

Plant-Based Diets: A Vital Component of Graduate Medical Education Programs on Climate and Health

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Introduction

Extreme weather and wildfires create undeniable health impacts, long noted by the medical community, with the World Health Organization naming climate change the century's top health threat.¹ Major health organizations urge graduate medical education (GME) leaders to incorporate climate change and health into ongoing education curricula.^{2,3} Increasingly, residents report eco-anxiety and climate grief, leading to some policy and curricular changes within institutions' clinical learning environments, though implementation is not uniform.^{4,5} In addition, residents across medical specialties will face an unabating US epidemic of noncommunicable diseases linked to poor-quality diet alongside climate change-associated diseases.⁶ Population dietary patterns connect both cardiometabolic diseases and the climate crisis,⁷ and potential solutions require a shift in the GME approach to preparing residents and fellows. This perspective intends to alert program directors that the benefits of a plant-based diet should be part of any curriculum dealing with climate change and health.

Planetary Health, Patient Health, and Diet

While popular media focuses on the effects of burning fossil fuels on climate, dietary choices have a substantial impact.^{8,9} Evidence supports that a shift toward plant-based foods and away from animal products reduces greenhouse gas emissions, land and water use, biodiversity loss, and environmental pollution.^{10,11} Moreover, consumption of plant-predominant diets may result in 75% less climate-heating emissions compared with diets with over 100g of meat daily.¹⁰⁻¹² Shifting consumption to more plant-based foods would improve personal health while reducing worldwide food insecurity, pollution, and climate change, thereby improving planetary health.¹³

Confronting the dual crises of the intensifying effects of global climate change¹⁴ and deteriorating metabolic health¹⁵ will require residents and fellows

to be aware of several important facts. First, half the global health burden comes from modifiable risk factors, with poor diets causing over 11 million premature deaths,¹⁶ accounting for more global deaths than tobacco. Second, the nutrient and fiber-rich diet of mainly whole plant foods is associated with a lower risk of cardiovascular disease, diabetes, hypertension, dyslipidemia, chronic kidney disease, obesity, and some cancers.¹⁷⁻¹⁹ Third, plant-based diets are recommended in the current US Department of Agriculture dietary guidelines and by national medical societies and nutrition scientists.²⁰⁻²² Despite a broad consensus on the importance of a plant-based diet on health, current health care strategies aimed at adopting better diets have yet to successfully curb the rise of cardiometabolic disease.

Patients are increasingly aware of climate change and its health effects and seek information about contributors and solutions.²³ As a trusted source of health information for the public, physicians have an essential role in addressing false health claims and dispelling dietary and nutrition myths.²⁴ Therefore, residents could learn to concisely communicate the evidence on diet and health to their patients. Residents might be encouraged to adopt a healthy diet, emphasizing sustainable protein sources, and limiting red meat and dairy. This action may improve their own health and wellness and may translate into promotion of healthy behaviors for their patients.²⁵

A Call to Action: Nutrition and Dietary Education for Patient and Planetary Health

The EAT-Lancet Commission suggests that achieving healthy and sustainable diets by 2050 will necessitate a reduction of more than half in worldwide red meat consumption and doubling the consumption of plant-based foods.⁹ The Congressional Food Is Medicine Working Group and the White House National Strategy on Hunger, Nutrition, and Health^{26,27} urged health care leaders to include nutrition in GME training. This led to the first Accreditation Council for Graduate Medical Education (ACGME)-sponsored Summit

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TABLE
Proposed Framework for Nutrition and Food Sustainability Education in GME

Topic	Goal/Objectives	Competencies	Educational Strategies
Lifestyle and preventative medicine	<ol style="list-style-type: none"> 1. Describe the relationship between diet quality and cardiometabolic health. 2. List ways plant-based diets are sustainable compared with animal-based diets. 3. Learn how to obtain a dietary history. 4. Demonstrate effective dietary counseling, considering patient goals and SDOH. 	<p>Medical Knowledge Interpersonal and Communication Skills Practice-Based Learning and Improvement</p>	<ul style="list-style-type: none"> • Lecture series on nutrition and dietary patterns • Interprofessional team workshops (registered dietitian, health coach): practice dietary history • Nutrition content integrated into existing disease-based curriculum (eg, cardiovascular disease, obesity, diabetes) • Motivational interviewing training focused on dietary behaviors (role-play)
Environmental determinants of health (EDOH)	<ol style="list-style-type: none"> 1. Recognize food accessibility challenges (ie, food deserts). 2. Examine the cost-effectiveness of plant-based dietary patterns in disease prevention. 3. Discuss environmental safety on lifestyle behaviors. 	<p>Practice-Based Learning and Improvement Systems-Based Practice</p>	<ul style="list-style-type: none"> • Ethics discussions • Design QI projects to address EDOH challenges (ie, patient tools that provide grocery cost comparison of healthy sustainable food options)
Social determinants of health (SDOH)	<ol style="list-style-type: none"> 1. Understand the social and economic factors that play an outsized role in health and behavior adoption. 2. Practice communication strategies for health literacy, empathy, and cultural humility. 3. Screen and refer (ie, WIC, SNAP) for food insecurity. 4. Employ “food is medicine” interventions (ie, medically tailored meals and groceries, produce prescriptions). 5. Recognize dietary behaviors in context of cultural significance and personal values. 	<p>Interpersonal and Communication Skills Professionalism System-Based Practice</p>	<ul style="list-style-type: none"> • Ethics discussions • Conferences in “food is medicine” interventions • Longitudinal experiential training in behavioral counseling (eg, simulated patients, role-play, and in clinical settings), tools to review plant-based cultural foods/menus • OSCE: food insecurity screening • Visiting food pantries may be impactful experiences • Culinary: medicine/teaching kitchens
Food systems and sustainability	<ol style="list-style-type: none"> 1. Explore the science behind food systems, agriculture, and climate change. 2. Describe how dietary shifts can optimize personal and planetary health. 3. Discuss the environmental impact of local food purchasing and waste reduction. 4. Adopt sustainable practices: buy seasonal foods from local farmers and sustainable producers. 	<p>System-Based Practice Practice-Based Learning and Improvement</p>	<ul style="list-style-type: none"> • Reading assignments, expert lectures • Visiting local farms may be impactful experiences • Design QI projects to increase resident, fellow, and faculty adoption of sustainable food practices
Climate change advocacy	<ol style="list-style-type: none"> 1. Describe the intersection between government policy and climate change solutions. 2. Explain how government food subsidies effects food affordability. 3. Discuss health-related elements of the Farm Bill.³⁴ 	<p>Interpersonal and Communication Skills System-Based Practice</p>	<ul style="list-style-type: none"> • Participation on national and state health care sustainability committees • Attend state climate and health “advocacy day” • Organize sustainable diet education during community health campaigns

TABLE

Proposed Framework for Nutrition and Food Sustainability Education in GME (continued)

Topic	Goal/Objectives	Competencies	Educational Strategies
Health care sustainability	<ol style="list-style-type: none"> 1. Examine how hospital food waste reduction and composting programs influence sustainability. 2. Discuss how hospital purchases from local growers and producers promote sustainability. 	Interpersonal and Communication Skills System-Based Practice	<ul style="list-style-type: none"> ▪ Hospital sustainability committees/green teams membership ▪ Participate in hospital sustainability initiatives (ie, Earth Day educational events)

Abbreviations: GME, graduate medical education; SDOH, social determinants of health; QI, quality improvement; EDOH, environmental determinants of health; WIC, Special Supplemental Nutrition Program for Women, Infants, and Children; SNAP, Supplemental Nutrition Assistance Program; OSCE, objective structured clinical examination.

on Medical Education in Nutrition,²⁸ discussing integrating nutrition and food insecurity education into curricula. Extending these efforts to support sustainable food systems and promote plant-based diets would be beneficial. However, inadequate nutritional training hampers residents' ability to guide patients toward healthy dietary behaviors,²⁹ despite recommendations made by the National Academy of Sciences and the American Society for Nutrition over 30 years ago.³⁰ Therefore, an excellent place to start the needed change is by combining comprehensive nutrition and dietary education with culinary training.^{31,32} Residency training could incorporate instruction on food systems sustainability and culturally sensitive dietary counseling strategies. In clinical settings, residents can address both cardiometabolic disease and climate change mitigation by communicating the benefits of plant-rich, locally purchased, low-waste food options.

In any curriculum, trainees should be educated on social determinants of health (SDOH) and approach patient recommendations with cultural humility.³³ Integrating plant-forward diets into diverse cultural contexts requires sensitivity, especially in regions traditionally reliant on animal-based foods. The climate crisis threatens vulnerable populations by altering animal availability and migration patterns, highlighting the universal need for dietary adaptability. Addressing economic barriers to food access is crucial, particularly for vulnerable groups disproportionately affected by these barriers. The curriculum for residents may encompass strategies to navigate financial and cultural obstacles, emphasizing meal planning, culinary education, and supplemental food programs. By framing plant-based diets within the context of preventive health and economic reform, future physicians can advocate for policies supporting equitable access to nutritious foods. This approach prepares them to promote health and sustainability, recognizing the interconnectedness of diet, health, and sustainability.

Incorporating Nutrition Into a Curriculum for Climate Change and Health

To achieve the goal of better patient and planetary health, it is essential for trainees to recognize the role of diet in health and climate change. Furthermore, trainees must recognize their own impact on patient behavior and be confident to counsel patients effectively. Nutrition education might be interweaved into existing educational structures whenever possible (eg, during educational sessions related to lifestyle-related diseases such as nonalcoholic fatty liver disease and type 2 diabetes mellitus). Working with nutritionists and dietitians in educational sessions can distribute the workload and promote interprofessional teams. The TABLE outlines topic areas, goals, associated core competencies, and examples of educational strategies.

Residency programs can integrate the principles of plant-based diets into discussions for specific diseases.³⁵ It is essential that Food Is Medicine initiatives, such as medically tailored meals and groceries, produce prescriptions, and food security programs, are familiar to all residents.^{27,36} Moreover, standardized interpersonal and communication competencies and milestones promoting nutrition and lifestyle behaviors should be implemented across all residencies and fellowships. Advocacy training is also helpful in addressing health disparities and SDOH factors affecting patient outcomes.³⁷ Program directors, residents, and fellows can organize healthy and sustainable diet education around disease prevention campaigns targeting patients and their families. Evidence-based resources and tools from organizations, such as the American College of Lifestyle Medicine, American Heart Association, and American Medical Association, can support these efforts.³⁸⁻⁴⁰

System-Level Changes

Beyond curricular changes at individual institutions, system-level changes are needed at multiple levels. At

the national level, the ACGME must integrate nutrition education and dietary counseling into the Common Program Requirements as part of the Medical Knowledge and Interpersonal and Communication Skills competencies. At the regional or local level, hospitals and hospital systems can transform clinical work environments by providing healthy menu options in cafeterias, vending machines, and during conferences. GME leaders across these systems can support interprofessional teams that promote medical guideline-recommended patient meals and minimize food waste at their institutions.

Conclusion

Integrating plant-based diet education into GME programs is crucial in addressing chronic disease and climate change. Equipping future physicians with knowledge and skills to promote nutritious and sustainable diets can lead to healthier outcomes for patients and the planet.

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