World Academy of Science, Engineering and Technology
International Journal of Nursing and Health Sciences
Vol:18, No:04, 2024

Effects of Folic Acid, Alone or in Combination with Other Nutrients on Homocysteine Level and Cognitive Function in Older People: A Systematic Review

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Abstract : Background: Homocysteine is a high-risk factor for cognitive decline, and folic acid supplementation can lower homocysteine levels. However, current clinical research results are inconsistent, and the effects of folic acid on homocysteine levels and cognitive function in older people are inconsistent. Objective: The objective of this study is to systematically evaluate the effects of folic acid alone or in combination with other nutrients on homocysteine levels and cognitive function in older adults. Methods: Systematic searches were conducted in five databases, including PubMed, Embase, the Cochrane Library, Web of Science, and CINAHL, from inception to June 1, 2023. Randomized controlled trials were included investigating the effects of folic acid alone or in combination with other nutrients on cognitive function in older people. Results: 17 articles were included, with six focusing on the effects of folic acid alone and 11 examining folic acid in combination with other nutrients. The study included 3,100 individuals aged 60 to 83.2 years, with a relatively equal gender distribution (approximately 51.82% male). Conclusion: Folic acid alone or combined with other nutrients can effectively lower homocysteine level and improve cognitive function in patients with mild cognitive impairment. But for patients with Alzheimer's disease and dementia, the intervention only can reduce the homocysteine level, but the improvement in cognitive function is not significant. In healthy older people, high baseline homocysteine levels (>11.3 μmol/L) and good ω-3 fatty acid status (>590 μmol/L) can enhance the improvement effect of folic acid on cognitive function. This trial has been registered on PROSPERO as CRD42023433096.

Keywords : B-complex vitamins, cognitive function, folic acid, homocysteine
Conference Title : ICN 2024 : International Conference on Nursing
Conference Location : Paris, France
Conference Dates : April 11-12, 2024