



# Cognition:

## The Important Role of Food, Nutrition, and Dining

NUTRITION CONNECTION



### NUTRITIONAL CONSIDERATIONS FOR IMPROVED COGNITIVE FUNCTIONING.

Recently when attending a conference on cognition and aging, an allied professional approached and asked “Why is a registered dietitian attending this conference? What does nutrition have to do with cognition?” Her query prompted me to address these questions in an article and to reemphasize the important role of nutrition with cognition. The Centers for Medicare & Medicaid Services (CMS) focuses on cognition with Quality Measures and Regulatory Requirements, and we each need to better understand “best practice” with nutritional care. This article will address general information about cognition, along with nutritional implications to consider for improved outcomes.

#### COGNITION

The number of Americans over age 65 is projected to increase from 40.2 million in 2010 to 88.5 million in 2050. It will become increasingly important to understand the cognitive changes that accompany aging, both normal and pathologic. Although dementia and mild cognitive impairment are both common, even those who do not experience these conditions may encounter subtle cognitive changes associated with aging. These normal changes are important to understand because they can affect an older adult’s day-to-day functioning in such areas as eating, bathing, dressing, mobility, etc.



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Let's look at cognitive ability, which can be divided into specific cognitive domains.

- **Processing speed:** the speed with which cognitive activities are performed as well as the speed of motor responses.
- **Attention:** the ability to concentrate and focus on specific stimuli. Simple auditory attention, as measured by repetition of a string of digits, shows only a slight decline in late life. A more noticeable age effect is seen on more complex attention tasks which involves the ability to focus on specific information in the environment while ignoring irrelevant information. Selective attention is important for tasks such as engaging in a conversation in a noisy environment. Divided attention is the ability to focus on multiple tasks simultaneously, such as talking on the phone while preparing a meal. Older adults perform worse than younger adults on tasks involving working memory. For example, older adults may have difficulty ordering a string of letters and numbers in the correct alphanumeric sequence,

or calculating a tip on a restaurant bill.

- **Memory:** One of the most common cognitive complaints among older adults is change in memory. As a group, older adults do not perform as well as younger adults on various learning and memory tests.
- **Language:** Language is a complex cognitive domain. Overall language ability remains intact with aging. Vocabulary remains stable and even improves over time. A few exceptions include the ability to see a common object and name it, which remains about the same until age 70, and then declines in subsequent years.
- **Visuospatial abilities:** a group of cognitive functions that involves the ability to understand space in two and three dimensions. Visual construction skills, which involve the ability to put together individual parts to make a coherent whole (for example, assembling furniture from a box of parts) declines over time. In contrast, visuospatial abilities remain intact such as household items or faces, and the ability to appreciate the physical location of objects either

alone or in relation to other objects.

- **Executive functioning/reasoning:** capacities that allow a person to successfully engage in independent, appropriate, purposive, and self-serving behavior. This includes a wide range of cognitive abilities such as the ability to self-monitor, plan, organize, reason, be mentally flexible, and problem-solve. Research has shown that concept formation, abstraction, and mental flexibility decline with age, especially after age 70, as older adults tend to think more concretely than younger adults. Other types of executive function, such as the ability to appreciate similarities, describe the meaning of proverbs, and reason about familiar material, remain stable throughout life.

## NUTRITION AND COGNITIVE DECLINE

### Preventing and Reducing Risk

There is significant variability in age-related cognitive changes from individual to individual. Some of the variability can be attributed to genetic

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differences, and studies estimate 60 percent of general cognitive ability can be attributed to genetics. Medical illness, psychological factors, and sensory deficits such as vision and hearing impairment can also accelerate age-related cognitive decline.

Dementia is now the sixth leading cause of death in the U.S., and preventing cognitive decline—the classic feature of dementia—is a public health priority. It is estimated that delaying disease onset by just five years will reduce the cost and prevalence by 50 percent.

Recent studies have focused on the potential of dietary

interventions as effective preventive strategies. There has been research looking at the cultural-based Mediterranean diet and the blood pressure lowering DASH diet (Dietary Approaches to Stop Hypertension) and their protective effects on cognitive decline.

A new dietary pattern tailored to protecting the brain, called MIND (Mediterranean-DASH Intervention for Neurodegenerative Delay) has been developed at Rush University. The diet is styled after the Mediterranean and DASH diets, but with modifications based on the most compelling findings in the diet-dementia field. The studies suggest that

the MIND diet substantially slows cognitive decline with age. Current studies are underway to replicate the findings to verify its relevance to brain health.

The MIND diet was based on the dietary components of the extensively studied cardiovascular diets Mediterranean and DASH, including emphasis on natural plant-based foods and limited intake of animal and high saturated fat foods. However, the MIND diet uniquely specifies consumption of berries and green leafy vegetables, and does not specify high fruit consumption, high dairy, high potato consumption, or greater than one fish

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Table 1: Overview of the MIND Dietary Patterns

<p><b>INCLUDE THESE</b> </p> <ul style="list-style-type: none"> <li>• Green leafy vegetables: every day</li> <li>• Other vegetables: at least once per day</li> <li>• Nuts: every day</li> <li>• Berries: at least twice per week</li> <li>• Beans: every other day</li> <li>• Whole grains: three times per day</li> <li>• Fish: at least once per week</li> <li>• Poultry: at least twice per week</li> <li>• Olive oil</li> <li>• Wine: one glass per day</li> </ul>	<p><b>LIMIT THESE</b> </p> <ul style="list-style-type: none"> <li>• Red meats</li> <li>• Butter and stick margarine: less than 1 tablespoon per day</li> <li>• Cheese: less than 1 serving per week</li> <li>• Pastries and sweets: limit</li> <li>• Fried or fast foods: less than one serving per week</li> </ul>
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(Morris, M.C. (2016), Nutrition and risk of dementia: overview and methodological issues. *Ann. N.Y. Acad. Sci.*, 1367: 31-37. doi:10.1111/nyas.13047)



meal per week. The MIND modifications highlight the foods and nutrients shown through the scientific literature to be associated with dementia prevention. An overview of the MIND diet is included in Table 1.

The primary limitation of the study is that it is observational and thus cannot be interpreted as a cause and effect relation. Replication of the findings in other studies is important for confirmation of the association, and a diet intervention trial is required to establish a causal relation between diet and prevention of cognitive decline.

### NUTRITION AND COGNITION IN POST-ACUTE CARE (PAC) FACILITIES

Older adults in post-acute care facilities generally are at the point where maintaining independent dining skills is a challenge. Eating and feeding difficulties with cognitive impairment related to dementia make it difficult for individuals to complete the motor and perceptual tasks required for eating, and often prevent them from accepting assistance from providers.

For providers, it's finding a balance between helping individuals maintain independence and also meeting nutritional needs. Helping individuals maintain independence with dining can significantly affect quality of life and overall outcomes.

While the following is not all inclusive, some areas for food, nutrition, and dining include:

- **Dining atmosphere and environment:** comfortable sound levels, no distracting noises, attractive settings with adequate lighting, comfortable temperature.
- **Meal service:** proper table height, meals on time, appropriate assistance, adequate staff on hand to serve.
- **Self-care:** Eating: Appropriate utensils to bring food to the mouth and swallow once the meal is presented (including modified food consistency). Adaptive equipment: colored plates, built-up handle utensils, swivel spoons, high-sided plates, scoop bowls, two-handled mugs, wide-handled mugs, non-skid mats.
- **Oral hygiene:** ability to use suitable items to clean teeth. If dentures are present: Ability to remove and replace dentures from and to the mouth, and manage equipment for soaking and rinsing them.

- **Muscle strength** for self-care and nutritional adequacy related to calories, protein, and other nutrients related to muscle anabolism and fluid maintenance. Provide education to resident, staff, and other caregivers.
- **Referral mechanism to the RDN** for residents with high dependence scores. Registered dietitian nutritionists need to work with the certified dietary manager to be actively involved in care planning, with reviews at regular intervals, and at discharge for nutrition intervention for eating skills, muscle strength, and hydration.
- **Interventions/management of mealtime behaviors by staff:** slow pace of eating, distractibility, ineffective use of utensils, impaired depth perception, memory loss, paranoia.

### CONCLUSION

The normal aging process is associated with declines in certain cognitive abilities. Nutrition and dietary patterns may support prevention or risk reduction of cognitive decline, and is an integral component in improving and managing those with cognitive decline. Utilizing nutritional risk tools, prompt referrals and nutritional assessments should be used to determine interventions and education to improve quality of life for independence with functional status such as activities of daily living, bathing, eating, and mobility. Food, nutrition, and dining are critical in helping individuals facing cognitive decline maintain independence while also improving quality of life and outcomes. **E**

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- *What Are the Components to the MIND Diet?* Marcason, Wendy, *Journal of the Academy of Nutrition and Dietetics, Volume 115, Issue 10, 1744.*

## NUTRITION CONNECTION

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- Cognitive changes are important to understand because they can affect an older adult’s day-to-day functioning in such areas as:
  - Eating and bathing
  - Dressing and mobility
  - Both A and B
- Studies estimate \_\_\_\_ percent of general cognitive ability can be attributed to genetics.
  - 60
  - 55
  - 50
- Medical illness, psychological factors, and sensory deficits such as vision and hearing impairment can \_\_\_\_\_ age-related cognitive decline.
  - Neutralize
  - Accelerate
  - Reduce
- Dementia is now the sixth leading cause of death in the U.S., and it’s estimated that delaying disease onset by just five years will reduce the cost and prevalence by \_\_\_\_ percent.
  - 25
  - 30
  - 50
- A new dietary pattern developed at Rush University, tailored to protecting the brain, is the Mediterranean-DASH Intervention for Neurodegenerative Delay or \_\_\_\_\_ diet.
  - BRAIN
  - MIND
  - RUSH
- Eating and feeding difficulties with cognitive impairment related to dementia make it difficult for individuals to complete the \_\_\_\_\_ tasks required for eating, and often prevent them from accepting assistance.
  - Metabolic and physiological
  - Psychological and circulatory
  - Motor and perceptual
- The dining atmosphere and environment needs to provide comfortable sound levels, no distracting noises, attractive settings with adequate lighting, and comfortable temperatures.
  - True
  - False
  - Does not apply

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