

# Relationship between participation in food assistance programs and skeletal health in adult women and men

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The relationship between osteoporosis and socioeconomic status (SES) has never been explored even though income and education related lifestyle factors, such as diet and activity, are known to affect bone status. The aims of this study were to determine if SES is related to skeletal health; and if, among the poor, bone density is higher in those who participate in food assistance programs. Relevant data were gathered in NHANES III, 1988-1994. Our secondary analyses were limited to non-pregnant pre-menopausal women aged 20 years and older, post-menopausal women, and men, aged 50 years and older. The outcome variables of interest were bone mineral density (BMD, g/cm<sup>2</sup>) for the femoral neck and total body. Multiple linear regression techniques were used to assess the relationships of participation in the Supplemental Nutrition program for Women, Infants and Children (WIC) and the Food Stamps program (FS), with bone density. Other relevant variables included in the regression models were nutrient intakes, physical activity, oral contraceptive use, pregnancy history, income, and education. Participation in WIC and FS was not positively related to BMD. WIC participation was associated with a decrease in femoral neck BMD in White pre-menopausal women [b (S.E.) = -.06 (.03)]. However, intakes of calcium were higher in pre-menopausal Black and Mexican American (but not White) women receiving WIC benefits. FS participation was also associated with lower femoral neck BMD in post-menopausal Black women [b(S.E.) = -.03(.01)] and Mexican American men [b(S.E.) = -.05(.02)]. It is possible that FS and WIC participants may have different health-related values and behaviors than non-participants of similar income levels. Non-WIC and non-FS recipients tended to have more education than WIC and FS recipients respectively. We conclude that education is an important predictor of skeletal health in Whites, and recommend that research be conducted to evaluate the usefulness of bone mineral density as a late-life indicator of sub-optimal childhood nutrition.