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**Improving patients' home cooking – A case series of participation in a remote
culinary coaching program**

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ABSTRACT

This case series describes and examines the outcomes of a remote culinary coaching program, aimed at improving nutrition through home cooking. Participants (n=4) improved attitudes about the perceived ease of home cooking ($p<0.01$) and self-efficacy to perform various culinary skills ($p=0.02$); and also in confidence to continue e-learning culinary skills and consume healthier food. We believe this program might be a viable response to the need for effective and scalable health related culinary interventions.

Key Words

Health coaching, Home cooking, Lifestyle Medicine, Eating behavior, Nutrition, Culinary Medicine

Abbreviations

CHEF – Culinary Healthcare Education Fundamental

JDC – Joslin Diabetes Center

US – United States

INTRODUCTION

In the United States (US), an important risk factor for morbidity and mortality is unhealthy diet, which is associated with 26% of deaths and 14% of disability-adjusted life-years (Murray et al. 2013). Further, healthy nutrition as part of lifestyle intervention was proven to be more effective than medications in preventing chronic diseases such as type 2 diabetes (Knowler et al. 2002). Beneficial associations are suggested between home cooking and consumption of healthy food choices (Monsivais et al. 2014). However, the consumption of pre-prepared food in the US is expanding (Food-Away-from-Home 2012), and a survey from 2007-2008 found a decrease in home food preparation (Smith et al. 2013). Barriers include limited time, skills, and cooking confidence (Gatley et al. 2014).

In response, educational interventions that aim to improve culinary skills as both primary and secondary prevention strategies have recently emerged (Reicks et al. 2014). These interventions improve confidence in home cooking and nutrition consumption (Reicks et al. 2014). Recently, we reviewed 10 key worldwide culinary education programs, and found a number of gaps (Polak et al. 2016): 1) programs focus on culinary skills rather than proven barriers to home cooking, such as low cooking confidence (Gatley et al. 2014); 2) a majority of programs lack a behavioral change component that addresses the challenges of sustaining home cooking; and 3) most of the programs include hands-on modules in teaching kitchens, which may be ideal, but encounter barriers for scalability including low accessibility and high costs (Reicks et al. 2014). Therefore, our overarching goal is to develop low cost, scalable health related culinary programs that address common home cooking barriers efficiently and effectively, through culinary skills training combined with behavioral change techniques.

Health coaching has proven to be effective in promoting nutritional change, through strategies such as participant-directed goal-setting, guided self-discovery, and accountability (Wolever et al. 2013). Recently, health coaching has developed national standards and accreditations (Mittelman. 2015); therefore, health coaching was selected and piloted as the program's behavioral change strategy (Polak et al. 2014). Then, the culinary coaching approach was developed as a form of health coaching to help participants improve nutrition through combining culinary training and coaching as a two pronged approach (Polak et al. 2015). We define *culinary coaching as a behavioral intervention that aims to improve nutrition and overall health by facilitating home cooking through an active learning process for participants that combines culinary training with health and wellness coaching competencies*. This report describes a remote culinary coaching program and presents our experience with the first four participants at the Joslin Diabetes Center (JDC), Harvard Medical School.

METHODS

Using the previously described definition of culinary coaching, this novel model was used at the JDC through a program called the **Patients Culinary Health Education Fundamental (CHEF) Coaching Program**. This innovative program aims to improve participants' nutrition and overall health through remote culinary coaching and combines: 1) live culinary coaching sessions that merge coaching principles with culinary training, and 2) CHEF Coaching resources - several open access recipes, culinary videos and comprehensive culinary classes, that were reviewed and curated specifically to provide

training for essential home cooking skills such as efficient kitchen workflow, food selection and purchasing.

In May 2015 the Patients CHEF Coaching Program was approved as a service at the JDC. This series presents our experience with and outcomes from the first four participants who responded to our social media marketing from May through June 2015 to participate in the program. Interested patients were considered eligible if they were following any diet for the prevention or management of cardio-metabolic disease. This case series was determined by JDC Committee on Human Studies to not be human subjects research under 45 CFR 46.

The program included 12 weekly one-on-one 30-minute tele-sessions that were delivered by a certified health coach who is also a credentialed chef. At the first session, participants identified their vision regarding home cooking and 3-month goals. During each subsequent meeting, participants reviewed their progress towards reaching the prior week's culinary goals and identified goals for the coming week, using a self-discovery process facilitated by the culinary coach. When patients detected a new culinary skill that is necessary for their progress, he/she was either taught by the culinary coach through discussions or referred to active learning from the CHEF Coaching resources (finding recipes or reviewing videos which address the required skill).

Data presented in this report was collected from the participants' culinary coaching records and includes: 1) participant's pre and post Cooking with Chef Questionnaire (Condrasky et al. 2011) a self-administrated Likert-scale questionnaire which was validated to evaluate impact of culinary education programs through four cooking attitude items (Cronbach's $\alpha=0.85$) and 14 cooking techniques and meal

preparation self-efficacy items ($\alpha=0.91$), (5 – strongly agree; 1 – strongly disagree); and, 2) participants goals and accomplishments which were qualitatively documented by the culinary coach through the sessions.

All data analyses were carried out using R (R Core Team. 2013). Descriptive statistics for individual item outcomes are reported as means and standard deviations. Change in individual response items from pre- to post-intervention were assessed using paired t-tests, and summary scores for overall attitude and confidence change were assessed using multivariate mixed effects models.

RESULTS

The first four participants who completed the program were adult women (age range 30-60). Two of the women were single (participants A, B) and two married (participants C, D) and living in families, each with 2 school-age children. Participant B had type 1 diabetes, celiac disease, and was obese; participant D was overweight; and participants A and C were free of metabolic risk factors.

Patients CHEF Coaching process

Three participants (75%) completed the program (A,C,D) as planned after 12 meetings, and one participant (A) ended after the seventh meeting due to life stressors unrelated to the program. All 43 sessions were completed after 30 minutes as planned. All participants defined culinary visions and 3-month culinary goals. Culinary goals were set by participants in all areas which addressed the known home cooking barriers including lack of culinary skills, limited time, and lack of management skills. Examples of goals and accomplishments are presented in Table 1.

Participants acquired new culinary skills by setting active learning goals using either the CHEF Coaching resources and other remote resources: *“I will look for a guacamole recipe and prepare it today”* (A); or recipes and video links that were provided by the culinary coach. Further, one patient (B) asked for a hands-on training in a specific skill (cooking chicken breast); thus a 1-hour training was scheduled at the clinic kitchen as a substitute for two remote 30-minute meetings. This training improved her confidence to continue with self-learning through videos, which she then praised: *“It was good! I have the confidence to do it again [to learn a skill from a video]. It was not hard. I would have never known how to do that.”*

Three patients (A,B,D,) also defined a wellness vision and 3-month wellness goals to address other health behaviors in addition to improving culinary skills (e.g., exercising). These participants started with setting only culinary weekly goals, and added other lifestyle goals during the program's course (between the 4th-7th meetings). Interestingly, the participant who elected to only define cooking goals (C) nevertheless reported during the sessions that she had been increasing her exercise level. Participant D stopped setting culinary goals after the 9th meeting and instead focused primarily on physical activity, stress reduction, and family relationship goals.

Patients CHEF Coaching outcomes

Table 2 presents the patients' cooking attitudes and cooking techniques and meal preparation self-efficacy responses. Participants improved attitudes about the perceived difficulty of home cooking from a mean of a 2.88 to 1.94 ($p < 0.01$); and self-efficacy to perform various culinary skills for a mean of a 3.44 to 4.11 ($p = 0.02$). Further, all of the participants' narratives reflected both these outcomes and supported improved nutritional

consumption. *“I have whole foods in the fridge and I like it!! I am looking at my supermarket cart and it is filled with “real” food compared to others ... all fresh fruits and vegetables and less bags and containers”*

DISCUSSION

This case series presents an evolving innovative remote culinary coaching program and our positive experience from the first four participants. Our initial results were demonstrating that this behavioral intervention might improve participants' attitude about the difficulty to perform home cooking, and confidence to cook. Further, the participants' attitudes consistently improved, and self-efficacy improved in most of the skills that participants had lacked confidence in prior to the program.

Although this is a small case series, the program's positive results align with studies that have demonstrated benefits of health coaching including improvement of participants' health behaviors (Appel et al. 2011); and with studies that have shown that cooking interventions can enhance participants' time spent preparing food, cooking confidence and thus nutrition quality (Reicks et al. 2014).

The program's feasibility is currently being evaluated by training seven individuals who are both chefs and health coaches who are delivering CHEF Coaching programs in their practice, and collecting new data about the training and its implementation with 28 clients. It is our intent to continue evaluating whether the Patient CHEF Coaching will have a significant impact on home cooking, nutrition consumption, health status, and ultimately healthcare costs.

In comparison to other lifestyle behavior goals (e.g., walking 5 minutes on Sunday afternoon), pursuing culinary goals might require acquisition of a new skills (e.g., making homemade hummus on Friday). Overall, it seems that learning culinary skills from the CHEF Coaching resources were accepted by participants, who also have gained confidence to continue using these resources after completing the program. Our findings correspond with a recent publication that presented the positive impact of culinary videos (Adam et al. 2015). Whether this program can be delivered in a cost efficient manner has yet to be determined; however, a recent summary showed that the costs of remote health related culinary education are lower than hands on education in teaching kitchens (Polak et al. 2016). Thus, remote behavioral interventions might be a sustainable solution to decrease culinary education costs and increase accessibility.

While the main goal of the program participants was to improve their home cooking, all participants addressed other lifestyle behaviors such as exercising. This supports the concept, also shown with fitness coaching, that success in changing one health behavior can generalize to changes in other health behaviors (Wolever et al. 2013). Further, while discussing culinary goals, three participants asked for more nutritional information. Two scheduled a primary care appointment and one did active learning online. This aligns with several culinary programs that combine nutrition with culinary education (Reicks et al. 2014). As we move forward to develop our culinary coaching model through the CHEF Coaching program, we plan to investigate how it can be further integrated with the health care team, primarily with nutrition education and with specific outcome measures regarding improved nutrition that directly affect health outcomes.

CONCLUSIONS

This report presents an innovative and novel remote culinary coaching program that improved attitudes and confidence about home cooking. We believe that this program has potential to be a viable response to the need for effective and scalable nutrition education interventions aimed at increasing home cooking.

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Table 1 – Example of participants' culinary goals domains and accomplishments

Home cooking barriers	<i>Goal</i>	<i>Accomplishment (stated by participant)</i>
Lack of culinary skills	<i>Incorporating nuts into the butternut squash soup on Thursday</i>	<i>My tool kit has expanded! I am not afraid of using fish, chicken, and grains [anymore].</i>
Limited time	<i>Making a double batch of lentils for the tacos tonight and freeze some for later</i>	<i>I make edamame as a snack for both kids and adults [at once]. They loved that! The kids share it; I never thought it would happen!</i>
Lack in management skills	<i>Taking bulgur on the family vacation and using it for salads</i>	<i>I have less stuff, but actually more stuff in my pantry. I take out what I don't need and the things I need are more accessible.</i>

Table 2 – Participants cooking attitude, and cooking techniques and meal preparation self-efficacy*

	Mean (SD)		p
	Pre	Post	
I do not like to cook because it takes too much time.	2.75(1.23)	2.25(0.96)	0.18
Cooking is frustrating.	2.50(0.56)	1.75(0.50)	0.06
It is too much work to cook.	2.75(0.96)	2.00(0.82)	0.22
I find cooking tiring.	3.50(0.58)	1.75(0.96)	<0.01
Summary of attitude items	2.88	1.94	<0.01
I fill confident to:			
Using knife skills in the kitchen	3.25(1.50)	3.25(1.26)	>0.99
Using basic cooking techniques	4.00(1.15)	5.00(0.00)	0.18
Steaming	4.00(1.15)	4.50(0.58)	0.18
Sautéing	4.00(1.41)	4.50(0.58)	0.39
Stir-frying	3.75(1.50)	4.50(0.58)	0.22
Grilling	2.75(0.96)	3.75(1.26)	0.09
Poaching	1.50(0.58)	2.75(0.96)	0.08
Baking	3.50(1.00)	4.25(0.50)	0.06
Roasting	4.00(0.82)	4.25(0.50)	0.39
Stewing	2.75(1.71)	3.00(1.15)	0.84
Preparing fresh or frozen green vegetables (eg, broccoli, spinach)	4.00(0.82)	4.50(0.58)	0.50
Preparing root vegetables (eg, potatoes, beets, sweet potatoes)	4.00(0.82)	4.50(1.00)	0.18

Preparing fruit (eg, peaches, watermelon)	3.50(1.00)	4.50(0.58)	0.09
Using herbs and spices (eg, basil, thyme, cayenne pepper)	2.75(0.96)	4.25(0.50)	0.06
Summary of confidence items	3.41	4.11	0.02

* 1 – strongly disagree; 5 – strongly agree

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