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The effect of iron supplementation on cognition, subjective mood, well-being and fatigue in women of reproductive age: a systematic review

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Abstract
Iron deficiency remains the most prevalent nutritional deficiency worldwide and is considered the most significant contributor to anaemia onset in children and women of reproductive age in both developing and developed countries. Iron plays a role in neurodevelopment and early deficits in iron have been found to impact hippocampal function affecting cognition and subjective mood. However, it is now recognised that neural structures can adapt throughout the lifespan and it is possible that changes in iron levels beyond infancy could stimulate neural changes and subsequent cognitive deficits at any time of life. Evidence for a causal link through the conduct of intervention studies is still sparse and varied in regards to the impact of iron deficiency in women of reproductive age. Our aim was to systematically review current evidence from intervention studies to determine the impact of iron supplementation upon cognition, subjective mood, well-being and fatigue in women of reproductive age. Searches included PubMed, Web of Science, Cochrane and bibliographies. Study selection and risk of bias assessment were duplicated and all intervention studies assessing cognition, subjective fatigue, mood and/or well-being that met the inclusion criteria were included in the review. Fifteen RCTs of women aged 12–49 were included. Nine studies investigated cognitive function following iron supplementation; eight found significant beneficial effects. All studies suggested that a reduced iron status at baseline was detrimental to one or more cognitive parameters, including attention and memory domains. Seven studies investigated subjective fatigue following iron supplementation; five found significant beneficial effects from baseline. Nine studies investigated mood and well-being; seven found significant effects, however they were somewhat conflicting. There is evidence to suggest that iron supplementation can improve attention, memory, subjective fatigue, mood and well-being, but additional studies using consistent measures, intervention methods and definitions of iron deficiency are warranted. Further studies should consider controlling for extraneous variables of diet, lifestyle choices and menstrual cycle to ensure an accurate measure of iron status.

Conflict of Interest
There is no conflict of interest