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### Original Article

#### *Relationship between Mandibular BMD and Bone Turnover Markers in Osteoporosis Diagnosis*

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### Abstract:

Background: The purpose of the present study was to determine mandible bone mineral density and evaluate its correlation with central BMD and bone turnover.

Methods: Two hundred and seven postmenopausal women were enrolled in this cross-sectional study. After receiving the testimonials, questionnaires were completed and physical exams were done. For all participants central BMD was measured through DXA method. In each women periapical radiography performed in two regions of mandible. The plain x-ray films were scanned using a standard film digitizer and standardized in size and intensity using a calibration step wedge phantom. The phantom was placed upper site in film cover. After the film digitized, the developed Matlab software was used to image processing.

Results: Mean age and body mass index of participants were  $54.6 \pm 6.3$  years and  $28.57 \pm 4.9$  kg/m<sup>2</sup> respectively. Prevalence of osteoporosis and osteopenia in one of regions in central DXA were 17.4% and 48.2% respectively. There was strong correlation between mandible and total femur BMD ( $P= 0.001$ ,  $r= 0.80$ ). In osteoporotic patients bone loss in mandible BMD was more than central DXA ( $P= 0.02$ ).

Conclusion: The main advantage of the proposed mandible BMD is to help clinicians make more accurate evaluation of Bone loss. Based on developed the suggested system a routine dental X-ray could be used to screen for bone loss.

### Keywords:

[Mandible](#) . [BMD](#) . [Osteoporosis](#) . [Periapical](#) . [Image Processing](#)

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