



Abstract

The Role of Nutritional Factors in Cognitive Health in Ageing: Shedding New Light through Systematic Review with Meta-Analysis of Intervention Studies [†]

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Abstract: Background: The global population is ageing, with predictions that 150 million people will be living with dementia by 2050. Cognitive dysfunction and dementia have significant adverse impacts on quality of life in older adults. Therefore, the identification of modifiable risk factors is a major public health priority. Evidence suggests that certain dietary patterns and/or specific nutrients can contribute to reducing the risk of dementia; however, the evidence is inconsistent. Objectives: The aim of this systematic review with meta-analysis was to investigate the effect of dietary patterns and specific nutrients on cognitive function in older adults. Methods: The bibliographic databases MEDLINE, EMBASE and PyscINFO were used to identify relevant studies. Inclusion criteria included the following: randomised controlled trials (RCT) with specific nutrients or dietary intervention with control groups; duration ≥ 1 y; and adults ≥ 50 years. Meta-analyses were performed to calculate standardised mean differences (SMD) for global cognition and specific cognitive domains such as memory. Quality of evidence was evaluated using the GRADE (grading of recommendations, assessment, development, and evaluations) assessment framework. A sensitivity analysis was conducted to assess the impact of studies with a high-risk of bias. Results: A total of 23 studies were identified for inclusion in meta-analyses. Results showed that B-vitamin interventions ≥ 1 y had a significant beneficial effect on memory (SMD 0.09, 95% CI, 0.02 to 0.16; 13 studies; 7330 participants; moderate certainty); removing the B-vitamin studies ($n = 3$) at high-risk of bias did not change the overall result. RCTs of vitamin D supplementation improved cognitive function scores (SMD 0.88, 95% CI, 0.08 to 1.67; 4 studies; 4593 participants; very low certainty). No significant cognitive benefits were detected in response to omega-3 supplements; however, the analysis for this outcome was limited by far fewer studies. Discussion: B-vitamins may have specific benefits for the ageing brain. Enhancing the status of these nutrients could contribute to improved cognitive health; however, additional RCTs should target at-risk individuals with sub optimal B-vitamin status.

Keywords: ageing; cognitive function; dementia; dietary patterns; nutrients



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