

## **Sodium Intake and Osteoporosis. Findings from the Women's Health Initiative**

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## ABSTRACT

**Background:** The relationship of sodium intake to changes in bone mineral density (BMD) in postmenopausal women has not been established, and no study to date has examined its relationship with fracture risk.

**Methods:** Prospective observational cohort study including 69,735 postmenopausal women in the Women's Health Initiative over an average of 11.4 years of follow-up to examine whether sodium intake is associated with changes in BMD at the lumbar spine, total hip, femoral neck and total body and with incident fractures and whether this relationship is modified by potassium and/or calcium intake.

**Results:** In adjusted models, there was no association of calibrated sodium intake with changes in BMD at the hip or lumbar spine from baseline to three or six years ( $p \geq 0.06$ ). Higher sodium intakes were associated with greater increases in total body BMD from baseline to three years ( $p=0.00$ ) with a trend from baseline to six years ( $p=0.08$ ) and with reduced hip fractures (HR 0.81 (95% CI 0.67-0.97)). In sensitivity analyses that included BMI as an additional covariate in the models, there was no association of sodium intake with changes in BMD at any skeletal site ( $p \geq 0.32$ ) or with incident fractures ( $p \geq 0.28$ ). There was no association of sodium intake with incident fractures after adjusting for potassium intake ( $p \geq 0.30$ ). Calcium intake did not modify the association between sodium intake and incident fractures ( $p \geq 0.20$ ). Levels of sodium intake above or below currently recommended guidelines for cardiovascular disease ( $\leq 2300$  mg /day) were not associated with changes in BMD at any skeletal site from baseline to three ( $p \geq 0.66$ ) or six years ( $p \geq 0.74$ ) or with incident fractures ( $p \geq 0.70$ ).

**Conclusions and Relevance:** Current population-based recommendations for sodium intake are unlikely to significantly impact osteoporosis.