0.210, $P < 0.001$). Binary logistic regression demonstrated that, compared to the subjects in Q1, the risk of prevalent anemia is significantly increased among the subjects in Q3 (adjusted odds ratio 1.329, 95% confidence interval 1.164 to 1.518) and in Q4 (adjusted odds ratio 1.425, 95% confidence interval 1.244 to 1.633). As a sensitivity analysis, the association between estimated 24-hour urine sodium excretion levels and the prevalence of anemia was analyzed, which reveal the risk of prevalent anemia is still significantly increased in the subjects with high estimated 24-hour urine sodium excretion levels.

Conclusions: High dietary sodium intake is associated with increased risk of prevalent anemia.