Education

IN LIFESTYLE MEDICINE

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A Novel Culinary Medicine Course for Undergraduate Medical Education

Abstract: *Traditional nutrition education in medical school has been inadequate to prepare future physicians to counsel patients on practical dietary changes that can prevent and treat food-related disease. Culinary medicine is being used to address this in a variety of settings, including medical education. The Teaching Kitchen Elective for Medical Students at Stanford University School of Medicine spans 1 academic quarter and combines hands-on cooking of food that is delicious and healthy, correlations with multiple clinical specialties, and role-playing real-life examples of brief dietary counseling with patients to make nutrition education practical and approachable. The course has been run as a quasi-randomized controlled study comparing 3 cohorts of students versus wait-listed controls via precourse and postcourse surveys. Preliminary analysis of the first cohort of students shows significant improvements in attitudes, knowledge, and behaviors around healthy cooking and meal planning for the students compared with controls. Despite these promising preliminary results, more resources are needed to be able to hold the course frequently enough to meet student demand.*

Keywords: culinary medicine; medical education; nutrition; cooking; teaching kitchen

Nutrition education in medical school is inadequate to prepare future physicians to counsel patients on practical dietary changes that can prevent

because this can help with resilience throughout training and practice.⁶ Additionally, clinicians are more likely to counsel patients on healthy behaviors that they themselves engage in than those that they do not.⁷

For these reasons, the Teaching Kitchen Elective for Medical Students: The Doctor is In (the Kitchen) was created at Stanford

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and treat food-related disease.¹ On average, most undergraduate medical education programs include fewer than 20 hours of nutrition in their curricula, and much of this is focused on topics such as biochemistry and micronutrient deficiencies that either are not applicable or not helpful for most patients.²⁻⁴ It is common for medical residents and clinicians to feel confused about healthy diet and nutrition for themselves.⁵ It is important to address not only patient counseling, but also self-care

University School of Medicine. The theory underlying the design of the curriculum was that practical nutrition content missing in traditional medical education could be stealthily incorporated by (1) focusing on hands-on techniques needed to prepare delicious, healthy, affordable, and approachable food; (2) role-playing real-life examples of brief dietary counseling opportunities with patients; and (3) peppering in related clinical pearls offered by clinicians practicing in a variety of specialties.

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This course is one example of culinary medicine in medical education. Culinary medicine is an evidence-based field of medicine that combines nutrition science and culinary arts to promote wellness and prevent and treat disease.^{8,9} It can be thought of as the previously missing laboratory portion of the historically didactic nutrition curriculum present in most medical schools.

To evaluate whether the course successfully achieved its intended goals, it was run as a quasi-randomized controlled study. Thus far, 3 cohorts of students and wait-listed controls have taken precourse and postcourse surveys about attitudes, knowledge, and behaviors around healthy cooking, eating, and motivational interviewing of patients focused on making dietary behavior changes. Preliminary data analysis from the first cohort showed significant improvements in several aspects of attitudes, knowledge, and behaviors around healthy cooking and meal planning for the students compared with wait-listed controls.¹⁰ These data will be aggregated with data collected from the subsequent 2 cohorts, then analyzed and published in the near future.

The course is composed of eight 2-hour weekly sessions run during a single academic quarter. Medical and physician assistant students in any year of training are allowed to participate, though most take the course during their first 2 preclinical years. The multiuse kitchen rented for the course holds 12 students. Course faculty include 2 dually trained physician-chefs, an executive chef, and professors specializing in medical education, nutrition, and prevention research; their medical practice specialties include internal medicine, family medicine, pediatrics, and obesity medicine. Additionally, faculty practicing within Stanford and at other local institutions, representing an array of medical, surgical, and psychiatric specialties, join the students throughout the course to offer insights into how content covered in a given session directly applies to care of the patients that they see regularly in clinic. Prior to each session, students are given 10 to 30

minutes of preparatory work, including videos and handouts related to cooking skills, food safety, and nutrition. On arrival to each class session, students get brief instructions for the day and then dive into an hour and a half of hands-on cooking, highlighting predominantly plant-based menus utilizing a variety of world flavors and healthy cooking techniques. For the remaining 30 minutes, students and faculty gather around a table to share the meal they prepared, role-play patient counseling scenarios, ask questions about topics covered during the day, and cover key nutrition topics.

Although many faculty participated in teaching and facilitating the course, this was a result of enthusiasm about the content rather than necessity. Given that physicians dually trained as chefs are relatively rare, it was an important goal while developing the course that the content be such that it could be taught by those with more traditional training. A detailed curriculum containing goals and objectives, flow of each session, recipes, shopping lists, and print and video resources was developed that allows the course to be taught by either dually trained physician-chefs or a combination of instructors who together possess these skills and experiences. Examples of those who could use the curriculum to teach the course include physician-chefs, a physician paired with a chef, or a prior class graduate paired with a chef and dietitian.

The final class session is a celebration of how the students have incorporated what they have learned throughout the quarter into their lives and approaches to patient care. They are asked to prepare a dish that means something to them personally and illustrates lessons learned from the course. They write a recipe for the dish that is then compiled into a class cookbook along with the other course recipes and handouts. The cookbook is distributed via portable document (PDF) to students as a course graduation gift, which they can easily share among family, friends, and patients. The students' dishes are described and shared during the final potluck, wherein

students reflect on what they learned during the course, how this has affected their personal health, and how they think it will affect their care of patients in the future. The following is a quote from one student that is representative of typical student feedback received in course evaluations:

Participating in this [teaching] kitchen elective has given me a framework to begin discussions about healthy eating with patients, but [has] also taught me concrete strategies that I can offer to patients to help them make better choices. It clarified misconceptions that I and many of my peers have been making about which foods are "healthy" and really bridged the gap between a biochemical understanding of how we process nutrients and the foods that we eat. Finally, because I now prioritize and actually eat healthier, I feel much more confident (and less guilty) about discussing healthy eating with patients.

In the 3 academic quarters that the Teaching Kitchen Elective Course for Medical Students has been offered at Stanford, a total of 36 students have participated. However, many more students have expressed interest in the course. Because of limited kitchen access and inconsistent funding, we have been unable to meet student demand. Preliminary quantitative and qualitative data collected from the course support use of hands-on, practical methods of nutrition education to aid medical students in changing attitudes, knowledge, and behaviors around healthy cooking and eating for themselves and their patients. Given that prior studies of nutrition education in medical schools have indicated an inadequacy in training to counsel patients on diet, more support and resources need to be allocated for practical, hands-on, participatory nutrition education.

Acknowledgments

The author thanks Dr/Chef Julia Nordgren and Chef David Iott for coteaching, Drs Tracy Rydel and Maya Adam for codirecting, Dr Christopher Gardner for his mentorship and support, and Dr

Charles Prober for administration-level support of the course. Thanks also to all the medical students and faculty who donated their time as facilitators. Funding for the course was provided by the Stanford Teaching and Mentoring Academy Innovations Grant Program and Dr Jeanne Rosner via SOUL Food Salon. Dr Hauser received support from the National Heart, Lung, and Blood Institute via training Grant 5T32HL007034-39.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethical Approval

Not applicable, because this article does not contain any studies with human or animal subjects.

Informed Consent

Not applicable, because this article does not contain any studies with human or animal subjects.

Trial Registration

Not applicable, because this article does not contain any clinical trials. **AJLM**

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