

# Abstract

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## Effects of vitamin D supplementation on symptoms of depression in overweight and obese subjects: randomized double blind trial.

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**OBJECTIVES:** The objective of the present study was to examine the cross-sectional relation between serum 25-hydroxyvitamin D [25-(OH) D] levels and depression in overweight and obese subjects and to assess the effect of vitamin D supplementation on depressive symptoms.

**DESIGN:** Cross-sectional study and randomized double blind controlled trial of 20,000 or 40,000 IU vitamin D per week versus placebo for 1 year.

**SETTING:** A total of 441 subjects (body mass index 28-47 kg m<sup>-2</sup>), 159 men and 282 women, aged 21-70 years) recruited by advertisements or from the out-patient clinic at the University Hospital of North Norway.

**MAIN OUTCOME MEASURES:** Beck Depression Inventory (BDI) score with subscales 1-13 and 14-21.

**RESULTS:** Subjects with serum 25(OH)D levels < 40 nmol L<sup>-1</sup> scored significantly higher (more depressive traits) than those with serum 25(OH)D levels > or = 40 nmol L<sup>-1</sup> on the BDI total [6.0 (0-23) versus 4.5 (0-28) (median and range)] and the BDI subscale 1-13 [2.0 (0-15) versus 1.0 (0-29.5)] (P < 0.05). In the two groups given vitamin D, but not in the placebo group, there was a significant improvement in BDI scores after 1 year. There was a significant decrease in serum parathyroid hormone in the two vitamin D groups without a concomitant increase in serum calcium.

**CONCLUSIONS:** It appears to be a relation between serum levels of 25(OH)D and symptoms of depression. Supplementation with high doses of vitamin D seems to ameliorate these symptoms indicating a possible causal relationship.

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