



Research Week 2020

Healthy Eating Index and Bone Mineral Density in Middle to Older-Aged Women: Evidence from NHANES, 2005-2010

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Keywords

bone mineral density; Healthy Eating Index; nutrition surveys; women; United States; menopause

Abstract

Purpose

Low bone mineral density (BMD) is a risk factor for osteoporosis, which can increase the risk of fractures and associated morbidity. Diet quality, as measured by the Healthy Eating Index (HEI), may be associated with bone mineral density. The relationship between the HEI and BMD was assessed in a U.S. population-based cohort of pre- and postmenopausal women, 40 years of age or older. Methods

Cross-sectional data from the National Health and Nutrition Examination Survey (NHANES) from 2005-2010 were analyzed to assess the relationship between HEI and total femur and femoral neck BMD among pre- and postmenopausal women (n= 3,597). The Healthy Eating Index score was calculated based on data from two separate 24-hour dietary recalls.

Results

Linear regression analysis showed the lowest quartile of the HEI was associated with lower BMD, compared to those in the highest quartile of HEI score (fully-adjusted beta= -0.029, -0.021 for pre- and postmenopausal women, respectively). After adjusting for confounding factors, there was support for a linear trend in both pre- and postmenopausal women; increasing HEI score was associated with successively greater total femoral BMD (p= 0.02, test of trend in premenopausal women, p= 0.002, test of trend for postmenopausal women). After adjustments, the regression coefficients indicated femoral neck BMD were similar to those in minimally adjusted total femur BMD models (fully-adjusted beta= -0.036, -0.011 for pre- and postmenopausal women, respectively). A linear test of trend demonstrated increasing HEI score was associated with higher femoral neck BMD in premenopausal women (p= 0.01). Although not statistically significant, the associations between HEI score categories and femoral neck BMD in postmenopausal women followed similar patterns in premenopausal women (p= 0.12).

Conclusion

Higher HEI scores, reflecting improved diet quality, were associated with higher BMD, suggesting a subtle yet important role of overall diet quality in bone health outcomes.