The Mediterranean Diet’s Fight Against Frailty

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Elizabeth Eckstrom, MD, MPH, has a recipe to help her older patients stay healthy and strong: orange slices topped with toasted almonds and maybe a splash of balsamic vinegar. It’s just one piece of dietary advice she gives her patients—most of whom are in their 70s, 80s, 90s, and 100s—to ward off frailty.

Of course, Eckstrom’s menu includes a bevy of other nutrient-rich foods such as blueberries, spinach, tomatoes, squash, olive oil, avocados, and more. Her mantra for older adults goes beyond long-standing dietary advice. “Don’t just eat a healthy diet, eat the Mediterranean diet,” said Eckstrom, professor and chief of geriatrics at the Oregon Health & Science University in Portland.

Known for its cardiovascular disease-fighting properties, mounting evidence now suggests the Mediterranean diet may also be valuable in helping to prevent and treat frailty in older adults. It emphasizes plant foods—fruits, vegetables, legumes, whole grains, seeds, tree nuts, and olives—as well as moderate fish consumption, olive oil as the principal fat source, low amounts of dairy products, few red and processed meats, and low to moderate amounts of wine with meals.

“The things in the Mediterranean diet are thought to extend the period of health while you’re aging,” said Rozalyn Anderson, PhD, an associate professor of medicine at the University of Wisconsin School of Medicine and Public Health in Madison whose research examines aging and caloric restriction.

Nutrition has long been recognized as an important factor in healthful aging. “One of the biggest problems that happens in people as they get older ... is that they lose their appetite and this can be a recipe for disaster,” Anderson noted. “Then they have less energy, they’re moving less, and they’re losing lean mass. This is at the center of frailty.”

Nutritional interventions could play a vital role in keeping populations healthy and controlling health care costs as the number of adults aged 65 years or older grows in the coming decades.

Defining Frailty Drives Research

A constellation of factors causes frailty, but it’s only in the last 15 or so years that a clinical definition has emerged. “It’s been quite hard to put a finger on a measure,” said Kate Walters, PhD, director of the Center for Aging at University College London in England.

Since the early 2000s, a phenotype based on data from 5317 older adults has come into common use. It describes frailty as a clinical syndrome in which older adults have at least 3 of the following 5 criteria: unintentional weight loss of about 10 pounds in the past year, exhaustion, weakness as measured by grip strength, slow walking speed, and low physical activity.

Women, black individuals, people with low income and educational attainment, those in poor health, and individuals with higher rates of comorbid diseases and disability are most vulnerable to frailty. Data showed the frailty phenotype was predictive of falls, worsening mobility, hospitalization, and death during a 3-year period.

Having a clinical definition gave researchers a stronger foundation to launch studies probing various aspects of frailty. “Clinicians have known for a long time there’s something over and above the health conditions that you have that make some older people much more unwell,” Walters said. “Now we felt for the first time we had a reasonably well-agreed upon, objective way of measuring this phenomenon.”

Food Affects Frailty

Among the most recent research to link the Mediterranean diet with a reduced risk of frailty is a meta-analysis from Walters and her colleagues. They analyzed 4 studies involving nearly 6000 older adults with a mean age between 60 and 82 years who were followed up for an average of about 4 years. The results showed that participants in the studies who scored highest on a scale measuring adherence to a Mediterranean diet had a 56% reduced risk of frailty compared with those who scored lowest.

The diet’s effect varied widely among studies in the analysis, however. “The one with less effect was the Hong Kong study,” Walters said.

In that cohort of 2724 older Chinese adults, those with the highest adherence to
a Mediterranean diet had an 8% reduced frailty risk compared with those whose adherence was the lowest. Walters speculated that the difference was lower olive oil consumption in the Chinese population. In contrast, a study of 690 adults aged 65 years or older in Italy’s Tuscany region found that those who adhered to a Mediterranean diet most closely had a 70% reduced risk of becoming frail after 6 years of follow-up compared with those who were least adherent.

Some investigators also have linked the Mediterranean diet with physiological functions related to frailty. A study from Spain in Walters’ meta-analysis showed that adults who followed the diet most closely had a 47% reduced risk of slow walking speed and of unintentional weight loss—2 factors that contribute to frailty.

In addition, data from the TwinsUK study based at King’s College in London showed that women who consumed the most components of the Mediterranean diet had significantly higher fat-free mass and leg muscle power than those who consumed the least. Women in the study ranged in age from 18 to 79 years, but the investigators noted that associations between the diet and fat-free mass as well as leg muscle power were greater for women older than 50 years than for younger women.

“These findings provide important information in developing and planning potential dietary intervention trials for the prevention of sarcopenia,” the authors wrote. Sarcopenia—the loss of muscle mass—is a very important component of frailty,” said Sameera Talegawkar, PhD, associate professor of exercise and nutrition sciences at the George Washington University Milken Institute School of Public Health in Washington, DC.

Multiple studies have shown associations between nutrients and these age-associated declines,” added Talegawkar, the lead author of the Tuscany study in Walters’ meta-analysis.

Protective Mechanisms
Teasing out the effects of specific dietary components on frailty is complex, but some research has pointed to the diet’s anti-inflammatory effect as a protective mechanism.

“That’s probably playing a pretty major role in what is the underlying reasoning for the diet being so effective in reducing frailty,” Eckstrom said. In fact, a number of studies have linked chronic inflammation with frailty in older adults.

A recent review by investigators at Washington University in St Louis described specific components of the diet with anti-inflammatory properties. For example, the outer layer of wheat bran contains anti-inflammatory phytochemicals. Salmon and avocados are abundant in omega-3 fatty acids that bind to a receptor involved in inhibiting NLRP3 inflammasome activity, which in an animal model has been linked with sarcopenia. In addition, newly pressed extra virgin olive oil contains oleocanthal, a phenolic compound with an anti-inflammatory effect similar to ibuprofen.

The Mediterranean diet’s recommended 2 or more weekly servings of fish also provide vitamin B12. “If you have low levels of vitamin B12, you will develop a gait disorder and memory loss... and those things are critical to frailty prevention,” Eckstrom noted.

Another recent review, by investigators in Coruña, Spain, noted that a study of older women in Japan linked 10 micronutrients—vitamin A, α-carotene, β-carotene, β-carotene equivalent, crypto-
xanthin, vitamin D, α-tocopherol, vitamin B6, folate, and vitamin C—with a reduced risk of frailty. Walters noted that antioxidants such as these thwart oxidative stress, another risk factor for frailty.

However, Talegawkar noted that it’s hardly practical for clinicians to suggest that patients eat specific amounts of specific nutrients. “It’s much easier to give information about an overall eating pattern because people don’t just eat nutrients, they eat foods,” she said.

Not Just a Diet—a Lifestyle
The Mediterranean diet doesn’t exist in a vacuum. In its cultural context, the foods were part of a way of life in which cooking with family and friends was a fun, relaxing way to socialize and form a sense of community.

In 2011, a consensus report that revised the Mediterranean diet pyramid included cultural and lifestyle elements. “The pleasure associated with the conviviality of meals may positively affect food behaviours, and in return, health status,” the authors wrote.

The report recommends at least 30 minutes of moderate physical activity throughout the day “as a basic complement to the diet,” and adequate rest at night and during the day in the form of an after-meal nap.

Eckstrom believes the diet’s lifestyle component is an important deterrent to frailty. “It does include movement and it does include social engagements,” she said. “Some of those things are so valuable in helping to reduce isolation, reduce muscle weakness, and reduce frailty overall.”

She added: “We should really acknowledge that it is a Mediterranean lifestyle, not just purely a diet, that is important.”

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