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Food is medicine: A low-cost, plant-based cooking class series for food pantry users

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Introduction

- Food insecurity - limited or uncertain access to nutritionally adequate, safe, and acceptable food- is a major public health concern.¹ In 2017, 15 million United State households were at one point food insecure.¹
- Food insecure adults typically have poorer diet quality than food secure adults independent of poverty.²
- Both food insecurity and poor diet quality are associated with diet sensitive chronic diseases including cardiovascular disease, type 2 diabetes, kidney disease, cancer, and obesity.^{2,3}
- People who rely on food pantries are a subgroup of concern due to their limited ability to purchase food.
- Meat, poultry, and seafood are the most expensive items in a food budget, and are usually purchased first. Lower income families therefore typically have less money to purchase fruits and vegetables.⁴

Purpose

To evaluate the impact of Food is Medicine (FIM), a low-cost plant-based cooking program, on food security, body mass index (BMI), and fruit and vegetable (F&V) intake of food pantry users.

Methods

PARTICIPANTS

- Participants were recruited from a food pantry in Rhode Island and paid \$95 for participating in surveys and classes.
- The University of Rhode Island Institutional Review Board approved all study procedures.

NUTRITION CLASSES

- Four-week series of one hour classes in which participants received a nutrition education lesson, observed a recipe preparation, and ate a meal that was one of a set of 22 FIM recipes developed by Mary Flynn, PhD, RD.
- Recipes main ingredients were extra virgin olive oil, canned and frozen vegetables, whole grains, and beans. The recipes were inexpensive at an average of \$1.45 per serving.
- Participants received recipe ingredients in each class and were encouraged to prepare the recipes at home.

MEASURES

- **Food Security**– USDA Six-Item Short Form Food Security Survey Model.
- **F&V intake** – NIH All-Day Fruit and Vegetable Screener.
- Height and weight were self-reported and used to calculate BMI.

ANALYSES

- Assessments were taken at Baseline (BL), at the end of the month long cooking program (M1), and at two follow up appointments at month 2 (M2) and month 3 (M3).
- T-tests examined changes in food security, F&V intake, and BMI using SPSS 24.0.

Results

Table 1: Participant Demographics

Participants (n=18)		
	N	%
Sex		
Female	13	72.2%
Male	3	16.7%
Age (mean ± SD)		
	50.18	±15.1
Race/Ethnicity		
Caucasian	14	77.8%
Native American	3	16.7%
Employment Status		
Full-time	2	11.1%
Part-time	5	27.8%
Unemployed	11	61.1%

Food Security Changes from Baseline to Month 3

- Food security score was significantly reduced (BL: 3.24 vs. M3: 2.47, $p = .033$). A lower score indicates higher food security.
- Percentage of participants with high or marginal food security scores increased by 7.5% from BL to M3 (BL: 27.8% vs. M3: 35.3%).
- Percentage of participants with very low food security scores decreased by 9.5% (BL: 38.9% vs. M3: 29.4%).

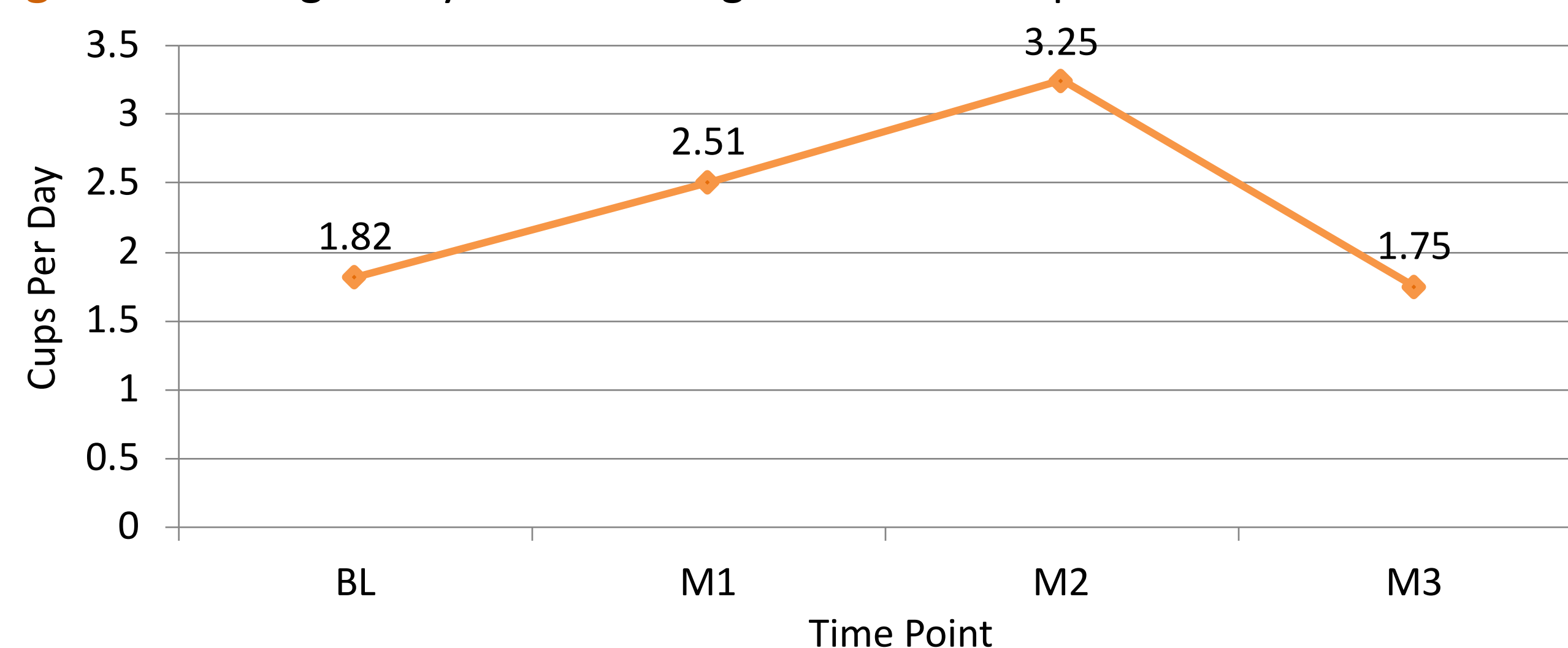
BMI

- BMI at M3 was not significantly lower than at BL (BL: 29.1 ± 1.6 ; M3: 28.7 ± 1.5 ; $P = .18$).

Fruit and Vegetable Consumption

- F&V intake significantly increased from BL to M2 (BL: 1.82 vs. M2: 3.25; $p = .035$) and significantly decreased from M2 to M3 (M2: 3.23 vs. M3: 1.75; $p = .009$).
- At M3, 59% of participants reported consuming more vegetables while only 31% of participants reported consuming more fruit.

Figure 1: Average Daily Fruit and Vegetable Consumption



Class Acceptability

At the end of the workshop series, the majority of participants thought the FIM recipes are easier than other recipes they use (66.7%), took less time (58.8%), and planned to continue to use the FIM recipes (100%).

Discussion

- FIM may potentially be an effective strategy to improve food security status in adult food pantry users.
- Increase in the mean food security score is consistent with the results of another study which found that a six-week cooking program using the FIM recipes significantly improved food security scores in Rhode Island food pantry clients.⁵
- Although a healthy diet is often perceived as expensive, FIM focuses on reducing intake of meat, poultry, and seafood which are the most expensive items in a food budget. This allocates more money to purchase fruits, vegetables and whole grains. The FIM recipes were well received by the participants, with a majority stating the FIM recipes are easier and take less time compared to other recipes.
- Contrary to our hypothesis, BMI did not significantly decrease and remained in the overweight category. The food-insecurity obesity paradox describes how food insecure individuals often choose less expensive, energy-dense, nutrient-poor foods which contributes to weight gain.⁷ The FIM recipes follow a Mediterranean diet pattern, which is associated with a lower BMI.^{6,8} An increase in food security paired with a healthy diet was therefore expected to be accompanied with a decrease in BMI.

LIMITATIONS

Limitations of this study include the small sample size. This sample was also predominately Caucasian and female. Future studies should include both a larger and more diverse sample to study changes in different subgroups.

FUTURE DIRECTIONS

Average daily F&V consumption significantly increased to 3.25 cups by M2, which is still not meeting the Dietary Guideline for Americans recommendation of five cups per day.⁹ However, consumption returned to baseline levels at M3.⁹ This indicates the need for increased support for participants after the conclusion of the workshop series. Offering additional monthly booster classes for several months may help maintain levels of F&V consumption.

Future studies should span a longer time frame and collect height and weight measurements instead of relying on self-reported measurements to be able to examine changes in BMI.

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