Study finds daily multivitamin supplements improve memory and slow cognitive aging in older adults

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Few effective strategies have been shown in randomized clinical trials to improve memory or slow cognitive decline among older adults. Nutritional interventions may play an important role because the brain

requires several nutrients for optimal health, and deficiencies in one or more of these nutrients may accelerate cognitive decline.

The COcoa Supplement and Multivitamin Outcomes Study (COSMOS), a large-scale nation-wide randomized trial directed by researchers at Brigham and Women's Hospital (BWH), a founding member of Mass General Brigham, included two separate clinical trials (COSMOS-Web and COSMOS-Mind) testing multivitamin supplementation on changes in cognitive function.

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In a study published in the *American Journal of Clinical Nutrition*, researchers from BWH and collaborators at Columbia University report from COSMOS-Web that daily multivitamin supplements, compared to placebo, improved memory among participants. The study is the second from COSMOS, along with the previously published COSMOS-Mind, to find an improvement in memory function among those taking a multivitamin.

"The findings that a daily multivitamin improved memory and slowed cognitive decline in two separate studies in the COSMOS randomized trial is remarkable, suggesting that multivitamin supplementation holds promise as a safe, accessible and affordable approach to protecting cognitive health in older adults," said co-author JoAnn Manson, MD, chief of the Brigham's Division of Preventive Medicine. Manson is a co-leader of the parent COSMOS trial with Howard Sesso, ScD, associate director of the Brigham's Division of Preventive Medicine.

Sesso adds, "With these two studies on cognition in hand for COSMOS, and more to come in COSMOS, it is critical to understand how a daily multivitamin may protect against memory loss and cognitive decline, and whether particular subgroups based on nutritional status or other factors

may benefit more, or less."

The newly published COSMOS-Web trial included more than 3,500 participants aged 60 and older who completed novel web-based assessments of memory and cognition annually over three years. Compared to the placebo group, participants randomized to multivitamin supplementation did significantly better on the memory tests at the prespecified primary time point of one year, with benefits sustained across the three years of follow-up.

The researchers estimated that the multivitamin intervention improved memory performance by the equivalent of 3.1 years compared to the placebo group. Intriguingly, both COSMOS cognitive studies also showed that the participants who benefited the most may be those with a history of cardiovascular disease.

"Because of our innovative approach of assessing cognitive outcomes using internet-based tests, we were able to examine the effects of a multivitamin in thousands of study participants. The findings are promising and certainly set the stage for important follow-up studies about the impact of multivitamin supplementation on cognition," said Adam Brickman, Ph.D., who co-led the COSMOS-Web study with Lok-Kin Yeung, Ph.D., at Columbia University. "Most older adults are worried about memory changes that occur with aging. Our study suggests that supplementation with multivitamins may be a simple and inexpensive way for older adults to slow down memory loss," added Yeung.

Results from COSMOS-Web, conducted as a collaboration between the Brigham and Columbia University, provide confirmation of earlier findings from COSMOS-Mind linking daily multivitamins to slowing of cognitive decline. COSMOS-Mind, which was conducted as a collaboration between the Brigham and Wake Forest School of

Medicine, had tested 2,200 older adults for three years and showed that randomized assignment to a daily multivitamin supplement was associated with a 60% slowing of global cognitive aging compared to placebo, equivalent to 1.8 years reduction in cognitive decline (the study was published in *Alzheimer's and Dementia* in September 2022).

The authors note that the COSMOS-Web study provides evidence that multivitamin supplementation has cognitive benefits but further research will be necessary to identify the specific nutrients contributing the most to this benefit and the underlying mechanisms involved. Additional research is also needed to determine whether the findings are generalizable to a more diverse study population with lower educational levels and lower socioeconomic status.

The study, titled "Multivitamin supplementation improves memory in older adults: A randomized clinical trial," was published in the *American Journal of Clinical Nutrition*.

More information: Yeung LK et al. "Multivitamin supplementation improves memory in older adults: A randomized clinical trial" AJCN DOI: 10.1016/j.ajcnut.2023.05.011, *American Journal of Clinical Nutrition* (2023). DOI: 10.1016/j.ajcnut.2023.05.011

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