

## Changes in Whole Body Bone Mineral Composition in a community-Based Pilot Study Designed for Mexican-American Women at Risk for Type II Diabetes

DAVID C. CASTILLO, MARIA G. PLACERES, ARELY PEREZ, DANIELLE M. BRAVO, DONOVAN L. FOGT, and ZENONG YIN

Mobile Health Laboratory; Department of Health and Kinesiology; The University of Texas at San Antonio; San Antonio, TX

Category: Masters

---

### ABSTRACT

**Background:** Osteoporosis is a serious public health concern in the United States that is expected to increase over the next several years, especially in women. The US Surgeon General's Report on Bone Health states that individuals can decrease the risk of developing osteoporosis with proper combinations of nutrition and physical activity. Diet and exercise are two important factors that have been shown to prevent or delay the onset of type II diabetes, another national top health concern. Intensive lifestyle interventions, such as The Diabetes Prevention Program have shown that type II diabetes can be delayed or prevented by losing moderate amounts of weight through dietary changes and increased physical activity. It is not clear if a lifestyle intervention can impact bone health. **Purpose:** This pilot study examined the effects of lifestyle intervention (dietary and physical activity behavior modification) on bone mineral density (BMD) and bone mineral content (BMC). The intervention was a 14-week community-based pilot study, based on The Diabetes Prevention Program, designed to reduce risk for type II diabetes in high-risk Mexican American women. The research questions were: Did the lifestyle intervention affect the outcome measures (BMC and BMD)? Were there differences in BMC and BMD between age groups (low-age  $\leq 45$  yrs. vs. high-age  $> 45$  yrs.)? Were there differences in BMC and BMD between body weight groups ( $\leq 78$  kg vs.  $> 78.1$  kg)? **Methods:** The study used a one-group pre- and post-test design. Twenty-five non-diabetic Mexican-American females (average age = 45, SD = 10.9; BMI 25-40) participated in a 14-week lifestyle intervention pilot study. Changes in BMD ( $\text{g}/\text{cm}^2$ ) and BMC (g) were measured at baseline and 14 weeks after baseline using whole body dual-energy x-ray absorptiometry (DXA). **Results:** results of paired t-test showed a significant increase in whole body BMC ( $p < .0001$ ) and a marginally significant increase in whole body BMD ( $p < .06$ ). Results of Analysis of Covariance revealed no significant difference in BMC between age groups and a marginally significant increase of BMD ( $p < .07$ ) in younger participants compared to older participants, after controlling pretest measure. There was a significant increase in BMC ( $p < .01$ ) and a marginally significant increase in BMD ( $p < .08$ ) in the high-body weight group compared to the low weight group after controlling for pretest measure. **Conclusions:** A lifestyle intervention that utilized a combination of physical activity and dietary modification showed great promise toward preventing the onset of osteoporosis, especially in heavier Mexican-American women.