



Can Multivitamins Slow Cognitive Aging?

UNDERSTANDING THE SURPRISING STUDY FINDINGS

Did you hear about the study that found taking a daily multivitamin provides cognitive benefits in older adults?

The study, called COSMOS-Mind (COcoa Supplement and Multivitamin Outcomes Study of the Mind), reported that taking a daily multivitamin-mineral supplement (multivitamin) reduced cognitive aging by about two years in people aged 65 and older compared to taking a placebo.

It was the first long-term, large-scale clinical trial to suggest a multivitamin may improve cognitive function in older women and men.

The results were published in April 2023 in *Alzheimer's & Dementia: The Journal of the Alzheimer's Association*.

To get the lowdown on the study and the implications of its surprising findings, Mind Over Matter® spoke with principal investigator Dr. Laura Baker, a professor of gerontology and geriatric medicine at the Wake Forest University School of Medicine, and Leslie Beck, Registered Dietician, one of Canada's leading nutritionists, Director of Food and Nutrition at Medcan in Toronto, and a member of Women's Brain Health Initiative's expert panel.

THE COSMOS TRIAL

COSMOS was a large clinical trial initiated by investigators at Brigham and Women's Hospital, an affiliate of Harvard Medical School in Boston. The original goal was to see if a daily cocoa flavanol supplement could reduce the risk of cardiovascular disease and if daily supplementation with a multivitamin could reduce cancer onset and severity in older adults.

COSMOS included 12,666 women aged 65 or older and 8,776 men aged 60 or older who were randomly assigned to four different groups: cocoa flavanol supplement plus multivitamin; cocoa flavanol supplement plus multivitamin placebo; cocoa flavanol placebo plus multivitamin; and placebos for both supplements. They took the supplements daily for three years.

THE COSMOS-MIND SUB-STUDY

Dr. Baker and her team at Wake Forest collaborated with the COSMOS study team to explore cognitive benefits in a sub-study called COSMOS-Mind. Wake Forest has a track record of expertise in conducting clinical studies with cognitive testing completed through telephone interviews - most notably for the Women's Health Initiative study, which has been researching risk factors for cognitive decline and early detection strategies for serious health conditions in older women since 1992.

For COSMOS-Mind, Dr. Baker's team administered a battery of cognitive tests to 2,262 older adults via telephone at the beginning of the study and then annually for three years. The assessments evaluated general cognitive status, episodic memory, and executive function, and included tasks such as word list and story recall, and word fluency.

About 60% of the study participants were women, with an average age of 73, and 89% were non-Hispanic White.

The investigators calculated global cognition scores for each participant based on their test results. Then, they compared scores for the cocoa flavanol groups and the multivitamin groups relative to placebo at different time points.

COSMOS-MIND FINDINGS

Surprisingly, the cocoa flavanol supplement had zero impact on global cognition, episodic memory, or executive function. "We expected the cocoa flavanol supplement would provide cognitive benefits based on the presumed benefits of cocoa flavanols for the heart and blood vessels since heart health and brain health go together," said Dr. Baker. "We were shocked when we saw it made no difference."

"However, multivitamin supplementation significantly improved global cognition, and the effect was greatest in individuals with a history of significant cardiovascular disease," she said.

THE RESEARCHERS ESTIMATED THAT THREE YEARS OF TAKING A DAILY MULTIVITAMIN ROUGHLY TRANSLATED TO SLOWING COGNITIVE AGING BY 1.8 YEARS, OR BY ABOUT 60%. MULTIVITAMIN SUPPLEMENTATION ALSO PROVIDED MEMORY AND EXECUTIVE FUNCTION BENEFITS.

"We looked for differences based on sex and found the cognitive benefits of multivitamins were the same for women and men," said Dr. Baker. "There were also no differences for any other factors, such as age and body mass index."

Next, the COSMOS-Mind team evaluated whether taking a cocoa flavanol and multivitamin supplement reduced the incidence of mild cognitive impairment (MCI) and dementia compared to placebo. Their follow-up analysis was published in *Alzheimer's & Dementia: The Journal of the Alzheimer's Association* in November 2023. Neither daily cocoa flavanols nor multivitamins reduced the risk of cognitive impairment. →

“ WE SAW THAT THREE YEARS OF TAKING A DAILY MULTIVITAMIN DID NOT REDUCE THE INCIDENCE OF MILD COGNITIVE IMPAIRMENT OR ALZHEIMER’S DISEASE. THAT DIDN’T SURPRISE US BECAUSE THREE YEARS OF OBSERVATION IS A FAIRLY SHORT TIME FRAME CONSIDERING IT USUALLY TAKES A BIT LONGER TO SEE BRAIN CHANGES ASSOCIATED WITH MILD COGNITIVE IMPAIRMENT AND DEMENTIA.

“However, among individuals who developed mild cognitive impairment during the study, those in the multivitamin group obtained higher cognitive scores than their counterparts in the placebo group, suggesting the multivitamins may have provided some protection or resilience to disease progression. The multivitamin didn’t take the disease away but kept them performing better,” continued Dr. Baker.

MORE EVIDENCE

The parent COSMOS study continued to grow, adding two more sub-studies called COSMOS-Web and COSMOS-Clinic, led by collaborating teams of investigators at Columbia University and Brigham and Women’s Hospital, respectively.

For COSMOS-Web, 2,472 people responded to computer-based cognitive tests at the beginning of the study and annually for three years. For COSMOS-Clinic, 573 study participants received cognitive testing in person at the start of the study and annually for another two years.

When the investigators combined data from all three sub-studies - COSMOS-Mind, COSMOS-Web, and COSMOS-Clinic - their analysis revealed that daily multivitamins had clear benefits for global cognition and episodic memory.

They calculated the magnitude of the effect on global cognition was equivalent to reducing cognitive aging by about two years, confirming the earlier result in the COSMOS-Mind study alone. Their meta-analysis was published in *The American Journal of Clinical Nutrition* in March 2024.

SHOULD ALL OLDER ADULTS TAKE A DAILY MULTIVITAMIN?

Multivitamins are readily available and relatively inexpensive. So, should all older adults take them to protect cognitive health?

The COSMOS meta-analysis researchers were careful not to make a blanket recommendation that all older adults should take a multivitamin. Instead, they concluded in their paper that their findings warrant consideration by clinical guidelines committees.

Health Canada’s Dietary Guidelines are currently silent on potential brain health benefits. The National Institutes of Health Office of Dietary Supplements hints that there may be some potential brain health benefits: “If you are 60 or older, taking a multivitamin might help maintain or improve cognitive function, memory, and related mental skills.”

“ THE COSMOS STUDIES WERE LARGE AND WELL DESIGNED AS RANDOMIZED CONTROLLED TRIALS WITH STATISTICALLY SIGNIFICANT FINDINGS. HOWEVER, THE RESULTS WERE QUITE MODEST, SUGGESTING THAT THE MULTIVITAMIN-MINERAL SUPPLEMENT BENEFITTED SOME, BUT NOT MOST PARTICIPANTS,” SAID MS. BECK.

“There are many things we still don’t know, such as what ingredients played a role in reducing cognitive aging, how they worked, and how the study results may apply to individuals from other racial groups since the study population was not diverse.”

“Since we recruited from the parent trial, we were not able to achieve an acceptable level of diversity in our study,” said Dr. Baker. “Therefore, we cannot say our findings apply to other racial and ethnic groups.”

SUPPLEMENTS STUDIED

Mars Edge, the nutrition division of Mars Inc., provided the cocoa flavanol supplement. It contained 500 mg of cocoa flavanols, including 80 mg of epicatechins, and about 50 mg of theobromine and 15 mg of caffeine. Results from previous population studies and small clinical trials have suggested cocoa flavanols may improve memory and executive function.

The multivitamin-mineral supplement was Centrum Silver, made by Pfizer Consumer Healthcare (now Haleon). It contains more than 20 different vitamins and minerals and is only available in the United States. Haleon told Mind Over Matter® that the product most similar to Centrum Silver sold in Canada was Centrum Minis Men 50+, according to a product comparison they conducted in October 2022.

Multivitamin-mineral supplements contain all or most essential vitamins and minerals at lower levels than found in individual products. Deficiencies in certain micronutrients, such as vitamin D and vitamin B12, are associated with cognitive decline.

She added, “We don’t know the safety profile of daily multivitamins for other groups or if they would benefit in the same way. We plan to seek funding to conduct a new study that includes appropriate diversity that would permit us to generalize results to the larger population.”

Both Ms. Beck and Dr. Baker agreed multivitamins are not a panacea for protecting brain health and that it’s still essential to eat a healthy diet, get sufficient sleep and exercise, reduce stress, enjoy social interaction, and participate in brain-stimulating activities – WBHI’s Six Pillars of Brain Health.

Many experts say taking a multivitamin is unnecessary if you eat a healthy diet. However, Dr. Baker said that advice deserves context because not everyone can access nutritious food.

For people living in food deserts, areas without access to plentiful and affordable healthy foods, or food swamps, areas with a higher density of fast food and junk food rather than healthy options, multivitamins may provide a low-risk, low-cost insurance policy for addressing nutrient gaps.

“Eating a healthy diet does not necessarily guarantee *no* nutrition deficiencies. Aging and some medications can reduce the absorption of micronutrients essential for good health,” said Dr. Baker.

Dr. Baker also noted, “Older adults should check to see if they have nutrition deficiencies by having a full blood panel and seek a personal nutrition evaluation with a registered dietitian.”

“I routinely recommend multivitamins to clients over 50 to help them bridge nutrient gaps after evaluating their diet, and in many cases, their bloodwork results, but not for brain health,” Ms. Beck said. “Nutrition guidelines do not yet recommend multivitamins for brain health benefits. It will be interesting to see if these findings or future studies may provide sufficient evidence to change guidelines.” 🌱

