

The effect of diet, lifestyle and/or cognitive interventions in Mild Cognitive Impairment: a systematic review

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Mild Cognitive Impairment (MCI) is described as a transitional stage between the expected decline of normal ageing and that of dementia and is suggested to be the optimum stage for preventative intervention. The role of nutrition in the prevention of cognitive decline has been examined in terms of a range of nutrients/dietary patterns, investigating single nutrients, such as n-3 PUFA as well as whole diet interventions, such as the DASH diet, a ketogenic diet or the Mediterranean diet. A systematic review of Randomised Controlled Trials was conducted to examine the effect of diet, either alone or in combination with lifestyle and/or cognitive strategies, on cognitive health outcomes in patients with MCI. The search generated a total of 2130 articles and following the removal of duplicates and screening process, 12 studies remained and were included in the review.

| Reference | Intervention | Cognitive outcome measured |
|-------------------------------------|--|--|
| Ma (2016) ⁽¹⁾ | Folic Acid (400 µg) (n = 180, 6 months) | Memory*; Visuospatial skills* |
| De Jager (2012) ⁽²⁾ | 0.8 mg folic acid, 0.5 mg vitamin B12, 20 mg vitamin B6 (n = 266, 2 years) | Memory*; Executive function*; Global cognition |
| Dekosky (2008) ⁽³⁾ | Ginkgo Biloba (120-mg) (n = 482, 6-1 years) | Diagnosis of Dementia |
| Lee (2012) ⁽⁴⁾ | n-3 fatty acids (430 mg of DHA and 150 mg of EPA) (n = 36, 12 months) | Memory*; Executive Function; Attention; Visuospatial Skills; Psychomotor speed; Global cognitive function |
| Petersen (2005) ⁽⁵⁾ | Vitamin E (2000 IU) (n = 769, 3 years) | Development Alzheimer's disease; Memory; Executive Function; Language; Visuospatial skills; Overall Cognitive Function |
| Krikorian (2010) ⁽⁶⁾ | Chromium Picolinate (1000 mcg) (n = 26, 12 weeks) | Memory; fMRI* |
| Desideri (2012) ⁽⁷⁾ | Cocoa Flavanols (990 mg/520 mg/45 mg) (n = 90, 8 weeks) | MMSE; Trail making test, Part A and B*; Verbal fluency test* |
| Krikorian (2010) ⁽⁸⁾ | Concord grape juice (n = 12, 12 weeks) | Memory* (verbal learning only) |
| Krikorian (2010) ⁽⁹⁾ | Wild blueberry juice (n = 9, 12 weeks) | Memory* (V-PAL test only) |
| Horie (2016) ⁽¹⁰⁾ | Nutritional counselling (healthy eating/calorie restriction) (n = 80, 12 months) | Memory; Executive Function; Language; Psychomotor Speed |
| Bayer-Carter (2011) ⁽¹¹⁾ | High-saturated fat/high-GI Vs low-saturated fat/low-GI diet (n = 49, 4 weeks) | Memory; Executive Function; Motor Speed; AD Biomarkers* (CSF Aβ42 only) |
| Krikorian (2012) ⁽¹²⁾ | High carbohydrate Vs very low carbohydrate diet (n = 23, 6 weeks) | Memory |

* indicates statistically significant difference between intervention and control/placebo at study completion (p < 0.05)

Due to the heterogeneity across the studies, in terms of the dietary interventions and cognitive outcome measures used, results suggest that there is currently insufficient data to support the effect of diet on cognition in MCI patients. Therefore, there is a need for more robust RCTs to be conducted to explore the potential for dietary intervention to improve cognitive outcomes within this patient group.

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