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The association between nutrition and post-stroke cognitive impairment and dementia: a systematic literature review

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One year after stroke incidence, stroke survivors present a 50-fold higher risk of dementia compared with people without a history of stroke⁽¹⁾. Considering the importance of modifiable factors in the prevention of cognitive impairment, we aimed to systematically review the current evidence on the effect of diet on post-stroke cognitive impairment and dementia. MEDLINE, Embase, Scopus, and CINAHL were searched for clinical trials, cohort, case-control, and cross-sectional studies published in all languages until 01 May 2024. Studies examining the association of any nutritional intervention/exposure and cognitive function or dementia in stroke survivor adults were included, except when the intervention was combined with non-nutritional treatment. ROB2 (RCT), ROBINS (non-randomised clinical trial, cohort and case-control) and NIH (cross-sectional) tools were used for quality assessment. Twelve RCTs, 2 non-randomised clinical trials, 5 cohort, 2 case-control and 5 cross-sectional studies met the inclusion criteria and were included in the review. Most of them had moderate (13) to high risk (13) of bias. RCTs revealed no benefits of supplementing a high-dose of vitamin D (300,000 UI), vitamin C or B-vitamins (folic acid, B6, B12) for post-stroke cognitive performance, while the supplementation of B-vitamins combined with omega-3 improved temporal orientation. Cognitive function was also not associated with vitamin C intake (1000 mg/d) as reported in a case-control study. A cross-sectional study reported that stroke survivors with and without cognitive impairment had similar daily intakes of B-vitamins, vitamins C and D, while omega 3 and 6 fatty acids intakes were higher in participants without cognitive impairment. A higher risk of incident dementia was reported in calcium supplement consumers compared to non-consumers with a history of stroke, according to a cohort study. Four RCTs showed that while increasing energy and protein intake did not change cognitive outcomes, daily supplementation of N-Pep-12 (peptides and amino acids mixture) increased global cognitive function. Four trials on different phytochemical supplements (Ginkgo biloba extract, pomegranate polyphenols, gupitang and pycnogenol) reported mixed effects on global cognitive function. Finally, six observational studies on dietary patterns and food components indicated that higher adherence to the MIND diet (a combination of Mediterranean and DASH diets), and higher consumption of fish and fruits were related to a lower risk of cognitive impairment. Further, the regular consumption of coffee (0.5–1 cup/d) and tea (2–3 cups/day) was reported to halve the risk of post-stroke dementia. Despite limited evidence, this review indicates that healthy dietary habits with the addition of some key foods such as fruits, fish, coffee and tea offer possible benefits to reduce the risk of post-stroke cognitive impairment, while the consumption of supplements seems to have mixed effects. Thus, more research is required to better elucidate the role diets may have in preventing post-stroke cognitive impairment.

References

1. Pendlebury, ST, Rothwell PM (2019) *Lancet Neurol* **18**(3), 248–258.