

Table S8. Associations between serum sulfate, and serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels and bone mineral density (BMD) measurements.

Trait	SNV covariate(s)	n	$\beta_{\text{SNV}} \pm \text{SE}$	P_{SNV}
ALT (U/L)	SO ₄	663	-3.71 ± 4.31	0.39
Mid-shaft radius BMD (g/cm ²)	SO ₄	660	0.01 ± 0.03	0.70
Mid-shaft radius Z-Score	SO ₄	660	-0.12 ± 0.58	0.84
Proximal (1/3 rd) radius BMD (g/cm ²)	SO ₄	660	0.04 ± 0.04	0.23
Proximal (1/3 rd) radius Z-Score	SO ₄	660	0.63 ± 0.60	0.29
Total forearm BMD (g/cm ²)	SO ₄	660	0.02 ± 0.03	0.55
Total forearm Z-Score	SO ₄	660	0.10 ± 0.57	0.86
Ultra-distal radius BMD (g/cm ²)	SO ₄	660	0.01 ± 0.03	0.80
Ultra-distal radius Z-Score	SO ₄	660	-0.02 ± 0.57	0.98
AST (U/L)	SO ₄	663	4.29 ± 3.01	0.15
Calcium (mg/dL)	SO ₄	663	0.01 ± 0.18	0.97
Corrected calcium (mg/dL)	SO ₄	663	0.08 ± 0.15	0.62
Femoral neck BMD (g/cm ²)	SO ₄	661	0.01 ± 0.07	0.84
Femoral neck Z-Score	SO ₄	661	-0.04 ± 0.57	0.95
Intertrochanter BMD (g/cm ²)	SO₄	661	0.18 ± 0.09	0.04
Intertrochanter Z-Score	SO ₄	661	0.99 ± 0.52	0.06
Total hip BMD (g/cm ²)	SO ₄	661	0.13 ± 0.07	0.08
Total hip Z-Score	SO ₄	661	0.88 ± 0.055	0.11
Trochanter BMD (g/cm ²)	SO₄	661	0.13 ± 0.06	0.03
Trochanter Z-Score	SO ₄	661	1.09 ± 0.54	0.04
Lumbar spine BMD (g/cm ²)	SO ₄	659	0.07 ± 0.08	0.39
Lumbar Spine Z-Score	SO ₄	659	0.50 ± 0.68	0.47
Whole-body BMD (g/cm ²)	SO ₄	659	0.04 ± 0.06	0.46

Adjusted for age and gender. Abbreviations: SO₄, sulfate; SE, standard error.