

Strategies to
Support
**Adequate
Nutrition**
in Older Adults

Proceedings From a Roundtable



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Introduction

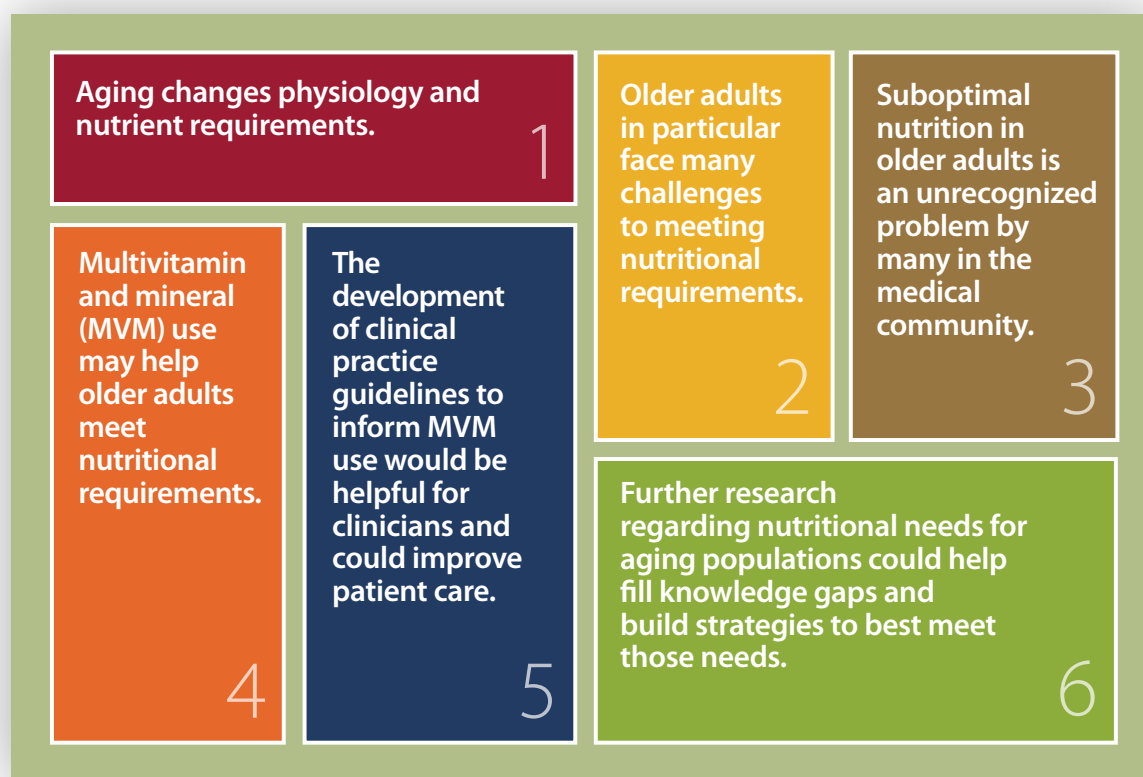
Adequate nutrition is fundamental for optimizing wellness and preventing disease throughout the life cycle.¹ Beyond preventing nutritional deficiencies and excesses—and their associated disorders—dietary prevention strategies may mitigate risk of age-associated diseases such as cardiovascular diseases, diabetes, cancer, osteoporosis, and neurodegenerative disorders, among others. However, nutrition is suboptimal for many adults, and issues that are common in older adults can worsen nutrition for this population. For example, over one-third of adults 60 years of age and older in the United States have barriers to obtaining nutritious food.²

Although older adults generally have lower caloric needs than younger adults, their nutrient requirements are similar or increased. Nutritional needs may also be affected by chronic health conditions, use of multiple medications, and changes in both metabolism and body composition. Additionally, malnutrition, frailty, and sarcopenia are interrelated conditions associated with suboptimal nutrition; these conditions are common in older adults and can exacerbate poor nutrition due to the functional disability they cause. Management of age-related diseases—including sarcopenia, cognitive decline, dementia, and infectious diseases—may benefit from careful attention to nutritional adequacy and a healthful diet.

To explore issues that impact nutrition for older adults and strategies to address these issues, the Gerontological Society of America (GSA) convened a multidisciplinary expert roundtable discussion on June 18, 2024, in Washington, DC. Roundtable participants included researchers, clinicians, and policy leaders with expertise in geriatrics and nutrition. Additional input and insights were provided following the roundtable both from participants and additional experts. This report summarizes the discussion on topics related to older adult nutrition and how to improve it, including: a review of factors that lead to nutritional

deficiencies and inadequacies, existing interventions to improve older adult nutrition, strategies for assessing nutritional status, strategies to include nutrition in practice models for clinicians who care for older adults, clinician education and training, potential roles for multivitamin and mineral (MVM) supplementation in addressing nutritional needs for older adults, and how to educate older adults and their caregivers about dietary requirements and appropriate use of supplements. Participants also explored areas in which future research can help better inform health policies to meet the diverse needs of older adults in an equitable manner.

Key Takeaways From the Roundtable on Adequate Nutrition in Older Adults



1

Key Issues Affecting Older Adult Nutrition

Adults of all ages in the United States typically eat a broadly unhealthy diet relative to national recommendations, which results in suboptimal intakes of multiple micronutrients from the diet.³ For example, the 2020 Dietary Guidelines Advisory Committee reported vitamins A, C, D, E, and K, calcium, dietary fiber, magnesium, potassium,



and choline are underconsumed across the population; additionally, protein and vitamin B₁₂ are underconsumed by older adults.⁴

The risk for nutritional deficiencies and inadequacies increases in older adults, especially among those residing in long-term care facilities.^{5,6} Roundtable participants noted that micronutrients of particular concern for this population include vitamin B₁₂ and choline for cognitive maintenance; vitamin E for immune function; and vitamin D, calcium, vitamin K, magnesium, and potassium for bone and cardiovascular health. A substantial proportion of older adults fail to consume adequate protein, which is needed to prevent muscle wasting and bone loss.^{7,8} There are several interrelated reasons spanning across various domains that help explain why older adults are at increased risk of nutritional inadequacies (Table 1).^{3,7,9-12}

Table 1. Factors Affecting Increased Risk for Nutritional Deficiencies and Inadequacies in Older Adults

Category	Factors
Physiologic changes	• Caloric needs gradually decline while needs for macronutrients remain stable or increase. • Aging is associated with decreased absorption of some micronutrients (e.g., vitamin B₁₂). • Many health conditions that increase with aging (e.g., diabetes) impact nutritional requirements or status. • Medication use among older adults can affect nutrient metabolism, absorption, and storage. • Obesity is associated with increased risk of deficiency for some micronutrients (e.g., vitamin D).
Appetite and consumption	• Taste perception and food preferences change with age. • Decreased appetite is common in older adults and may be associated with conditions such as depression, apathy, sarcopenia, malnutrition, and frailty. • Memory impairment is commonly associated with undernutrition.
Functional impairments	• Declines in physical function contribute to unhealthy nutrition in older adults. Being physically unable to access and/or prepare food can result in a negative cycle between functional losses and inadequate nutrition. • Sarcopenia contributes to decreased functional capacity, alters nutrient requirements, and can impede the ability to acquire food and prepare meals, further reducing nutritional intake. • Dental changes, such as tooth loss, can affect food consumption and enjoyment, contributing to reduced nutritional intake.
Interrelated changes	• Changes in cognition, functional capacity, mental health, mobility, vision, and dentition can impact nutrition. • Older adults are more likely to be hospitalized, institutionalized, living alone, disabled, and have multiple comorbid conditions, all of which increase risk for nutritional deficiencies and inadequacies.
Socioeconomic factors	• Access to nutritious food may be limited due to affordability, transportation, and geographic access to nutrient-dense food. • Food choices may be restricted for those not living independently. • Lack of access to caregivers who are competent and affordable can create barriers to obtaining healthy foods for older adults who rely on these services.

Source: References 3, 7, 9–12.

2 Approaches to Assessing and Addressing Nutrition in Older Adults

Some roundtable participants with clinical practices reported that many older adults who receive a nutritional assessment have some evidence of nutritional inadequacy, including low B₁₂ levels, mild anemia, and evidence of inadequate protein intake. However, even though older adults often have unmet nutritional needs, nutritional status is not commonly or consistently assessed in older adults by most health care professionals.



Body weight and body mass index (BMI), which are tangentially related to nutrition, are often the only measures regularly assessed and documented by clinicians other than dietitians. Other assessments that may reflect nutritional status, such as bone mineral density, may also be assessed and documented, and these assessments can provide information about needs for specific dietary supplementation.

Current Nutritional Assessment Tools

Nutritional assessment tools can be implemented in clinical practice. The tools most often applied include the [Mini-Nutritional Assessment](#) (MNA) and the [Patient-Generated Subjective Global Assessment](#) (PG-SGA):

- The MNA is a validated nutrition screening and assessment tool that can identify older adults who are malnourished or at risk of malnutrition. It assesses food intake, weight loss, mobility, psychological stress, acute disease, neuropsychological problems, and BMI.
- The PG-SGA is an interdisciplinary patient assessment tool widely used in oncology and other chronic catabolic conditions. It assesses change in weight (focus on unintentional weight loss), change in dietary intake, nutrition impact symptoms, and change in activity/function and allows for triaging of specific nutrition interventions.

The MNA and PG-SGA have moderate validity for use in community-dwelling older adults and low validity among those who are institutionalized and/or in long-term care.¹³

Participants recognized that self-assessment tools such as the [Automated Self-Administered 24-Hour \(ASA24\) Dietary Assessment Tool](#) are being used in research settings, but are time-consuming and may not be practical for clinical settings.

Additionally, participants noted that when nutritional assessments are performed, laboratory tests may be used. However, not all nutrients important to health and well-being are assessed as part of standard blood panels.

Proxy assessments of strength and mobility may be used in clinical practice and can tangentially inform nutritional assessments. These include assessments of function and frailty such as grip strength and gait speed as well as the 4Ms (Mobility, Mentation, Medication, and What Matters)/5Ms (adds Multimorbidity), the Short Physical Performance Battery (SPPB), and the Timed Up and Go (TUG) Test.

Finally, participants shared that the Academy of Nutrition and Dietetics (AND) has developed a [Nutrition Care Process](#), which is a systematic method composed of assessment, diagnosis, intervention, monitoring, and evaluation used by professionals to provide nutrition care. If nutritional risk is identified, a nutrition-focused physical exam should be performed to provide a more comprehensive evaluation to assess muscle loss, subcutaneous fat loss, change in weight, reduced dietary intake (based on patient recall), fluid accumulation, and functional status as well as examination of the mouth, skin, and nails.



Practice Models for Nutritional Assessments

Participants stated that routine screening for nutritional information would be helpful for assessing nutritional status and could be added to various clinical touch points, including the Welcome to Medicare visit and the Annual Wellness Visit. They also noted that clinicians should consider nutritional status when evaluating domains such as recent weight loss, loss of appetite, and changes in function as factors that could indicate a need for a more thorough assessment.

During the roundtable, participants shared examples of care models in which nutrition is assessed such as home care visits and pre- and post-operative care planning. They also reported that nutrition is sometimes addressed as a component of social determinants of health assessments, particularly when issues of food insecurity arise. However, clinicians often lack tools to effectively address food insecurity.



Examples of Programs Addressing Nutritional Needs

Roundtable participants shared examples of programs that have been effective for addressing nutritional needs of older adults. For example, the [Malnutrition Quality Improvement Initiative](#) (MQII) has worked to advance evidence-based, high-quality, patient-driven care for adults who are hospitalized and have malnutrition or are at risk of malnutrition. Participants noted that the MQII developed a robust process for addressing the nutritional needs of patients and supporting them through transitions of care.

Another example of more thorough nutritional care that participants shared is the [Program of All-Inclusive Care for the Elderly](#) (PACE), which is designed to meet the needs of homebound, frail older adults living in their community settings. The PACE model includes a dietitian on the interdisciplinary care team, delivers care across all settings for the patient, and integrates and coordinates care, including prescriptions, transportation, and meals.

Participants observed that nutrition is more consistently assessed when patients are hospitalized and that inpatients may be referred to a dietitian. Of note, if a hospitalized Medicare beneficiary is diagnosed with malnutrition, the Centers for Medicare & Medicaid Services (CMS) requires nutritional follow-up as part of transitions of care. However, a nutritional intervention and plan developed during hospitalization may not always effectively follow patients through transitions of care due in part to limited documentation about nutrition in electronic health records (EHRs), leading to gaps in the coordination of nutritional care across providers, which can have important impacts on patient outcomes. Further, waiting until someone is hospitalized to address nutritional needs misses many important opportunities to improve nutrition.

Incorporating Nutritional Assessment in Clinical Care: Barriers and Solutions

Barriers to more consistent and comprehensive nutritional assessments include time limitations facing busy practices, lack of reimbursement unless specific conditions are met, and lack of nutritional training for many providers. Participants noted that emerging practice models can help to address some of the gaps and needs that arise across care settings. For example, models that compensate based on outcomes may better support nutritional screenings and interventions. To address time constraints, participants encouraged leveraging members of the interdisciplinary care team to perform assessments and capture relevant information for evaluation and care plan development. For example, team members such as medical assistants can effectively gather nutritional screening information when provided with appropriate training and resources. This information can then be used by the primary care provider or other clinician to assess and address care needs.

Most clinicians, including physicians, nurse practitioners, and physician associates, are not trained in medical nutrition therapy and have limited nutrition education during their schooling. Therefore, participants suggested that health care providers should consult with a dietitian as part of the patient's care team to develop a medical nutrition therapy plan if malnourishment is identified. Participants also recognized that many clinicians do not have the time or the training to accurately evaluate all available dietary supplements to determine whether they address individual patient needs.

In general, primary care clinics do not have a dietitian in the clinic setting nor do they have a referral process set up to refer patients to a dietitian when they identify nutrition deficits. Access to dietitians may also be limited due to costs, lack of insurance coverage, and logistical issues. Some participants commented that they would like to have a dietitian on the interdisciplinary care team to assess

nutritional needs of all older adults, make recommendations to patients, and support implementation of those recommendations.

Reimbursement for assessments of nutritional status would increase the likelihood that clinicians would provide this service. Participants called for expansion of the types of nutritional services covered by Medicare. Currently, medical nutrition therapy is covered by Medicare only for beneficiaries with type 2 diabetes or chronic kidney disease. Participants recommended expanding coverage to include malnutrition, cancer, obesity, and eating disorders.

Furthermore, participants identified a need to better incorporate nutrition information in the documentation process and expand nutritional information that is contained in EHRs. They called for collaboration with EHR system developers to address these needs. Participants noted that the AND, in concert with the American Society for Parenteral and Enteral Nutrition and the Association of Clinical Documentation Improvement Specialists, developed recommendations for optimizing EHRs for nutrition care.¹⁴ This consensus document provides recommendations that clinicians and health care organizations can use when working with existing information systems and selecting and implementing health care software.



Multivitamin and Mineral Supplement Use in the United States

Dietary supplements are widely used in the United States, with 57.6% of adults aged 20 years and older reporting the use of a dietary supplement in the past 30 days; those aged 60 years and older were the most likely to report use (74.3%). Many older adults take three or more supplements concurrently.¹⁵

MVMs were the most frequently used supplements among all age groups, followed by vitamin D and omega-3 fatty acids. For adults aged 60 years and older, the fourth and fifth most commonly used supplements were calcium and vitamin B₁₂, respectively. Use of multiple dietary supplements was common.¹⁶

Benefits of Supplementation

An analysis of data from the National Health and Nutrition Examination Survey found that middle-aged and older individuals who regularly use an MVM have been shown to have higher levels of biomarkers for vitamins and minerals.³ Those who did not use multivitamins were more likely to have micronutrient deficiencies.³ Daily use of MVMs reduces the likelihood of micronutrient deficiencies and appears to be safe in healthy adults when recommended upper limits are not exceeded.¹⁷ There is some evidence that, beyond addressing deficiencies, some supplements can have additional health benefits for specific scenarios in older adults.¹⁸⁻²⁰

Published data regarding the risks and benefits of MVMs for health promotion beyond correcting deficiencies provide conflicting results. This may be

in part due to the difficulty of conducting long-term randomized controlled trials of MVMs in human populations. Furthermore, there is substantial variability among multivitamins, and not all products include the same vitamins and minerals or quantities of ingredients. Notably, some formulations may have differences in bioavailability as well as quality control. Therefore, it can be difficult to assess the effect of MVMs in retrospective observational surveys.

Specific nutrients have been shown to help reduce disease progression for certain conditions. For example, the combination of calcium with vitamin D is well established for the prevention of osteoporosis. The combination of vitamins C and E, lutein, zeaxanthin, zinc, and copper has been shown to be beneficial for age-related macular degeneration.⁷ Some, but not all, studies have shown that MVM supplementation can support brain health. For example, in the COcoa Supplement and Multivitamin Outcomes Study (commonly referred to as COSMOS), MVM supplementation was found to improve global cognition, memory, and executive function; the magnitude of the effect on global cognition was considered equivalent to 2 years of aging.¹⁸⁻²⁰ Although multivitamins have not been found to prevent mortality from cardiovascular disease or cancer in large observational studies, a systematic review of 15 randomized trials indicates B vitamin supplementation will lower plasma homocysteine levels and the incidence of stroke.^{21,22}

Regulation of Dietary Supplements

The legal and regulatory framework for dietary supplements progressed greatly with the passing of the 1994 Dietary Supplement and Health Education Act (DSHEA), which classified vitamins, minerals, herbs/botanicals, amino acids, or a combination of these ingredients as “dietary supplements” under the general umbrella of “foods” and allows the U.S. Food and Drug Administration (FDA) regulatory authority over these products through many regulations and

guidelines. DSHEA resulted in the marketing of a vast array of dietary supplement products with varying degrees of information available about their efficacy, safety, and quality.

DSHEA dictates the mandatory information that should appear on a dietary supplement label. The Federal Food, Drug, and Cosmetic Act (FD&C Act) requires manufacturers that market dietary supplements with structure/function claims to notify FDA about the claim within 30 days of first marketing the dietary supplement. These notifications are reviewed by FDA in detail. The FD&C Act clearly states all claims must be truthful and not misleading. The Federal Trade Commission oversees and enforces advertising for dietary supplements. However, FDA is generally responsible for the quality, safety, and labeling of dietary supplements.

FDA has the authority to take action against a dietary supplement after it reaches the market or after an audit if there is evidence that it violates Current Good Manufacturing Practice regulations, is misbranded or chemically adulterated, or presents safety risks (e.g., undeclared allergens, unauthorized drug ingredients). Public FDA warning letters are posted on a weekly basis. FDA enforcement action can lead to substantial ramifications, thus manufacturers that receive warning letters must respond in a timely manner.

There is no standard definition for “multivitamin” from a regulatory standpoint, nor is there a standard definition in the literature. Additionally, there are no requirements regarding which vitamins and minerals should be included in a multivitamin product. Thus, there is substantial variability in composition among MVMs on the market. Roundtable participants noted that this situation may further complicate assessments of research about MVMs, particularly for observational self-reported studies in which the actual composition of MVMs used by participants can vary greatly.

Privately run verification programs have been developed to address additional quality assurance for dietary supplements, including the U.S. Pharmacopeia (USP) Dietary Supplement Verification Program and USP Verified Mark, the ConsumerLab Quality Certification Program, and the NSF International Supplement and Vitamin Certification program. Some participants indicated that they educate their patients to look for an indicator from one of these programs on dietary supplement product labels to be more confident about the contents of the product they are using.

Participants recognized that, while verification programs fill some gaps, standards and controls for dietary supplement manufacturing are variable across manufacturers and it may be difficult to determine whether a dietary supplement product contains the ingredients listed on the label. This variability can impact clinicians’ comfort and confidence in recommending dietary supplements to their patients. Participants in clinical practice stated that they recommend their patients select products that have been independently verified but recognized that many older adults are not aware of the risks associated with unverified products. They called attention to the importance of educating consumers to evaluate the Nutrition Facts labels of dietary supplements when selecting among available products. They also noted that some clinicians may benefit from education about verification programs and how to assess dietary supplement labels.

Participants called for stricter requirements for ensuring the ingredients in supplements match what is listed on the Supplement Facts label and noted that the Consumer Healthcare Products Association is leading an initiative to advocate for revisions to DSHEA.

3

Improving Nutrition in Older Adults

Interventions to promote better nutrition in older adults can improve outcomes associated with aging and can include recommendations to optimize nutrient intake as well as strategies to support access to nutritious foods. The food patterns recommended by the [2020–2025 Dietary Guidelines for Americans](#) and the U.S. Department of Agriculture (USDA) [MyPlate](#) program meet standards of adequacy for most nutrients for all ages and may be recommended when appropriate.²³

The federal Nutrition Services Program, which is authorized under the Older Americans Act, plays a key role in addressing access to nutritious foods for older adults through programs such as Meals on Wheels. The purposes of the Meals on Wheels program include reducing hunger and food insecurity, promoting socialization of older adults, and promoting health and well-being of older adults by delaying onset of chronic conditions that result from poor nutrition.²⁴ The USDA's [Assistance for Older Adults](#) webpage provides information about this and other programs that offer support for meeting nutritional needs in older adults.



Roundtable participants observed that many older adults rely on nutrition programs for their only meal of the day as well as for socialization. Further, they indicated that there are data demonstrating such programs are effective in addressing nutritional deficiencies.²⁵ However, in some cases, there are long waiting lists for such nutritional services. These limits on resources for vulnerable older adults, particularly homebound individuals, can result in malnutrition and important gaps in nutrition.

Use of MVM Supplements to Address Nutritional Needs

A varied dietary pattern that includes a range of nutrients helps to ensure nutritional adequacy and provide health benefits.¹ However, based on the challenges older adults may experience obtaining adequate nutrition from the diet, MVMs may be needed to maintain and/or improve nutritional status in this population.^{3,9,17,26}

According to the AND's position statement on micronutrient supplementation, MVMs can be used both to help meet requirements and to treat deficiencies.⁵ AND has also developed a guideline on addressing [Malnutrition in Older Adults](#). However, this guideline focuses on behavioral lifestyle interventions and does not address treatment or prevention of micronutrient deficiencies.²⁷ Although these authoritative publications highlight that older adults are among the groups most vulnerable to micronutrient inadequacy, there are no current guidelines from professional societies that provide detailed recommendations for when MVMs should be used.



Participants were supportive of using MVMs to help meet nutritional needs in older adults. Likewise, participants noted that MVMs may be helpful for individuals with health conditions or medication use that interferes with absorption or effective nutrient utilization of specific nutrients. Participants with clinical practices reported that they make dietary recommendations for an MVM if an individual is identified as being at nutritional risk or malnourished or if specific micronutrient deficiencies are identified.

Another important aspect mentioned by participants is recognition that older adults are a heterogeneous population, encompassing individuals in their 60s through their 90s and beyond, and these adults have substantial differences in their status across domains that influence eating behavior and nutrient requirements such as age, BMI, physical activity participation, and comorbidities. For example, older adults with obesity who are on restricted caloric diets for weight loss often also require MVM supplementation, as do those who have undergone weight reduction surgery (and certain bariatric surgery patients may require specialized supplementation).²⁸

Polypharmacy Issues Impacting MVM Recommendations

Participants emphasized that drug–supplement and disease–supplement interactions must be considered when assessing nutritional status for older adults with chronic conditions, who often use multiple medications. For example, they noted that glucagon-like peptide-1 inhibitor use (e.g., semaglutide, tirzepatide) is increasingly common among older adults and that these medications generally decrease dietary intake and could contribute to inadequate intake of micro-nutrients. Conversely, some older adults take a multitude of supplements, and thus it is necessary to review the entire regimen to ensure potentially harmful supplements are not being used and that recommended upper limits are not being exceeded. (This process can be particularly complicated when people are using multiple dietary supplements with multiple ingredients.)



Comprehensive medication reviews (also known as brown bag medication reviews) were identified by participants as an important strategy for assessing medication regimens, including dietary supplements, to identify appropriateness as well as the potential for interactions and toxicities. Pharmacists are well-positioned to perform this role based on their knowledge and experience reviewing medication regimens. Participants noted that use of EHRs can sometimes assist health care providers with this process; however, EHRs do not always have comprehensive and accurate information about the ingredients of various supplements. A comprehensive database for checking potential interactions of supplements would be particularly helpful.

Although vitamin/mineral interactions with drugs have not been systematically studied, there are many known interactions. The Micronutrient Information Center at Oregon State University provides a thorough table of known [Drug–Nutrient Interactions](#).*

In addition to using information from comprehensive reviews to assess when a dietary supplement is needed, participants noted that polypharmacy and pill burden are often issues for older adults, and practice patterns can vary widely with some clinicians deprescribing any medication or supplement not considered essential. Further, some reimbursement constraints limit the number of products for an individual in certain care settings.

*This link leads to a website provided by the Linus Pauling Institute at Oregon State University. GSA is not affiliated nor endorsed by the Linus Pauling Institute or Oregon State University.



Adherence to MVM Recommendations

Adherence to multivitamin recommendations may be better than adherence to dietary recommendations because it is generally easier to take a pill than it is to implement the behavioral changes needed to obtain the same nutrients through the diet. Participants noted that older adults are more likely to adhere to recommendations to use MVMs if they believe the benefits outweigh the costs.

Older adults' adherence to recommendations for MVM use can vary. For example, even though MVM use is recommended to prevent nutritional deficiencies after bariatric surgery, not all such patients are consistent with their use of MVM, and some stop taking them completely.²⁹ Commonly cited reasons among inconsistent users that were reported in a survey of bariatric surgery patients included forgetfulness, gastrointestinal side effects, and unpleasant taste or smell. Those who stopped taking MVMs did so for reasons including gastrointestinal side effects, high costs, and absence of vitamin deficiencies. Some survey respondents also reported being dissatisfied with the instructions for using MVM and felt their personal preferences were not taken into account.²⁹

Participants reported that most of their patients are adherent to MVM recommendations as long as they have access to the supplements. According to participants, most older adults want to maintain their independence and live healthy and active lives, and if they believe a nutrition recommendation will help them achieve these goals, they are more likely to follow those recommendations. However, the participants drew attention to the importance of understanding the individual's social and economic situation to ensure recommendations are appropriate.

Among other reasons that participants reported for nonadherence included patients' lack of understanding of the purpose underlying the recommendations. Functional limitations (e.g., difficulty swallowing pills) can also impede adherence as can conditions such as substance abuse or eating disorders. Therefore, recommendations should be patient-centered and address individual needs holistically. For example, gummy or liquid vitamins could be recommended for someone with difficulty swallowing pills. Additionally, better collaboration among primary care providers, dietitians, social workers, and community-based organizations could help improve access to the foods and supplements to meet nutrition recommendations.

4

Clinician Education and Training

There are several gaps in clinician knowledge regarding nutritional needs of older adults. Most clinicians (including physicians, nurse practitioners, physician associates, nurses, and pharmacists) receive little education about nutrition and MVM dietary supplements in health professional school or clinical training. In addition to developing a knowledge base, clinicians require training about how to consult effectively with experts in nutritional issues to deliver patient-centered team-based care. Roundtable participants supported increasing information about nutrition throughout clinical training to reinforce the primacy of nutrition as a determinant of health and well-being.

During their discussion on continuing education about nutrition, participants recommended the development of training modules to prepare providers to address older adults' nutritional needs. Different programs could be developed for various providers based on their potential roles in assessing and addressing nutritional needs. Participants observed that continuing education programs already exist for dietitians and recommended exploring how these could be incorporated into the continuing education for other health professionals.



Providers also need information about reliable resources to refer their patients to and guidance for how to help them understand how to assess the validity of nutritional information. For example, although MVM manufacturers are not required to demonstrate safety and efficacy of their products, there are numerous resources that share reliable information for professionals and consumers. Participants indicated that caregivers may also benefit from education and training to help them address the nutritional needs of the older adults they care for, understand how to evaluate health claims on nutritional products, and assess these products within the context of the overall diet.

Participants noted that many providers are seeking guidance on when to recommend MVMs as part of a healthy lifestyle to promote healthy aging and prevent disease and need reliable, evidence-based information. Determinations about recommendations can be complex because of the need to assess multiple interrelated organ systems related to aging. Clinicians are often unaware of literature describing the risks and benefits of nutritional interventions, including supplementation. Participants suggested that the addition of statements about nutritional interventions in clinical practice

guidelines could help add authority to recommendations that emerge from these data and would help reach broader audiences.

Resources for dietary supplement information recommended by participants include the National Institutes of Health (NIH) Office of Dietary Supplements (ODS). ODS provides a [collection of dietary supplement fact sheets](#) and other resources about dietary supplements (vitamins, minerals, herbs and botanicals, probiotics, etc.) and their ingredients. In addition to information about individual supplements, ODS provides general information about supplements and the use of supplements for

specific purposes. ODS also has a [Dietary Supplement Label Database](#), which currently has information about more than 189,000 products marketed in the United States. Another resource is the [Dietary Supplement Ingredient Database](#), developed by the USDA Methods and Application of Food Composition Laboratory in collaboration with ODS and other federal agencies. This database provides estimated levels of ingredients in dietary supplement products sold in the United States. These statistically predicted estimates are based on chemical analysis of nationally representative products and often differ from dietary supplement labeled amounts.



5

Older Adult Education About Nutrition

Roundtable participants noted that consumer education about nutrition is an essential component of supporting adherence to recommendations from health care providers. They stated that older adults have variable awareness about their nutritional needs and that a lack of nutrition-based knowledge is a barrier to overcoming nutritional deficiencies in this population.

Dietary recommendations have changed over the past few decades, which may contribute to confusion and frustration. Participants commented that conflicting information in the media can further complicate older adults' acceptance of nutritional recommendations, and misinformation can lead to further confusion.



Participants mentioned that people who are current users of dietary supplements have a wide range of knowledge and perceptions about these products and gather information from diverse sources. Older adults are increasingly using social media and other online platforms to gather information. However, it is important to remember that not all older adults are able to access these materials. Moreover, misinformation about nutrition is abundant and can lead to less than optimal decision-making, particularly in the absence of direct clinician–patient discussions about nutrition.

To support education about nutrition for older adults, participants recommended the development of a consumer education campaign around nutritional literacy and how it influences healthy aging. In addition, participants noted numerous reputable sources of information available online (Table 2).

While some nutrition information and recommendations may come directly from health care providers, participants suggested that settings such as community centers and places of worship

can be leveraged for nutrition information delivery. Partnering with representatives of communities who share the same cultural background and speak the same language and/or community health workers can be an effective strategy for ensuring the information is delivered by a trusted individual (who could receive training regarding nutritional issues). A trusted individual may be more effective at combatting misinformation and could potentially increase adherence to nutrition recommendations.

Table 2. Select Resources About Nutrition and Dietary Supplements

Source	Resource
Professional Resources	
Academy of Nutrition and Dietetics	Malnutrition in Older Adults Guideline
Linus Pauling Institute at Oregon State University Micronutrient Information Center	Drug–Nutrient Interactions*
National Institutes of Health Office of Dietary Supplements	Collection of Dietary Supplement Fact Sheets, General Supplement Information and Supplements for Specific Purposes Dietary Supplement Label Database Dietary Supplement Ingredient Database
Consumer Resources	
AARP	Magazines from AARP
National Institute on Aging	Dietary Supplements for Older Adults
Tufts University	Health & Nutrition Letter
U.S. Department of Agriculture	MyPlate Older Adults
U.S. Department of Agriculture—Nutrition.gov	Dietary Supplements

*This link leads to a website provided by the Linus Pauling Institute at Oregon State University. GSA is not affiliated nor endorsed by the Linus Pauling Institute or Oregon State University.

6

Equity Considerations for Addressing Nutrition



Roundtable participants commented that economic limitations are an important barrier to addressing the nutritional needs of older adults, especially because nutrient-dense foods (e.g., fruits, vegetables) and protein tend to be more expensive than less nutritious foods.³⁰ Nutritious foods may also be more logistically difficult to obtain in low-income communities, which often lack sufficient access to grocery stores and are sometimes referred to as “food deserts.” Greater sustainable financial resources are needed to address nutritional deficiencies and inadequacies, especially among older adults of lower socioeconomic status. Enhancing such resources will promote health equity.

In addition to calling for an expansion of nutrition programs such as Meals on Wheels and “food is medicine” programs,³¹ participants called on stakeholders to address nutritional gaps by expanding access to healthful foods and exploring opportunities to reduce the cost of MVMs for older adults. They suggested several potential mechanisms, including the Supplemental Nutrition Assistance Program (known as SNAP benefits), or industry-funded programs that could operate similar to pharmaceutical industry patient assistance programs for people with limited incomes.

Befittingly, participants also suggested that nutritional interventions should be designed to meet the cultural needs of diverse populations. They emphasized that community health worker models would be beneficial because these individuals are more likely to represent the communities that they serve, are culturally responsive, and may be better able to overcome barriers related to mistrust. Social workers and home health nurses could also play important roles. Community social workers can identify issues such as food insecurity and caregiving needs and work with other entities such as Area Agencies on Aging to identify and implement supports.

Participants indicated federal initiatives that aim to address nutritional needs are underway. For example, the [White House Conference on Hunger, Nutrition, and Health](#) in 2022 focused on addressing issues such as food insecurity and nutrition-related diseases (e.g., diabetes, obesity, hypertension). The conference created a vision for ending hunger, reducing diet-related disease, and narrowing disparities.³² Participants suggested increasing focus on these issues and collaboration with a broad range of stakeholders to facilitate the development and implementation of solutions that address nutritional needs for all older adults.

7 Opportunities for Research to Better Inform Nutrition Practices

Roundtable participants discussed gaps in knowledge about nutrition for older adults, including the use of MVMs, and addressed several specific areas for further investigation. They noted current dietary recommendations for older adults are largely based on requirements measured in healthy young adults and more research is needed to better define nutritional needs across the spectrum of aging. They observed that daily recommended intakes (DRIs) for micronutrients are infrequently updated and additional research to further define DRIs for various segments of the older adult population is needed, especially for the oldest old. Further, participants noted that there is a lack of information about how various chronic conditions and medications impact DRIs. Therefore, it can also be difficult to determine ideal individualized intake levels, and research on a more diverse group of older adults is needed.

Incorporating nutrition information (including when to recommend supplementation) into treatment guidelines for various disease states offers another opportunity to address nutrition in clinical practice, and participants suggested that stakeholders seek to collaborate with guideline-writing organizations. However, they observed that additional research about the use of specific interventions for the prevention and treatment of various indications would be needed to support the development of guideline recommendations.



Among their comments, participants explained that randomized controlled trials may not be feasible or of sufficient duration for dietary interventions in humans; existing research is often short-term or observational. Thus, innovative approaches are needed to explore how nutrition research is conducted and to collaborate with FDA, NIH, and the Centers for Disease Control and Prevention regarding strategies for conducting studies. Proposed strategies for nutritional research included seeking markers for assessing whether a dietary supplement is improving aspects of the aging process such as benefits for cellular health (which may respond more rapidly to nutritional interventions). Because the various nutrients have different cellular mechanisms, a multitude of markers may be needed to identify compound-specific outcomes.

Participants also called for more research on the cost-effectiveness of nutritional interventions, including dietary supplementation, as well as practice models that support nutritional interventions. Emerging evidence indicates that certain dietary supplements and interventions have the potential to reduce health care costs associated with chronic conditions, which can potentially yield substantial savings.^{33,34} They noted that the ability to demonstrate a return on investment for these interventions may help support increased funding for nutritional interventions.

Conclusion



Many older adults face challenges meeting their nutrient requirements. A growing body of evidence shows that healthful nutrition reduces risk for a number of conditions associated with advancing age, including cognitive decline, dementia, osteoporosis, cardiovascular conditions, and sarcopenia. Thus, maintaining adequate nutrition with aging is important for optimizing outcomes. However, aging is associated with changes in physiology and nutrient requirements as well as other changes that can interfere with the ability to obtain adequate nutrition. Additionally, many barriers impact the ability of older adults to obtain adequate nutrition from their regular diets.

Suboptimal nutrition in older adults is often overlooked by clinicians and many health system barriers impede thorough assessments of nutritional needs. Leveraging members of the health care team and increasing the integration of dietitians on the health care team can help address some of these issues. Increasing opportunities for reimbursement for nutritional services can also help address gaps in care. Education and training are needed for health care providers to be better prepared to address nutritional requirements. Similarly, consumer awareness campaigns about nutrition, as well as promotion of reliable resources, can help support uptake of and adherence to healthful nutrition practices. Finally, supplementation with MVMs may help older adults meet their nutritional needs but there are few authoritative resources to guide use of these dietary supplements. Increased research into nutrition practices can help to better identify the risks and benefits of MVM supplementation and support integration of MVM recommendations in clinical practice guidelines to help optimize use in clinical practice.

References

- Melzer TM, Manosso LM, Yau SY, et al. In pursuit of healthy aging: effects of nutrition on brain function. *Int J Mol Sci*. 2021;22(9):5026. doi:10.3390/ijms22095026
- Vaudin AM, Moshfegh AJ, Sahyoun NR. Measuring food insecurity in older adults using both physical and economic food access, NHANES 2013–18. *J Nutr*. 2022;152(8):1953–1962. doi:10.1093/jn/nxac058
- Wallace TC, Frankenfeld CL, Frei B, et al. Multivitamin/multimineral supplement use is associated with increased micronutrient intakes and biomarkers and decreased prevalence of inadequacies and deficiencies in middle-aged and older adults in the United States. *J Nutr Gerontol Geriatr*. 2019;38(4):307–328. doi:10.1080/21551197.2019.1656135
- Dietary Guidelines Advisory Committee. *Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services*. July 2020. U.S. Department of Agriculture; U.S. Department of Health and Human Services. https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport_of_the_2020DietaryGuidelinesAdvisoryCommittee_first-print.pdf
- Marra MV, Bailey RL. Position of the Academy of Nutrition and Dietetics: micronutrient supplementation. *J Acad Nutr Diet*. 2018;118(11):2162–2173. doi:10.1016/j.jand.2018.07.022
- van den Berg GH, Huisman-de Waal GGJ, Vermeulen H, et al. Effects of nursing nutrition interventions on outcomes in malnourished hospital inpatients and nursing home residents: a systematic review. *Int J Nurs Stud*. 2021;117:103888. doi:10.1016/j.ijnurstu.2021.103888
- Roberts SB, Silver RE, Das SK, et al. Healthy aging—nutrition matters: start early and screen often. *Adv Nutr*. 2021;12(4):1438–1448. doi:10.1093/advances/nmab032
- Wallace TC, Frankenfeld CL. Dietary protein intake above the current RDA and bone health: a systematic review and meta-analysis. *J Am Coll Nutr*. 2017;36(6):481–496. doi:10.1080/07315724.2017.1322924
- de Souto Barreto P, Cesari M, Morley JE, et al. Appetite loss and anorexia of aging in clinical care: an ICFSR Task Force report. *J Frailty Aging*. 2022;11(2):129–134. doi:10.14283/jfa.2022.14
- Hales CM, Carroll MD, Fryar CD, et al. Prevalence of obesity and severe obesity among adults: United States, 2017–2018. NCHS Data Brief No. 360; National Center for Health Statistics. February 2020. <https://www.cdc.gov/nchs/data/databriefs/db360-h.pdf>
- Pereira-Santos M, Costa PR, Assis AM, et al. Obesity and vitamin D deficiency: a systematic review and meta-analysis. *Obes Rev*. 2015;16(4):341–349. doi:10.1111/obr.12239
- Shlisky J, Bloom DE, Beaudreault AR, et al. Nutritional considerations for healthy aging and reduction in age-related chronic disease. *Adv Nutr*. 2017;8(1):17–26. doi:10.3945/an.116.013474
- Academy of Nutrition and Dietetics. Malnutrition in Older Adults (MIOA) Systematic Review (2020–23). <https://www.andean.org/topic.cfm?menu=6064&cat=6076>
- Kight CE, Bouche JM, Curry A, et al.; Academy of Nutrition and Dietetics; American Society for Parenteral and Enteral Nutrition; Association of Clinical Documentation Improvement Specialists. Consensus recommendations for optimizing electronic health records for nutrition care. *J Acad Nutr Diet*. 2020;120(7):1227–1237. doi:10.1016/j.jand.2019.07.018
- Tan ECK, Eshetie TC, Gray SL, et al. Dietary supplement use in middle-aged and older adults. *J Nutr Health Aging*. 2022;26(2):133–138. doi:10.1007/s12603-022-1732-9
- Mishra S, Stierman B, Gahche JJ, et al. Dietary supplement use among adults: United States, 2017–2018. NCHS Data Brief No. 399; National Center for Health Statistics. February 2021. <https://www.cdc.gov/nchs/products/databriefs/db399.htm>
- Blumberg JB, Cena H, Barr SL, et al. The use of multivitamin/multimineral supplements: a modified Delphi consensus panel report. *Clin Ther*. 2018;40(4):640–657. doi:10.1016/j.clinthera.2018.02.014
- Vyas CM, Manson JE, Sesso HD, et al. Effect of multivitamin-mineral supplementation versus placebo on cognitive function: results from the clinic subcohort of the COcoa Supplement and Multivitamin Outcomes Study (COSMOS) randomized clinical trial and meta-analysis of 3 cognitive studies within COSMOS. *Am J Clin Nutr*. 2024;119(3):692–701. doi:10.1016/j.ajcnut.2023.12.011
- Yeung LK, Alschuler DM, Wall M, et al. Multivitamin supplementation improves memory in older adults: a randomized clinical trial. *Am J Clin Nutr*. 2023;118(1):273–282. doi:10.1016/j.ajcnut.2023.05.011
- Baker LD, Manson JE, Rapp SR, et al. Effects of cocoa extract and a multivitamin on cognitive function: a randomized clinical trial. *Alzheimers Dement*. 2023;19(4):1308–1319. doi:10.1002/alz.12767
- Loftheld E, O'Connell CP, Abnet CC, et al. Multivitamin use and mortality risk in 3 prospective US cohorts. *JAMA Netw Open*. 2024;7(6):e2418729. doi:10.1001/jamanetworkopen.2024.18729
- Martí-Carvajal AJ, Solà I, Lathyris D, et al. Homocysteine-lowering interventions for preventing cardiovascular events. *Cochrane Database Syst Rev*. 2017;8(8):CD006612. doi:10.1002/14651858.CD006612.pub5
- U.S. Department of Agriculture; U.S. Department of Health and Human Services. *Dietary Guidelines for Americans 2020–2025*. December 2020. https://www.dietaryguidelines.gov/sites/default/files/2021-03/Dietary_Guidelines_for_Americans-2020-2025.pdf
- Congressional Research Service. Older Americans Act: Nutrition Services Program. May 4, 2020. <https://crsreports.congress.gov/product/pdf/IF/IF10633>
- Ullevig SL, Sosa ET, Crixell S, et al. Impact of home-delivered meals on nutrition status and nutrient intake among older adults in central Texas. *J Nutr Health Aging*. 2018;22(7):861–868. doi:10.1007/s12603-018-1038-0
- U.S. Department of Agriculture; U.S. Department of Health and Human Services. *Scientific Report of the 2015 Dietary Guidelines Advisory Committee*. February 2015. https://ods.od.nih.gov/pubs/2015_DGAC_Scientific_Report.pdf
- Skipper A, Colman A, Tomesko J, et al. Position of the Academy of Nutrition and Dietetics: malnutrition (undernutrition) screening tools for all adults. *J Acad Nutr Diet*. 2020;120(4):709–713. doi:10.1016/j.jand.2019.09.011
- Gasteyer C, Suter M, Gaillard RC, et al. Nutritional deficiencies after Roux-en-Y gastric bypass for morbid obesity often cannot be prevented by standard multivitamin supplementation. *Am J Clin Nutr*. 2008;87(5):1128–1133. doi:10.1093/ajcn/87.5.1128
- Smelt HJM, Pouwels S, Smulders JF, et al. Patient adherence to multivitamin supplementation after bariatric surgery: a narrative review. *J Nutr Sci*. 2020;9:e46. doi:10.1017/jns.2020.41
- Leung CW, Insolera NE, Wolfson JA. Trends in recurring and chronic food insecurity among US families with older adults. *JAMA Health Forum*. 2024;5(3):e235463. doi:10.1001/jamahealthforum.2023.5463
- Newman T, Lee JS, Thompson JJ, et al. Current landscape of produce prescription programs in the US. *J Nutr Educ Behav*. 2022;54(6):575–581. doi:10.1016/j.jneb.2022.02.011
- The White House. Fact Sheet: The Biden-Harris Administration Announces More Than \$8 Billion in New Commitments as Part of Call to Action for White House Conference on Hunger, Nutrition, and Health. September 28, 2022. <https://www.whitehouse.gov/briefing-room/statements-releases/2022/09/28/fact-sheet-the-biden-harris-administration-announces-more-than-8-billion-in-new-commitments-as-part-of-call-to-action-for-white-house-conference-on-hunger-nutrition-and-health/>
- Berkowitz SA, Terranova J, Randall L, et al. Association between receipt of a medically tailored meal program and health care use. *JAMA Intern Med*. 2019;179(6):786–793. doi:10.1001/jamainternmed.2019.0198
- Council for Responsible Nutrition. *Supplements to Savings: Health Care Cost Savings From the Targeted Use of Dietary Supplements 2022–2030*. 2022. <https://www.crnusa.org/Supplement-Savings>



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