Abstract

Background: Osteoporosis is a major public health concern among ethnic populations. This study explores the relationship between dietary calcium intake and bone mineral density (BMD) among Chinese and Hispanic populations in St. Louis, MO. The aim is to identify factors contributing to bone health disparities.

Methods: A secondary data analysis and cross-sectional survey were conducted at Health Protection & Education Services (HPES), a free health clinic in St. Louis. Three years of dual-energy X-ray absorptiometry (DXA) scan data were analyzed for Chinese and Hispanic participants. A survey assessing dietary calcium intake was administered in translated formats with interpreter assistance. Participants aged 18-89 years were included. T-scores from DXA scans were compared using independent t-tests, and compliance with daily calcium intake recommendations was assessed using chi-square tests.

Results: Mean T-scores were consistently higher among Hispanic participants compared to Chinese participants across 2022, 2023, and 2024, indicating significantly greater BMD in the Hispanic group ($p < 0.001$). However, compliance with recommended daily calcium intake was 29% among Hispanic participants and 47% among Chinese participants, with no statistically significant difference ($p = 0.209$). Compliance was higher among females (42%) compared to males (21%) and increased in participants aged 51-90 due to calcium supplementation. No significant differences were found in compliance rates by age or sex.

Conclusion: This study highlights ethnic disparities in BMD between Chinese and Hispanic populations in St. Louis. While calcium intake compliance was not directly associated with BMD, variations in dietary habits and supplementation practices suggest underlying differences

in osteoporosis risk. These findings emphasize the need for targeted public health strategies to address bone health disparities and promote adequate calcium intake in diverse communities.