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Review Article

The Future is Now - Emerging Trends in the Older Adult

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Abstract

Expert insight on nutrition and healthy aging along with concise takeaways for practitioners were developed from the 8th Annual Virtual Conference of the Healthy Aging Dietetic Practice Group. With six distinguished professionals presenting on an array of topics, the conference highlighted both emerging trends and advances in the field. The first presentation explored the safe implementation of a low-carbohydrate diet, elucidating its effects on metabolic health and discussed both the best uses and contraindications. The second lecture focused on continuous glucose monitoring in older adults with diabetes, emphasizing the role of technology in improving glycemic control and patient outcomes. In the third expert lecture, the adaptation of the Diabetes Prevention Program (a landmark lifestyle intervention) for older adults was presented, underscoring the need for tailored, age-specific strategies and tactics. The fourth lecture addressed the importance of providing culturally appropriate patient care in dietetics, highlighting the nuances of dietary habits across diverse cultures and cuisines. In the fifth presentation, the speaker deconstructed the concept of "anti-aging" or longevity diets, separating fact from fiction and providing evidence-based insights into emerging nutritional therapies to extend lifespan, including controversial dietary approaches with evolving science like protein restriction and calorie restriction. The conference wrapped up with a discussion on the aging brain, highlighting the relationship between nutrient-rich diets and cognitive function in older adults, including key micronutrient needs and the impact of multivitamin supplementation. Overall, the conference served as a platform for knowledge exchange and emphasized the pivotal role of dietetics in promoting healthy aging and longevity.

INTRODUCTION

Over a 2-day virtual event, the Academy of Nutrition and Dietetics' Healthy Aging Dietetic Practice Group (HADPG) presented their 8th annual conference on nutrition for healthy aging, entitled "The Future is Now - Emerging Trends in the Older Adult." This annual conference is an interprofessional venue to discuss critical advances and new information in the field, guiding dietetics professionals to be field leaders. The HADPG consists of dietetics working in diverse sectors ranging from community programs, assisted living facilities, hospitals, government agencies, to universities, and is united by a shared belief - the health and wellness of older adults can be significantly improved by optimal nutrition and physical activity. The HADPG is overseen by its Executive Committee, which offers educational opportunities, online resources and networking for its membership in fulfillment of the HADPG mission and vision.

The HADPG mission is to empower and support its members to be food and nutrition leaders promoting life-long wellness, with the vision that optimizing longevity and wellness in aging can be accomplished through food and nutrition. In pursuit of these ideals, the annual virtual conference translates cutting-edge research into evidence-based practice. Following the success of our annual virtual conferences on healthy aging nutrition, this year's 8th annual virtual conference, "The Future

is Now: Emerging Trends in the Older Adult," provided a platform for scientific discourse on emerging trends in nutrition for healthy aging. Six field-leaders were selected to speak on curated topics, providing support from recent peer-reviewed literature and their professional practice experience. These conference proceedings encapsulate the six expert presentations and the key points garnered from each, serving as an invaluable resource for practitioners committed to delivering the best possible care to their patients and clients.

The broad theme of the annual virtual conference, improving the health of older adults through nutrition, is a critical aspect of promoting longevity and healthy aging. As individuals age, their nutritional needs evolve, thus necessitating a strategic approach to diet that considers these changes throughout the aging process. An example of the application of nutrition for healthy aging is disease prevention through food. Healthy dietary patterns in alignment with the Dietary Guidelines for Americans [1] (DGA) can mitigate the risk of chronic diseases such as heart disease, type 2 diabetes, and osteoporosis. Small but meaningful adjustments can create personalized healthy diet approaches. For example, for an older individual with hypertension, adjusting the DGA dietary pattern towards the Dietary Approaches to Stop Hypertension (DASH) diet, provides a targeted nutritional approach to address high blood pressure [2]. In this way, nutrition for older adults can be adjusted by registered dietitians using the latest research to address their most pressing health needs. Furthermore, certain nutrients can be instrumental in preserving physical mobility, cognitive function, and mental well-being among older adults – core components of maintaining a high quality of life. Consequently, the role of dietetics in ensuring the health and longevity of older adults cannot be overemphasized. Practitioners in this field are tasked with continually updating their knowledge, adapting to new research findings, and implementing these in a manner that is both culturally sensitive and sustainable for the aging demographic. By doing so, they have the potential to significantly elevate the quality of life for older adults and extend their years of healthy living.

A significant barrier to staying up to date on the latest nutrition research, especially on topics of high media and lay interest such as longevity, is reading, evaluating and synthesizing nutrition research. Unfortunately, the current scientific publishing landscape presents a taxing challenge for dietetic practitioners aiming to keep abreast of the latest research in the field [3]. The number of publications has exponentially expanded, making it an arduous task to sift through and accurately interpret the surfeit of information. Compounding this issue is the rising incidence of predatory journals that disseminate weak or misleading research, under the guise of a rigorous peer-review [4]. Consequently, it becomes increasingly difficult for practitioners to discern and extract valid, high-quality research insights from the deluge of available literature. Such a convoluted scientific publishing environment underscores the importance of expert sources of information and platforms like professional conferences that enable an open dialog between researchers and practitioners. The HADPG annual virtual conference represents a modern and innovative approach to support practitioners with the latest evidence-based information in nutrition for healthy aging. A summary of the expert presentations, discussion topics and key practitioner takeaways are described in these conference proceedings.

Safely Implementing a Low-Carbohydrate Diet in the Aging Adult

The first speaker of the conference, Dr. Laura Buchanan, MD, MPH, ABOM, is a double board-certified physician in the fields of family and obesity medicine. She led an informative discussion on the significance of a multidisciplinary team approach in safely implementing a low-carbohydrate diet in aging adults. Dr. Buchanan emphasized that a low-carbohydrate diet could have beneficial effects on metabolic disease, particularly in older adults [5].

The key benefits of a multidisciplinary team as discussed by Dr. Buchanan include effective communication between the provider, dietitian, health coach, and front-of-house staff, along with consistent monitoring of progress and side effects. She posited that such an approach is essential to safely manage the shift to a low-carbohydrate diet in highly motivated older adults, especially when appropriate deprescription is also implemented. This multidisciplinary team approach helps mitigate the potential negative effects such as rapid changes in blood pressure, glucose levels, and other lab values that may occur. Using a multidisciplinary team-including a registered dietitian-can help monitor these changes and reduce potential risks. Dr. Buchanan articulated the rationale for a low-carbohydrate diet, citing its potential benefits to combat obesity, sarcopenia, diabetes, and hypertension [6]. However, she also acknowledged barriers to implementation, including knowledge deficits, social isolation, financial constraints, trigger foods, eating out, hunger, and temptation. She proposed practical solutions for each scenario, such as advising waiters not to bring out a 'breadbasket' while eating out at a restaurant to remove temptation. While discussing the implementation details, Dr. Buchanan went in-depth into the variations of the diet, including a moderate carbohydrate diet, low-carbohydrate ketogenic diet, and very low-carbohydrate ketogenic diet. Independent of the carbohydrate and fat ratios, she advocated for a protein intake of 1.2-2 g/kg/day to combat anabolic resistance in aging adults [7]. (Anabolic resistance a reduced ability to stimulate muscle growth in response to protein intake.) Dr. Buchanan also highlighted critical safety precautions, as although a low-carbohydrate diet can be beneficial, it is not suitable for everyone. She listed several contraindications, like glycogen storage disease type 1 and carnitine deficiency. She stressed the necessity of monitoring conditions such as diabetes, chronic kidney diseases (stages 3-5) and hypertension [8,9]. Deprescribing of medications may be necessary and should always be done under the supervision of a healthcare provider.

In conclusion, according to Dr. Buchanan, implementing a low carbohydrate diet in the aging adult can provide many profound benefits, especially in motivated individuals. The ultimate choice

of implementing the diet requires communication between the patient and practitioner and should balance the benefits with the concerns. Implementation should proactively address concerns by monitoring key clinical measures. Practitioners must consider the individual health history and needs of each patient when prescribing such a diet. The future directions in this field involve more detailed research on the long-term effects of low-carbohydrate diets in older adults and finding more effective ways to implement these diets safely.

Continuous Glucose Monitoring for Older Adults with Type 2 Diabetes (T2DM)

The second speaker, Emily Schilling, RD, LDN, CDCES, the 2022–2023 Chair-Elect for the HADPG, explained the implementation of Continuous Glucose Monitoring (CGM) for older adults with Type 2 Diabetes (T2DM). The relevance of CGM in practice for the older adult is paramount, particularly considering the rising prevalence of T2DM among older adults. Emily delved into the importance of diabetes self-management and emphasized the need to empower individuals to make informed decisions about self-care. She cautioned against the assumption that older adults are uncomfortable with technology, such as CGMs, underlining critical benefits and challenges. The benefits of CGM include improved self-efficacy in diabetes management, a decreased or even eliminated need for fingerstick blood glucose sampling, more informed treatment decisions, and the ability to improve the detection of hypoglycemia. These positive aspects can outweigh the challenges, which might involve discomfort with technology, poor dexterity or eyesight and cost.

Five recent research findings were highlighted: CGM's usefulness for caregivers managing diabetes in older adults with cognitive impairment [10], decreased occurrence of hypoglycemia in older adults (>60 years) using CGM [11], low rates of professional CGM use in older adults with T2DM [12], decreased acute events and diabetes-related hospitalizations with CGM usage [13], and improved time in range glucose and reduced hyperglycemia in older adults (65+) using basal insulin only and CGM [14].

RDNs play a pivotal role in CGM monitoring, with opportunities for education, advocacy, and personalized nutrition education. Medicare coverage requirements for CGMs, including a diagnosis of diabetes and a routine in-person or Medicare-approved telehealth follow-up with a treating practitioner were also discussed. Emily concluded her session with a "crash course" on interpreting CGM data. She elaborated on valuable data-driven CGM reports such as the Ambulatory Glucose Profile (AGP), Average Glucose, Glucose Management Indicator (approximate A1c), Glucose Variability, and Time in Target Range. The Ambulatory Glucose Profile (AGP) is a comprehensive report generated from CGM data, visually representing glucose levels throughout the day and night. This overview helps identify patterns and trends of glucose behavior over a given period, which can be instrumental in making effective treatment decisions. Average glucose refers to the mean value of glucose concentrations measured over specified intervals, providing a general indication of an individual's overall glucose control in the short term e.g., over several hours or days. It offers a snapshot of blood glucose levels and is used in combination with other parameters to manage diabetes effectively. The Glucose Management Indicator (GMI) is an estimation of the Hemoglobin A1c (HbA1c) based on average glucose readings from CGM data. HbA1c is a standard measure used in clinical practice to assess long-term glucose control over 2-3 months. However, the GMI is a dynamic tool providing an immediate estimate, which can guide ongoing treatment adjustments. Glucose variability refers to the fluctuations in glucose levels that occur throughout the day. These variations can be due to multiple factors such as food intake, physical activity, stress, medication, etc. High glucose variability can be an indicator of unstable glucose control and may increase the risk of hypoglycemia and hyperglycemia. Time in Target Range is the percentage of time an individual's glucose levels stay within a predetermined target range. It is a crucial metric in diabetes management, providing insight into how well the treatment plan is maintaining glucose levels within the desired range, thereby reducing the risk of complications. Additional information on clinical guidelines for glucose monitoring and other recommended lab values is available in a recently updated expert consensus report [15].

In summary, Emily Schilling underscored the relevance and utility of new technology and the use of CGM for older adults with T2DM. She emphasized the role of dietetics professionals in empowering patient self-management and navigating the benefits and challenges of CGM. Going forward, the focus should be on personalized nutrition education, leveraging technology to improve patient outcomes, and expanding research on the use and efficacy of CGM in older adults.

Adapting the Diabetes Prevention Program for Older Adults

For the third session, concluding the first day of this two-day virtual conference, Dr. Emily Johnston, PhD, MPH, RDN, CDCES spoke on one of the most successful lifestyle programs to reduce the risk of diabetes development, the Diabetes Prevention Program (DPP) [16,17], and adapting the DPP for older adults. Dr. Johnston is a Research Assistant Professor at NYU Gross School of Medicine in the Division of Geriatrics, leading a trailblazing path in dietetics with a specific focus on diabetes prevention and management among older adults. As the prevalence of diabetes continues to escalate, the relevance of this topic in healthy aging dietetics cannot be overstated. Diabetes poses significant health risks to older adults, making effective prevention and management techniques indispensable in promoting longevity and healthful aging. The focus of Dr. Johnston's discussion revolved around the DPP and the BRInging the Diabetes prevention program to GEriatric populations (BRIDGE) study [18]. The original DPP study published in 2002 showed that a lifestyle change program promoting healthful dietary choices and regular physical activity to achieve weight reduction and decreased HbA1c levels was more effective than metformin at reducing risk of type 2 diabetes

in high risk adults. The DPP was most effective in older adults, reducing risk by 71% in adults over the age of 60 years [19].

The BRIDGE study aimed to evaluate the effectiveness of DPP-Tailored for Older Adults (DPP-TOAT) on clinical outcomes and assess its implementation. The BRIDGE study is currently ongoing and aims to recruit 230 participants, primarily sourced through physician referrals and proactive community and clinic outreach. The participants will be randomized to receive either the in-person adapted DPP or the virtual adapted DPP for 1 year. Outcome assessments to measure the effectiveness take place at baseline, 6 months, and 12 months. The primary outcomes are body weight and glycemia, both of which are continuous outcomes. Adherence is based on the number of group sessions each participant completes. The RE-AIM (reach, effectiveness, adoption, implementation, maintenance) [20], and Consolidated Framework for Implementation Research (CFIR) frameworks will be used to guide the implementation measures [21]. This rigorous evaluation will inform whether the intervention can be generalized, readily disseminated, and implemented elsewhere (e.g., at other clinics).

Dr. Johnston highlighted progress in the study, including recruitment and engagement. Early indications were promising, and the results of a feasibility study showed that participants lost weight and found the intervention to be relevant to their lives and goals [22]. The researchers highlighted the feasibility of telehealth for older adults, suggesting a greater focus on specific needs of this demographic, such as technology support. As Dr. Johnston shared the early progress of the BRIDGE Study's intervention, she highlighted the necessity of providing ample resources to participants such as tracking resources (e.g., HealthWatch 360 app or website), local and virtual physical activity resources and a way to feel connected between sessions using a study-created BRIDGE website. The researchers are supported by a co-investigator team that makes recommendations on issues that arise including on how to engage diverse groups of learners with different baseline levels of knowledge. The session also featured feasible adaptations to the DPP to make it more accessible for older adults, such as videos on behavior change tailored for geriatrics, large font materials, videos with captions and sending recordings of all sessions so participants can revisit anything they missed.

In summary, Dr. Johnston underscored the effectiveness of personalized, engaging approaches in the prevention of diabetes among older adults. The presentation emphasized the importance of adapting interventions to suit the unique needs of this population, offering valuable insights for practitioners in the field of dietetics. Looking ahead, the challenge lies in broadening these tailored interventions and ensuring their wide adoption in clinical practice, thereby promoting healthy longevity in the face of growing diabetes prevalence.

Delivering Culturally Appropriate Patient Care to Older Adults

At the start of Day 2 of the virtual conference, the fourth presentation was delivered by Dr. Melinda Boyd, DCN, MPH, MHR, RD. Dr Boyd is an experienced Registered Dietitian in both the United States and the United Kingdom and brings with her a wealth of knowledge and expertise in the field of dietetics, with a special focus on the cultural aspects of patient care. In this lecture, Dr. Boyd emphasized the importance of delivering culturally appropriate patient care to older adults in the context of healthy aging dietetics. She cited data showing that the number of people aged 65 and older is increasing, particularly in the United States [23], and that chronic conditions are not only prevalent, but often result in a loss of independence. Additionally, around a quarter of older adults experience behavioral health problems, dispelling the myth that depression is a normal part of aging [24]. Regarding depression and determining a potential cause, Dr. Boyd touched upon the concept of nostalgia, which is a sentimental yearning for a return to some past period. Nostalgia, particularly food nostalgia, may serve as a coping tool and consuming foods that are familiar may improve well-being [25]. In this context, she stressed the importance of acknowledging and respecting food memories and cultural foods of each patient. The lecture also discussed health disparities, noting that these differences in health or health outcomes may arise due to factors like race, ethnicity, gender, sexual orientation, geographical location, socioeconomic status, and more.

Moving to the core of the presentation, Dr. Boyd focused on the concept of culturally appropriate care, which responds to the diverse needs of individual patients, families, and caregivers [26]. It is critically important for dietetics professionals to deliver culturally appropriate care, as this fosters better patient-provider relationships, mutual respect, and improved health outcomes. It also aids in reducing health disparities and increasing nostalgia experiences, ultimately empowering the patient, and offering them an element of control. Dr. Boyd underlined the role of culture in influencing not just what, but how, when, where, and with whom we eat. She also stressed that culture affects our beliefs and behaviors about obtaining food, food preparation, and physical activity.

Dr. Boyd concluded her presentation by sharing practical ways to develop cultural humility, combine culturally appropriate care with evidence-based practice, and implement it in clinical practice-calling the following core concepts part of a "culturally appropriate care toolbox." She emphasized understanding patient demographics to anticipate possible language barriers and to know when to utilize translator services. She encouraged practitioners to reflect after new interactions, self-identify personal bias, and aim to improve their cultural competence through proactive education and exposure to various cultures. As part of the "toolbox," the proactive steps included incorporating culturally relevant questions into the clinician's pre-visit forms and gaining conversational experience with individuals from diverse backgrounds. This process builds confidence working with individuals from different cultures and helps to better identify personal biases. Another "tool" included exploring culturally specific grocery stores to improve knowledge of different foods and their nutritional values. Dr. Boyd stressed

the importance of asking questions about unfamiliar ingredients, food items, and preparation methods, underscoring the need to make the time and effort to research common foods consumed by patients of different cultures. Additional ways to improve delivery of culturally appropriate care are understanding and avoiding the use of harmful food stereotypes while focusing on using positive terms to describe foods. Learning basic phrases in commonly encountered languages of patients may also help promote beneficial patient-practitioner relationships. Researching age-related cultural norms and adapting educational materials to accommodate the patient's culture were also underscored. For example, using specific examples of culturally relevant foods and showing where they fit within the American MyPlate model. In the ever-evolving field of dietetics, Dr. Boyd's lecture underscores the necessity of delivering culturally appropriate patient care to older adults. As dietetics professionals, incorporating these practices into daily clinical practice can improve health outcomes, enhance patient satisfaction, and reduce health disparities.

The Anti-Aging Diet: Separating Fact from Fiction

Dr. Cristal Hill, Ph.D., an assistant professor at the USC Davis School of Gerontology, was the fifth presenter. She reviewed controversial topics centered on "anti-aging diets" and their emerging role in dietetics. Dr. Hill began her segment by illustrating the biological mechanisms of aging [27,28]. She and her co-authors reviewed some of the most common anti-aging diets currently being examined [29], including fasting [30], calorie restriction [31], ketogenic [32], and protein restriction diets [33]. Each diet has unique characteristics, but all share a common goal of promoting health benefits such as reducing obesity, improving metabolic health, and enhancing immune function. Comprehensive overviews of these dietary approaches, including potential benefits and concerns in the context of older adults were discussed and are available in targeted review articles [34-37].

Dr. Hill drew special attention to the topic of calorie restriction, noting it is the primary nutrition intervention that has produced increases in longevity in preclinical models with supportive effects on longevity markers in human trials [38-41]. Calorie restriction involves a daily reduction of calorie intake by 12-15% (in humans), without malnutrition. Essential micronutrients and macronutrients are still provided.

Another type of calorie restriction occurs through forms of fasting, which alters the timing of when food is consumed. Although the specifics fasting regimens are variable and not explicitly defined by consensus definitions, they generally fall within several broad categorical sub-types. One subtype is time-restricted feeding, which involves restricting daily food consumption within a specific time window, for example, consuming all foods within a pre-determined~4-hour to~12-hour window, and not consuming foods outside of that window. Another subtype, intermittent fasting, involves alternating between fasting periods and ad libitum eating periods of various lengths, for example alternate day fasting [42], which uses a 2-day repeating pattern of a fasting day (no food) followed by a feeding day (food ad libitum). Lastly, periodic fasting consists of alternating longer periods of feeding and fasting, for example, a 1-2 day fasting period followed by a 5-day ad libitum feeding period. She also noted that ketogenic diets are commonly perceived as a type of nutritional fasting due to dietary restriction of carbohydrates and resultant increases in blood ketone levels, which are also increased during prolonged fasting. Although, ketogenic diets are not inherently calorie restricted, they may impact similar physiologic mechanisms [43].

Dr. Hill directed a significant portion of her talk to dietary protein restriction, which functions through reducing signaling through the growth hormone pathway; reduced growth hormone signaling is well-evidenced to increase longevity in both preclinical models and humans. Dietary protein restriction has multiple subtypes that involve reducing either the total intake of protein or specific amino acids in the diet. Protein restriction limits total protein intake to 4–8% of daily calories, which is approximately 20-50 grams of protein per day. Methionine Restriction (MR) reduces methionine intake from control levels of 0.86% (i.e., 8.6 g/kg diet) to 0.17% (1.7 g/kg diet). The third type involves restriction of the branched chain amino acids (BCAAs): leucine, isoleucine, and valine. Indeed, each of these protein restriction diets induces distinctive characteristics, yet shares a common physiologic function of promoting health benefits in pre-clinical models, such as reducing obesity, improving metabolic health, and enhancing immune function.

Dietary protein restriction leads to cellular adaptations that induce beneficial metabolic hormones such as Adiponectin and Fibroblast growth factor 21 (FGF21) [44]. Adiponectin and FGF21 are two key metabolic hormones linked to longevity and healthy aging. Dr. Hill discussed the importance of these hormones in her presentation, highlighting their roles in cellular adaptations and energy balance. Adiponectin is an adipokine mainly synthesized in and secreted from white adipocytes. It has an anti-inflammatory, insulin-sensitizing effect and is decreased during obesity. Adiponectin plays an integral role in energy homeostasis and has been found to regulate insulin sensitivity. It also has anti-atherogenic properties, helping to reduce or prevent the build-up of artery plaque, which is associated with cardiovascular diseases. Some studies have shown that high levels of adiponectin are linked to extended lifespan, suggesting an important role for this hormone in longevity. On the other hand, FGF21, mainly synthesized and secreted from hepatocytes, is a hepatokine that improves glucose uptake and energy expenditure. It aids in decreasing body weight and reduces the Growth Hormone (GH) response to target tissues. FGF21 has been found to extend lifespan in various animal models, and research suggests it may also play a significant role in human health and longevity. It acts by mimicking the effects of dieting, such as enhancing fat burning and reducing sugar consumption, thus contributing to its beneficial health effects. Adiponectin and FGF21 signaling pathways are potential targets for interventions aimed at promoting healthy aging and longevity. However, more research in this field is essential to understand the precise mechanisms by which these hormones affect lifespan and how they might be harnessed to promote healthier aging.

In summary, Dr. Hill's lecture underscored the emerging research on anti-aging diets and their potential role in healthy aging and longevity. She emphasized the importance of understanding the benefits and limitations of these diets, particularly in the context of protein restriction, though it is noteworthy that protein-restricted diets have not breached clinical utility [45,46]. This discussion serves to inform dietetic professionals about the current state of research in this area and the potential of these diets to contribute to healthy aging. These studies, along with ongoing research in the field, promise to further our understanding of the dietary strategies that can promote healthy aging and increased lifespan.

Alphabet Soup for the Aging Brain

The sixth speaker, Dr. Rachael Patusco, DCN, RDN, brought her extensive expertise in nutrient-focused interventions for cognitive health and aging. Her presentation provided an overview of the role of vitamins and minerals in cognitive aging, appraised the current evidence on micronutrient supplementation and cognitive health and discussed how this information may influence clinical practice decisions for healthy aging. As the population ages, preserving cognitive function and promoting brain health have become increasingly prominent concerns. Nutrition, including the role of specific vitamins and minerals, is a critical component of these efforts. Thus, Dr. Patusco's insights provide crucial guidance for dietetics practitioners in this field. The lecture commenced with an overview of the importance of nutritional intake for brain health and highlighted the dietary gaps that currently exist, especially for older adults. Echoing earlier presentations, she reiterated the six pillars of brain health, emphasizing the key role that diet plays in supporting cognitive functions. She discussed the essential nutrients for brain health, including vitamins A, C, E, and K, thiamin, pantothenic acid, folate, vitamins B6, B12, and C, along with minerals like calcium, potassium, iron, magnesium, and zinc. She underscored that these nutrients contribute to the synthesis of neurotransmitters, the creation of neuronal structures, and the process of neurotransmission, all vital for maintaining cognitive health.

Dr. Patusco then defined cognitive aging. The human brain naturally undergoes considerable alterations throughout the lifespan, characterized by changes in both its structure and abilities. This process of evolution in the brain impacts various domains of cognition, encompassing memory, decision-making capabilities, processing speed, wisdom, and learning. These changes, termed "cognitive aging," are subject to wide inter-individual variability. It is important to note that the decline in cognitive capacities is not uniformly distributed across all domains. Certain cognitive functions remain largely intact, while others are more susceptible to change as one ages [47].

Dr. Patusco then navigated the attendees through a rigorous examination of several studies that showcase the current landscape of evidence related to multivitamin supplementation in cognitive aging. In a double-blind, placebo-controlled randomized controlled trial conducted by Cockle et al., a sample of 139 healthy, cognitively intact individuals aged 60-83 with above-average intelligence was studied for 24 weeks [48]. Participants were given a 10-nutrient multivitamin (MVM) supplement or a placebo, with biospecimens and cognitive tests conducted at baseline, 12 weeks, and 24 weeks. Baseline deficiencies in certain vitamins were noted. The study found a significant association between cognitive assessment scores and the levels of several nutrients including thiamin, riboflavin, pyridoxine, vitamin B12, vitamin C, beta-cryptoxanthin, and lycopene. Post-supplementation, there was a significant increase in the levels of all vitamins except for vitamin A. Despite the increases in micronutrient levels, the study's findings only indicated a statistically significant improvement in Total Reaction Time from the Choice Reaction Time task while differences in other cognitive measures were not affected. The largest and longest study of multivitamin use for cognitive aging was the Physicians' Health Study II which did not find a statistically significant benefit of daily MVM supplementation on global cognitive function scores [49]. While this study was a 12-year double blind, placebo controlled randomized trial of 5,947 healthy male physicians over the age of 65, baseline cognitive assessments were not conducted until on average 2.5 years after randomization. This could be an important distinction as a more recent large-scale trial, COSMOS-Mind, found that when 2,262 older adults were randomized to take either a MVM or placebo daily for 3 years, there was significant improvement in global cognitive function, episodic memory, and executive function [50]. Across these three study examples, participants were well educated, well-nourished, and majority Non-Hispanic White participants. While the more recent COSMOS-Mind trial demonstrated cognitive benefit associated with MVM use, as Cockle et al point out, trials that include longer duration among those with poorer nutritional status could have more substantial impact on cognitive measures.

These studies are mere examples of the larger landscape of the literature which shows conflicting reports on MVM supplementation and cognitive aging. Notably, Dr. Patusco highlighted that while some studies found significant associations between nutrient supplementation and improved cognitive assessment scores, others did not report any significant benefits. Heterogeneity in results highlights the need for harmonization in trial design in this space. Inconsistencies in cognitive measures, duration, intervention, population, and baseline nutrition status should be addressed in future research within this domain.

Dr. Patusco's primary takeaways are to 1) encourage a nutrient-dense diet, 2) address nutrient inadequacies and 3) promote a wellness routine that includes physical and brain health. She underscored that these strategies should be rooted in the six pillars of brain health, thus promoting holistic wellness. Moving forward, research must continue to explore the complex relationship between multivitamin supplementation and cognitive function, to equip dietetics professionals with the most comprehensive and accurate guidance for their patients. This underscores the importance of continued education and collaboration among professionals in the field of aging and dietetics.

SUMMARY

The 8th Annual Virtual Conference of the Healthy Aging Dietetic Practice Group offered insightful discussions on recent advancements in nutrition for promoting healthy aging and longevity. It is crucial for practitioners in the field of dietetics to remain updated with the latest research and clinical practice advancements to ensure effective and comprehensive patient care. As such, this virtual conference stressed the need for consistent interprofessional communication and collaboration to enhance clinical practice. Moreover, in the current environment where research publications are marred by predatory journal publications, obtaining information from experts in the field is critical for professionals in clinical practice to optimally interpret the literature. Outside of targeted conferences such as this virtual conference, professional society guidelines and professional society journals continue to serve as quality primary research resources for dietetics professionals. This conference underscored the importance of active engagement in interpreting and synthesizing emerging literature, emphasizing their role in informing and shaping the future of dietetics practice and optimizing patient care for the older adult.

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