

# Abstract

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## Depression is associated with decreased 25-hydroxyvitamin D and increased parathyroid hormone levels in older adults.

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**CONTEXT:** Depression has incidentally been related to altered levels of 25-hydroxyvitamin D [25(OH)D] and parathyroid hormone (PTH), but this relation has never been studied systematically.

**OBJECTIVE:** To determine in a large population-based cohort whether there is an association between depression and altered 25(OH)D and PTH levels.

**DESIGN:** Population-based cohort study (Longitudinal Aging Study Amsterdam).

**PARTICIPANTS:** One thousand two hundred eighty-two community residents aged 65 to 95 years.

**SETTING:** The Netherlands.

**MAIN OUTCOME MEASURE:** Depression was measured using self-reports (Center for Epidemiologic Studies-Depression scale) and diagnostic interviews (Diagnostic Interview Schedule). Levels of 25(OH)D and PTH were assessed. Potentially confounding factors (ie, age, sex, smoking status, body mass index, number of chronic conditions, and serum creatinine concentration) and explanatory factors (ie, season of data acquisition, level of urbanization, and physical activity) were also measured.

**RESULTS:** Levels of 25(OH)D were 14% lower in 169 persons with minor depression and 14% lower in 26 persons with major depressive disorder compared with levels in 1087 control individuals ( $P < .001$ ). Levels of PTH were 5% and 33% higher, respectively ( $P = .003$ ). Depression severity (Center for Epidemiologic Studies Depression Scale) was significantly associated with decreased serum 25(OH)D levels ( $P = .03$ ) and increased serum PTH levels ( $P = .008$ ).

**CONCLUSION:** The results of this large population-based study show an association of depression status and severity with decreased serum 25(OH)D levels and increased serum PTH levels in older individuals.

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