Bone quantitative ultrasound and nutritional status in severely handicapped institutionalized children and adolescents

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BACKGROUND & AIMS
Children with cerebral palsy (CP) have a high prevalence of pathologic fractures. Bone quantitative ultrasonography (QUS) has emerged as a radiation-free method for the assessment of bone quality and fracture risk. In this study, we applied QUS technique in order to investigate bone status in handicapped institutionalized children and adolescents.

METHODS
This cross-sectional study included 87 handicapped institutionalized patients. Measurements of the velocity of ultrasound wave, speed of sound (SOS), at distal radius and midshaft tibia, were performed using Omnisense 7000S analyser (Sunlight Ltd., Tel Aviv, Israel). In addition, all the participants had a thorough evaluation of nutritional status, demographic and clinical characteristics.

RESULTS
Forty-five of patients had either radius or tibia bone SOS lower than -1 SD, and 21% had either radius or tibia bone SOS lower than -2.5 SD. Using step-wise regression analysis, female gender (P=0.003) and stature (P=0.008) were correlated with radius SOS. Age (P=0.03) and fracture history (P=0.04) were negatively correlated with tibia SOS.

CONCLUSION
In this group of children and adolescents with CP one-fifth had poor bone status as suggested by low tibia/radius SOS assessed by QUS. Female gender, stature, age and fracture history were significantly correlated with poor bone status.