CULINARY MEDICINE

Kimberly Parks, DO, FACC, and Rani Polak, MD, MBA

Culinary Medicine: Paving the Way to Health Through Our Forks

Abstract: *Recent findings reveal that suboptimal diet is responsible for more deaths than any other risk factor nationally and globally. It is estimated that with improving eating behaviors, 1 in 5 deaths can be prevented, underscoring the urgent need for effective dietary interventions.*

Keywords: cooking; nutrition; culinary medicine; lifestyle medicine; diet

Overview

Culinary medicine is an emerging, evidence-based discipline, which aims to positively affect public health by improving eating behaviors through integrating nutritional science with food preparation. Although a consensus definition of culinary medicine is yet to come, the definitions proposed by existing programs include reducing the global burden of nutrition-related disease[1,2] and health care costs through delivery of basic nutrition information combined with instruction in practical food related skills. The intention is to help create positive behavior change by not just providing knowledge, but by teaching specific skills that may aid in creating lasting change. Culinary medicine is not a practice that uses alternative approaches, such as specific foods or ingredients as a panacea to disease; rather, it is an evidence-based approach that includes simple nutrition education and instruction in nutritious cooking skills, including shopping, meal planning and preparation, and food storage.

In the past decade, there have been a growing number of educational initiatives that focus on culinary medicine and are designed for clinicians or directly for patients and communities.[3] These range from Continuing Medical Education trainings[4,5] and formal medical school curricula[6] to outpatient shared visits,[7] live online courses, and remote video coaching.[8]

> . . . one way to help implement change in dietary habits is through instruction on home cooking.

The Nutritional Benefits of Home Cooking

According to the Centers for Disease Control and Prevention, 36.6% of adult Americans dine at fast food restaurants on a daily basis.[9] Given that fast food dining is associated with poor dietary quality and high intake of calories,[10] one way to help implement change in dietary habits is through instruction on home cooking. Data have shown that home cooking is associated with higher-quality nutrient intake and reduced calorie intake overall.[8] An analysis of the National Health and Nutrition Examination Survey data showed that individuals who cook 6 to 7 dinners at home per week consumed an average of 137 calories less per day than those who ate 0 to 1 home-cooked dinners/wk ($P < .05$).[11] Interestingly, this difference was kept even among a subgroup of individuals who did not try to lose weight.[6,12] Furthermore, a recent publication looked at the differences between adults who ate 3 meals a day of ultraprocessed food and those who eat minimally processed food. It showed that eating ultraprocessed food until libitum, results in consuming 500 calories/d more, compared to eating unprocessed diet, which was matched for presented calories, sugar, fat, fiber, and macronutrients.[13]

In addition to improved nutrition, home cooking is also linked to health benefits.[14] For example, analysis of the

DOI:10.1177/1559827619871922. Manuscript received August 1, 2019; accepted August 5, 2019. From the Division of Cardiology, Massachusetts General Hospital, Newton Wellesley Hospital, Harvard Medical School, Boston, Massachusetts (KP), and CHEF Coaching Program, Institute of Lifestyle Medicine, Spaulding Rehabilitation Hospital, Harvard Medical School, Boston, Massachusetts, and Lifestyle Medicine Center, Sheba Medical Center, Tel Hashomer, Israel (RP). Address correspondence to: Kimberly Parks, DO, FACC, Synergy Private Health, 300 Boylston Street Suite 201, Chestnut Hill, MA 02467; e-mail: kaparks@mgh.harvard.edu.

Nurses' Health Study (121700 female registered nurses aged 30-55 years)[15] and the Health Professionals Follow-up Study (51529 male health professionals aged 40-75 years)[16] data found that people who ate 11 to 14 home-cooked lunches and dinners per week had a 14% lower risk of developing type 2 diabetes than those who ate only 6 or fewer home-cooked lunches and dinners per week[17] and that this association was partly attributed to less weight gain linked with this dining behavior. Furthermore, recent articles showed that the opposite behavior, consuming ultraprocessed food, was attributable to cardiometabolic diseases,[18] overall cancer risk, and breast cancer risk.[19]

Starting a Nutrition Conversation

Only 38% of physicians discuss diet during routine office visits,[20] which is perhaps a reflection of the lack of nutrition medical education[21] or the lack of self-adherence to healthy practices. Even when patients are counseled about diet, compliance remains a challenge, and sustainable change can be difficult to achieve[22] because change in dietary intake requires a change both in attitudes regarding food and personal habits.

There are a number of options to start incorporating culinary medicine into your practice. The conversation about food and health can be integrated into a patient's annual health maintenance visit or as a separate visit. In our practice, the patient is given a Food Frequency Questionnaire (FFQ), which assesses their Mediterranean Diet Score. FFQs can assess long-term dietary habits and have been shown to predict long-term health risk.[23] The Mediterranean diet score has been validated[24,25] and can assess the dietary risk factors that have been associated with high mortality, which include diets high in sodium, low in whole grains, low in fruit, low in nuts and seeds, low in vegetables, and low in omega-3 fatty acids.[2]

Once the assessment has been completed, here are a couple of examples of how a provider might begin the conversation about diet and risk: (1) "There is some new information about the impact of food on our health, is it ok if I share some of this?" and (2) "According to recent studies, dietary habits are responsible for more deaths than any other modifiable risk factor, including smoking and obesity. If you would like, we can review your dietary habits and determine if there are things you can do to help improve your risk." The patient then has an objective measure of their risk from which to build dietary goals. Next, an action plan can be developed, and recipes that support the plan can be shared.

Below is a featured recipe that can help improve whole grain consumption. Please feel free to try it also yourself because providers who adhere to best practices themselves are most likely to impart knowledge to their patients.

Featured Recipe

Avocado and Pearl Barley Salad

Many of our patients are interested to learn more about whole grains. It is important to note that whole grains have significant benefits over refined grains. Once a grain is refined (processed), it can lose more than half of its nutrients, including fiber.

Of the many available whole grains, barley is the highest in fiber. It contains important phytonutrients and is an excellent source of B vitamins and other nutrients. In addition to their health benefits, these whole grains are excellent in cold salads, thanks to their naturally crunchy texture.[26] For example, the next time you prepare a pasta salad, try making it with whole-wheat pasta. The result will be of a much higher nutritional and culinary quality. Let the salad sit for a few minutes after all the ingredients have been mixed, so that the grain has a chance to absorb all the flavors.

Borrow ideas for interesting salads with grains and legumes from the ACLM/ACPM culinary medicine resource section,[27] peer-reviewed publications,[26] and from international cuisines. Think about the legume salads in Central America, the whole-grain salads of the Mediterranean (like the salads below), and the rice and soba noodle salads from Asia.

Ingredients

Serves 8/Serving size: 3/4 cup
1 cup pearl barley, rinsed and drained
2 cups water
Pinch Atlantic sea salt, or to taste
2 medium Persian style or English style cucumbers cut into cubes
1 cup diced button mushrooms
1 medium avocado, ripe but firm, peeled, pitted, and cut into 1/2-inch cubes
3 tablespoons chopped fresh thyme
1/2 cup chopped fresh parsley
4 tablespoons extra-virgin olive oil
4 tablespoons fresh lemon juice
1 clove garlic, chopped
1 teaspoon honey
Pinch ground black pepper

Directions

In a small pot over high heat, bring pearl barley, water, and salt to a boil. Reduce heat to low and cook for 20 minutes or until liquid is absorbed. Rinse with cold water, drain, and transfer to a medium bowl.

Add cucumbers, mushrooms, avocado, thyme, and parsley, and toss together until combined. Add oil, lemon juice, garlic, and honey, and mix until combined. Let sit for 30 minutes for flavors to blend. Season with salt and pepper before serving.

To make vegan, substitute maple syrup for honey. To make gluten free, substitute wild rice or quinoa. Olive oil can be eliminated if desired.

Authors' Note

Dr Parks is the owner of a culinary medicine practice. Dr Polak receives author royalties from Penn Publication (self) and provides professional training in culinary medicine.

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.

ORCID iD

Kimberly Parks https://orcid.org/0000-0003-1907-2576 AJLM

References

1. US Burden of Disease Collaborators; Mokdad AH, Ballestros K, et al. The State of US Health, 1990-2016: burden of diseases, injuries, and risk factors among US states. *JAMA*. 2018;319:1444-1472.
2. GBD 2017 Diet Collaborators. Health effects of dietary risks in 195 countries, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet*. 2019;393:1958-1972.
3. Polak R, Phillips E, Nordgren J, et al. Health-related culinary education: a summary of representative emerging programs for health professionals and patients. *Glob Adv Health Med*. 2016;5:61-68.
4. Eisenberg DM, Miller AM, McManus K, Burgess J, Bernstein AM. Enhancing medical education to address obesity: "See one. Taste one. Cook one. Teach one." *JAMA Intern Med*. 2013;173:470-472. doi:10.1001/jamainternmed.2013.2517
5. Polak R, Pober D, Finkelstein A, et al. Innovation in medical education: a culinary coaching tele-nutrition training program. *Med Educ Online*. 2018;23:1510704. doi:10.1080/10872981.2018.1510704
6. Birkhead AG, Foote S, Monlezun DJ, et al. Medical student-led community cooking classes: a novel preventive medicine model that's easy to swallow. *Am J Prev Med*. 2014;46:e41-e42. doi:10.1016/j.amepre.2013.11.006
7. Kakareka R, Stone TA, Plsek P, Imamura A, Hwang E. Fresh and savory: integrating teaching kitchens with shared medical appointments. *J Altern Complement Med*. 2019;25:709-718.
8. Polak R, Pober DM, Budd MA, Silver JK, Phillips EM, Abrahamson MJ. Improving patients' home cooking—a case series of participation in a remote culinary coaching program. *Appl Physiol Nutr Metab*. 2017;42:893-896. doi:10.1139/apnm-2017-0053
9. Fryar CD, Hughes JP, Herrick KA, Ahluwalia N. Fast food consumption among adults in the United States, 2013-2016. *NCHS Data Brief*. 2018;(322):1-8.
10. Todd JE. Changes in consumption of food away from home and intakes of energy and other nutrients among U.S. working-age adults, 2005-2014. *Public Health Nutr*. 2017;20:3238-3246.
11. Wolfson JA, Bleich SN. Is cooking at home associated with better diet quality or weight-loss intention? *Public Health Nutr*. 2015;18:1397-1406.
12. Fryar CD, Ervin RB. Caloric intake from fast food among adults: United States, 2007-2010. *NCHS Data Brief*. 2013;(114):1-8.
13. Hall KD, Ayuketah A, Brychta R, et al. Ultra-processed diets cause excess calorie intake and weight gain: an inpatient randomized controlled trial of ad libitum food intake. *Cell Metab*. 2019;30:67-77.e3.
14. Polak R, Tirosh A, Livingston B, et al. Preventing type 2 diabetes with home cooking: current evidence and future potential. *Curr Diab Rep*. 2018;18:99.
15. Hu FB, Manson JE, Stampfer MJ, et al. Diet, lifestyle, and the risk of type 2 diabetes mellitus in women. *N Engl J Med*. 2010;345:790-797.
16. van Dam RM, Willett WC, Rimm EB, Stampfer MJ, Hu FB. Dietary fat and meat intake in relation to risk of type 2 diabetes in men. *Diabetes Care*. 2002;25:417-424.
17. Zong G, Eisenberg DM, Hu FB, Sun Q. Consumption of meals prepared at home and risk of type 2 diabetes: an analysis of two prospective cohort studies. *PLoS Med*. 2016;13:e1002052.
18. Mendona RD, Pimenta AM, Gea A, et al. Ultraprocessed food consumption and risk of overweight and obesity: the University of Navarra Follow-Up (SUN) cohort study. *Am J Clin Nutr*. 2016;104:1433-1440.
19. Fiolet T, Srour B, Sellem L, et al. Consumption of ultra-processed foods and cancer risk: results from NutriNet-Santé prospective cohort. *BMJ*. 2018;360:k322.
20. Sinclair J, Lawson B, Burge F. Which patients receive advice on diet and exercise? Do certain characteristics affect whether they receive such advice? *Can Fam Physician*. 2008;54:404-412.
21. Devries S, Agatson A, Aggarwal M, et al. A deficiency of nutrition education and practice in cardiology. *Am J Med*. 2017;130:1298-1305.
22. Weber B, Bersch-Ferreira ÂC, Torreglosa CR, et al. Implementation of a Brazilian Cardioprotective Nutritional (BALANCE) Program for improvement on quality of diet and secondary prevention of cardiovascular events: a randomized, multicenter trial. *Am Heart J*. 2019;215:187-197.
23. Willett WC, Stampfer MJ, Manson JE, et al. Intake of trans fatty acids and risk of coronary heart disease among women. *Lancet*. 1993;341:581-585.
24. Panagiotakos DB, Pitsavos C, Arvaniti F, Stefanadis C. Adherence to the Mediterranean food pattern predicts the prevalence of hypertension, hypercholesterolemia, diabetes and obesity, among healthy adults; the accuracy of the MedDietScore. *Prev Med*. 2007;44:335-340.
25. Gnagnarella P, Dragà D, Misotti AM, et al. Validation of a short questionnaire to record adherence to the Mediterranean diet: an Italian experience. *Nutr Metab Cardiovasc Dis*. 2018;28:1140-1147.
26. Polak R, Phillips EM, Campbell A. Legumes: health benefits and culinary approaches to increase intake. *Clin Diabetes*. 2015;33:198-205.
27. American College of Preventive Medicine. Culinary medicine—resources for patients and clinicians. https://www.acpm.org/page/culinarymedicine. Accessed August 8, 2019.