

MEDICAL EDUCATION

CULINARY MEDICINE ELECTIVE FOR MS1s: BRIDGING SILOS

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Culinary medicine is an emerging field that “blends the art of food and cooking with the science of medicine.”¹ Medical schools are introducing culinary medicine electives into their undergraduate medical curricula in response to growing interest from medical students and physicians who report lack of confidence and knowledge to effectively guide their patients on making healthy diet choices.² An integrated clinical nutrition and culinary medicine elective can provide medical students with the basics of clinically relevant nutrition science, practical hands-on culinary skills, and patient education skills so that they are able to (i) improve self-care, (ii) validate the importance of diet and address common nutrition concerns in patient encounters, and (iii) appropriately coordinate care with nutritionists. We describe our efforts to develop and implement a culinary medicine elective at the University of Pittsburgh with an aim towards increasing awareness of culinary medicine and providing guiding points for others who may be interested in creating a similar program at their academic institutions.

To gain familiarity with culinary medicine, we (ZF, BLR) attended the annual Goldring Center for Culinary Medicine at Tulane University’s 2018 Health Meets Food conference.³ Attended by approximately 250 individuals from across the United States, the conference included several keynote presentations and sessions on food insecurity, microbiome, mindful eating, and barriers to healthy eating. Additional modules covered the basics of culinary medicine, kitchen safety/knife handling skills, effectiveness of Mediterranean and DASH diets, and patient communication methods. We participated in hands-on cooking classes off-site offered at both the Goldring Center and at a local culinary school, where we prepared meals under the direction of trained program chefs with a clinical focus on (i) neurocognition (dementia, ADHD) and (ii) food allergy/intolerance. At the end of each cooking session, we enjoyed the foods we prepared together

while listening to case studies and sharing experiences with other participants. Using the background we gained from the culinary medicine conference, we returned to Pittsburgh and consulted with our school’s Dean for Student Affairs (JH) and a local content expert (RG).

Local Environment (Medical School)

Wellness surveys previously distributed to Pitt medical students (ZF) indicated they had a strong interest in cooking-related nutrition events. Since our medical institution has an established system of offering mini-electives for exploration and growth in areas not typically available to medical students in the pre-clinical years, we opted to create a two-part didactic and hands-on elective for first year medical students interested in gaining culinary medicine skills that they can apply to achieve personal nutrition goals as well as improve future discussions with patients regarding nutrition and dietary changes.

Teaching Kitchen

While some culinary medicine programs have their own institutional teaching kitchens, others collaborate with professional culinary schools or use home kitchens of participating faculty.² We decided to include a hands-on component and were able to partner with the Phipps Conservatory and Botanical Gardens, a community organization located within one mile of our medical school that recently installed a state-of-the-art teaching kitchen able to accommodate up to 18 students per class.⁴ Phipps leadership was excited to partner with our medical school and offered us use of their kitchen at no cost for our pilot elective.

Teaching Faculty/Staff

Culinary medicine programs are often run by health professionals and physicians with a strong interest or back-

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First-year PittMed students making Moroccan chickpea stew (*Phipps Botany Hall Kitchen*)

ground in the culinary arts; other culinary and content providers include chefs from the Culinary Institute of America, dietitians, behavior change experts, medical specialists (endocrinologist, gastroenterologist), and public health faculty.² In our case, the Phipps has a registered dietitian on staff and connections with chefs who participate in community cooking classes. They kindly volunteered their registered dietitian and community educators' time to assist with our pilot program together with a pediatrician who volunteered his time to guide students in our hands-on kitchen sessions.

Curriculum: Didactic and Hands-On Components

Educational content for culinary medicine programs is typically organized by (i) specific diets (ex: Mediterranean), (ii) health conditions (diabetes, cancer) or (iii) culinary behaviors (cooking legumes/vegetables, preparing breakfasts, using whole grains).² Our elective encompassed these topics through six didactic sessions focused on the scientific underpinnings of nutrition and three hands-on sessions focused on preparing meals following these guidelines (each session was two hours).

Table 1. Didactic Classroom Education

Session 1	Obesity, CAD, T2DM, Metabolic Syndrome The impact of diet and essential fatty acids on inflammation, metabolism of omega 3s/arachidonic acid, atherosclerosis, diabetes processes
Session 2	Mental Health Research on the role of micronutrients and their relation to depression, AD/HD, and bipolar disorder
Session 3	Cancer Diet, environmental toxins, and hormonal factors on the development of cancer, antioxidants, free radicals
Session 4	Fatigue, Krebs Cycle Energy metabolism, mitochondrial function, and micronutrients
Session 5	Autoimmune Disease The role of diet on immune function and ketones, fat digestion, ketogenesis
Session 6	Clinical Nutrition How do we approach conversations with patients about their diet? Individual reflections on diet modification

Table 2. Hands-On Teaching Kitchen

Session 1	Culinary Skills, Mediterranean Diet, Motivational Interviewing Sanitation/ food safety, knife skills, using basic kitchen equipment. <i>Recipes: Salmon, Tabbouleh Salad</i>
Session 2	Food Safety, Spices, Dressings, Plant-Based Diet, Pantry Foods <i>Recipes: Moroccan Chickpea Stew, Moroccan Quinoa Salad</i>
Session 3	Culinary Skills (Roasting), Motivational Interviewing in a Clinical Setting <i>Recipes: Pan Roasted Vegetables and Chicken</i>

The content for the didactic sessions (organized and taught by RG, EK) included discussion of scientific articles, related basic science principles, clinical nutrition applications, and self-selected dietary changes (Table 1). Co-presenters of the didactic sessions included a registered dietitian, an integrative health coach, a functional medicine physician, and three naturopathic physicians. Each class included a healthy plant-based snack illustrating the principles of the specific class. Additionally, the course was concurrent with the MS1 required Behavioral Medicine course in which the Stages of Change model is prominently featured.

All hands-on sessions focused on preparing meals (food provided by the Phipps) in accordance with evidence-based Mediterranean, Dietary Approaches to Stop Hypertension

(DASH), and plant-based diets (Table 2). These sessions incorporated discussion on how dietary changes are related to primary and secondary disease prevention with specific focus on adapting dishes to have lower salt, animal fat, and/or sugar content while incorporating more herbs and spices to enhance the flavor of food. An important component of these sessions was learning elements of motivational interviewing and tips for brief nutritional counseling in addition to discussing the scientific evidence for health benefits of meals prepared and practicing hands-on culinary skills.

Evaluation

Outcome measures commonly assessed include (i) providers' perceived personal habits (culinary skills, confidence, healthy food consumption),

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(ii) perceived attitude and knowledge regarding nutrition and cooking, and (iii) confidence and extent of nutritional and culinary counseling.² In addition to documenting attendance, we sent post-elective evaluations electronically after the third hands-on session with a modified version of a validated psychosocial assessment for evaluating the impact of culinary nutrition education on cooking and healthful eating.⁵ We also invited open-ended feedback from students for improvement in future iterations of this elective.

Summary

Culinary medicine is a great opportunity for interprofessional programming across all healthcare professions where students and providers can personally benefit from improved culinary knowledge and skills. Additionally, the variety of professionals involved in development and delivery of curricula (physicians, community health educators, chefs, dietitians) ensures exposure to a variety of perspectives and approaches regarding an important area of clinical focus. Given the ongoing diabetes and obesity epidemic and the benefits of nutritional counseling for many patients, elective culinary medicine training for interested students and residents provides an invaluable opportunity for clinicians-in-training to work closely with patients within the community as a continuum of this elective in the future.

Lessons Learned

For those interested in implementing a culinary medicine elective at their medical school, consider the following points:

- *Benchmark from established programs.* Attending the

Culinary Medicine Conference at Tulane and seeing models of other programs across the country (ex: Teaching Kitchen Collaborative) provided us a better understanding of the basics of culinary medicine, the necessary steps to develop and implement a culinary medicine program, as well as different potential models for medical students. We were then able to adapt and customize these elements to the unique resources within our institution.

- *Bridge silos.* We found culinary medicine to be an area of great interest and enthusiasm among students, faculty, and community partners across the board, but stakeholders had previously been in separate “silos.” Bringing stakeholders from different silos to the same table for discussion greatly raised inter-organizational awareness of resources and interests, allowing us to move forward in building an interdisciplinary culinary medicine elective in partnership with a community organization.
- *Start small.* When starting a culinary medicine elective, a lot of moving parts need to be worked out including identification of a faculty champion, nutrition curricula, logistics with a teaching kitchen, trained staff and faculty time, cost of food for sessions, etc. Starting small with a few hands-on sessions allows for trialing various food options, chefs and educators, and iteratively revising the elective before attempting to roll-out to an entire class.
- *Consider elective options.* Adding required material to the undergraduate medical cur-

riculum is challenging due to competing interests and limited time. By making the culinary medicine program elective and working with a medical school dean, we were able to develop and deploy our elective within 6 months rather than go through the often years-long full curriculum committee process.

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