

# The Vital Role of **NUTRITION IN BRAIN HEALTH**

## Promoting Overall **HEALTH & WELLNESS**

**1** Healthful nutrition helps prevent a wide range of health conditions, including diabetes, cardiovascular disease, hypertension, obesity, and many other chronic diseases as well as age-related syndromes such as sarcopenia and frailty.

**2** Strategies that manage health and wellness overall (e.g., neurovascular risk management, physical activity, sleep, nutrition, social activity, cognitive stimulation) are meaningful for primary prevention of multiple neurologic conditions.<sup>1</sup>

— Up to 40% of dementia cases can be attributed to modifiable behaviors.<sup>1</sup>

**3** A growing body of evidence indicates that nutrition plays an important role in brain health.

— The nutrition-based recommendations for primary care providers to promote brain health focus on assessing dietary patterns and recommending brain-healthy dietary patterns.<sup>1</sup>



# DIETARY PATTERNS

## for Brain Health

A well-balanced dietary pattern includes all necessary macronutrients (fats, protein, and carbohydrates) and micronutrients (vitamins and minerals) while limiting excess fat, sugar, salt, and highly processed food.<sup>2</sup>

Certain dietary patterns have been shown to be associated with improved cognition and may alter the trajectory of neurodegenerative conditions, including Parkinson's disease, Alzheimer's disease, and other types of dementia.<sup>2</sup>

Brain-healthy dietary patterns include the Mediterranean diet, the Dietary Approaches to Stop Hypertension diet (DASH diet), and the Mediterranean and DASH Intervention for Neurodegenerative Delay diet (MIND diet).<sup>3-5</sup>

- These three dietary patterns are associated with improved cognition and decreased risk of dementia in older populations.<sup>1</sup>
- They are also associated with other health benefits, including reduced depression and improved cardiovascular health, blood pressure, and blood glucose control.<sup>1</sup>
- In general, individuals should be encouraged to:<sup>2,6</sup>
  - Reduce intake of high-fat dairy products, red meat (especially processed red meat), fried foods, and highly processed foods, including sugar-sweetened beverages and sweets.
  - Increase intake of leafy green and cruciferous vegetables, berries, beans, nuts, whole grains, and protein-rich foods such as fish, seafood, and chicken.

### Brain-Healthy Diets

Diet	Details
<b>Mediterranean diet</b>	<ul style="list-style-type: none"><li>• Focus on eating fruits, vegetables, bread and other grains, potatoes, beans, nuts, and seeds</li><li>• Olive oil as a primary fat source</li><li>• Dairy products, eggs, fish, and poultry in low to moderate amounts</li><li>• Fish and poultry are more common than red meat in this diet</li><li>• Minimally processed, plant-based foods</li><li>• Wine may be consumed in low to moderate amounts</li><li>• Fruit is a common dessert</li><li>• Limited intake of sweets</li></ul>
<b>DASH diet</b>	<ul style="list-style-type: none"><li>• Focus on eating vegetables, fruits, and whole grains</li><li>• Include fat-free or low-fat dairy products, fish, poultry, beans, nuts, and vegetable oils</li><li>• Limit foods high in saturated fat, full-fat dairy products, and tropical oils such as coconut, palm kernel, and palm oils</li><li>• Limit sugar-sweetened beverages and sweets</li></ul>
<b>MIND diet</b>	<ul style="list-style-type: none"><li>• Focus on consuming vegetables, especially green leafy vegetables, nuts, berries, beans, whole grains, fish, poultry, and extra virgin olive oil</li><li>• Limit consumption of red meat, processed meats, butter and margarine, regular cheese, pastries and sweets, and fried foods, especially fast food</li></ul>

Source: References 3-5.

# ROLE OF Micronutrients and Nutritional Supplementation

- The risk of inadequate nutritional intake increases with age.
- Middle-aged and older individuals who regularly use a multivitamin have been shown to have higher levels of biomarkers for vitamins and minerals while those who do not use a multivitamin are more likely to have micro-nutrient deficiencies.<sup>7</sup>
- Because vitamins and minerals are required for multiple biologic pathways that support brain function, deficiencies in older adults may increase the risk for developing cognitive decline and dementia.<sup>8</sup>
- Several studies have shown that intake levels or deficiencies of micronutrients can have effects on cognitive function.<sup>2</sup>

## *Micronutrient Supplementation and Cognitive Function: The COSMOS Clinical Trials*

- The COcoa Supplement and Multivitamin Outcomes Study (COSMOS) was a large randomized controlled trial that assessed the effects of cocoa flavanols (containing 500 mg flavanols) and multivitamin/mineral (MVM) supplementation for cardiovascular disease and cancer prevention in 21,442 adults aged 60 years and older.<sup>9</sup>
- This study had three substudies: COSMOS-Mind, COSMOS-Web, and COSMOS-Clinic.<sup>9</sup>
  - A meta-analysis of these COSMOS substudies found that MVM use benefited global cognition and episodic memory.<sup>9</sup>
  - The magnitude of the effect on global cognition was considered equivalent to 2 years of aging.<sup>9</sup>

### **COSMOS-Mind**

- This ancillary study assessed the cognitive benefits of cocoa extract versus a daily MVM supplement for 3 years in 2,262 participants with a mean age of 73.5 years.<sup>8</sup>
- Daily MVM supplementation, but not cocoa extract, was found to improve global cognition, episodic memory, and executive function; these benefits were greatest in adults with pre-existing cardiovascular disease.<sup>8</sup>
- Based on these data, the authors concluded that MVM use may be a safe, affordable, and accessible intervention to protect against cognitive decline in older adults.<sup>8</sup>

### **COSMOS-Web**

- This substudy compared a daily MVM supplement with placebo in 3,562 adults (mean age 71.0 years).<sup>10</sup>
- MVM use improved memory after 1 year and this improvement was maintained over 3 years of follow-up.<sup>10</sup>

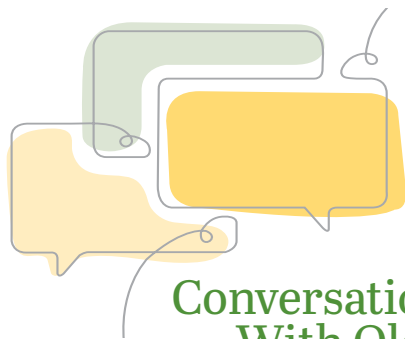
### **COSMOS-Clinic**

- The design of this substudy compared MVM supplementation with placebo in of 573 adults (mean age 69.6 years).<sup>9</sup>
- The investigators found that MVM use improved global cognition over 2 years.<sup>9</sup>

## Learn more about Nutrition and Brain Health







## Conversations With Older Adults Regarding **DIET & BRAIN HEALTH**

- **Initiate patient-centered conversations about the impact of diet and nutrition that include identifying and implementing strategies that benefit brain health as well as overall health and well-being.**
- **Assess the quality of individuals' diets with prompting questions:<sup>1</sup>**
  - Are you concerned about your diet?
  - Do you think you get enough fruits and vegetables in your diet? How many servings do you have per day?
  - How many times per week do you eat butter, cheese, red meat, or fried foods? In what quantities?
  - How many meals per day (or per week) include highly processed foods?
- **Encourage healthful dietary modifications:**
  - Decrease intake of high-fat dairy products (e.g., butter, cheese), red meat, fried foods, and highly processed foods or sweets.
  - Increase relative intake of leafy green and cruciferous vegetables, berries, beans, high-fiber nuts and whole grains, and non-red meats such as fish or chicken.
- **Educate patients about how to incorporate dietary modifications:**
  - Share resources for brain-healthy diets.
  - Determine underlying motivations as well as potential barriers to dietary modifications.

## References

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