

Peripheral iron levels in children with attention-deficit hyperactivity disorder: a systematic review and meta-analysis.

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Abstract

There is growing recognition that the risk of attention-deficit hyperactivity disorder (ADHD) in children may be influenced by micronutrient deficiencies, including iron. We conducted this meta-analysis to examine the association between ADHD and iron levels/iron deficiency (ID). We searched for the databases of the PubMed, ScienceDirect, Cochrane CENTRAL, and ClinicalTrials.gov up to August 9th, 2017. Primary outcomes were differences in peripheral iron levels in children with ADHD versus healthy controls (HCs) and the severity of ADHD symptoms in children with/without ID (Hedges' g) and the pooled adjusted odds ratio (OR) of the association between ADHD and ID. Overall, seventeen articles met the inclusion criteria. Peripheral serum ferritin levels were significantly lower in ADHD children (children with ADHD = 1560, HCs = 4691, Hedges' g = -0.246, p = 0.013), but no significant difference in serum iron or transferrin levels. In addition, the severity of ADHD was significantly higher in the children with ID than those without ID (with ID = 79, without ID = 76, Hedges' g = 0.888, p = 0.002), and there was a significant association between ADHD and ID (OR = 1.636, p = 0.031). Our results suggest that ADHD is associated with lower serum ferritin levels and ID. Future longitudinal studies are required to confirm these associations and to elucidate potential mechanisms.