Abstract. The objective of the present study was to investigate the relationship between leptin and bone mineral density in postmenopausal Turkish women. A total of 122 healthy postmenopausal women were enrolled in this cross-sectional study. Blood samples were obtained for analysis of serum leptin. Bone mineral density (BMD) was measured by dual-energy X-ray absorptiometry at the lumbar spine, femoral neck and trochanter on the same day. Leptin levels was significantly correlated with BMD of L₁–₄ (P = 0.04), but not of femoral neck (P = 0.13), and trochanter (P = 0.39). However, Z scores of L₁–₄ (P = 0.009), femur neck (P = 0.009), and femur trochanter (P = 0.025) were positively correlated with leptin levels. In multiple linear regression analysis, leptin was not found to be a statistically significant independent predictor for BMD. Leptin was associated with BMD and Z scores at various body sites; however, it was not an independent predictor of BMD.