proceedings

MDPI

Abstract

Factors Associated with Bone Health in Healthy Young Women †

K. Schraders [1], G. Zatta [1], J. Coad [1], M. Kruger [1,2,3], J. Weber [1], L. Brough [1] and J. Thomson [1,*]

[1] School of Food and Advanced Technology, College of Sciences, Massey University, Palmerston North 4442, New Zealand; K.Schraders@massey.ac.nz (K.S.); Giancarlazatta@gmail.com (G.Z.); J.Coad@massey.ac.nz (J.C.); M.C.Kruger@massey.ac.nz (M.K.); J.L.Weber@massey.ac.nz (J.W.); L.Brough@massey.ac.nz (L.B.)

[2] College of Health, Massey University, Palmerston North 4442, New Zealand

[3] Riddet Institute, Massey University, Palmerston North 4442, New Zealand

* Correspondence: J.A.Thomson@massey.ac.nz

† Presented at the 2018 Nutrition Society of New Zealand Annual Conference, Auckland, New Zealand, 28–30 November 2018.

Published: 12 March 2019

Background: It is not feasible in large population studies to measure bone density using Dual X-ray Absorptiometry (DXA) due to cost and accessibility, so Quantitative Ultrasound (QUS) has been considered instead. There is strong correlation between QUS and DXA in postmenopausal women, but studies in young women are lacking. This study aimed to investigate this relationship in young women and, in addition, examined dietary and other factors which may influence bone health.

Methods: Bone mineral density (BMD) and bone mineral content (BMC) of the lumbar spine and femoral neck were determined in 54 healthy women (18–26 years) using DXA; bone quality, as broadband attenuation (BUA) and speed of sound (SOS), was measured using QUS. A three-day estimated food diary and questionnaires about osteoporosis knowledge and bone health were completed.

Results: The DXA mean Z-score was within the expected range (Z-score > −2.0) for the hip (0.19 ± 1.199) and spine (−0.2 ± 1.129); the QUS mean Z-score was also within the expected range (Z-score > −1.0) (0.41 ± 1.082). A strong correlation was found between BMD and both BUA (hip and lumbar spine $p < 0.0001$); femoral neck p 0.0002) and SOS (hip $p < 0.0001$; lumbar spine p 0.0007; femoral neck p 0.0003) measured by the QUS at all points. Of the 5 participants identified as at risk using DXA (Z-score < −2), only 1 was identified as at risk (Z-score < −1) by QUS. Median intake of protein and calcium were 83.7 g/day and 784.4 mg/day respectively. Less than half of participants (24/54) met their EAR for calcium intake.

Conclusions: Over 50% of participants had low calcium intake. There was a strong correlation between DXA and QUS. However, those identified as at risk based on DXA results were not identified as at risk by QUS, suggesting it may not be suitable for screening young women.