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Reflections on The Journey to Improve Medical Education in Nutrition

Kathryn M Kolasa, Kathrin Eliot and Kay Craven

Abstract

The landscape of nutrition education within the United States health care system has a rich history although the impact remains limited. This paper explores various change drivers to address the need for increased value for incorporating knowledge of food and nutrition into health professions education. Key initiatives discussed include the 2022 White House National Strategy on Hunger, Nutrition and Health, the 2023 Medical Education in Nutrition Summit and recent 2024 Food Is Medicine Summits which have contributed to reshaping healthcare priorities. This paper also underscores the relevance of value-based care and interprofessional collaboration in addressing the nation's nutrition-related challenges. With acknowledgement of persistent barriers to the effective integration of nutrition education across the medical curricula continuum, the paper recognizes the historical perspectives that have contributed to today's landscape. It also explores strategies proposed to enhance medical nutrition education, including funding sources, curriculum development, competency frameworks, culinary medicine programs and legislation. The authors emphasize the need for sustained

advocacy, innovative and intentional curriculum design, and interprofessional collaboration to equip health care professionals with the knowledge and skills needed to effectively address the mounting burden of diet-related diseases today.

Introduction

The face of nutrition is changing, and it's important for registered dietitian nutritionists (RDNs) and others who have had nutrition as a core to their work, and an interest in medical nutrition education, to be aware of the forces working to address hunger and health in the United States health care system. There has been a growing awareness and an abundance of attempts to address the widespread food insecurity in the United States during the activities prior to, amid and after the 2022 White House Conference on Hunger, Nutrition and Health (1-2). At the same time, there has been widespread discussion of how the US health care system is "broken" based on huge sums of money being spent on healthcare while continuing to have poor reported outcomes reported (3). Shmerling (3) suggests one reason is investments in health care seem misdirected and focused on disease, specialty care, and technology rather than preventive care. This is particularly concerning given the recognition that at least 60% of adult Americans have at least one chronic condition (4), many of them preventable and diet related. For many years, most physicians acknowledge they are not equipped to counsel their patients on diet for the prevention and management of chronic disease (5).

The 2022 White House National Strategy on Hunger, Nutrition, and Health (2) energized both traditional and non-traditional players in the world of nutrition and health to take actions addressing the strategy's Five Pillars (Table 1) (2). The Pillars appear simple

but stakeholders from many sectors are using research and knowledge to take a wide variety of actions to reduce waste while improving food security meant to build healthier communities.

Insert table 1 about here

Prior to and following the White House Conference, organizations made important commitments to the national strategy. Attention grabbing conferences have followed the White House Conference including an historic Medical Education in Nutrition Summit hosted by American College of Graduate Medical Education (ACGME) (6) in March 2023 and the first Food Is Medicine (FIM) conference, “Food is Medicine Summit”, hosted by the Department of Health and Human Services in January 2024 (7). The term Food Is Medicine (FIM) has been widely used but vague in what it encompasses. The HHS conference provided a framing language for FIM (7) recognizing that food is critical to health and resilience; and that access to high quality nourishment is essential for well-being. At this conference (7) public-private partnerships and five principles of FIM to guide the work also were announced. Many meetings focused on Culinary Medicine (CM) have also been held. CM is generally thought of as a sub field of FIM. It combines the art of food and cooking with the science of medicine and healing. And a May 2024 joint conference, The Food as Medicine Strategy Summit, (8) was co-located with The Healthcare Innovation Congress. The meeting was marketed as “the only event that brings the entire healthcare ecosystem together -- the people and organizations implementing, running,

and measuring evidence-based food programs -- to prevent chronic disease, personalize treatment, and mitigate food security issues to produce better health outcomes. The topic of value-based care was front and center in its discussions as was medical nutrition education.

Many health care organizations are participating in value-based care agreements with Medicare, Medicaid, and commercial payers while the US is transitioning from a volume-based payment system to an outcomes-based system, and they are scrambling to understand how to improve outcomes to survive this transition in payment and care delivery. The healthcare system is becoming deeply engaged in addressing issues such as nutrition and social drivers of health to improve health outcomes and the quality and cost of healthcare. We have previously discussed in this journal the role of the RDN in value-based care (9).

With these changes in our healthcare delivery and payment system, and the FIM movement (10-11). Given the changes occurring in health care delivery and payment system, and the growing emphasis on FIM, strategies to enhance medical nutrition education from medical school to continuing medical education. This need is becoming more apparent and concerning to even those outside the small group of physicians and RDNs who have been promoting medical nutrition education for more than half a century beginning in the 1950's with the American Medical Association's Council on Food and Nutrition's effort to provide nutrition education to medical professionals (12). Table 2 has a sampling, not an exhaustive list, of notable curriculum efforts and milestones.

Insert Table 2 about here. (references 12-34 go with table 2)

This paper details current efforts to improve medical nutrition education as it relates to these significant changes in our healthcare system. We are active advocates of increased and universal nutrition education in medicine and interprofessional education and practice. To provide a bit of context for the discussion on medical nutrition education we offer Table 2 with a list of a variety of past efforts to inform the discussion of solutions to overcome the barriers reported for physicians acquiring the knowledge, attitudes and skills to counsel their patients on nutrition. In addition to those efforts ASN led a major effort towards establishing the role of clinical nutritionists (17).

The list demonstrates that RDNs and physicians have been engaged in a range of efforts for more than 50 years that even if deemed successful have failed to be institutionalized. Table 2 is a sampling, not an exhaustive list, of notable curriculum efforts, starting in the late 1950s with the American Medical Association Council on Food and Nutrition (12) to provide nutrition education to medical professionals. The fact remains that medical students, residents and practicing physicians still report inadequate training in nutrition to serve their patients.

One aim of this paper is to inform readers about the proceedings and ongoing developments from the 2023 Medical Education in Nutrition Summit (35-38) hosted by the ACGME and co-sponsored by the American Association of Medical Colleges (AAMC), and the American College of Osteopathic Medicine (ACOM). This article concludes with a brief discussion of critical issues needing resolution as medical educators and those who collaborate with them go forward to be successful in ensuring

physicians and their interprofessional teams have the appropriate nutrition knowledge, attitudes and skills to assist, especially their patients with diet related chronic diseases to eat healthy and be physically active.

History of Recent Efforts that include a focus on Medical Nutrition Education

2022 White House Conference on Hunger, Nutrition and Health. A White House conference was announced by the Biden administration in 2022 with the aim of addressing hunger, nutrition and health. It was preceded by a call to professional, public and private groups for commitment to improve the current situation. The Biden- Administration set a goal of ending hunger and increasing healthy eating and physical activity in the U.S. by 2030 so that fewer Americans would experience diet-related diseases, such as diabetes, obesity, and hypertension. The conference galvanized professional, private and voluntary efforts. It also launched a National Strategy (2) outlining how we achieve this goal.

Since the 2022 conference, agencies across the federal government have made progress toward the actions and priorities laid out in the National Strategy's 5 pillars. Notably, Pillar 2 (Table 1) addressed integrating nutrition and health, calling for investment in health-related social needs, conducting more screenings for food insecurity and offering nutrition services; and *better educating health professionals about how to help their patients make healthy food choices and be more physically active*. It clearly stated that "Health professional schools (e.g., medical, dental, pharmacy, nursing, social work, public health, physician's assistants, physiology, exercise science, etc.) and licensing boards should expand nutrition education in graduate medical education curriculums, board exams, and postgraduate training." While RDNs are not specifically listed in the call to action, earlier in the discussion of

strengthening the health care workforce it was noted that registered dietitian nutritionists (RDNs), play a central role in preventing, treating, and managing diet-related diseases. (2, page 20). The WHC website is updated frequently (1).

In a related effort, the Department of Health and Human Services (HHS) developed a Food is Medicine initiative. The Secretary of HHS was directed to develop and implement a federal strategy, in consultation with other government agencies, to reduce nutrition-related chronic diseases and food insecurity to improve health and racial equity in the United States. This included diet-related research and programmatic efforts that increased access to food is medicine initiatives. The range of activities which included but was not limited to nutrition education will be described later.

The Administration launched a nationwide stakeholder call-to-action across all of society to make commitments to advance The White House's goal to end hunger and reduce diet-related diseases by 2030—all while reducing disparities. Groups across all sectors of government and society have responded with notable efforts in support of the call to action.

2023 AAMC/AACOM/ACGME Summit Meeting of Leading Medical Educators. As mentioned above, in response to the Call to Action that preceded the White House Conference on Hunger, Nutrition and Health, an invitation only meeting was co-sponsored by the AAMC, AACOM and ACGME in March 2023 (6). We recommend all interested in the topic of medical education in nutrition read the entire Proceedings (35). Table 3 highlights key topics found in the Proceedings.

Insert Table 3 about here

As participants, we felt a great optimism from the 100 participating medical education stakeholders that progress could be made in ensuring that physicians provided evidence-based nutrition information to their patients or referred them to a health care professional who could.

At the outset of the Summit participants were reminded by ACGME that curricula are local and medical school faculty are responsible for the overall design, management, integration, evaluation, and enhancement of a coherent and coordinated medical curriculum. This was surprising to many of us not directly involved in accreditation of graduate medical education programs.

The Summit included energized small and large group work codifying key learnings and refined recommendations from the group that each included a RDN or physician nutrition specialist who has been involved in medical nutrition education. Besides Eliot and Kolasa five other RDNs who had been involved in medical nutrition education were included in the discussions.

Table 4 is a summary of thoughts Kolasa collected in informal interviews of medical nutrition educators before the Summit. She asked them what they hoped physicians would know about nutrition and what they should include in their practice. As a panelist she shared these views.

Insert Table 4

Bullet points from our positive reactions to the Summit published shortly after the Summit in our dietetic practice group's, Nutrition Educators of Health professional's newsletter is reprinted with permission from the Academy of Nutrition and Dietetics. We titled the report "We don't want doctors to be dietitians and they don't want to be either" (36). We also initiated a discussion with RDNs on what dietetics profession could contribute to the effort to improve medical nutrition education. We were all waiting for the Proceedings which were not issued until October 2023 (35) and included what some say is a disappointing small list of Resources contributed by some of the participants (37). In a commentary published in 2024 about past efforts and inadequate progress in adopting a curriculum, Agusala and coauthors (38) make the case for nutrition in graduate medical education providing insights particularly into policy issues surrounding graduate medical education. We encourage all to read their paper as well. Some guidance from ACGME did follow in January 2024 in the section of its journal devoted to "ACGME news and views" (39).

As noted in Table 2 there have been many faculty engaged in efforts that either have never been brought to scale nor sustained. While small group discussions during the Summit focused on challenges and overcoming barriers, no truly definitive steps were outlined in the proceedings or guidance. At the time of this writing, we have been unable to identify a coordinated effort to improve medical nutrition education resulting from the Summit by any group.

US DHHS Food Is Medicine Summit. In January 2024, the Department of Health and Human Services held a Summit on Food Is Medicine to respond to Congressional directives in 2023 appropriations to implement the White House Conference goals. The

summit issued five principles to guide Food Is Medicine and related initiatives. The statement that spoke most directly to medical education was “*Cultivate understanding of the relationship between nutrition and health.*” This principle was interpreted to mean “it was important for intentional integration of nutrition education throughout healthcare and human service delivery and training to help ensure adequate provider knowledge” needed to be fostered. For this to occur, the need was clear to expand nutrition education for physicians-in-training as well as other health care team members to equip them for the growing demand of related services.

**Other Related Commitments made at the time of or following the Medical
Education in Nutrition Summit**

The American College of Lifestyle Medicine. ACLM offered without charge its “Lifestyle Medicine and Food as Medicine Essentials” 5.5-hour online course to physicians and health care professionals (27).

American College of Osteopathic Medicine. ACOM developed a statement supporting Food As Medicine and enhancing nutrition education in all Colleges of Osteopathic Medicine (COMs). (40).

American Society for Nutrition (ASN) in 2023 announced a new article series in the American Journal of Clinical Nutrition to educate physicians and other health care professionals on nutrition. Additionally, it conducted a one-day pre-conference to NUTRITION 2024 called Nutrition in Clinical Practice. The event provided Continuing Medical Education (CME) credits. The program was captured for on-demand viewing on DiscoverNUTRITION, ASN’s new learning platform. (41).

The Gaples Institute, a relatively new physician-led educational nonprofit with a stated mission of advancing the role of nutrition and lifestyle in health care is providing online nutrition education programs for the community and for health care professionals." (33)

The Plantrician Project (34) offers webinars to the medical community and the public.

We have been unable to find data describing the uptake of activities listed above.

Questions Remaining

As noted earlier, different organizations are sponsoring medical nutrition education activities. Based on the collective experience of medical nutrition educators and studies of nutrition in medical education efforts, it will take more than creating a stand-alone course or an integrated curriculum to ensure widespread adoption and support for a sustained effort to include nutrition in the training of physicians. There appear to be no easy solutions to overcoming the barriers faced. We describe here some of the steps open for debate, being considered to ensure physicians acquire the knowledge, skill and attitudes to provide nutrition counseling to patients with chronic conditions.

Are more federal grants the answer? There is encouragement to invest with more federal grants to bring nutrition into medical schools. Medical education efforts were funded in the 1990's by the National Cancer Institute using its R25 mechanism, and later from the National Heart Lung and Blood's Academic Awards Program that funded more than 20 medical schools over 10 years collaboratively and individually to determine competencies and curricula for undergraduate and graduate medical nutrition education. (22) The report of a 2017 conference, Advancing Nutrition Education,

Training, and Research for Medical Students, Residents, Fellows, Attending Physicians, and Other Clinicians: Building Competencies and Interdisciplinary Coordination called by NHLBI contains an extensive relevant bibliography (30). While many of these resources are still available from MedEdPORTAL.org or from the developers themselves, most efforts ended with the conclusion of grant funding or loss of a champion for medical nutrition education at an institution. Unfortunately, even efforts championed by students themselves have had time-limited success (23). However, Federal funding of such efforts continues, albeit at a lower level than previously. It may be useful to ask what educational research opportunities are needed to provide stronger evidence of various strategies to improve physician knowledge of nutrition relevant to patient care.

Would curriculum developed by faculty, with input from students and an advisory committee move the needle on educating medical students and residents about diet and chronic disease prevention and management? Some faculties have tried a “Do it Yourself” approach by working with a Student Advisory Committee to develop a tailored nutrition course for their medical school student group. Table 2 includes some of the notable faculty and student efforts to develop and share curricula. Some curriculum efforts had private funding, others received support from professional organizations or government funding. Some were scalable, but none have been fully institutionalized.

Could finding consensus on nutrition competencies move the field forward? An important session during the March 2023 Summit focused on the competency work being done by ACGME and also by the Academy of Nutrition and Dietetics. Would

medical faculties collaborate across schools to develop a set of uniform nutrition competencies? There have been significant efforts to develop competencies (24). Ten years ago, DiMaria-Gahlili and co-workers suggested the need to evaluate and bolster nutrition competencies within professions (nursing, pharmacy and dentistry/dental hygiene) as a primer to the development of interprofessional nutrition competencies (42). While some of this development may have been done within healthcare professions, this work has not translated to a holistic set of interprofessional nutrition competencies. If and when competencies are developed, it's not clear what organization will lead in utilizing these competencies to establish a consensus-driven set that is adopted? Neither the AAMC nor the ACGME competencies are specific to subject matter.

In a conversation with an AAMC education leader several years ago, we had been told that medical nutrition education could best fit under their core competency of Interprofessional competencies and collaboration. The Interprofessional Education Collaborative (IPEC) competencies (employed by most medical schools include language aimed at training future health care professionals to recognize the value of roles and responsibilities of other professions (42). In part, these competencies should provide foundation for physicians understanding what the RDN does and therefore how nutrition fits into the healthcare team. However, this competency can be met in a myriad of ways, not relying specifically on the collaboration between medicine and nutrition. The intentional incorporation of nutrition as an essential component of medical education is a solution for meeting IPEC competencies and promoting nutrition in medical education

What is the next step? The ACGME Proceedings includes comments from a panel on competencies. They noted that the ACGME and Accreditation Council for Education in Nutrition and Dietetics (ACEND) have implemented models for developing and sustaining competency-based education in their accredited programs. Competency-based learning provides a framework for a holistic approach to integrating nutrition education rather than simply adding it to the curriculum as a separate component. Medical educators acknowledge that assessment drives learning, and requiring learners meet nutrition competencies may be part of the solution.

Is Culinary Medicine the answer? There is growing interest in repackaging nutrition education as culinary medicine to appeal to medical students, residents and practicing physicians. The idea is to teach doctors to cook to interest them in nutrition. The HHS Food Is Medicine conference included a discussion of the efforts to develop and implement culinary medicine curricula across disciplines. Several wonderful examples of culinary medicine activities were presented at the ACGME Medical Education in Nutrition Summit. Is this the curriculum that will capture the imagination of decision makers to make a commitment to including nutrition in undergraduate and graduate medical education? There is a sizeable literature about culinary medicine although most are pilot projects of efforts that only reach a small number of medical students and residents and sometimes include the community (44-47). The papers range from reports of a one-time workshop with a focus on cooking skills, to a month-long selective that includes modules on nutrition as well as cooking. Few report having consistent funding from the institution but must rely on grants and other non-recurring funds, while others have community partners that provide funding or facilities. Many programs

developed their own curricula. Some reports come from programs that have licensed the Health Meets Food Curriculum (31) and a few report using the Culinary Medicine Curriculum from the American College of Lifestyle Medicine (32). No standard or validated assessment tool(s) exist for these curricula. The reports did include similar questions about confidence in counseling patients, and preparing foods for self, as well as a wider range of questions about culinary skills. The papers note that there is strong interest in the use of hands-on culinary medicine as educational tools. There is evidence of feasibility in implementation, but large variations exist in delivery method, setting, and course content among programs. Other challenges include lack of program cost reporting and long-term follow up of participants with inconsistent evidence for improved nutrition attitudes and skills amongst participants. There is a rich literature of cooking skill assessments outside of culinary medicine that can be adapted to evaluate skills acquired. More work is needed to define the optimal content, format, timing and dose of the programs. Additionally, we need more work to determine if the training leads to desired behavior change in patients which is greater than traditional nutrition education of medical students and residents---evidence that we think will be difficult to acquire.

CulinaryMedicine.org is the home of the Health Meets Food curriculum (first piloted at Tulane in 2012). Leadership for this program is provided by Dr. Tim Harlan. Its developers stated that culinary medicine would change the dialogue between healthcare professionals and their patients about food and health. This programming is reported as used by over 60 academic medical centers across the United States. A license to use the 20+ modules is available, however not all programs consider it a

priority to use their limited resources to purchase the license. We have often heard the phrase “nutrition or culinary medicine is nice but not necessary to being an excellent physician.” Some prestigious medical schools and CME programs have offered Culinary Medicine programs to rave reviews. It is no surprise to those of us who have been involved in dietetics education that providing experiential education in food and nutrition is both of interest to learners and produces better outcomes than didactics alone. However, barriers to scaling culinary medicine can be more daunting than implementing case-based nutrition education or other didactic approaches that have evidence of effectiveness but yet to be universally accepted by all medical schools.

Would better marketing help sell medical nutrition? Some feel that marketing medical nutrition education as FIM will make it more palatable to health professional students. The FIM Movement appears to be gaining strength in many sectors, from government sponsored initiatives to a food as medicine strategy summit. FIM is not explicitly described as nutrition education for health care professionals, but some believe that a barrier to implementing the programs is the lack of health care provider awareness about the role and impact of nutrition in chronic disease prevention and management. Some definitions of FIM include medical nutrition education under the FIM umbrella as well as Medical Nutrition Therapy (MNT) and nutrition counseling and education programs for patients. The FIM Institute at Tufts University is one program that includes a component focused on medical nutrition education for doctors and other providers (10).

One problem with the FIM concept is that it is vague, and there are a range of definitions being used to describe FIM. It often refers to medically tailored meals

(MTMs) or groceries (MTGs), and prescription produce programs while others refer to nutrition education and counseling. The pilot programs are reporting positive results, but more study is needed (47).

The Academy of Nutrition and Dietetics (11) defines FIM as a philosophy where food and nutrition aids individuals through interventions that support health and wellness. It notes that focus areas include Food as preventative medicine to encourage health and well-being; as medicine in disease management and treatment; as medicine to improve nutrition security; and as medicine to promote food safety.

Is ACGME Guidance sufficient or does it need 'teeth'? Some suggest that recommendations that have been made are toothless up to this point. The Guidance was described earlier (Table 5) This Guidance repeats what has been said in many other papers and reports. Some agencies or organizations might take the lead to explore the opportunities listed but there is no guarantee there will be significant uptake. At present adherence to ACGME guidance is voluntary.

The Harvard Law School Food Law and Policy Clinic discussed this and other policy issues in their report "Doctoring our diets: policy tools to include nutrition in medical education in the United States," 2019 (48). This report identifies the policy opportunities thought that might drive an increase in nutrition education at various stages of medical education, including undergraduate medical education (UME); graduate medical education (GME); step and board examinations; and continuing medical education (CME). Each of their recommendations merit careful consideration.

Is Putting Questions on Board exams the answer? Some experts have suggested that the answer is to put nutrition questions on Board Exams, and if medical students and others were tested on applied nutrition concepts, they would be more inclined to believe that learning is important. Efforts were made in the late 1990s to put nutrition questions on the medical licensing examinations in the United States (18). Their review noted the number of questions was likely adequate, but the appropriateness was not determined. Van Horn (22) reported that during the 10 years of the Academic Award program, two questions were added to Board exams and subsequently were dropped. While it is often thought that assessment drives learning, we question if one or two nutrition questions on exams would make a significant difference.

Is legislation the answer? Another possibility that has been suggested is to introduce legislation to ensure/mandate that physicians in training receive nutrition education. The 117th Congress (2021-2022), Reps. James McGovern and Michael Burgess proposed a House resolution (50) calling on medical schools, residency and fellowship programs to strengthen nutrition education for physicians. Although the resolution did not impose a mandate on medical education, it signaled congressional interest in nutrition education. Many educators object to the Federal government dictating policy/curricula for educational institutions, including medical schools. Some say it would violate academic freedom. At this Summit the thought was offered, "Government (local, state or federal) intervention in medical education—mandating or prohibiting educational content or experiences—is counterproductive and should remain with experts in the profession (medical and health professions educators.)"

One effort to legislate these efforts included California State Bill 380, which would have mandated hours of CME in nutrition over 4 years for practicing physicians.

Several medical societies objected that government should not micromanage requirements to practice medicine with one group noting this would be a slippery slope since there are many subjects' advocates would want mandated. Some noted that requirements like these would make it more difficult for doctors to stay on top of the changes in their own specialty. Others reported it unfair to mandate something doctors are not reimbursed to do.

Amid all that we have described here, other efforts are underway that may impact this issue in a different way. H.R. 6407, the Medical Nutrition Therapy (MNT) Act of 2023(51) expands Medicare coverage of MNT services. Medicare currently covers such services for individuals with diabetes or kidney disease under certain circumstances; such services must also be provided by a registered dietitian or nutrition professional pursuant to a physician referral. The bill extends coverage to individuals with other diseases and conditions, including obesity, eating disorders, cancer, and HIV/AIDS; such services may also be referred by a physician assistant, nurse practitioner, clinical nurse specialist, or (for eating disorders) a clinical psychologist. While this bill would not directly impact medical nutrition education, it has the potential to remove one of the barriers for patients receiving MNT and increase support for interprofessional practice, especially if other insurers follow suit .

Conclusions

There are many other structural problems that could be mentioned that have made progress slow in making nutrition education universal for health professional learners. Time and professional incentives are lacking for medical schools and practice settings to change. Also, reimbursement is lacking in practice settings.

However, in spite of these obstacles, the need is still there to: 1) teach medical students to recognize nutrition problems in patients, 2) develop physician ability to counsel on nutrition issues with evidence-based knowledge and confidence, 3) develop clinicians' ability to collaborate with dietitians and others who can address nutrition problems that physicians cannot or do not have time to address. Physicians are already familiar with referring to other providers, such as social workers, to address financial issues for example. Leadership is needed to find the way to ensure medical professionals acquire the needed knowledge, skills and attitudes to ensure fewer Americans experience diet related diseases.

RDNs and others interested in medical nutrition education must continue to advocate for the care of their patients with diet related conditions. Educators need to continue to develop and test evidence based hands-on nutrition curricula that can be delivered to many learners and continue to provide opportunities for students and residents interested in lifestyle medicine order to grow the audience of medical providers who agree learning about nutrition in training is critical to providing quality care.

References

(1) White House Conference on Hunger, Nutrition and Health.

<https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/04/white-house-announces-conference-on-hunger-nutrition-and-health-in-september/> Accessed June 1, 2024.

(2) Biden-Harris Administration. White House National Strategy on Hunger, Nutrition and Health. September, 2022. <https://www.whitehouse.gov/wp-content/uploads/2022/09/White-House-National-Strategy-on-Hunger-Nutrition-and-Health-FINAL.pdf> Accessed June 1, 2024.

(3) Shmerling RG. Is our health care system broken?

<https://www.health.harvard.edu/blog/is-our-healthcare-system-broken-202107132542>) Accessed June 12, 2024.

(4) Hoffman D. Commentary on chronic disease prevention in 2022. Nat. Assoc.

Chronic Disease Directors. <https://www.chronicdisease.org/> Accessed June 12, 2024.

(5) Kolasa, K and Rickett K. Barriers to Providing Nutrition Counseling Cited by

Physicians A Survey of primary care practitioners. Nutr Clin Pract. 2010; 25:502-509.

<https://doi.org/10.1177/0884533610380057>

(6) Summit on Medical Nutrition Education website. <https://www.acgme.org/meetings-and-educational-activities/summit-on-medical-education-in-nutrition>.

Accessed June 1, 2024.

(7) Health and Human Services Food As Medicine Summit. <https://health.gov/our-work/nutrition-physical-activity/food-medicine/hhs-food-medicine-summit>.

Accessed 4.20.2024

(8) Validation Institute. Food As Medicine Strategy Summit.

<https://mailchi.mp/5c954f53b6c0/your-vip-invitation-to-health-benefits-nation-2023-sept-26-28-in-houston-12691701?e=563faf6d34>. Accessed 4.20/2024

(9) Craven, K, Gay D, Foltz, J, Kolasa KM. Remaining Relevant in a Changing

Healthcare Organization.: Registered Dietitian Nutritionists Must Listen Up or Lose Out!

Nutrition Today. 2024: 59(1):27-36.

(10) Food As Medicine at Tufts. <https://tuftsfoodismedicine.org/>accessed 4.20.2024

(11) Academy of Nutrition and Dietetics Foundation. Food As Medicine.

<https://www.eatrightfoundation.org/resources/food-as-medicine> Accessed 6.8.2024

Commented [KK1]: References 12-34 are for table 2

(12) Shils ME. National Dairy Council Award for Excellence in Medical and Dental

Nutrition Education Lecture, Nutrition education in medical schools—the prospect

before us. Am J Clin Nutr. 1994;60(4):631-638. [://dx.doi.org/10.4300/JGME-D-23-](https://doi.org/10.4300/JGME-D-23-00801.1)

00801.1

(13) Weinsier R, Boker JR, Brooks CM et al. Priorities for nutrition content in a medical

school curriculum: a national consensus of medical educators. 1986. Am J Clin Nutr;

50(4):701-712.

(14) Weinsier RL.I. An innovation in nutrition education. Development of a national

nutrition test bank. Am J Clin Nutr. 1983;38(5):765-769.

(15) . National Research Council Committee on Nutrition in Medical Education. Nutrition

Education in U.S. Medical Schools. Washington, DC: National Academy Press; 1985.

- (16) Kolasa KM, Deen D. with Group on Nutrition Society for Teachers of Family Medicine, Physician's Curriculum in Clinical Nutrition: Primary Care. 20006. available on MedEdPortal. https://doi.org/10.15766/mep_2374-8265.159. Accessed 4.19.2024
- (17) Morgan SL, Merritt RJ, Jackson JR. et al. Biennial survey of clinical nutrition training programs. *Am J Clin Nutr.* 1990;52:29-38
- (18) American Dietetic Association. Position of the American Dietetic Association: nutrition—An essential of medical education. *J Am Diet Assoc.* 1994;94(5):555-557
- (19) Hark LA, Iwatoto C, Melnick DE. Et al. Nutrition coverage on medical licensing examinations in the United States. *Am J Clin Nutr.* 1997 65:568-571.
- (20) Thomson CA, Taren D, Kof N, et al. An integrated nutrition curriculum in medical education. *J Cancer Educ.* 2000;25(30):127-129.
- (21) Harvard. Integrated Nutrition Curriculum <https://nutrition.hms.harvard.edu/medical>
- (22) Van Horn L. The Nutrition Academic Award: brief history, overview and legacy. *Am J. Clin. Nutr.* 2006; 936s-940s.
- (23) Report of the American Medical Student Association's Nutrition Curriculum Project. Essentials of nutrition education in medical schools: a national consensus. *Am J Clin Nutr.* 1997 May;65(5):1559-61. doi: 10.1093/ajcn/65.5.1559. PMID: 9157789.
- (24) Kris-Etherton PM, Akabas SR, Douglas P, et al. Nutrition competencies in health professionals' education and training: a new paradigm. *Adv Nutr.* 2015 Jan 15;6(1):83-7. doi: 10.3945/an.114.006734. Kris Etherton Nutrition competencies

- (25). Adams KM, Kohlmeier M, Powell, M, et al. Nutrition in Medicine: Nutrition Education for Medical Students and Residents. *Nutr Clin Pract* 2010;25:471-480
- (26) Nutrition in Medicine Online Modules. <http://www.nutritioninmedicine.org/portal/>
Accessed 4/21/2024
- (27) Am College of Lifestyle Med. Lifestyle Medicine & Food As Medicine Essentials.
<https://lifestylemedicine.org/education-courses>. Accessed June13, 2024
- (28) Hark LE, Dean D. Position of the Academy of Nutrition and Dietetics: Interprofessional Education in Nutrition as an Essential Component of Medical Education *J Acad. Nutr. Diet.* 2017;117(7):1104-1113.
doi:10.1016/j.jand.2017.04.019.ND
- (29) Aspry KE, van Horn L, \Carson JA, et al. Medical Nutrition Education, Training, and Competencies to Advance Guideline-Based Diet Counseling by Physicians: A Science Advisory From the American Heart Association. *Circulation.* 2018;Vol 137, (23): e821-e841.
- (30) Linda Van Horn, Lenders CM, Pratt CA et al. Students, Residents, Fellows, Attending Physicians and other Clinicians: Building Competencies and Interdisciplinary Coordination. 2019. *Advances in Nutrition.* 2019;10:1181s-120s.
doi.org/10.1093/advances/nmz083. <https://pubmed.ncbi.nlm.nih.gov/31728505>
- (31) Culinary Medicine.org. Health Meets Food. Culinary Medicine Courseware.
Accessed June 13, 2024.

(32). Hauser ME, Nordgren JR, Adam M, et al. The first comprehensive open-source culinary medicine curriculum for health professional training programs: a global reach. *Am J Lifestyle Med* 2020;14(4):369-373.

(33) Gaples Institute. The White House Spotlights the Gaples Institute's Nutrition Education for Clinicians. <https://www.gaplesinstitute.org> Accessed June 8, 2024

(34) Plantrician Project. Plantrician Education Series. <https://plantricianproject.org> Accessed June 8, 2024

(35) Proceedings off the summit on Medical Education in Nutrition. Documenting Three Days of Discussion. Chicago, Illinois | March 12-14, accessed at 2023<https://www.acgme.org/globalassets/pdfs/nutritionsummit/nutrition-summit-proceedings.pdf> March 1, 2024.

(36) Eliot K, Kolasa KM. We don't want doctors to be dietitians and they don't want to be either. A report from the ACGME, AAMC, AACOM Nutrition in Medicine Summit. *Educator's Resource*.2023;(summer):14-16.

(37) Resources A report from the ACGME, AAMC, AACOM Nutrition in Medicine Summit. *Educator's Resource*.2023. Appendix C, pages:14-16. <https://www.acgme.org/globalassets/pdfs/nutritionsummit/nutrition-summit-proceedings-resources.pdf> Accessed June 8, 2024.

(38) Agusala B, Leib EB, Albin J. The Time is Ripe: The Case for Nutrition in Graduate Medical Education in the United States *J Med Educ and Curricular Dev*.2024; 11: 1–4

Commented [KK2]: End of references to table 1

(39) Holton Lauren, Hitchell KS, Surdyk P M, Combes JR. ACGME Summit on Medical Education in Nutrition Develops Guidance for Educators on Improving Education in Nutrition. JGME. 2023;Dec): 759-760. DOI: <http://www.jgme.org>

(40) American College of Osteopathic Medicine. Elevating Health through Nutrition: Embracing the Principles of Food as Medicine in Osteopathic Medical Education <https://www.aacom.org/news-reports/news/2024/04/19/aacom-releases-historic-statement-after-food-as-medicine-special-session#:~:text=By%20integrating%20the%20concept%20of,comprehensive%20and%20effective%20patient%20care>. Accessed June 13, 2024

(41) Am Soc Nutr. Nutrition for the Clinician. <https://nutrition.org/the-american-journal-of-clinical-nutrition-launches-new-article-series-to-educate-physicians-and-other-health-care-professionals-on-nutrition>. Accessed June 13, 2024

(42) DiMaria-Ghalili RA, Mirtallo JM, Tobin BW, et al. Challenges and opportunities for nutrition education and training in the health care professions: intraprofessional and interprofessional call to action. Am J Clin Nutr. 2014 May;99(5 Suppl):1184S-93S. doi: 10.3945/ajcn.113.073536

(43) Interprofessional Education Collaborative core competencies. <https://www.ipecollaborative.org/ipec-core-competencies>. Accessed June 4, 2024

(44) Tan J, Atamanchuk L, Rao T. et al. Exploring culinary medicine as a promising method of nutritional education in medical school: a scoping review. BMC Med Educ 22, 441 (2022). <https://doi.org/10.1186/s12909-022-03449-w>

- (45) Newman C, Yan J, Messiah S, et al. Culinary Medicine as Innovative Nutrition Education for Medical Students: A Scoping Review. *Academic Medicine*. 2023; 98(2):p 274-286. | DOI: 10.1097/ACM.0000000000004895
- (46) Villanola S, Ortiz V, Castillo WJ et al; Cultural relevancy of culinary and nutritional medicine interventions: A scoping review. *Am J Lifestyle Med* .2022;16(6);663-668. PMC9644144
- (47) Asher RC, Shrewsbury VA, Bucher T, et al. Culinary medicine and culinary nutrition education for individuals with the capacity to influence health related behaviour change: A scoping review. *J Hum Nutr Diet*. 2022; 35(2):388-395. doi: 10.1111/jhn.12944.
- (48) Leib EMB, Shapiro M, Chan A et al Doctoring Our Diet: Policy Tools to Include Nutrition in U.S. Medical Training. Food Law and Policy Clinic, Harvard University, 2019 https://chlp.org/wp-content/uploads/2013/12/Doctoring-Our-Diet_-September-2019-V2.pdf Accessed 4.20.24
- (49) Hanauer JA, Thapa R, Moffit A, et al Anon. Food as Medicine in Healthcare can food solve the crisis it created? Accepted and in Press *Nutrition Today*. 2024; DOI: 10.1097/NT.0000000000000693
- (50) McGovern J. 117 Congress. HR. 784. <https://www.congress.gov/bill/117th-congress/house-resolution/784> Accessed 4.21.2024
- (51) Medical Nutrition Therapy Act of 2023, <https://www.congress.gov/bill/118th-congress/house-bill/6407/text>. Accessed June 13, 2024.

Tables

Table 1. 5 Pillars of White House Strategy on Hunger, Nutrition and Health

Table 2. Selection of milestones in medical nutrition education.

Table 3 What you will find in the Proceedings of the Summit on Nutrition in Medicine

Table 4 Summary of thoughts from medical educators about the state of medical nutrition education.

Table 5 Guidance for Educators on Improving Medical Education in Nutrition

What opportunities do you see to incorporate what we've discussed today?

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Author bios

Kathryn M Kolasa

Kathrin A. Eliot is an Associate Professor and Interprofessional Education Faculty Coordinator in the Department of Nutritional Sciences and at the University of

Oklahoma Health Sciences. A tireless advocate for promoting interprofessional learning outcomes in health professional students, she serves as a faculty sponsor the student-run interprofessional clinic on campus and the Leadership Education in Neurodevelopmental and Related Disabilities interdisciplinary program

Kay Craven is the Director of Clinical Nutrition Services for ECU Health Physician's Academic Practice and the Section Head for Nutrition Services in the Department of Family Medicine, Brody School of Medicine at East Carolina University, Greenville, North Carolina. She is passionate about working with dietitians to improve reimbursement for the work they do. She is a provider of Medical Nutrition Therapy in the Family Medicine Clinic specializing in diabetes education and support.

Call Outs

the lag in addressing the teaching of evidence-based nutrition in the medical school curricula is becoming more apparent and concerning to many

. One aim of this paper is to inform readers about the proceedings and ongoing developments from the 2023 Medical Education in Nutrition Summit

The Administration launched a nationwide stakeholder call-to-action across all of society to make commitments to advance The White House's goal to end hunger and reduce diet-related diseases by 2030—all while reducing disparities.

there have been many faculty engaged in efforts that either have never been brought to scale nor sustained.

mean "It is important for intentional integration of nutrition education throughout healthcare and human service delivery and training to help ensure adequate provider knowledge"

It will take more than creating a stand-alone course or an integrated curriculum to ensure widespread adoption and support for a sustained effort to include nutrition in the training of physicians.

acknowledge that assessment drives learning, and requiring learners meet nutrition competencies may be part of the solution Medical educators.

. It's no surprise to those of us who have been involved in dietetics education that providing experiential education in food and nutrition is both of interest to learners and produces better outcomes than didactics alone.

Some agencies or organizations might take the lead to explore the opportunities listed but there is no guarantee there will be significant uptake. At present adherence to ACGME guidance is voluntary.

Table 1. Pillars of White House National Strategy on Hunger, Nutrition and Health(3).

- Pillar 1: Improve food access and affordability
- Pillar 2: Integrate nutrition and health
- Pillar 3: Empower all consumers to make and have access to healthy food
- Pillar 4: Support physical activity for all
- Pillar 5: Enhance nutrition and food security research
- ---

Table 2. Notable Curriculum efforts in Nutrition in Medical Education

1980's SERMEN's (Southeast Regional Medical Education in Nutrition Network) development of an exam to assess the nutrition knowledge of fourth year medical student(Weinsier 1983.)

Late 1990s-mid 2000 NIH Nutrition Academic Award Program provided faculty support needed to launch a medical nutrition education curriculum in 21 medical schools. Curriculum guide and other achievements (Van Horn , 2006)

Early 2000s – present Nutrition in Medicine made available at no charge to medical schools.
<https://uncnri.org/nutrition-in-medicine/>

Late 2000s. American Heart Association Science Advisory. Issued Medical Nutrition Education, Training, and Competencies to Advance Guideline-Based Diet Counseling by Physicians: A Science Advisory From the American Heart Association (Aspry,et al 2018)

Late 1990s Medical students of the American Medical Student Association established the Nutrition Curriculum Project (NCP) with the goals of ensuring that adequate nutrition information be taught to medical students (Report of the American Medical Student Association's Nutrition Curriculum Project. Essentials of nutrition education in medical schools: a national consensus. Am J Clin Nutr. 1997 May;65(5):1559-61. doi: 10.1093/ajcn/65.5.1559.

Mid 1990's Hark and Morrison published a textbook, Medical Nutrition and Disease, a case based approach, designed to appeal to those medical schools using a case based curriculum.

Late 1990s Thomson CA, Taren D, Koff N, Marian M, Canfield L, Bassford T, Ritenbaugh C. An integrated nutrition curriculum in medical education. J Cancer Educ. 2000 Fall;15(3):127-9. doi: 10.1080/08858190009528677. PMID: 11019756.

Mid 2000s. Society for Teachers of Family Medicine Group on Nutrition Education developed and disseminated Physician's Curriculum in Clinical Nutrition: Primary Care (Kolasa
https://doi.org/10.15766/mep_2374-8265.159)

Mid 2000s Integrated Nutrition Curriculum <https://nutrition.hms.harvard.edu/medical-education>

Late 2000s NHLBI Conference on Advancing Nutrition Education, Training , and Research for Medical Students, Residents, Fellows, Attending Physicians and Other Clinicians : Building competencies and interdisciplinary coordination compiled extensive relevant bibliography (VanHorn

American College of Lifestyle Medicine.

- Lifestyle Medicine & Food as Medicine Essentials Course: ACLM offered a \$24.1M commitment to the White House Conference on Hunger to advance lifestyle medicine and food as medicine education for physicians and healthcare professionals by offering the equivalent of 100,000 complimentary registrations for the \$220, 5.5-hour CME/CE-accredited Lifestyle Medicine and Food as Medicine Essentials online course. Just over 40,000 clinicians have enrolled in the course and the course access has been extended to September 2025. Research on the course efficacy is in progress. In addition, preliminary research on the efficacy of the course to significantly increase self-reported knowledge, confidence, and increased practice with patients
- Culinary Medicine Curriculum: is freely downloadable and based on the foundational work of Michelle Hauser, MD, MS, MPA, FACP, FACLM, DipABLM, Chef Clinical Associate Professor at Stanford University School of Medicine. The curriculum is intended to be used and implemented in medical schools, health professional education programs, residency programs and more. Nutr. 2024 Mar 19;11:1338620. doi: 10.3389/nut.2024.1338620. PMID: 38567252; PMCID: PMC10985187.
- Lifestyle Medicine Residency Curriculum (LMRC): The LMRC was initially launched in 2018 to fill the gap in lifestyle medicine and nutrition education in graduate medical education (GME). The LMRC has grown, evolved, and exponentially expanded since its debut. Upon completion of the LMRC, residents qualify to sit for the American Board of Lifestyle Medicine (ABLM) certification exam. The LMRC addresses the critical gap in medical education by emphasizing the transformative power of food as medicine. Aligning with the American Board of Lifestyle Medicine competencies, over 25% of the LMRC focuses on nutrition in chronic disease; from prevention to treatment and remission. As of the 2023 academic year, the LMRC is currently offered in over 300 residency programs with over 6,500 enrollees with additional exciting growth for the upcoming 2024 academic calendar year!
- The Lifestyle Medicine 101 Curriculum: ACLM offers Free, ready-to-use curriculum that includes thirteen (13) slide decks that follow Harvard Professor, Dr. Elizabeth Frates, MD, DipABLM, award-winning Lifestyle Medicine Handbook. Available as PDF and PPT to eligible faculty, this group of presentations can be tailored to a variety of educational settings. This complimentary curriculum comes complete with a syllabus and instructor's manual.

Health Meets Food. https://culinarymedicine.org/certified-culinary-medicine-specialist-program/form-10/?gad_source=1&gclid=CjwKCAjwz42xBhB9EiwA48pT73QOJpNFQpQBWYJe-o-K4VYp9ljsnqBkcqV9DtRWs-ECW8giCue2JBoCwVlQAvD_BwE.

To earn the certificate Twelve (12) credits must be satisfied by attendance at 4 hands-on teaching kitchen modules. The remaining 48 credits can be satisfied by completing a mix of online courses through the CCMS website and by attending live nutrition and culinary medicine-focused conference sessions at the Health meets Food conference (optional).

Table 3. Summary of thoughts from medical educators wanted Summit participants to know about teaching the clinical experience of nutrition in Graduate Medical Education.

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- The barriers to including nutrition in medical education are well known and have been documented sufficiently over more than the last 40 years. Little has changed except for issues related to the influence of social media has been sustained. There is no need to study the issue further. We need to focus on addressing the barriers, perhaps in a new way.
 - Physicians need to have a basic understanding of nutrition. Unfortunately although competencies have been developed and published there still is no consensus on what graduating medical students or specialty physicians should meet. All recognize competent nutrition care from the physician goes beyond nutrition knowledge.
 - There may be a discrepancy between what the MD knows about nutrition and their perceived competence in nutrition if they do keep current in the science of nutrition, and counsel their patients base on the evidence.
 - One size does not fit all. Doctors need to know what elements of diet need to be tailored to patient because of chronic condition, faith and culture, budget (apply the principles of social determinants of health)
 - Physicians need to understand the scope and specialized skills of the RDN as seen inpatient, outpatient and community. Few have that opportunity during their training.
 - Physicians need to be confident in identifying, treating or get an RDN to treat, and monitor nutrition related conditions or malnutrition in all its forms (micronutrient deficiencies, obesity)
-

Bullet point reprinted with permission from the Academy of Nutrition and Dietetics from the Newsletter of Educators of Health Professions. Educator's Resource, 2023(summer), pages 14-16, We don't want doctors to be dietitians and they don't want to be either. A report from the ACGME, AAMC,, AACOM Nutrition in Medicine Summit.

Table 4. Guidance for Educators on Improving Education in Nutrition

Goals for learners in an integrated, longitudinal, interprofessional nutrition education curriculum in undergraduate, graduate and continuing medical education	Communication of basic nutrition information to patients
	Recognition of appropriate referral channels for patients to Registered Dietitian Nutritionists and existing resources
	Reduction of misinformation transmission
	Preparation to address food insecurity
	Provision of culturally sensitive care
Skills for residents to develop during training	Recognize the critical role nutrition and food security play in overall health and well-being
	Provide basic nutrition counseling, applying evidence-based dietary guidelines while ensuring cultural humility and lack of bias.
	Identify and address food insecurity by assessing food history and a nutrition focused physical exam.
	Understand structural determinants of health and learn to access community resources to support patients' food needs beyond the immediate scope.
	Recognize limitations in providing nutrition counseling, collaborate with interprofessional teams, refer patients for specialized care when necessary, and integrate personal lifestyle choices with professional recommendations.
Opportunities and Challenges for moving forward	Identify common terminology for interprofessional team members
	Develop mutual understanding of priorities and competencies for nutrition education
	Explore funding mechanisms to ensure faculty support
	Create mechanisms for sharing resources within the GME community

