

Vitamin D levels in children and adolescents with attention-deficit hyperactivity disorder (ADHD): a meta-analysis

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Atten Defic Hyperact Disord. 2018 Oct 26.
doi: 10.1007/s12402-018-0276-7.

Abstract

The aim of this article was to assess the differences in serum 25(OH)D levels between children and adolescents with attention-deficit/hyperactivity disorder (ADHD) and healthy controls. We used the PubMed (1966-2017), Scopus (2004-2017), ClinicalTrials.gov (2008-2017), Cochrane Central Register of Controlled Trials CENTRAL (2000-2017), and Google Scholar (2004-2017) databases. Statistical meta-analysis was performed with RevMan 5.3. Eight studies were finally included in the present meta-analysis with a total number of 11,324 children. Among them, 2655 were diagnosed with ADHD, while the remaining 8669 were recruited as healthy controls. All eight trials reported significantly lower serum concentrations of 25(OH)D in patients diagnosed with ADHD compared to healthy controls. The pooled data showed that there was a significant difference between the ADHD group and the control group (SMD = - 0.73, 95% CI [- 1.00, - 0.46]). The systematic review and meta-analysis of observational studies demonstrated an inverse association between serum 25(OH)D and young patients with ADHD. Large cohort studies are required to investigate whether vitamin D-deficient infants are more likely to develop ADHD in the future. Also, whether children with ADHD should be supplemented with higher doses of vitamin D₃ remains to be confirmed through long-term controlled clinical trials.