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DISEASES

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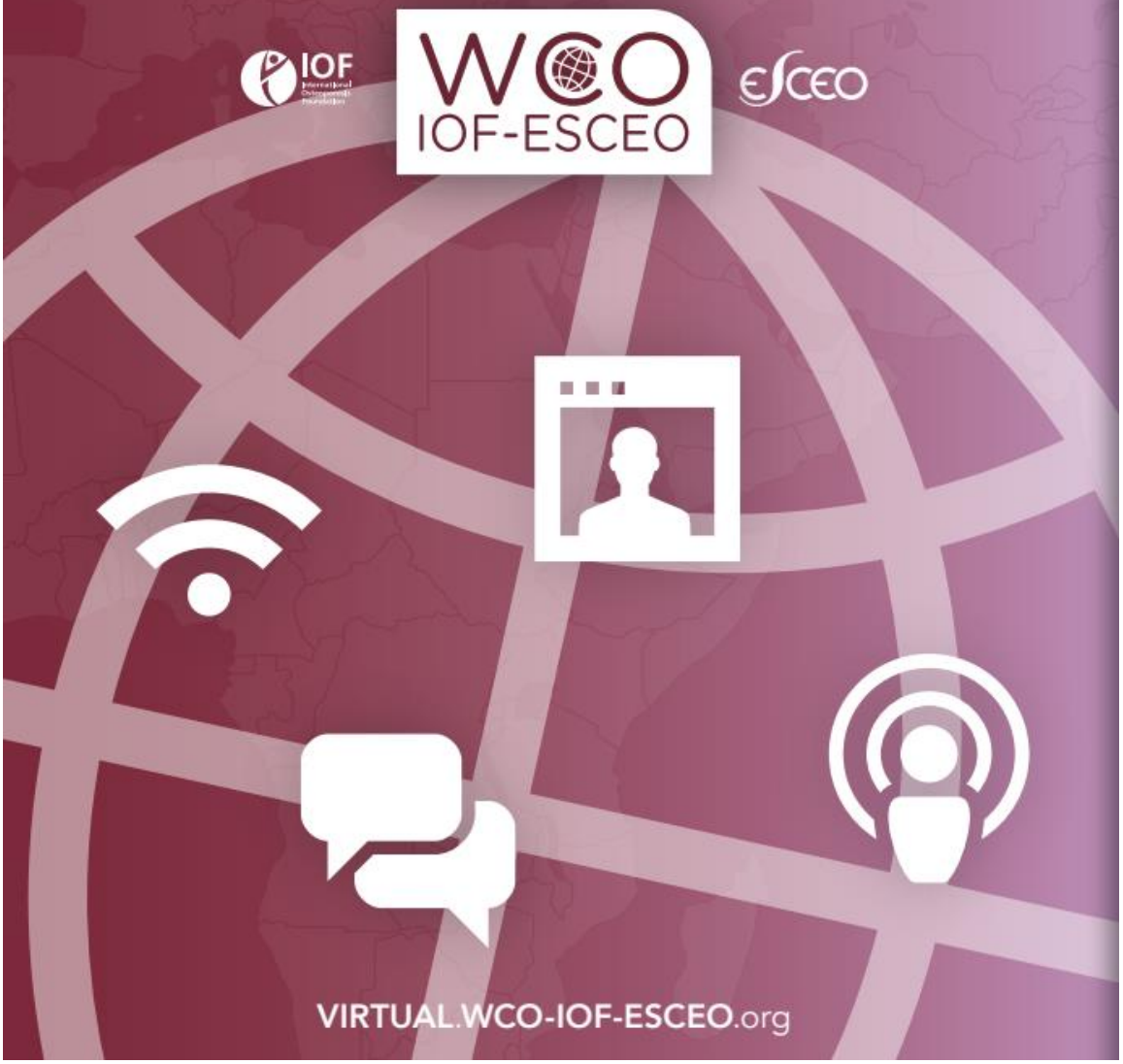
August 20-22, 2020



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TRABECULAR BONE SCORE IS ASSOCIATED WITH BONE MINERAL DENSITY, AND MARKERS OF BONE TURNOVER IN NON-OBESE SUBJECTS: THE BUSHEHR ELDERLY HEALTH (BEH) PROGRAM

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Objective: Obesity is associated with greater BMD and is considered protective against hip and vertebral fracture. Obesity results in low bone turnover and improves bone microarchitecture parameters. We aimed to determine if there are differences in TBS, BMD, or bone turnover markers between obese and non-obese older adults.

Methods: The present study was conducted within the framework of the BEH programme, a population-based prospective cohort study being conducted in Bushehr, a southern province of Iran. In brief, 400 persons (186 men and 214 women) from participants of the second stage of BEH program were randomly selected and serum bone turnover markers including bone-specific alkaline phosphatase (bALP), N-terminal procollagen propeptides of type I collagen (P1NP), osteocalcin (OC), and tartrate-resistant acid phosphatase isoenzyme 5b (TRAP) were measured using chemiluminescence method. BMD was measured through DXA (Discovery WI, Hologic, Bedford, Virginia, USA). Obesity was defined as BMI of ≥30. Nonparametric Spearman's rho was used to assess the correlation between different measurements. Between-group differences were checked by independent t-test or Mann-Whitney U test, where applicable.

Results: The mean (SD) age of participants were 69.5(6.4) and 69.1(6.3) among men and women, respectively. The mean (SD) values of TBS and BMD were 1.3(0.1) and 0.9(0.2), respectively. Obesity was found in 118(28%) of study participants 48(25%) among men and 66(31%) among women (P=0.21). TBS values greater than 1.35 considered to indicate a low risk of microarchitectural damage were present in 100(35%) and 28(25%) of non-obese and obese subjects, respectively (P=0.051). TBS was significantly positively correlated with bone mass in both groups, but the association was stronger in non-obese group (r=0.74 vs. r=0.57). In non-obese subjects all BTMs (both bone formation including OC, and bALP and bone resorption including CTX and TRAP) were significantly negatively correlated with TBS. Surprisingly, comparing to obese group, non-obese group had higher BMD and TBS values, although a difference of BMD was not significant (p=0.09).

Conclusion: Obesity was associated with a lower TBS values, predictive of increased microarchitectural damage, and higher bone turnover markers.