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Patient Centered Medical Home Cooking: Community Culinary Workshops for Multidisciplinary Teams

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Abstract

Ideal management of chronic disease includes team based primary care, however primary care medical staff face a lack of training when addressing nutritional counseling and lifestyle prevention. Interactive culinary medicine education has shown to improve knowledge and confidence among medical students. The aim of this study was to determine whether a culinary medicine curriculum delivered to a multidisciplinary team of primary care medical staff and medical students in a community setting would improve self-reported efficacy in nutritional counseling and whether efficacy differed between participant roles. A 4-h interactive workshop that took place within the neighborhood of a primary care medical home was delivered to medical staff and students. Participants completed a voluntary questionnaire before and after the workshop that addressed participants' attitudes and confidence in providing nutritional counseling to patients. Chi-square tests were run to determine statistically significant associations between role of participant and survey question responses. Sign Rank tests were run to determine if pre-workshop responses differed significantly from post-workshop responses. Thirteen of seventeen responses related to attitudes and efficacy demonstrated significant improvement after the workshop compared with prior to the workshop. Significant differences noted between roles prior to the workshop disappear when asking the same questions after the workshop. Delivery of culinary medicine curricula to a primary care medical home team in a community setting is an innovative opportunity to collaboratively improve nutritional education and counseling in chronic disease prevention.

Keywords

community health, lifestyle change, obesity, primary care, underserved communities, prevention

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Introduction

A rapidly rising chronic disease burden in the United States over the past few decades has shifted the focus in healthcare from a treatment alone approach to one that also addresses prevention.[1,2] Although healthcare providers are uniquely positioned to promote prevention through nutrition and lifestyle counseling, a lack of training in these subjects combined with time constraints in clinical practice prevent healthcare providers from effectively engaging patients in lifestyle prevention and management of chronic disease.[3-5] The Guide for Obesity in Primary Care makes specific recommendations for clinicians to build multidisciplinary teams to assist with weight management and connect patients with available community resources.[6] These recommendations recognize that routine provider-patient interactions in standard clinical settings alone are typically too limited in time and scope to realistically help patients achieve lifestyle changes. Primary care physicians are increasingly being called upon to lead change in both the clinical and community settings to address obesity.[7] Optimal care delivery also requires the inclusion of support staff, including nurses and medical assistants. These supportive interactions may be an underutilized avenue that help overcome time constraints and may serve as an engaging and effective model for multidisciplinary team-based care in community settings.[8-10]

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Objectives
1. Understand use of motivational interviewing skills in discussing nutrition
2. Interpret and explain food labels based on health needs
3. Explain how to meal plan in a culturally appropriate, budget and time conscious way
4. Implement new strategies for effective and relevant nutrition counseling to achieve behavior change
5. Provide appropriate nutrition and community resources

Figure 1. Culinary medicine workshop objectives.

Culinary medicine is an emerging field blending the art of food and cooking with the science of medicine to prevent and manage disease through dietary prescriptions.[11,12] Medical schools have recently begun to utilize hands-on methods to educate students about nutrition and cooking so they may feel comfortable to appropriately counsel patients. The Teaching Kitchen Collaborative started in 2015 by the Harvard T.H. Chan School of Public Health, is a consortium of organizations introducing culinary medicine curricula to medical students nationwide. Tulane University and University of Southern California are 2 such programs, with Tulane's curriculum now expanding to 13 medical schools.[12,13] While culinary medicine education has shown to improve knowledge and confidence among medical students, there is growing interest in expanding this training to a team based format and comparing the uptake of diverse members of the team. Preliminary research suggests culinary medicine interprofessional education has a positive impact on perceived team dynamics between medical and nutrition students, although further research is needed on culinary curricula delivery to different teams in alternative settings.[14,15]

The aim of this study was to determine whether a culinary medicine curriculum delivered to a multidisciplinary team of primary care medical staff and medical students in a community setting would improve self-reported efficacy in nutritional counseling, and whether efficacy differed between participant roles.

Methods

Three 4-h culinary medicine workshops were held between May and June 2019 engaging a primary care medical home in East Baltimore. The workshops took place in the community space of a church next to the medical practice. This church was already being utilized for a weekly teaching kitchen with community residents and was equipped with an industrial sized kitchen, 2 oven ranges, and large countertop space. An adjacent large multi-purpose room was used for workshop didactics, a group lunch following meal preparation, and a debrief session.

Two facilitators, a physician and a registered dietitian, led each workshop, and developed the educational objectives. The recipes used during the workshop were selected by nearby elementary/middle school students as favorite meals. The facilitators recruited 12 participants for each workshop based on the kitchen size, which could accommodate 3 teams of 4 to prepare recipes. Recruitment methods included emails to the primary care medical practice staff and medical students, along with an in-person presentation introducing the workshops to medical practice staff at their monthly administrative meeting. A variety of medical staff were recruited, including medical assistants, office assistants, nurses, and physicians. Participants were not required to have prerequisite culinary medicine experience, and medical staff were given overtime compensation from the medical practice for their participation.

The learning objectives for the workshop are outlined in Figure 1. Each workshop began with a presentation on the principles of culinary medicine, motivational interviewing, and nutrition education and counseling. Specifically, the 4 principles of motivational interviewing, engaging, focusing, evoking, and planning, were described.[16] Participants were given case scenarios to practice motivational interviewing skills as a group in the context of nutrition education and counseling along with community resources. Following the presentation, participants walked through the neighborhood, visited a corner store, grocery store, and noted the local food environment and differences between availability of items, in particular ready to eat items and the associated likelihood of impulse consumption.[17] There were then divided into teams, provided recipe cards and ingredients to prepare 4 recipes. Nutrition topics, including food labels, macronutrient composition of meals, and the relationship between food and chronic disease were reinforced through discussion during recipe preparation. The group then gathered to share the meal they prepared while they debriefed and reflected on their experiences with nutrition education and counseling both through the workshop and in their previous clinical work. Ideas for budget-conscious meal planning and integration of the culinary education lessons into clinical practice were also exchanged during the group meal.

At the start of each workshop, participants were invited to complete a voluntary 23-item questionnaire including 3 demographic questions. At the end of the workshop, participants were given a voluntary questionnaire with 19 follow-up questions. The questionnaires addressed participants'

Table 1. Demographics of Participants.

Demographics	*n* (%)
Race (*N* = 28)	
Asian	11 (39%)
Black/African	7 (25%)
White/Caucasian	5 (18%)
Other	5 (18%)
Role (N = 29)	
Doctor	1 (3%)
Medical assistant	7 (24%)
Medical office assistant	5 (17%)
Medical student	12 (41%)
Nurse	2 (7%)
Other	2 (7%)
Years experience (*N* = 29)	
<5	20 (69%)
Between 5 and 10	6 (21%)
Between 10 and 15	1 (3%)
Between 15 and 20	1 (3%)
>20	1 (3%)

attitudes and confidence regarding the impact of nutritional counseling and culinary education on patient health outcomes using a 5-point Likert scale.

A message indicating the purpose of the culinary medicine workshops was provided with each questionnaire. The Johns Hopkins University Institutional Review Board provided a waiver for this study (ID No. IRB00107676) on 11/12/18. Participants provided informed consent before participating in the study and completed questionnaires using pen and paper and were asked not to provide self-identifiable information to protect anonymity.

Descriptive statistics were run to describe the pre-workshop and post-workshop survey results using means, medians, and percentages. Chi-square tests were run to determine statistically significant (alpha = 0.05) associations between role of participant and survey question responses and associations between race of participant and survey question responses for both pre- and post-workshop surveys. Sign Rank tests were run to determine if pre-workshop responses differed significantly from post-workshop responses. Analysis was performed using SAS 9.4.

Results

Out of thirty-four participants in the workshops, twenty-nine were included in the overall analysis (please see Table 1). The included participants consisted of 16 medical support staff and 12 medical students, and 1 physician. All support staff and the physician worked full time in the primary care medical home, while all medical students were completing their ambulatory clerkship during their first or second years of training. Four participants were omitted from the data due to lack of direct patient care, including 1 public health student and 3 administrators. Missing responses for any of the questions were excluded from the analysis. Sixty-nine percent of all participants reported less than 5 years of clinical experience. The self-reported median of weekly home-cooked meals in the sample of participants was 6 (range 2-20). No differences were found for any responses when they were compared by self-reported race/ethnicity (subgroupings consisted of Asian, Caucasian/White, Black/African American, and other).

The set of questions addressing efficacy in patient nutritional counseling showed significant improvement in responses after the workshop compared to before the workshop (Table 2). This includes both questions related to self-efficacy ("My patients will change their behavior if I advise them") and role-based efficacy ("Clinic staff has an effect on patient's dietary behavior"). The question related to personal knowledge of nutrition ("How much does your knowledge of nutrition impact the type of care that you provide for your patients") showed no difference after the workshop compared to before. Responses to the impact of personal behavior ("How much does your own behavior impact the type of care that you provide for your patients") significantly decreased after the workshop compared to before the workshop. Two of the questions related to motivational interviewing demonstrated no change in the ability to motivate patients who are not initially motivated and no change in comfort level of helping patients create behavior change goals within their context. However, there were significant improvements in self-reported understanding of the principles of motivational interviewing ($P = .002$), confidence in ability to use motivational interviewing ($P < .001$), and intention to use motivational interviewing in their practice ($P = .03$). There was also a significant increase in confidence in ability to come up with nutrition related changes to improve health ($P = .008$) and intention to discuss nutrition related changes with patients ($P = .006$).

In conducting the analysis comparing the responses by role, the respondents were grouped into medical staff or medical students and 28 respondents were included (Table 3). The physician was excluded from this analysis given the differences in training and experience (greater than 20 years of experience) with both subgroups. The only significant differences between medical staff and medical student responses appear in two questions asked prior to the workshop: "my patient education efforts will be effective in increasing patients' compliance with nutritional recommendations" (with support staff agreeing more often than medical students) and "how much does your own behavior impact the type of care that you provide for your patients" (with support staff more often rating this item as "significantly"). In both cases these differences disappear when asking the same question after the workshop (see Table 4).

Table 2. Comparison of Pre-Post Workshop Score Difference.

Survey questions	*N*	Mean score difference (SD)	Sign-rank *P*-value
I feel comfortable counseling patients about nutrition	29	−0.4 (0.8)[a]	.02[b]
Most patients will try to change their behaviors if I advise them to do so	29	−0.4 (0.7)[a]	.01[b]
Physicians can have an effect on a patient's dietary behavior	29	−0.3 (0.5)[a]	.002[b]
Clinic staff can have an effect on a patient's dietary behavior	29	−0.3 (0.7)[a]	.02[b]
After receiving nutrition counseling, patients with poor habits will make major changes in their eating behavior	29	−0.5 (0.9)[a]	.003[b]
My patient-education efforts will be effective in increasing patients' compliance with nutritional recommendations	29	−0.4 (0.6)[a]	.003[b]
I feel comfortable prescribing nutritional interventions for disease management	29	−0.8 (0.8)[a]	<.0001[b]
How much does your knowledge of nutrition impact the type of care that you provide for your patients?	28	+0.07 (1)	.7
How much does your own behavior impact the type of care that you provide for your patients?	29	+0.6 (1)	.002[b]
I understand what culinary medicine is and the role that it plays in clinical medicine	29	−1 (0.8)[a]	<.0001[b]
I understand the basic principles of motivational interviewing	29	−0.6 (0.9)[a]	.002[b]
I feel confident in my ability to use motivational interviewing in my practice	28	−0.8 (0.7)[a]	<.0001[b]
If a patient is not initially motivated, I do not think that I will be able to increase his or her motivation	29	+0.2 (0.7)	.2
I feel comfortable helping my patient create behavior change goals within their context	27	−0.2 (0.8)[a]	.2
I will use motivational interviewing in my practice	25	−0.5 (1)[a]	.03[b]
I feel confident in my ability to help my patients come up with nutrition related changes to improve their health	28	−0.6 (1)[a]	.008[b]
I will discuss nutrition related changes with my patients to improve their health	29	−0.5 (0.7)[a]	.006[b]

[a]Negative differences imply pre score is lower than post score.
[b]Significant *P*-values with a critical value of .05.

Discussion

Following a community culinary workshop outside of a primary care medical home, all participants in a multidisciplinary team of health professionals demonstrated significant increases in self-efficacy in providing nutritional counseling to patients as well as better understanding of motivational interviewing principles and intended use of motivational interviewing skills and nutritional counseling with patients. There were no significant differences between role of participants in self-reported efficacy in nutritional counseling or use of motivational interviewing skills following the workshop.

Personal behaviors are believed to have an impact on nutritional and lifestyle counseling due to a the previous studies that have found that physicians who smoke are less likely to counsel patients to stop smoking if they smoke versus if they are nonsmokers.[18] However, it has been demonstrated that level of training may be more important than personal behaviors when providing lifestyle counseling related to weight management.[19] In this study, respondent perception of the impact of their own behavior on the care that that they provide to patients was significantly less after the culinary workshop than prior to the workshop. This suggests that an interactive nutritional curriculum may provide skills and confidence in providing nutritional counseling regardless of personal behavior.

Culinary medicine has had a growing presence in nutritional curriculum in medical education over the past several years. There has been a call for the next phase of development in culinary medicine programming to involve team-based learning.[14,20,21] Based on the findings of this study, culinary medicine education may be delivered to a primary care medical home team to expand nutritional counseling to include multiple members of the team. Systematic reviews have indicated that obesity interventions engaging auxiliary or allied health professionals with physicians are more likely to produce clinically significant weight loss.[22,23] Non-physician health professionals have a clear role to play based on the guidelines for obesity in primary care but need additional training in weight management and nutritional counseling than are currently in place to effectively participate in collaborative weight management

Table 3. Pre-Workshop Responses by Role.

Survey question	Rating	Medical student	Other staff	*P*-value
I feel comfortable counseling patients about nutrition	Disagree	3 (25%)	1 (6%)	.4338
	Neutral	3 (25%)	6 (38%)	
	Agree	6 (50%)	9 (56%)	
Most patients will change their behavior if I advise them	Disagree	1 (8%)	1 (6%)	.4434
	Neutral	8 (67%)	7 (44%)	
	Agree	3 (25%)	8 (50%)	
Physicians have an effect on patients' dietary behaviors	Disagree	0 (0%)	0 (0%)	1
	Neutral	1 (8%)	1 (6%)	
	Agree	11 (92%)	15 (94%)	
Clinic staff has effect on patients' dietary behavior	Disagree	0 (0%)	0 (0%)	1
	Neutral	2 (17%)	2 (13%)	
	Agree	10 (83%)	14 (88%)	
After counseling, patients will change poor eating behavior	Disagree	3 (25%)	1 (6%)	.2538
	Neutral	5 (42%)	5 (31%)	
	Agree	4 (33%)	10 (63%)	
My patient education efforts will be effective in increasing patients' compliance with nutritional recommendations	Disagree	1 (8%)	0 (0%)	.0496
	Neutral	5 (42%)	2 (13%)	
	Agree	6 (50%)	14 (88%)	
I feel comfortable prescribing nutritional interventions for disease management	Disagree	4 (33%)	6 (38%)	.5417
	Neutral	4 (33%)	2 (13%)	
	Agree	4 (33%)	8 (50%)	
How much does your knowledge of nutrition impact the type of care that you provide for your patients	Unsure	3 (25%)	1 (7%)	.7479
	Not at all	0 (0%)	1 (7%)	
	Very slightly	1 (8%)	3 (20%)	
	Moderately	4 (33%)	5 (33%)	
	Significantly	4 (33%)	5 (33%)	
How much does your own behavior impact the type of care that you provide for your patients	Unsure	2 (17%)	0 (0%)	.0129
	Not at all	0 (0%)	1 (6%)	
	Very slightly	1 (8%)	1 (6%)	
	Moderately	5 (42%)	1 (6%)	
	Significantly	4 (33%)	13 (81%)	
I understand what culinary medicine is and the role it plays in clinical medicine	Disagree	3 (25%)	1 (6%)	.1424
	Neutral	5 (42%)	4 (25%)	
	Agree	4 (33%)	11 (69%)	
I understand the basic principals of motivational interviewing	Disagree	0 (0%)	2 (13%)	.6132
	Neutral	1 (8%)	2 (13%)	
	Agree	11 (92%)	12 (75%)	
I feel confident in my ability to use motivational interviewing in my practice	Disagree	2 (17%)	2 (13%)	.8756
	Neutral	5 (42%)	5 (31%)	
	Agree	5 (42%)	9 (56%)	
If a patient is not initially motivated, I do not think that I will be able to increase his or her motivation	Disagree	7 (58%)	9 (56%)	1
	Neutral	4 (33%)	5 (31%)	
	Agree	1 (8%)	2 (13%)	
I feel comfortable helping my patient create behavior change goals within their context	Disagree	1 (8%)	1 (6%)	.6986
	Neutral	4 (33%)	3 (19%)	
	Agree	7 (58%)	12 (75%)	
I will use motivational interviewing in my practice	Disagree	1 (8%)	2 (14%)	1
	Neutral	1 (8%)	2 (14%)	
	Agree	10 (83%)	10 (71%)	
I feel confident in my ability to help my patients come up with nutrition related changes to improve their health	Disagree	3 (27%)	2 (13%)	.3254
	Neutral	3 (27%)	2 (13%)	
	Agree	5 (45%)	12 (75%)	
I will discuss nutrition related changes with my patients to improve their health	Disagree	0 (0%)	0 (0%)	1
	Neutral	2 (17%)	3 (19%)	
	Agree	10 (83%)	13 (81%)	

Table 4. Post-Workshop Responses by Role.

Survey question	Rating	Medical student	Other staff	*P*-value
I feel comfortable counseling patients about nutrition	Disagree	0 (0%)	0 (0%)	.1031
	Neutral	5 (42%)	2 (13%)	
	Agree	7 (58%)	14 (88%)	
I feel more comfortable than prior to the workshop counseling patients about nutrition	Disagree	0 (0%)	0 (0%)	1
	Neutral	1 (8%)	1 (6%)	
	Agree	11 (92%)	15 (94%)	
Most patients will change their behavior if I advise them	Disagree	1 (8%)	0 (0%)	.656
	Neutral	3 (25%)	5 (31%)	
	Agree	8 (67%)	11 (69%)	
Physicians have an effect on patients' dietary behaviors	Disagree	0 (0%)	0 (0%)	NA
	Neutral	0 (0%)	0 (0%)	
	Agree	12 (100%)	16 (100%)	
Clinic staff has effect on patients' dietary behavior	Disagree	0 (0%)	0 (0%)	1
	Neutral	0 (0%)	1 (6%)	
	Agree	12 (100%)	15 (94%)	
After counseling, patients will change poor eating behavior	Disagree	1 (8%)	0 (0%)	.2382
	Neutral	3 (25%)	2 (13%)	
	Agree	8 (67%)	14 (88%)	
My patient education efforts will be effective in increasing patients' compliance with nutritional recommendations	Disagree	0 (0%)	0 (0%)	.5604
	Neutral	2 (17%)	1 (6%)	
	Agree	10 (83%)	15 (94%)	
I feel comfortable prescribing nutritional interventions for disease management	Disagree	1 (8%)	1 (6%)	.8068
	Neutral	3 (25%)	2 (13%)	
	Agree	8 (67%)	13 (81%)	
How much does your knowledge of nutrition impact the type of care that you provide for your patients	Unsure	0 (0%)	0 (0%)	.7874
	Not at all	0 (0%)	0 (0%)	
	Very slightly	0 (0%)	1 (6%)	
	Moderately	3 (25%)	2 (13%)	
	Significantly	9 (75%)	13 (81%)	
How much does your own behavior impact the type of care that you provide for your patients	Unsure	1 (8%)	0 (0%)	.2196
	Not at all	0 (0%)	0 (0%)	
	Very slightly	0 (0%)	1 (6%)	
	Moderately	3 (25%)	1 (6%)	
	Significantly	8 (67%)	14 (88%)	
I understand what culinary medicine is and the role it plays in clinical medicine	Disagree	0 (0%)	0 (0%)	1
	Neutral	0 (0%)	1 (6%)	
	Agree	12 (100%)	15 (94%)	
I understand the basic principals of motivational interviewing	Disagree	0 (0%)	0 (0%)	1
	Neutral	0 (0%)	1 (6%)	
	Agree	12 (100%)	15 (94%)	
I feel confident in my ability to use motivational interviewing in my practice	Disagree	0 (0%)	0 (0%)	.3541
	Neutral	4 (33%)	2 (13%)	
	Agree	8 (67%)	14 (88%)	
If a patient is not initially motivated, I do not think that I will be able to increase his or her motivation	Disagree	8 (67%)	12 (75%)	.8344
	Neutral	3 (25%)	2 (13%)	
	Agree	1 (8%)	2 (13%)	
I feel comfortable helping my patient create behavior change goals within their context	Disagree	0 (0%)	0 (0%)	.6618
	Neutral	3 (27%)	3 (19%)	
	Agree	8 (73%)	13 (81%)	
I will use motivational interviewing in my practice	Disagree	0 (0%)	1 (7%)	1
	Neutral	0 (0%)	0 (0%)	
	Disagree	12 (100%)	13 (93%)	
I feel confident in my ability to help my patients come up with nutrition related changes to improve their health	Neutral	0 (0%)	1 (6%)	1
	Agree	0 (0%)	0 (0%)	
	Disagree	12 (100%)	15 (94%)	
I will discuss nutrition related changes with my patients to improve their health	Neutral	0 (0%)	0 (0%)	1
	Agree	0 (0%)	1 (6%)	
	Disagree	12 (100%)	15 (94%)	
I will incorporate something I learned today in my clinical practice	Neutral	0 (0%)	0 (0%)	1
	Agree	0 (0%)	1 (6%)	
	Disagree	12 (100%)	15 (94%)	

models.[24] Interactive teaching kitchens that provide practical skills using culinary medicine curricula can be an effective way to fill this gap in training.[20,25]

The practical aspects of these culinary workshops are important to highlight. Understanding the neighborhood food environment and community resources outside of the medical practice that impact patients and families is critical component of nutritional counseling given the known associations between neighborhood availability of healthy food and risk for diet-related disease outcomes.[26] Holding these workshops in the neighborhood provided a more realistic view of food environment, resources, and culture than would be possible in a clinical environment.

Several limitations of this pilot study should be considered. First, the recruitment process allowing for self-selection of the modest sample size of participants into the program limits not only statistical power but also the ability to control for potential confounding effects of the intervention. However, this feasibility study with a high pre-and post- response rate by participants does offer useful results to inform future larger studies. Secondly, the self-reported data limits the ability to objectively assess for the impact of the curriculum on behavior change. Importantly though, the findings do offer insight into the lack of perceived self-efficacy in providing nutritional counseling prior to the workshop and the ability to improve self-efficacy following the interactive training. Finally, given the surveys were completed directly after the workshop, there are limitations in understanding the long- term impact of the curriculum on patient counseling in practice.

Implications for Research and Practice

Culinary medicine education utilizes interactive teaching kitchens to provide practical knowledge and skills in nutrition. Delivery of this training to multidisciplinary primary care teams in a community setting can collaboratively improve and expand nutritional education and counseling in chronic disease prevention.

Declaration of Conflicting Interests

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